

VISUAL LITERACY AND ENVIRONMENTAL EVALUATION
A PROGRAMME FOR THE PARTICIPATION OF COMMUNITY
GROUPS IN DESIGN

A THESIS SUBMITTED FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY BY
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ABSTRACT

Involving community groups in the design processes concerning their city or neighbourhood, might play a constructive role in creating responsive environments and, as a result, achieve a higher level of satisfaction for communities. The interaction between clients and professionals is the means to achieve such an involvement and carry out the resolution of disputes at the design stage rather than once actions have been taken. Effective interaction must guarantee that the different roles and expertise of clients and professionals can significantly contribute to the assessment of the design settings, to the definition of goals and to their achievement.

Research has demonstrated that environmental meanings - and the related evaluative responses - are significant to people, to their attachment to places and their behaviour; moreover, it has been shown that a general shared consensus on peoples' appreciation of their environment exists. On this basis, the thesis supports the idea of a form of participation based on research in environmental experience in relation to the built environment.

The strategy proposed uses, as inputs of design, a structured combination of methods for the analysis of environmental experience, of the visual qualities of the physical environment, their effects on perception, evaluation and acceptance, as well as of the factors that play a role in such experience. In parallel, the strategy enables the training of visual literacy and joins information and communication to stimulate community groups and professionals to develop together observational and analytical skills, and make their collaboration increasingly efficient.

The intent of the study is to establish a way to do participatory design that will increase the quality and quantity of communities' engagement in issues concerning their area, reinforce their identity, improve their understanding of the context, structure and synergies, and strengthen their role in actions of urban renewal.

*We are what we repeatedly do.
Excellence, then, is not an act, but a habit*

Aristotle (384-322 BC)

INTRODUCTION

Four years ago the researcher came to Glasgow for three months to study the work of community based housing associations and how they involve communities in actions of renewal of their areas. Interviews, consultation, site visits, attendance at meetings, open discussion with local residents as well as with people involved in housing and planning offices showed a rich panorama of choices, opportunities, problems and challenges.

Through the experience of housing associations Glasgow, over the last twenty years, underwent great changes and improvements both in physical and social terms. Strong community ties developed to combine energies into community-sensitive actions. Despite the numerous successes it was, however, immediately evident that the achievements of such associations varied from case to case. These differences are conditioned a number of factors, specifically the contextual conditions such as associations have to work in and the varied level of experience in the planning of strategies. Generally, the results were also affected by the limitations of housing associations to deal with issues other than the improvement of the housing stock. This insight into the strength and weaknesses of housing associations led to question whether it was possible to identify factors that can influence the degree of success of their activities, and also whether such factors can be partially attributed to their limited strategic involvement in comprehensive evaluations of their action areas. In this case, the next question was whether such factors, together with a more organised involvement in the whole design process, could improve the quality of products these associations achieve.

By the time these questions were raised, the University of Strathclyde and Glasgow 1999 UK City of Architecture and Design launched the "Visual Literacy Research Programme, Reading the City". The project aimed at examining *what is meant by visual literacy, investigate the extent of public awareness in this field and direct this knowledge towards an intensification of such awareness in order to deepen community understanding of, and involvement in, the process of design* (University of Strathclyde and Glasgow 1999, 1997: 1). The Programme required to carry on

research with a focus on different age groups, different socio-economic levels and areas of the city in order to find differences of responses to urban settings. This required to identify for each group elements and features that contribute to the group response to the built environment and to compare the responses of different groups in order to level them out within educational programmes.

For over twenty years the experience of housing associations in involving their members in some stages of the design process had been done largely without theoretical and methodological foundation to co-ordinate individual contribution of professionals. Since 1994 SHARE (Scottish Housing Associations Resources for Education) has been providing training courses on design issues to the associations, in order to expand their energies and engagement from issues of immediate relevance to issues of design quality. These courses have the format of lessons where the engagement of members of the associations is limited and the references to their specific settings is lacking. Although the interest in SHARE's programme is rather high, the Education Department of Glasgow 1999 felt that such courses on the built environment ought to have a more researched foundation and ought to apply more sophisticated and systematic methods of analysis and teaching. Hence the instigation of the Visual Literacy Research Programme.

Aims of the thesis

The research programme proposed by the University of Strathclyde and Glasgow 1999 seemed the ideal opportunity to look for answers to the above issues and develop a new approach to design capable of involving communities throughout its whole process. To do so, it has been necessary to become familiar with several areas of research.

Working with community groups requires first of all to develop communicative skills that could engage the researcher and community groups in a fruitful dialogue. Communication was, then, the first issue to address; the forms of dialogue used in other participatory approaches and in visual literacy seemed to be helpful in establishing the desired form of dialogue.

Working with communities, also, implies having to deal with several contributors at the same time; the concept of dispute solving had therefore to be taken into account, and with it that of identifying differences of opinion, and also that of clarifying and sharing ideas, goals and solutions.

When dealing with communities and area-renewal projects, it is important to work on a realistic base, to maximise the expertise of such communities regarding familiar contextual conditions. To do so, communication and debate must be linked to the physical environment of the community groups; the analysis of the physical environment was therefore another issue to be faced. In particular, it was necessary to explore how groups perceive their space, how they understand it and on what cognitive, emotional and affective bases they respond to it. It was felt that this could reinforce the role of communities in participatory design. Developing a comprehensive vision of their own space by being actively engaged in its analysis can, in fact, guarantee that the actions taken are responsive and can effectively improve existing conditions.

Vision and motivation can also help communities to play a robust role in the decision-making process rather than a marginal one. As clients are believed to be “experts” in the formulation of their needs and aspirations, the idea pursued throughout the whole research was to develop an alternative to those participatory approaches where clients' contribution is limited to minimal and nonessential roles. The research, then, had to be based on the challenge of bringing clients and professionals together in an open field of study and debate, where roles and competencies had to be clearly defined and respected in order for both groups to support each other.

The insight into these issues and problems, led to structure more thoroughly the main goal of the research: creating a method to increase quality and quantity of communities' observational and practical engagement in issues concerning their area/city. An ideal way to do so seemed to be by linking research in environmental experience and participation within educational programmes where visuals are used as carriers of ideas, together with the training of observational and analytical skills.

During the entire research process, it was evident that experience and flexibility played a major role in every step taken; the way proposed to link all the above mentioned issues should therefore still be considered as one possibility rather than a finite answer.

Due to the commitment to Glasgow 1999 the research developed, next to the main task of community involvement, a second task aiming to bring architecture and environmental education into Scottish schools. The outcome of this part of the research is an educational tool for pupils of primary schools, to support them in learning about the built environment, architecture and design, whereas the outcome of the research in community involvement is a method for successful participatory design.

The two tasks - developed in parallel - highly influenced each other, even if they had to deal with different approaches, mainly due to the different nature of their outcomes: a teaching tool for schools, and a learning tool for community groups.

Structure of the thesis

The thesis is structured in six chapters containing, in order, the motives that lead to the idea of establishing a new approach to participatory design, the literature review to support such an approach, its development, and finally its testing.

Chapter one assesses **participation** - understood as a negotiation process where the parties involved are significantly represented and can co-operate - in its historical development, manifestations, techniques, with reflections on its most common criticisms and advantages. As a result, it proposes a way of 'doing' participation, based on the reciprocal understanding and education of clients and users (in local communities) and designers on issues concerning the built environment. This approach assures that such a negotiation process has influence on the quality of the built environment, making it responsive to both designers and users.

As visual communication is becoming increasingly powerful and widespread, this research explores the use of visual images as a possible vehicle to deliver information on the environmental experience of people.

Chapter two proposes **visual literacy** - a competence to understand and communicate through visuals - as an engine for participation. It discusses the meanings of visual literacy, the competencies it depends on, the historical manifestations of visuals as a form of communication, and the analysis of the advantages and risks of its application. The aim is to find out whether visual literacy can focus on the built environment, and whether it is possible to make use of its competencies to facilitate the perception, understanding and discussion of the environment. The chapter then explores the role of experience, culture, education and circumstances in developing visual literacy in relation to the built environment.

From these foundations, the chapter explores the development of a **commonly understandable and shared communicational resource** - where skills to listen, discuss and observe are joined and based on the principles of interaction and co-operation. This research suggests that three processes, urban design, design review and development decisions, shape the built environment (Nasar, 1998) and that the quality of the built environment can be improved if these three factors are treated as interrelated and if they are based on the analysis of peoples' experience of, and reaction to, the built environment.

Chapter three explores the significance of the **visual qualities of the physical environment**, and their effects on perception, evaluation and acceptance, as well as the factors - physical, personal, societal - that play a role in such affects. Showing how environmental meanings and evaluative responses are significant to people, to their attachment to places and their behaviour, and how there is a general consensus on peoples' appreciation of their environment, this chapter suggests the study of environmental experience as basis for participatory design. From an overview of approaches to the study of environmental experience - theoretical, empirical, perceptual/cognitive, evaluative, formal, subjective/objective - this chapter proposes an integrative approach to combine their strength and overcome their weaknesses.

Chapter four explores **research methods** that can provide the information to use as a base of participatory design. Accordingly, it assesses and discusses map sketching exercises, open-ended questions, personal conceptual systems, multidimensional analysis, semantic differential methods and emotional loading profiles. The chapter then explores the advantages and limits of each method. Assuming that environmental experience is a continuous process - from its perceptual to its behavioural phase - this chapter suggests that several analytical tools are needed to investigate environmental experience, and that they ought to be combined, in a spatial and temporal framework. Therefore, this argument proposes the sequential application of six of the above methods.

Chapter five organises the combination of methods within a **multi-method strategy (MMS)** consisting of two analytical phases focused on the study of the built environment. The first phase involves, in a rather intense commitment, a working-team. In a target area, a small group of representatives of users and designers takes part in a process of collection, confrontation, analysis and organisation of information on the built environment. This phase is "issue specific": once having identified an area of action and the major issues of concern regarding urban features, the team attempts to identify criteria, parameters and priorities for their evaluation. The outcome is an evaluative tool for environmental assessment of the issues identified. The second step, the "contextual-phase", uses this tool to capture broader views of the target community. The two phases together seek to identify the evaluative image and the degree of acceptability of urban areas, through a sequence of design research methods:

- A map sketching and open-ended question exercise, to identify, for specific groups of people, the major spaces/urban features/issues of concern within target areas.
- Multiple sorting task exercises to categorise the criteria applied in the evaluation of the priorities identified in the previous stage. Furthermore, the chapter explores various forms of interaction between participants to achieve advantages similar to those offered by multidimensional scaling analysis.

- The above steps lead to the definition of semantic differential scales, to be distributed to larger groups of the community in the "context-phase".
- From the results of the semantic differential, emotional loading profile schemes are compiled to compare targeted spaces with selected models and address further actions. The designer can use this phase to develop the design brief, the feed back and reliability check, but it does not substitute for the clients' perspective.

Chapter six presents the results of **three experiments** carried out by the researcher first, to test a number of methods that would be useful for a teaching programme in Primary schools, then to test phase by phase the multi-method strategy (MMS).

The **first experiment**, based on Francescato and Mebane's work (1973), studies "how people see Glasgow" in order to identify the categories of urban features of major concern to people, further discussion of which, they are more willing to be involved in.

The **second experiment** describes two workshops carried out in primary and secondary schools in Glasgow, as part of the educational programme of Glasgow 1999 UK City of Architecture and Design. The first workshop explored, tested and improved the communicational possibilities offered by visual literacy. The second workshop went a step further: such communication skills are used to engage in a more complex discussion of the visual qualities of the physical environment. Moreover, this workshop tested some of the techniques specified in chapter 4. As a result of these two experiences, a CD-ROM "Architecture, one word millions of worlds"¹ has been developed; the appendices include a preliminary version, together with the user manual.

The **third experiment** includes the first complete application of the proposed multi-level analytical method, during an experiment involving a community-based housing association in Glasgow, and a Fourth Year Design Group from the University of

¹ The CD-ROM has been commissioned by Glasgow 1999; it is meant to be implemented and distributed in schools by summer 2000.

Strathclyde, Department of Architecture and Building Science, Glasgow. In a three-month project, the researcher, students and community groups carried out an evaluation of the area of competence of the association on the base of the sequential method proposed. The aim was to develop renewal strategies for the area, both sensitive to the residents' requirements and to the most advanced principles of design. This experiment served to test the form of participatory design proposed in its initial stages.

The thesis discusses then on the value of the Multi-Methods Strategy (MMS), considering that it has been tested only in the initial analytical phases of the design process, and not yet throughout its whole development. The MMS is analysed according the principles of validity, reliability and discriminability, to show how its flexibility and its "suggestive" rather than normative nature should not be considered as limitations but as potentialities.

As a possible future application of the MMS, the thesis proposes the creation of a databank of activities of regeneration, evaluation, design etc. carried out by community groups and professionals on the base of the analytical methods proposed. This would guarantee that experience, expertise, skills and problems would become a common resource reinforcing, on a long term, the role of communities and establishing new links between them and the city.

CHAPTER 1 THE NEED FOR PARTICIPATION OF COMMUNITIES IN (URBAN) DESIGN

There was one woman -she was just impossible to deal with. She just yelled and screamed and pounded her fists on my desk- and nothing I could say did anything. There wasn't anything I could do; I'd try to talk to her, but she'd yell and demand this and that- she was just irate. Then once I couldn't take it anymore. I threw my casebook down on the floor, slammed my fist, and yelled right back at her. What happened? She had a big smile on her face, and in the first calm and steady voice I'd ever heard out of her, she said, "Well, there! You'll be all right yet!" I was astonished. It seemed I hadn't been really paying attention to her, taking her seriously, really listening to her, until then.

The experience of a former welfare department caseworker, now a planner (Forester 1989: 112)².

This chapter discusses the need of involving community groups in the design processes concerning their city, neighbourhood, or community.

It is based on the conviction that issues regarding several groups of actors at the same time, each with different interests, aims and competencies, need to be treated jointly by all such actors (how such actors should be represented is a key issue of this thesis). The chapter suggests an interactive process where different roles and inputs can enrich each other, can solve conflicts rather than create them; this process is based on the principle of communicability between participants.

In particular, the focus of this chapter is on involving communities in urban design regarding specifically the built environment, as a means to enhance its responsiveness, sustainability and support the communities' active role in the city.

² Forester (1989), planning theorist and educator, suggests the art of listening rather than just hearing as a tool which guarantees to actually understand interactions, to take part in them, share ideas and respect reciprocal positions, build relationships and express concern. Listening allows and facilitates understanding, therefore it is the first step forward to critical, meaningful and useful action.

It proposes to bring together consumers, suppliers³ and producers within the design process to encourage dispute solving at the design stage rather than once actions have been taken.

Reasoning on the origins and developments of participatory processes, comparing the forms of participation generally practised, with their tools, roles, objectives, the chapter supports the idea of a form of participation based on design research, to be carried out with the participants themselves.

Doing so, an informative background can be generated for the actors involved in the participatory process, and this guarantees -or at least increases the chance- that the issues debated were treated with more awareness by all the parties.

This form of participation aims at achieving an improvement of design standards on the base of informing, educating and making the demand more critical.

1.1 The meanings of participation

The focus is on its effective means of participation, how it manifests itself, what advantages it can produce, in order to identify and suggest a more effective form of participation.

Sanoff (1990: 1) defines participation -as practised in recent times- *...as face-to-face interaction of individuals who share a number of values important to all, that is a purpose for them for being together*. In very general terms, participation becomes the foundation of communities who aim at assuring freedom to all citizens and it becomes a matter of control over decisions by those involved in the participatory process.

³ Generally suppliers are a rather difficult category to involve, influence or control in the design process; as will be discussed, they are normally those dictating rules and restrictions. This thesis though has the "privilege" of dealing with Community Based Housing Associations in Glasgow, which act, in a rather unusual case, as consumers, suppliers (previous economical support from the Government) and clients, all at the same time and, of course, on a limited scale of action still with several restrictions from "higher level" suppliers (i.e. the planning department, Scottish Homes, the Council).

Since its main development in the late '60s, participation has assumed rather different connotations, within the different countries, according to the different forms of decision-making processes adopted and the parties involved. Wulz (in Sanoff, 1990) identifies seven forms of participation according to the roles of those involved and the results they can generate. The two theoretical opposites are what he calls “passive” and “active” participation, whose meanings are close to Sherry Arnstein’s “A Ladder of Citizen Participation” (Arnstein, 1969). Arnstein, whose focus was on the process of collaboration of architects and clients in design, identified a scale of user involvement, from the extreme where the user takes all the decisions, excluding the architect completely (*citizens' control* for Sherry and *active participation* or *expert anonymous* for Wulz) to the other extreme where the architect, after having taken all the decisions, informs the user (*manipulation* for Sherry and *passive participation* or *user anonymous* for Wulz). Other variations take place in between, as summarised in Figure 1-1. What is practised in reality, is a compromise between the two extreme approaches.

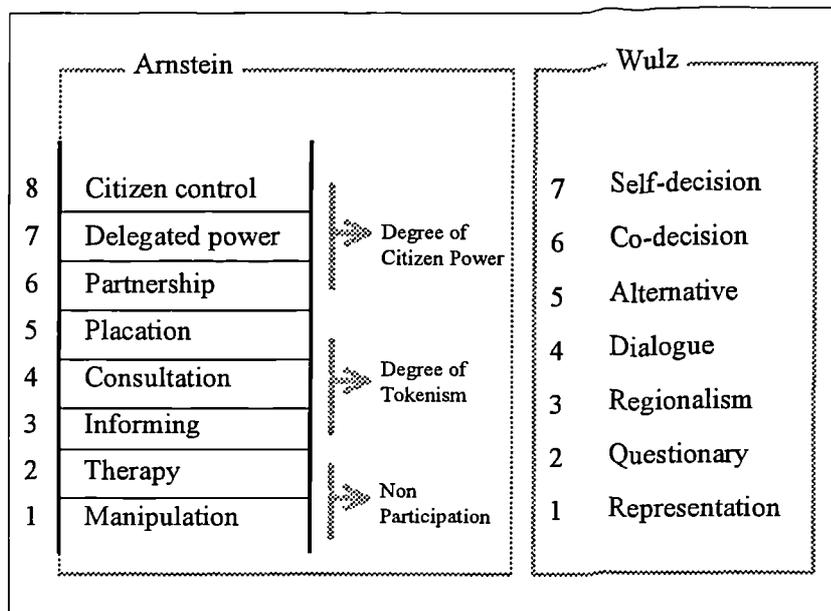


Figure 1-1. Arnstein's and Wulz's ladder of citizens' participation

For Arnstein, power holders use manipulation and therapy to achieve public support through establishing public relations; this is not therefore a form of real participation. Information is instead the very first step towards legitimising user involvement; the limitation of this approach is that the information flow is most of the times one-way,

from the power holders to the users, and participation rather ends up being often resulting in indoctrination and top-down control. Placation allows citizens to advise or plan ad infinitum but power holders maintain the right to judge the legitimacy or feasibility of such advice.

Consultation is carried out through attitude surveys, neighbourhood meetings and public enquiries, but the contact between power holders and users is still very indirect. Arnstein still doesn't consider this as a real form of participation. In a partnership the decision-making process is shared; in delegated-power, representatives of citizens take decisions together with governmental bodies. Finally, in citizen control, there is no form of mediation between citizens and power anymore, because they directly deal with and control power.

According to Wulz (in Sanoff, 1990), the first forms of participation developed around 1870 in the USA and reached Europe just in the '60s via the UK. Due to the variety of conditions in which participation was practised, forms of participation manifested and developed through different decision-making processes, which, as a consequence, affected the types of products obtained. To this regards, Wulz contextualised Arnstein's degrees of citizens' involvement within urban developments of the last decades. This provides an interesting perspective on how involvement can affect -and has affected- the urban panorama, although other economic, political and cultural factors should be considered⁴.

1.2 The question whether participation is relevant to people today

Participation has become widely practised especially over the last 20 years; different approaches, methodologies and objectives have characterised such developments, to the extent of having a real influence on peoples' approach to public life.

⁴ Among the others, economical, political, cultural factors must be taken in account; involvement can be intended as the broad manifestation of all of them together. Involvement is therefore a wide concept, which requires careful analysis; it is in fact one of those too generally used concepts, often discussed vaguely with the risk of undervaluing its power and potential implications; it seems as something "necessary", but there is not much clarity on how to achieve it. Still, the need for participation is unquestionable... "And so what?" This thesis tries to answer to this question.

In 1979, within the framework of research on social indicators on “Neighbourhood quality of life”, respondents from S. Francisco Bay (Russ-eft, 1979) identified as priorities the following set of factors:

- *Natural beauty and natural phenomena;*
- *Air and noise quality;*
- *Population and traffic density;*
- *Landscape character and maintenance;*
- *Architectural character and maintenance;*
- *Housing costs and property values;*
- *Employment and job opportunities;*
- *Business and commercial facilities and services;*
- *Educational facilities and services;*
- *Recreational, cultural and social service facilities and programmes;*
- *Public and civic services;*
- *Citizen participation in local decision-making;*
- *Socialising and interpersonal relationships;*
- *Mutual assistance;*
- *Involvement in neighbourhood or community improvement;*
- *Ethnic, racial, economic and social character;*
- *Freedom from criminal harm.*

These data reveal the high interest of people in taking active part in programmes for urban renovation.

The United Nations Habitat Agenda (UNCHS, 1996) and the relative implementations are enhancing, as one of the main priorities for sustainable development, the concept of participation, as can be seen in the following recommendations:

- The need to build on the synergies of activities at the local, national and international levels.
- The issue of involving the participation of as many stakeholders as possible from the start of any activity.

- The need to ensure that no single interest group dominates the decision-making process at the local authority level action plans, and that the interests and needs of the most deprived are represented.
- Community visioning exercise as a way to provide an excellent means of initiating, formulating and adopting local level action plans including the definition of the respective roles and responsibilities of each stakeholder.
- Strategies for effective communication and sharing of information are required to enable the ideas and priorities identified by community groups to be transformed into plans of action.

The United Nations are challenging Local Authorities from all over the world [from 1996 members of the UN as World Secretariat of Cities and Local Government (WACLAC-CAMVAL)] to adopt the following measures on:

- Appointing a local co-ordinator with links to senior management.
- Set up a working group to assure holistic engagement.
- Involve the community.
- Set up a broad-based group organised by civil society to ensure transparency of procedures.

The United Nations are furthermore challenging groups of the civil society to:

- Form local steering groups.
- Organising awareness-raising campaigns to broaden interest in local issues related to the Habitat Agenda and Agenda 21.
- Establish procedures for participation.
- Engage in community dialogues on local issues and mutual interests.
- Establish priorities and develop a plan that reflects local groups' visions.

To support this process, the UNCHS have developed a database (Best Practices Database) presenting the best cases in the world on housing and poverty issues in general; several sections are dedicated to enhance and developing participatory processes. Among these, the sections: Social Services and Education, Environmental

Management, Housing, Land Use Management, Civil Engagement & Cultural Vitality, Urban and Regional Planning, Architecture and Urban Design, Use of Information in the Decision Making Processes.

Relating to the last point, that of information dissemination, it is relevant to mention Tom Duncan's Project "Can Access to Information Influence Community Involvement in Regeneration?". The starting idea of the project was that *only those regeneration initiatives which have active community involvement and commitment built into them are likely to stand the test of time* (Duncan, 1999:1). The aim of the project was to provide access to an information service with full back-up facilities as a means to enable community groups to participate actively in regeneration processes.

The project involved many actors, among these: the Finsbury Park Group in North London; the Bermondsey and Rotherhithe Development Partnership in south London; Hartcliffe and Withywood Ventures Ltd, Bristol; Milton Keynes Christian Foundation Ltd; The Partnership Council, Nottingham; Kirklees Council for Voluntary Service, West Yorkshire; and VANT Economic Development Trust Ltd in Liverpool.

The project offered an information service for local authorities, government agencies, academic departments and a range of private bodies for around 25 years on topic areas of concern within the broad field of regeneration. The main characteristics of the information provided were:

- That information was independent, uncensored and free from bias;
- That the service provided was easy to access and therefore cost-effective for small groups to pursue

The main result demonstrated that the information received provided groups with a broader understanding of the issues to face, offered valuable contacts with organisations elsewhere, and gave national benchmarks against which groups could measure their own performance.

⁵ The Leader of the Project has been contacted by the researcher. The article cited has not been published, but was provided directly by Tom Duncan, the author.

The local groups, which need to get involved in regeneration partnerships, have a range of needs to be solved for enhancing their capacity building. These include training services and access to adequate local resources. Access to a national information service is not the only important issue. Nevertheless, this pilot project has shown that a high level of reliable information can significantly help such groups in a number of ways.

One is through enabling them to have access to the same sources of knowledge as their better resourced regeneration partners; they can become then more aware of what other organisations around the country are doing in a similar field.

Another benefit of having such a service is that it enables groups to speak and to operate with greater confidence in their partnership involvement. In turn this leads to greater effectiveness of the partnership's efforts as a whole and the prospect for more rapid progress towards the partnership's goals. Past work has highlighted that differences in culture between local authorities and community bodies can sometimes obstruct the sharing of power. Having independent access to good information has helped to bridge that gap in the pilot project.

1.3 Views on participation

The idea of citizen participation is a little like eating spinach: no one is against it in principle because it is good for you. (Arnstein, 1969: 216)

Much discussion has taken place on the results of the approaches described in the previous paragraph, as well as on Wulz's and Arnstein's degrees of citizens' involvement.

The approach to participation today is more pragmatic, not as strongly defined as in Arnstein's and Wulz's definition; it is more a matter of exchange of information, a way to solve conflicts and improve design practice. In this sense, although generally the principle of participation is supported and encouraged, there are many who criticise its mechanisms, mainly because of the lack of capacity of representing a wider range of opinions.

Here follow the main arguments supporting or rejecting participation; taken as a whole, they give good directions and indications; they also point out what needs to be changed in the commonly practised forms of participation.

1.3.1 Arguments against participation

There are two major critiques addressed to user involvement in the design process; it is important to be aware of them, so to offer a way of practising participation that is capable of overcoming them. One of them is related to the issue of creativity and the other to its capacity of assuring significant, and at the same time flexible, representation.

Team design of a horse resulting in a camel

This critique suggests that *teams cannot design* (Sanoff 1992: 72), since the essence of design is, by nature, individualistic. The visualization of this idea is the image of a camel as a horse designed by a team.

Vast research has been conducted on decision-making processes by consensus; the results of this research deny this preconceived idea. Schein (1969, cited in Sanoff, 1992) demonstrated that consensus approach produces more creative decisions and more effective implementation than an approach where decisions are taken by single individualities. Slightly more moderate is Gordon's view, a psychologist, in suggesting that *creative individual processes emulate analogue group processes* (ibid.: 73). In a case or the other, this thesis supports the idea that group-decision processes can contribute to the quality of the development of ideas and of the achievement of outcomes.

What does participation represent?

Another concern regarding participation is linked to the role of representatives of the groups involved. Each group taking part in the design process in fact represents a category of interests. The concern is that the user groups or committees involved may become carriers of mundane and commonplace aspiration rooted in their limited experiences.

This is a real risk; a good participatory process should overcome it by attributing to the *designers the responsibility to expand the horizons of the groups* (ibid.: 73). The designers' imagination and energy are meant to stimulate clients' awareness (Sanoff, 1991) while their knowledge is necessary to *state the obvious or the common place to expand the narrowness of vision* of the various groups (Sanoff, 1992:72). There are some who see in this approach the risk of a form of top-down indoctrination; this is undoubtedly a problem, but the alternative would be a simple top-down imposition. The only way to overcome it, is to base participation on a sort of "information campaign" providing the client with the tools to identify, next to needs and requirements, also the respective roles and competencies of every party involved, so that all are able to respect the reciprocal boundaries and protect their own identity. In this sense, it is fundamental that roles don't change (that users don't arrogate designers' competencies and vice versa), but make all their own contribution and enrich debate.

Whom does participation represent?

It is frequently the case that those taking part in the design process won't later be the users of the product. Since there are differences among people, there are those who suggest that the best way to cope with this continuous turnover is to ignore individual differences and design for no one in particular.

The argument is that people have undoubtedly different needs, that the attempt of designing standardised environments goes therefore to everyone's disadvantage.

Good participatory processes overcome this difficulty by demonstrating that simply creating variety does not resolve the problem of the mismatch between individual needs and the shared environment.

Instead, if the user participates as an agent to assure flexibility and variety, designers can create places that encourage individual choice in spite of situations that involve high occupancy turnover (Sanoff, 1992).

At this point, it is relevant to mention Coleman's (1985) research project on assessing the relationship between design solutions and the distribution of vandalism in 4000 houses and 4000 blocks of flats build in the UK over the last 100 years. The comparison of the houses and flats surveyed, led to the conclusion that the houses,

especially those built in the '30s had very much lower levels of vandalism. In these, residents were free to select good innovations and reject bad ones, and this process gave each household a clear control over its own separate territory. The assumption derived from this comparison was that since people are all different, and therefore any given design would not affect everyone equally, there is still the possibility that some features might affect more people than others. If this was true, there might be a case for modifying the worst designs in the hope of reducing the social breakdown that is associated to them (Coleman, 1985). Design is perceived as a major factor of social breakdown, and therefore the suggestion that user control over the design process (with the help of participation) can help avoid criminality, rejection and misuse.

Several ways can be taken to overcome the problem of achieving significant representation of the needs and aspiration of communities in participatory processes. One of them would consist in involving, directly, statistically significant groups of users, but this would be both extremely expensive and inapplicable in cases of future clients not being identifiable before the design stage. Alternatively a new approach would have to be developed that would help identify the needs and aspirations of specific user groups, and construct from the findings a comprehensive list of criteria for the design of environments responding to them. This will be discussed in chapter 4.

1.3.2 Opinions supporting participation

According to Verba, *significant changes in human behaviour can be brought about rapidly only if the persons who are expected to change participate in deciding what the change shall be and how it shall be made* (Verba, 1981, cited in Sanoff, 1990:ii). Participation then, is not only a way for "users" to be known by "producers"; it also helps users to know themselves better, to explore critically their needs and potentialities, and to use it for their own self-development. On a longer term, the feeling of having had an active role in the shaping of something that belongs to them, could affect their self-esteem, and finally have a positive impact on their responsibility and contractual capacity regarding issues of their area. With this in mind, Twigger-Ross and Uzzell's study (1996) on how place and identity processes

can affect continuity, distinctiveness, self-esteem and self-efficacy, and finally motivate people to actions towards their space, becomes significant.

Continuity, when related to space, manifests itself in two forms: place-referent continuity, that is *continuity perceived via specific places that have emotional significance for a person* (ibid: 208), and place-congruent continuity, that is *continuity perceived through some characteristic of the space*, which can be transferred to other places. In the first case, places act as reminder of past actions and experiences; it has been demonstrated that people's psychological well-being largely depends on the level of control on this form of continuity; the more there is a chance of shaping it, the better people's relation to the space. Direct involvement is therefore recommendable⁶.

In the second case, places are chosen according to the level of congruence to one's values; if they are not respondent to such values, they can be substituted by other spaces or adapted to the values. Again, the capacity of choosing or transforming spaces to make them respondent to one's expectations affects satisfaction and may therefore influence one's decision to stay in the area or move away from it (previous other circumstances).

Distinctiveness is defined as the *desire to maintain personal uniqueness* (ibid: 207); it identifies a life-style and the relationship between people and their own environment. It has been demonstrated that resident associations frequently enhance distinctiveness and manifest it in the strong perception of the boundaries of their area (Eyles, 1968, cited in Twigger-Ross and Uzzell, 1996).

The quality of spaces can affect one's self-esteem, and encourage or deny it. Self-esteem is often linked to one's capacity of control over one's immediate space, the level of privacy and activities allowed.

Finally, self-efficacy is a characteristic probably more strongly related to involvement in space design; it is the effect of *manageable environment* on their perceivers, where a manageable environment is:

⁶ To this concept is strictly linked the phenomenon of relocation: studies demonstrated that people shifted from their neighbourhood to another, where the socially and physical bounds were suddenly substituted, suffer even after 40 years distress (Nanistova, 1994 cited in Twigger-Ross and Uzzell, 1996). Community Based Housing Associations have often been facing problems of adaptation to relocations.

...one in which the residents of an area are able to organise information from their immediate socio-physical environment in such a way that they can develop a predicative system that allows them to judge whether a setting supports their goals and purposes (Winkler, 1981 cited in Twigger-Ross and Uzzell, 1996: 208).

The more manageable a place, the easier will it be for people to carry out their activities in it; for a place to be manageable, it must be responsive. Responsiveness is directly linked to controllability and controllability is obtained (also) through participation.

For Allsopp (in Mikellides, 1980), architecture is a form of art. Art has social relevance, is a necessary human activity that helps us understand nature and ourselves, create and communicate. Allsopp therefore deduces that architects can communicate with buildings which either can be mute, talk or sing. He emphasises the fact that the architects should not consider architecture as a self-expression unless society would benefit. In conclusion, he identifies the urgency of providing the client with a body of knowledge, and generate what he calls the 'professional client' capable of taking responsibilities and of supporting professionals.

Aldington and Craig (in Mikellikes, 1980: 29) criticise the concept of the *average person* and conclude that designing buildings for the average person is like building for the *not existing person* and that any design process should involve the users during its phases and during its development.

Hertzberger (in *ibid.*: 38), compares people's relationship with the environment with that of a musician and his/her instrument. He suggests that *as it is up to the player to draw as much as he can from his/her instrument, so the environment gives the chance to people to impress it with their individual characteristics.*

Regarding the belief that the built environment is a form of language, a carrier of meanings among people Rapoport (1982) and Hershberger (cited in Lang, 1974), identify two distinguished types of meanings that users and designers tend to

attribute to the environment⁷. The capacity of sharing such meanings by making them understandable is the prerequisite for the correct use of space, with all the related psychological repercussions. To understand and share such meanings, a common dialogue between users and designers of space is required.

Groat (1979) presents a comparative study of the different interpretations of modern and post-modern architecture as expressed by architects and non-architects. The main findings of this research⁸ provide sets of criteria, which can have only a limited significance to professionals *if considered as a surrogate of the users' criteria in attributing meanings to buildings*. What Groat suggests, is the necessity of realising *...the conceptual contribution that clients, users, and the public - as well as architects - can make in the process of giving buildings meanings* (ibid.: 79). Such a contribution can take place within a participatory process based on the concept of awareness of the issues focused on by all the subjects involved, whether they are professionals or lay-people. Hershberger (in Broadbent, 1980) and Hubbard (in Neary, 1994, and 1996), authors of similar studies, come also to the conclusion that informed participation, based on design research, is the only effective way to practise architecture and deal with urban spaces.

Sanoff (in Neary, 1994) defines participation as direct public involvement of citizens. Participation gives people a say in the design and planning decision-making process to improve plans, decisions and service delivery. The main outcome of a correct participatory process should be an increased trust of people in governmental policies. For people to have a voice capable of improving plans, decisions and services delivery, it is first of all necessary that some conditions are verified regarding the respective roles and competencies of those involved, the activities carried out and the methods used. A description of these will follow after having presented the most relevant critiques to the concept of participation.

⁷ For more details on the process of creation and attribution of meanings to the environment, see chapter 3. Here it is sufficient to stress that culture, education, and other social and personal factors are the major issues responsible for such a process. Co-operation (between users and designers) becomes therefore the best arena where such differences can be exposed and where communicable responses may be developed.

⁸ See chapter 3 for more details.

1.4 Establishing participation in design

In "The Rhetoric of Urban Design" (Hayward, McGlynn, 1993:4), Sue McGlynn points at the risk that the practice of urban design becomes rhetoric, where rhetoric is intended as the *art of persuasive or impressive speaking or writing; language designed to persuade or impress*. To avoid the risk, she suggests that urban design should effectively shape the environment in a way to make it capable of *providing its users with an essentially democratic setting, enriching their opportunities by maximising the degree of choice available to them* (Bentley et al 1985: 9).

Democratic settings reflect the capacity of people to use space adequately and to have a role in its definition and maintenance, to control it and act upon it in ways that don't generate social disturbance, but facilitate co-operation and interaction, all with a controllable amount of privacy. Availability of choice needs to be provided for people - including those traditionally considered receivers of the design process - and needs to be flexible over time.

The question is who defines - case by case - what democratic settings are and what the right amount of choice is to guarantee democratic settings. Public consultation seems to be the unarguable answer, but it is very often an extremely difficult practice.

Although recognising this difficulty Punter (Punter, cited in Hayward 1993: 13) considers it a necessary phase to be integrated within the practice of design. Such integration needs to be real and effective, and therefore exercised not once *applications have been lodged and significant decisions have been taken* (ibid.:13), but at the beginning of the negotiation process itself. The discussion on key problems, requirements and expectations needs to be the foundation of design processes in order to develop strong, pervasive and respondent solutions.

Public consultation is often feared to be time consuming, difficult to operate and to generate controversies. This thesis argues that it is a necessity, and proposes to operate it in conjunction with research into the design process (what will be called from now on design research) to allow and facilitate it and generate a consultative process based on different levels of engagement of members of the community, still with a high level of representation of the views of communities.

To discuss any topic with any group of actors, it is first of all necessary to establish a commonly shared communicative tool. Discussion, in fact, is defined as an *oral, and sometimes written, exchange of opinions -- usually to analyse, clarify, or reach conclusions about issues, questions, or problems*⁹. To exchange opinions, there must be understanding of the issues considered, that is, the actors discussing should be aware of their nature, meanings and implications.

Urban design is an activity involving various actors at the same time. To develop any discussion on it, the actors must possess communicational tools that can help them analyse objectively states of fact, evaluate needs, priorities, resources, and develop strategies to combine them within sustainable frameworks. The question is whether or not urban design allows such communication. Actually, it has been accused of having developed a specialised language, and that even among practitioners and theorists, there is no complete agreement on it. Punter's analysis of the vocabulary of urban design exemplifies this as Figure 1-2 shows (Punter: 1990).

Kevin Lynch 1982	Jane Jacobs 1961	Bentley Alcock McGlynn Murrain Smith 1985	Tibbalds 1988	HRH The Prince of Wales 1989	Holojok 1987	Urban Design Group 1987	Wates 1988	Buchanan 1988
Vitality (include biological and ecological)	Appropriate activity before visual order	'Responsive environments'	Places before Buildings	The place		Responsive forms	Urban environment in broadest sense	Place making public realm outdoor room
(see sense)		visual appropriateness	respect history	harmony & context				dialogue with context & history; re-contain street
(see fit)	mixed use mixed age mixed rent concentration	variety	encourage mixed use			mixed use		
(see vitality)	the street	human scale	scale enclosure	enclosure in scale with context				
access	permeability (short blocks)	permeability	encourage pedestrian permeability			public access		public space and movement systems
control	social mix and consultation	personalisation	social mix and consultation	community		consultation	individual responsibility professional enablers local action and control integrating experience optimising resources envi. education	
sense (clarity with which it can be perceived)		legibility	legibility	hierarchy				(i) respect conventions (ii) articulate meanings (iii) connect inside and out
fit (adaptability)	robust spaces	robustness and adaptability						
(see efficiency)	gradual not cataclysmic money		small scale change					
	activity richness	richness	visual delight	material and decoration		stimulating		natural, rich materials good weathering decoration
two meta criteria efficiency (relative cost) justice (social equity)	automobile attrition surveillance (safety)			signs and lights		protection security comfort shelter		

Figure 1-2 John Punter's matrix on urban design vocabulary (in Hayward, 1993: 13).

⁹ Definition derived from ERIC, <http://ericae.net/search.htm>.

If such difficulties in communication exist among practitioners, they will be even graver in communication of practitioners with the public. There cannot however be any effective communication without a commonly shared language that allows roles, aims and procedures to be established and pursued co-operatively. The degree of influence the various actors can exercise upon (urban) design issues is largely determined by the extent to which such groups understand the process and its mechanism. The lower the understanding, the lower the influence, the lower the chances that requirements and needs of people are satisfied and achieved. McGlynn (Hayward & McGlynn, 1993) summarises, within what she calls *powergram* (see Figure 1-3), the power relations between actors (suppliers, producers and consumers) and urban design, relating urban features and the degree of influence that such actors can exercise on them.

ELEMENTS OF THE BUILT ENVIRONMENT.	SUPPLIERS.			PRODUCERS.				CONSUMERS
	LAND OWNER	FUNDER	DEVELOPER	LOCAL AUTHORITY		ARCHITECTS	URBAN DESIGNERS	EVERYDAY USERS.
				PLANNING	Highway Engineers.			
STREET PATTERN	-	-	⊕	○	●	70%	○	○
BLOCKS	-	-	-	-	-	-	○	-
PLOTS - subdivision or amalgamation.	●	●	●	○	-	-	○	-
LAND/BUILDING USE	●	●	●	●	⊕	○	○	○
BUILDING FORM - Height/mass.	-	●	●	●	-	⊕	○	○
Orientation to public space.	-	-	○	⊕	-	-	○	○
Elevations.	-	○	○	●	-	⊕	○	○
Elements of construction (materials/structure)	-	○	●	⊕	-	⊕	○	○

KEY: ● POWER - either to initiate or control.
 ⊕ RESPONSIBILITY - legislative or contractual.
 ○ INTEREST/INFLUENCE - by argument or participation only.
 - No obvious interest.

Figure 1-3. The powergram describes roles among actors in urban design (in Hayward & McGlynn, 1993: 6)

If one considers everyday users, they have an interest in almost all elements of the urban environment, and such an interest is manifested through arguments and/or participation in the shaping of the environment. This thesis aims at finding a way to make such arguments representative and appealing and to make participation more active; it aims at increasing the understanding, influence and fulfilment of goals.

It is recognised that people lack the confidence and vocabulary to express themselves, when concerning environmental issues, but from this to derive the belief¹⁰ that *architectural innovation is suppressed by the conservatism of public taste* would be risky if not a mistake. Instead, it can be argued that *the greatest impediment to creativity is a speculative commercial and residential development process and the lack of attention to design of many businesses and householders* (ibid.:13).

If this is true, as will be supported and discussed further on, then it is essential to provide people with the vocabulary which will generate the confidence to support and encourage creativity, even against those who have the stronger influence on design (as seen in Figure 1-2). If the standards required by the public (the consumers) are improved, then the offer (suppliers and producers) will need to adapt to such standards, and the overall quality of the product will be increased.

1.4.1 The heart of participation: need, conscience and responsibility

The concept of participation in the design process becomes relevant when the users of urban areas start perceiving them as not or inadequately responding to their requirements and needs. It is essential, therefore, that those traditionally in charge of designing such spaces, develop, in collaboration with users, alternatives more conforming with such expectations.

The nature of participation is then close the notion of citizens as those who "make" society (Trebbi, 1976), and becomes a way to communicate, to make known, to express expectations, provide opinions, inform and to built upon this process.

¹⁰ The word "belief" emphasises the fact that this is often not the case; vast research has been carried out to identify public preference for urban features, and often the answers contradict the widely shared belief that the public taste is conservative. Day (1996), among others, studying public opinions on economic developments in America, demonstrated that preference was for the most innovative solution, although for different reasons from those provided by professionals. Other studies, discussed in Chapter 3, demonstrate a general public preference for more conventional solutions; however, if the reasons at the base of these choices are studied, it will become evident that preferences tend to be given to what is more comprehensible. To enhance a form of innovation, which is accepted and supported requires, therefore, an education process, in which aims and meanings are made very clear, and roles are engaging, so that the unconventional is no longer symbol of inappropriateness and uncertainty, but an indication of a challenge, of possessiveness should be seen as a way forward.

Design, as a way to communicate ideas, concepts and values of societies and *a way to make sense together* (Forester 1989:119), must be shaped by the culture, life and the needs of society. Participation then becomes the process to discuss and confront ideas to make the design product more closely responding to actual requirements.

According to Ralph Erskine (Wates and Knewitt, 1987), at the base of social justice is the necessity of knowledge of different cultures. Participation is the tool generating such knowledge, regarding conflicting cultural demands; it implies the co-operation of categories of experts: on the one side the users, on the other the professionals, each of them with their own knowledge. Participation is meaningful when actual user needs are involved and faced, and is both a right and a must: the right to know and the must to take up responsibilities.

The importance of participation has been discussed so far with no specific regard to any particular physical setting. Design and planning can take different forms, and operate on various scales: national, regional, urban and local.

1.4.2 The role of the physical context on community perception.

One of the most important characteristics of urban areas, which are already developed, with existing building stock, is that they are already often inhabited. It is therefore possible for urban designers working on the regeneration of these areas to identify real people who can be involved in the process of design. In practice, this potential is often not taken up... This is unfortunate because user-involvement has the potential to revive urban design culture from its present rather introvert state (Hayward, McGlynn 1993: 72).

This thesis is based on the idea that the quality of the built environment affects its perception and evaluation by communities and thus their integration with it. The thesis supports communities' involvement in the design of the built environment in order to guarantee better interaction between communities and designers.

The thesis focuses in particular on *the aggregation of buildings, signs and elements of a community* (Nasar, 1998: 33), i.e. what we see, remember and make sense of, in the urban environment.

The relevance of this focus is bound to have much wider repercussion on the urban structure, that reflects the aggregation of communities, their interaction and much more. The overall appearance of the built environment will, in fact, affect our spatial experience, evoking emotions and inferences that will influence our spatial behaviour.

When studying urban form, two concepts need to be considered: city and community experience, as depending on the evaluation of the people who regularly experience it and the evolution of the city form, as the resulting action of both public and private entities (Nasar, 1998).

Three factors affect urban form, and therefore community perception, experience and behaviour: urban design - an activity taking place, at many scales, for a variety of land uses, and at various levels of development (ibid.: 33) – design review and development decisions. This thesis argues that, when these three factors are joined, treated as inter-related and based on an analysis of city (and neighbourhood) experience conform (or not opposed) to its developmental forces (economic, politic, social factors directing such development), a better urban form may result.

In particular, it aims at exploring knowledge on city and neighbourhood experience, to make it a useful tool to inform and advice the practice of urban design, design review and the decision making process.

In this sense, Forester's view of design¹¹ as a reciprocal listening attitude of the various parts involved in the design process, is linked to the idea of design research.

Research aimed at discovering perceivers' reactions to urban form, can be helpful to define design guidelines, and to assure their positive influence on future community projects. This has happened already for some time in the United States, where consultation is a compulsory activity, as will be described more in detail in chapter 5 (Stamp & Nasar, 1997; Nasar, 1998).

¹¹ Design is a way to make sense together (Forester, 1989, 119).

1.5 The origins of community involvement

The argument of the "symmetry of ignorance" ...says that the amount of knowledge required to solve a planning problem adequately is infinite.

Compared to this infinite amount of knowledge, while the knowledge each of us has may greatly differ in extent and content, we are equals in what we do not know, in ignorance.

(Ouye and Protzen, 1975: 305, cited in Sanoff, 1990: 25).

It is generally understood that participation, as a way to affect design,¹² developed during the early '60s as a reaction of the design consumers to unsuitable conditions offered by the institutional design producers (to use Haywards' vocabulary). In particular, its origins can be found in the rejection of the large scale and comprehensive city redevelopment that was undertaken in the post War decades all over Europe and the USA.

The interest in developments more sensitive to community needs is actually much older; social architecture started earlier in the XVIII Century to provide communities - generally of factory workers - with housing and working conditions more suitable than those generally offered. A good example is New Lanark in Scotland. Such development was mainly the initiative of enlightened factory owners, single cases, exemplifying a sort of paternalism rather than community architecture as intended today. Nevertheless, these precedents are significant, because they are early examples of the clear recognition that the physical environment affects, among other things, living and working conditions.

1.5.1 Communities get active

Both America and Great Britain saw in the early '60s the growing of a progressive loss of confidence in professional knowledge and competence that was responsible

¹² There are different forms of participation, according to the amount and type of inputs that users can add to the work of professionals (see chapter 1.3). Here, with a "way to affect design", is intended a way to influence - somehow- the design brief, process and outcomes, at any scale, from city scale down to micro scale.

for urban developments unsuitable for the activities, requirements and habits of communities. The period following World War II, in fact, saw an extraordinary process of deterioration of both European and American cities; increase of population, war destruction, migrations/immigrations were generally faced by short term governmental urban actions which mainly ended up exacerbating problems rather than solving them (Comerio, in Sanoff, 1990).

The belief was actually that *urban renewal... was more than an ineffectual solution to the problems of inner cities: it was the conscious uprooting and destruction of some neighbourhoods for the benefit of others* (Hartman, 1974, Anson, 1981, Goodman, 1971 cited in Comerio, in Sanoff, 1990: 23).

The fundamental and successful¹³ move in looking for alternative approaches has been probably the "philosophical" (and consequently rational and moral) questioning of the principles at the base of the post war movements. Design started being considered as a complex, comprehensive and influential process, requiring the rational evaluation and interaction of the several factors and actors involved; the faith in the necessary nature of Technical Rationality, the practical outcome of Positivism¹⁴, was abandoned.

In the past...it was believed that if men of good will discussed a problem thoroughly...the right solution would be forthcoming. We know today...that there are no right solutions...The right course of action is always a matter of choice, never of fact. In a bureaucratic age great care must be taken that

¹³ The degree and value of the successes achieved through participatory processes is actually largely debated and contradictory opinions around it have developed. As it will be mentioned in the section on the procedures of participation (Paragraph 1.5.1), public involvement can be evaluated on the base of several factors: 1) the control on physical changes and economical and political power by the public; 2) the actual projects realised; 3) the secondary effects on those involved in the process, such as an increase in their self-esteem, responsibility etc.

¹⁴ Positivism is ...*the powerful philosophical doctrine that grew up in the nineteenth century as an account of the rise of science and technology and as a social movement aimed at applying the achievements of science and technology to the well-being of mankind.* (Schon, 1983: 21-69, cited in Comerio, in Sanoff 1990: 24) *Technical Rationality is the Positivist epistemology of practice; for it, professional practice was a process of problem solving.* (ibid.:24).

choices remain in the area of public view and participation (Davidoff, cited in Comerio, in Sanoff 1990: 23).

The first manifestations of this new approach to design were direct to identify alternatives to the post War developments, on the belief that problems required to be solved through the involvement and dialogue of all those interested by such alternatives. The focus of interest shifted from the solution to the process, and the question of decisions making became the major concern.

In particular, in the United States¹⁵, advocacy planning became the way to support community based alternatives, developed on these principles, against strategies proposed by government, generally menacing the life of whole neighbourhoods.

The period of major activity carried out by what was called Community Design Centres was around 1968 and 1972. One of the first action took place in New York where, from 1959 to 1970, advocacy planners and the community worked together on a plan to save the whole housing stock in the community from the city hall's proposal for large scale neighbourhood renewal.

Still in America, Christopher Alexander, Viennese born, educated in Architecture in the UK, developed the idea of *quality without a name* (Hall, 1988: 258, 259) as the object to achieve in design. For this to happen, groups of people were engaged in changing their environment taking care of the entire community. The failure in trying to apply such an idea of self-sustaining and self-governing communities in the project People Rebuilding Berkeley, shifted the focus to more direct and immediate involvement of communities in designing their environment, such as in a project in Mexicali where communities were actually involved in the building process of their homes. In 1968, again in Berkeley, in the Department of Architecture of the University of California, Claude Stoller engaged in a co-operation between communities and the university. With a financial support from a government program, he organised a Community Design Centre to assist the neighbourhood in area renewal, service and housing provision (Comerio, in Sanoff, 1990).

¹⁵ It was exactly in those years that Jane Jacobs published a study on the effects of redevelopment stressing the need for variety, spontaneity and the value of the traditional street patterns (Towers, 1995).

In Europe too, and in particular in the UK, a large number of community actions took place. One example is North Kensington in London. It had developed during the nineteenth century as wealthy residential area. By 1950s, it turned into an overcrowded area as the original terraced houses were sub-divided and rented to low income tenants, mainly migrant population. By 1965, it was one of the most densely populated and run-down area in the city with the majority of houses privately rent. By the late 1960s the Trellik Tower was built according to the Modernist standard to reduce the shortage of housing, and the area was cut into two by an extension of the motorway network. The community organised itself in the Notting Hill Housing Trust and then in Community Workshop and People's Association to work on projects dealing with housing, play facilities and legal and social advice (Towers, 1995). North Kensington has been considered as a clear example of the major threats pending on communities: high-rise buildings and related housing conditions, the motorway as a physical barrier, the phenomenon of gentrification. If such factors were among the main causes of social problems, they also acted as the major incentive for the organised reaction of communities.

The British version of the People's Park in Berkeley (Hall, 1988: 265) happened in London, in the Covent Garden Area, where a community-based movement was set up as a reaction to a proposal of economic redevelopment. The area, a market in the XII Century, a piazza in the XVII, a bohemian area in the XVIII, started degenerating by the second half of last century. By 1965, when the population living there was mainly employed in small scale manufacturing and craft-industries, a plan proposed the comprehensive development of 60 per cent of the area, including housing, economic development, business centres and hotels.

Community opposition started to develop in 1971, through the Covent Garden Community Association, and established in 1974 the Covent Garden Community Forum; the aims were to retain ... *the residential community, increasing the amount of housing in the area, and reducing the redevelopment to carefully selected infill sites* (Towers, 1995: 60).

Covent Garden is of particular importance regarding community involvement both for the high level of organisation that the local residents developed¹⁶ and for the extraordinary interest caused by the threat of the loss of the community values. Hall, citing Esher (1981), dates to this experience a change in planning mentality: *planning here becomes estate management: making the best of what one has got* (Halls, 1988: 266).

Also on a smaller scale several initiatives took place. In the University of Eindhoven, the Foundation for Architectural Research (SAR), was set up in the late '60s by John Habraken, to diffuse the idea that *people should have the right to plan their own homes and to choose what they looked like* (Towers 1995: 49). Lucien Kroll's medical school of the University of Louvain in Belgium is probably the most famous result of the influence of the SAR's method¹⁷.

In 1968, in Newcastle-upon Tyne the Council appointed Ralph Erskine – a British architect who developed vast experience in social architecture in Sweden - for the development of a community of 12000 people in Byker. One of the major objectives of the project was to maintain the community without dispersing it in the process of development, which was common practice during the '60s. The residents of the Old Byker were involved as *user clients* (Towers 1995: 52) in a consultation process, which did not replace by considerable influence the design product. The applied form

¹⁶ In 1969 a governmental proposal planned to move the fruit and vegetable market from Covent Garden to Ballesea, a less congested site. Such proposal was developed by a consortium including Greater London Council, Westminster City Council and Camden; the design team, including Ralf Rookwood, Geoffrey Carter Holland, generated in 1968 a draft plan based, interestingly enough, on a lynchian approach. The proposal highly concentrated on the commercial development, although included also a large amount of housing. In 1971 doubts regarding how much local communities and their interests had been taken in consideration by the whole process were raised by Brian Anson, a member of the planning team that was then dismissed. The media played a big role in the case; the Covent Garden Community Association was set up to guarantee an organised opposition to the Greater London Council plan. Other associations joined the protest such as the Society for the Protection of Ancient Buildings, the Georgian Group, the Victorian Society, the Civic Trust, the Town and Country Planning Association (Hall, 1988) to the point that in 1973 the Secretary of State publicly rejected it.

¹⁷ Students and residents worked on the project under the guidance of Lucien Kroll; the SAR principle of a strong grid of support with "infill" was adopted, and the result variously judged as *abnegation of design responsibility*, or as a positive alternative to the *systematic approach of the state machine* (ibid.: 49).

of control of the professionals' response to needs and the related satisfaction was described by one of the architects involved in the project, Vernon Gracie, as *urban management* more than power to affect design (ibid:52). An office was established on-site where architects and builders would receive residents and discuss problems, clarify questions, accept critiques; but the actual design remained the task of the architect. The idea of a place where discussions on development of an area between residents/future residents and professionals can take place is fundamental, and should be taken in account as a focus for further developments¹⁸.

In the late '60s Glasgow too became very active concerning community action; some community groups established then and have remained active until today, developing a very singular form of community involvement which is among the strongest characteristic of the city: the Community Based Housing Associations¹⁹. This phenomenon is specific of Glasgow, with a few notable exceptions, and deserves some investigation because the causes that generated it, the approach used in community involvement, the results achieved, are the initial motivation of this thesis.

The origins of Community Based Housing Associations: the housing panorama in Glasgow from the 2nd World War²⁰

The housing provision in Glasgow during the inter war period and after the Second World War has been widely characterised by the intervention of the Council, due to the very poor qualities of the housing stock built during the process of industrialisation.

The provision of social housing in Glasgow can be distinguished within three phases, the first – which took place in the second half of the XIX Century - carried out by the City

¹⁸ This thesis suggests a similar common gathering place where issues related to the community can be discussed, and the whole process of participation based on design research can take place. See chapter 6 for details.

¹⁹ Community Based Housing Associations are voluntary, non-profit organisations, which restore and build houses mainly for rent. They work in defined areas, providing flats and social facilities to those in priority lists. To become a member one must be a resident of their area of competence, but the residents in that area are not forced to associate (Romice, 1997; Joiner, Romice, 1999).

²⁰ The information contained in this paragraph are taken from: Reed, 1999; Faley, 1990; SHARE; 1996.

Improvement Trust; the second and the third in the inter-Wars period and after the Second World War. In the last two phases, the private investment was very limited. In none of these phases communities were involved in the design process, or at least consulted in the development of the strategies undertaken. Instead, top down actions were imposed on entire communities, eradicating them from their neighbourhoods of origin.

Those able to afford accommodation in better areas of the city moved out leaving behind an ever higher concentration of low income and unemployed people. From the city centre, large communities were moved to peripheral estates in the outskirts of Glasgow

For those remaining in the comprehensive development areas, such as in the Gorbals²¹, the new housing provided was so distant from their traditions and habits, as shown in Figure 1-4, that the area soon started to lose population.



Figure 1-4. The Gorbals. High-rise by Sir Basil Spence.

Almost all the housing provision in these 3 periods consisted in the demolition of the old housing stock and the erection of new housing. Only in 1969, due to restrictions to the Government's housing budget, the Housing Scotland Act defined the necessity of considering the rehabilitation of exhausting housing stock in the City Centre as a further potential provision of flats (Reed, 1999; SHARE, 1996).

A new policy of tenement-improvement begun and developed in different phases. The first two phases, carried out respectively by the private sector and the Council, failed: they either provided very low standards, or encountered major difficulties in cooperation and control. As a reaction, the phase of the local communities' action started: in 1969 the first Tenement Improvement Projects were set up as an action research carried out by Raymond Young, a then member of ASSIST at the University of Strathclyde, and the New Govan Society. This experience led to the tenant-managed housing association.

In 1974 the Central Government for the first time funded Housing Associations to renew tenements, establishing for them the Housing Association Grant.

Since the establishment of the first Community Based Housing Association, their numbers have grown reaching over 80 units in 1999. Generally these associations are established in those areas where the housing conditions are poor and the local community is willing to assume the management of the housing stock under its responsibility.

The eldest associations started their action over twenty years ago. From simple flat renewal works, they then moved to the closets, the backyards, and the streets, to new buildings and the provision of common facilities. An incremental process that allowed those involved to acquire, slowly but naturally, observational, analytical, evaluative and dialogical skills that have transformed community involvement (between the communities and the professionals appointed to work for them) from an initial one-way rather dictatorial process, to a two-ways enriching interaction. During

²¹ The Gorbals is a central area on the South side of the River Clyde; it became famous for its '60s demolition and redevelopment, and its high levels of deprivation. Only recently, after years of work and campaign, its communities have started to get rid of the stigma that the public opinion used to attribute to the whole area.

these years, the Central Government monitored, encouraged and financed the work of housing associations. Various activities were set up to support them providing educational facilities to their members, to the point that an institutionalised organisation called S.H.A.R.E.²² was funded in 1985 to run – among others - courses on design and housing management to members of the associations.

Despite the similar nature of the associations and the improvement programmes not all associations achieve the same quality, both concerning the physical outcomes of their actions and the personal development of those involved.

Three are the major factors that have been identified as being potentially responsible for these differences. The first regards the areas in which an association is working; the second is related to the type and length of the educational training of its members. Finally, the third factor is related to the openness of the association itself in terms of its willingness to integrate experiences and to be involved in the exchange of ideas.

In relation to the geographical factor, the housing associations in Glasgow can be distinguished among those working in inner city area, those operating in the Comprehensive Development Areas realised in the '50s and '60s, and finally those based in the peripheries of Glasgow as Figure 1-5 shows. According to their localisation, associations generally have to deal with different types of issues. In the case of associations based in inner city areas, their main activities are generally focused on the repair and reinforcement of the historical substance of the housing stock; this often reveals to be a challenge and produces positive effects both on the physical and social structure of the area. For those associations working where the higher concentrations of dereliction and deprivation are instead, the task, as well as the chances of success, is different. It is clear that the development and reinforcement

²² SHARE, Scottish Housing Associations Resources for Education, is a membership organisation, a non-profit making company to provide training and support to the staff and voluntary members of Scotland's 200 housing associations. Partly funded by Scottish Homes, the governmental housing agency, its incomes derive from the various partners and the associations themselves, who pay to attend the courses offered (generally 10 to 12 times cheaper than those offered by private companies). Among the products offered, "Design's On You!", running from 1994, is a course for housing associations members on housing design.

of such communities and neighbourhoods cannot take place simply through the improvement of the housing stock; also social, economic issues should be faced, and the associations cannot be left alone in their solution.

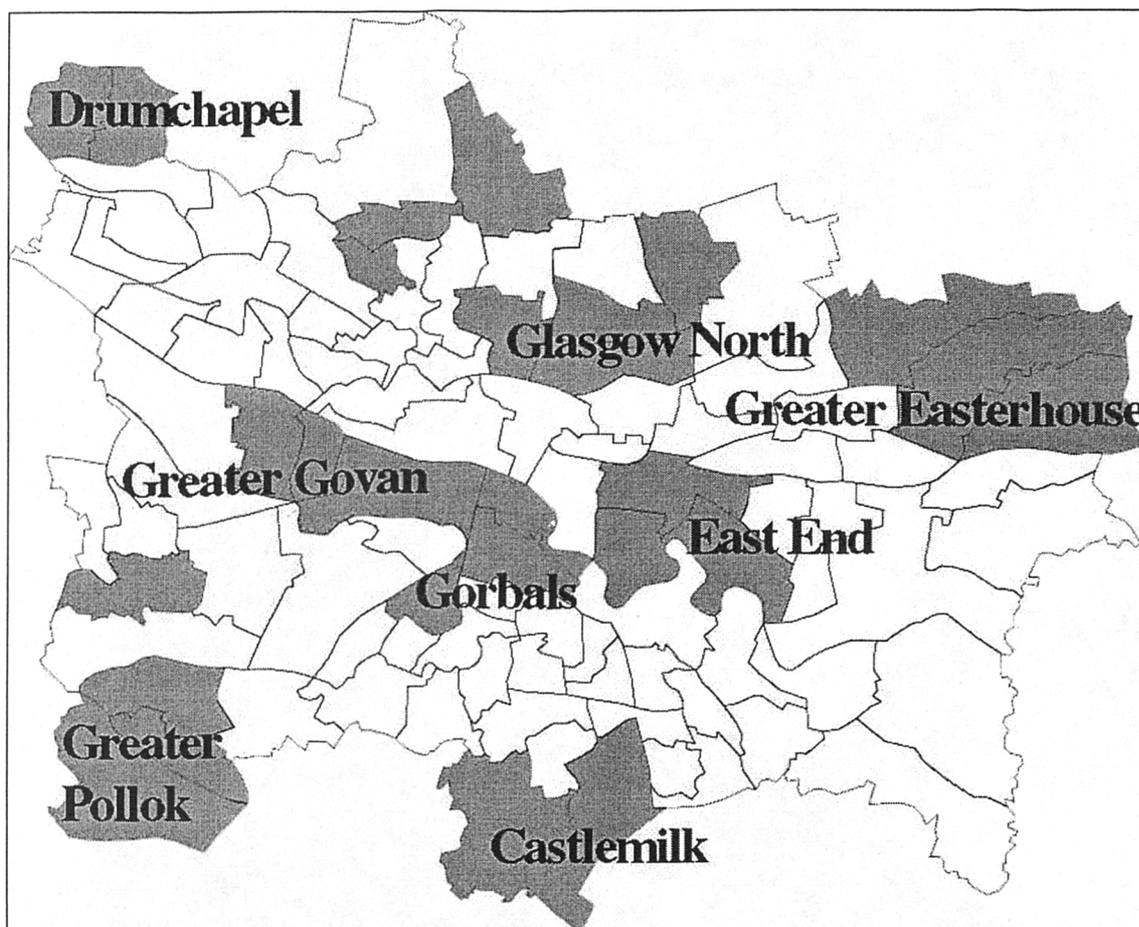


Figure 1-5. The distribution of housing association and community based housing associations in Glasgow.
Their location is highly connected to the nature of the problem they are facing.

Previous studies investigated the strength of some associations working in the first two areas, comparing these with the difficulties those working in the third areas. The aim now is to support the third group by providing it the methods to develop its strengths.

Regarding the educational factor, finding a way to make use of decades of experience of non-professionals involved in design and management issues, exposed to projects and to innovation, to discussions, evaluation and design briefs, could

become the key for identifying such approaches and take advantage of them. The question is how to do that. Decades, as mentioned, meant the opportunity to upgrade continuously the experience of the associations (Joiner; Romice, 1999), an opportunity that the younger associations didn't have. Therefore courses tailored to community groups should make a distinction between the levels of experience of housing associations, trying not to provide the same amount of expertise and confidence, but the tools to understand the potentialities and the values of a "community cognition"²³, to encourage the will to develop such expertise and confidence. The tool should make communities understand that experience is needed and cannot be substituted by mere and simplistic indoctrination. The tools should be shaped on the community directly, involving it thoroughly, and develop over time; they should be dynamic, organically maturing and adaptable. These tools should provide associations with information on successful regeneration, together with a process on how to utilise this information. If organised in this way, they would be utilisable by any group which is part of the community, and they would encourage interaction, so that by the end the whole emerging picture of community cognition would be as complete as possible within their existing community structure.

The third factor that has been found to be responsible for differences in the products of housing associations in Glasgow regards the openness of the association itself to share and to be involved in experiences and information flow, as well as their response to dialogue and criticism. The most active and innovative ones, in terms of projects carried out, of services provided and responsiveness to the community, have been more exposed to external influences such as educational programmes; also trips around other European neighbourhoods; the invitation of community workers and professionals; the attendance at meetings as a chance to present their work and discuss it. All this helps communities to accept criticism and suggestions, and to confront the problems of their area with an open mind.

²³ Community cognition is intended as both the information related to a community (contents) and how it can be used by the community members for its development and improvement (framework).

These three factors together can partially help understand the causes for an unquestionable success as well as failure in a particular form of community movement. The question is what the next step ought to be to reproduce success.

There is another factor to be aware of. The development achieved by these associations happens within a very fragile equilibrium of powers. Community groups are, for their own nature, subject to the needs and aspiration of individual people. This on the one side this is an advantage because it enriches views and experiences, on the other side there is the danger of individuals trying to impose their ideas. An aim to achieve in community action is to take advantage of such individualities without risking a too strong dependence on them and their individual idiosyncrasies. The fact that different ideas on the strengths and weaknesses within the area exist, requires a robust method to be developed to assess the conditions and develop jointly a programme brief.

1.5.2 The achievement of community action

The examples of community action at a neighbourhood scale described all focus on the provision of housing, public spaces and, ideally, economic facilities, and demonstrate that the more involvement of the community there is, the higher the chances of success of such provision will be. They demonstrate that it is possible to plan actions responsive to those directly interested by them. Finally, they suggest that solutions must be developed respecting the local resources (physical, economic, social), at times also reorganising them and re-establishing interactions among them.

But very often community movements have been criticised that their influence on the quality of the built environment was very limited and too sporadic. Especially in the initial stages, they were perceived as having only limited affect on the redevelopment strategies, or acting too late. In North Kensington for example the community groups started action only once many residents had lost their homes as a result of the expansion of the motorway. In Covent Garden, the social and economic character of the area changed despite community involvement, as a result of the transformation of the area into a magnet for tourists.

More severe critique questioned the effective benefits for the communities involved; one common argument questions the degree to which the communities acquired effective power and control upon their area. If they acquired power to decide and to control, that is if they developed a say on matters regarding their community, this happened only just after years of action. The lack of such immediate gratification often suggested that such involvement was simply a new cynical justification for the control of the professional, and in general of the governmental institutions over the public (Towers, 1997).

The causes for all that are however more complex. Especially at the beginning, advocacy planners had to face the problem of representing and responding adequately to neighbourhood groups often lacking homogeneity, community feeling and interest. This was perceived as such a complex obstacle that an adequate solution seemed unobtainable; this resulted in the belief that often the actual conditions of the community were ignored just to obtain public consensus.

In many cases this was not, however, really the case. On the one side it was difficult to achieve a respondent and representative involvement of communities in their area, on the other community involvement worked as an incentive which allowed from the late '60s on a continuous progress of communities gaining experience and competence. Today community involvement has become responsive and effective and it has become obvious that ultimately community involvement is the only reasonable approach to take no matter how easier or tempting other would appear, in order to achieve an environment that would be satisfactory to the community.

1.5.3 Defining the way ahead

Community projects were set up to provide, especially at the very early stages, mainly housing. The professionals' first organised response to the variety of the group users consisted in consulting social science research on human needs in

relation to the environment. In 1968 EDRA²⁴ (Environmental Design Research Association) was funded with the aim of understanding more about the "client" through environmental behavioural studies. EDRA and similar associations were accused of a too much deductive approach to problem solving, of assuming attitudes too easily and of making too objective something so personal as preferences and behaviours. The alternative to such a social science approach was proposing discussion with the direct participation of all those interested in the design process at any stage. There were approaches to link the two methods²⁵, but this started taking place just at the beginning of the 1990, once it became evident that none of the two alternatives was satisfactory if taken alone. The first was not capable of filling the major gaps between professionals and non-professionals, the second led too often to anarchy of management of decision making and to partial solutions.

Arguing that local communities lack effective power of control and economic power can be dangerous. Effective power to make decisions or to influence them can be obtained just through awareness and time. Power can be exercised only if motivated by understanding and knowledge. Only then it would resist circumstances, time, arguments and disputes. But for this to happen, knowledge of the tasks to be confronted and awareness of the methods to be employed must be developed, through a process that is bound to be slow and complex, but cannot be substituted. Giving power to communities when they don't know how to manage it would be dangerous and useless. But helping them in requiring such power on the base of responsibility, of understanding a way to make use of it as a community belonging to a city and interacting with other forms of power and responding to other requirements, is the aim to pursue.

²⁴ EDRA is an international, interdisciplinary organisation founded by design professionals, social scientists, educators, facility managers and students. The purpose of EDRA is the advancement and dissemination of environmental design research, thereby improving understanding of the interrelationships between people, their built and natural surroundings, and helping to create environments responsive to human needs. Information taken from the EDRA official web site: <http://telepath.com/edra/home.html>

²⁵ Henry Sanoff (1992) is among those proposing to integrate design research and participation, as a way to mutually inform and enrich each other and to solve inefficiencies and conflicts that the two methods, alone, are bound to create.

1.6 The built environment as seen through participation²⁶

Wulz (in Sanoff, 1990) describes the various manifestations of user involvement, according to the decision making process and the tools adopted, and the roles that the interested parties play; the main focus is on the interaction between clients and architects.

1.6.1 Representation

It is the most passive form of participation and takes place when the architect considers the user requirements by *putting himself in the clients' place*. (Wulz in *ibid.*: 41).

At the base of this very fundamental form of participation, is the belief that the educational background can provide professionals with a clear view on the clients' needs and wants; the idea of the anonymous client is that he/she can be 'simulated' thanks to experience and general information. But research has demonstrated that most of the times this is not the case. Wilson (1996), studying the effects of culture on the development of preferences²⁷, demonstrated that professional education is a major cause for the creation and then increase of the gap between experts and non-experts. Hershberger (1980), Groat (1979, 1982) and Hubbard (1996)²⁸ respectively demonstrated that architects and planners perceive and evaluate the built environment differently from non-professionals.

The possibility for professionals to interpret the clients' wishes and substitute to them for their assessment, is without any doubt used at all stages of the design process, but

²⁶ Even if the seven approaches described are called forms of participation, the reader must be aware that they include any type of relationship between clients and professionals; some of them, especially the first ones, are very far from the commonly shared idea of participation. Using participation in such a wider sense though, helps understanding how any form of design can be read under the light of interaction, and meditate on the acceptability of its results. The labels used to identify each category correspond to Wulz's terminology.

²⁷ Her research focused on students in Architecture and how their preferences changed, as regarding architectural style, according to the course year they were attending.

²⁸ See chapter 3 for more details on their research.

the assumptions that are made must take care of the differences that exist between the groups. Design research²⁹ becomes therefore a fundamental tool to inform professionals on them; if it does, it works as the base of participation. But representation alone is insufficient.

1.6.2 Questionnaire

This approach is characteristic of the developments which took place from the 1930s up to the '60s both in Europe and in the USA. It has little to do with participation as practised today; instead, it is the result of the high demand on housing provision, and the consequent transformation of the traditional private client into the "mass client" or the public client. To respond to such an increase in the number of products, a new approach to the study of human needs and requirements was established, based on the idea *that what many people have in common is also what they like* (Wulz, in Sanoff, 1990:43). Architecture became the large-scale reproducible response to a prototype of life style observable through a scientific and statistical approach. The form of involvement enhanced by this procedure led to the formation of the so-called *anonymous* client, reached, identified and represented through statistics of group requirements often obtained through large-scale questionnaires.

1.6.3 Regionalism

As a reaction to the uniformity of the "questionnaire" phase, developed the need for differentiating settings in relation to their historic context, for expressing preferences regarding architectural forms and symbols (Sanoff, 1990). The areas studied by this approach were much more restricted in comparison to the previous phase, and a high weight was given to local cultural heritage through direct questionnaires and representation.

²⁹ To respond to these requirements, design research should be able to provide information on people's relationship with the environment, and in particular on the processes of perception, cognition of it and reaction to it. Still, such information risks to be too general if not related to specific contexts, and meaningless if not understood by "clients".

The positive aspect of this phase of participation is that attention started to be paid to local contexts, making design solutions more respondent to individualities and increasing their flexibility and adaptability.

1.6.4 Dialogue

It presupposes informal conversation between the architect and local residents, who are encouraged to visit the former commenting on what they think about the project (an approach applied, for instance, by Erskine at Byker). This is the first active form of participation enhancing a two ways process of inter-relationship: on the one side, the architects inform, and on the other the clients have the chance, at least at the early stages, to influence decisions according to their priorities and desires. Participation ends here since it is up to the architect to take the design decisions regarding the project.

1.6.5 Alternative

In this form of participation, clients definitely stop being anonymous; instead, they are required to evaluate, express opinions and make choices on given sets of solutions. Two major problems arise at this point, one of communication and one of representation. First of all, to have opinions and express choice, one must understand what has been offered; therefore professionals and clients will need to communicate clearly and with no ambiguities: the design language must be shared (Sanoff, 1990). A lot of research into aspects of this approach has been carried out; several techniques have been identified to treat issues of concern to present ideas and proposals, to discuss on alternatives. Both Henry Sanoff - founder of EDRA (see footnote 24), architect and lecturer on community design - and Towers (1995) extensively researched methods and techniques to facilitate this communication, proposing several ways to facilitate the interaction of professionals and clients at any stage of the design process³⁰.

³⁰ In particular, Sanoff's interest focuses on identifying ways for environmental measurement, mapping and simulation, imageability and visual notation. He researches techniques to be used by professionals to clearly

Regarding the second issue, that of how to make alternative participation representative, when design choices will affect large numbers of people, Wulz (in Sanoff, 1990) suggests to ask people to vote and ultimately respond to the choice of the majority. The question hereby is whether such a majority vote will be effectively representative of the choice of all people³¹.

1.6.6 Co-decision

The client has no longer a passive role; instead, the roles between clients and professionals are balanced, and the client is involved in the decision making process from the very beginning; the form and length of such involvement will however depend on the client's commitment³², time availability and economical capacity.

1.6.7 Self-decision

It is the extreme form of participation; people are seen as creative entities responsible for and capable of taking up the decision-making process. On a small scale, self-decision takes place in projects of self-built or self-help, where users can take on the completion of buildings. Self-decision can happen at town planning level as well, where users are entitled to take decisions on actions, rules and regulation, generally on issues regarding the management of their area of competence. In Glasgow this happens, up to a certain extent, in Community Based Housing Associations: its members can decide what needs to be done in the area, in terms of renewal,

present variety of design material without affecting or influencing responses, as well as methods to facilitate comparability of alternatives on the base of parameters sensitive to respondents. Among these, "best fit slide rule", "buildings character studies", semantic differential, are some of those that could be used at this stage (Sanoff, 1991). Towers' contribution is more oriented to study the effects of such methods during the interaction processes.

³¹ The question of representation of opinions is a key issue of this thesis. When talking of community involvement (in this case on design issues), no right solutions can exist; instead, a consensus view must be reached.

³² When participation involves a large community, it is likely that co-decision is practised by a restricted group of particularly committed members, willing to spend time and efforts in debating on community issues.

redevelopment, and rents to impose to tenants. Generally, professionals (staff and advisers) advise them on such issues.

From this review no recommendable form of involvement of users can yet be formulated, as each case may be different for contextual, socio-economic conditions, each group of users may have a different level of experience of participation, and different levels of decision making may require a different level or combination of participatory methods³³. Therefore, the appropriate form of users' involvement, time by time, should be chosen from those described according to the specific task and conditions.

1.7 Basics, roles and stages in the participatory process

The three critiques described above can be resolved when the participatory process is based on 1) the provision of a stable and informed background of information, 2) the definition of roles and competencies among the parties involved, and 3) the organisation of the whole process within a sequence of phases. The main "rule" to remember is that in a participatory process the team is not generating from the adding up of individuals (Sanoff, 1992), but by the interaction of team members.

The immediate advantages of such interactions are, on a personal level, that participants can perceive the sense of having influenced the decision making process and can generate an increase of awareness of the consequences of the decisions made (Hester, cited in *ibid.*). On a group level, the major advantages would be the reduction of the feelings of anonymity of those involved and the development of a greater public spirit.

On a physical level, participation could lead to a better maintenance of the physical environment; moreover, user satisfaction could be increased thanks to an improved response to social needs that, together with a more responsive utilisation of resources.

³³ Regional and district issues for example may require more strategic plans, which may be communicated to people but involve only feed-back and no active participation. Local issues instead require little top down coordination but can be better dealt directly with the community.

1.7.1 Linking theory to practice: the role of design research in participation

Sanoff is arguably one of the major experts in the field of design research as the fundamental background of participation.

Based on a critique of research methods on environmental issues which divide theory from practical testing and approaches, he suggests an integration of design research and participation as *a new paradigm for effectively utilising the knowledge that is generated by the environment-behaviour research community*.

He puts forward the notion of action research, *a model that integrates theory and practice and requires that one must act on a system in order to understand it, and the designer will have some effect on the outcome* (Sanoff, 1992: 87).

Integral to action research is the participation of the clients; the research team consists of a small group of professionals and clients. What Sanoff suggests is a new approach to design *where design research, design participation and design development are inextricably linked activities* (ibid.:88), as shown in Figure 1-6.

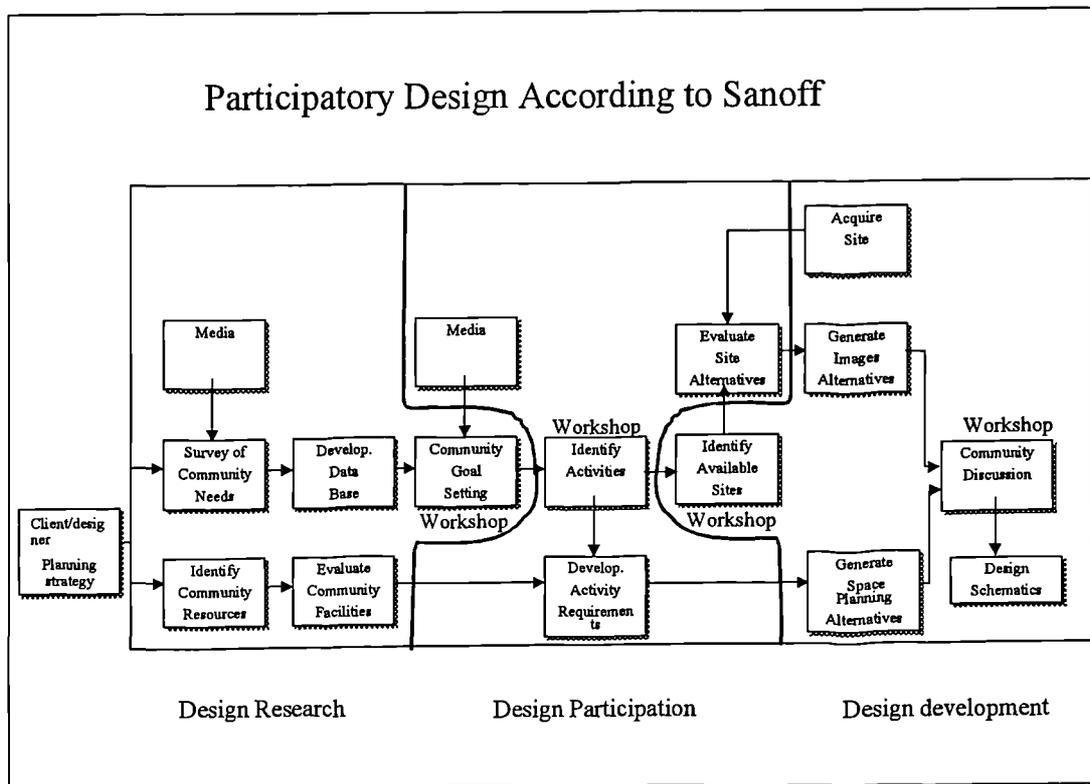


Figure 1-6. Participatory design process (Sanoff, 1992: 88).

Sanoff justifies participation as integral part of the decision-making process in the belief that people who use the environment are experts of their role in it, although differently from the way architects are. For this reason such people, who have widely been object of design research, should become active participants in evaluating research results and subsequently in developing recommendations about how to address the problems identified.

The theoretical foundation of this idea can be identified in the so-called Theory Z, which is explained next.

Theoretical foundation. The theory Z approach

Sanoff (1992), suggests that participation reduces the forces opposed to change, while external direction increases them and causes group tensions and aggressions. He therefore proposes the so-called *Theory Z* (as developed by William Ouchy, 1981, cited in *ibid.*:66), generally used to describe organisational development in companies. The essence of Theory Z is that, to make the decision making process effective, all members should be actively involved and take a positive commitment in the discussion. This theory derives from a combination of two other theories: the first is Theory X, which is based on the assumption that people are, by nature, lazy and need to be constantly watched. The second is Theory Y, which instead is based on the assumption that people are hard working and need only to be supported and encouraged to be productive (McGregor, 1960 cited in *ibid.*).

The resulting Theory Z is centred on egalitarianism, and implies that each person can apply discretion and work autonomously without close supervision, as everyone is to be trusted. Decisions are examined in a participatory form, but a single person, who requires to be trusted by all others, takes the final decision. It was demonstrated that companies that work in this way are healthier and have better results than others based on the principles of apathy (following Theory X) or autocracy (following Theory Y).

In this way, people would gain satisfaction from feeling competent, being in control, and free to choose for themselves within an organised framework.

1.7.2 Defining roles among the actors

According to Sanoff (1991), the key factor of participation is egalitarianism, which implies that all participants, as a consequence of their expertise, are considered to be equal in the decision-making process. The respective roles of professionals and users are:

It should be up to the designer to increase the user's awareness and involve him/her in discussions. The professional should state his/her opinion, provide technical information, and discuss consequences of various alternatives.

It should be up to the user to state his/her opinions and contribute his/her expertise to the decision-making process (Sanoff, 1991:1).

The interaction between these two groups should be based on open dialogue, communication and trust (ibid.), to avoid the risk of one-way indoctrination (see paragraph 1.4.2).

1.7.3 Stages of participation

As Burns (1979, cited in ibid.:7), Sanoff's distinguishes four phases of participation; for each he defines aims and methods and encourages all the parties interested to remain involved in the process up to the very final stage.

"Awareness", the first stage, is meant to discover, or rediscover, the realities of a situation; there follows "perception", which focuses to the study of the social, economic, cultural and physical ramification of the situation considered. It requires sharing objectives, understanding and expectations, and leads to the identification of the problems to be tackled.

In the third phase, "decision-making", the findings of the stages awareness and perception are joined into a programme which aims to solve the identified problems. Participants generate physical designs for the professionals.

The final stage is called "implementation". What usually happens is that participation is terminated right at this point, and this means that valuable user input at later stages is lost. Instead, Sanoff suggests that users stay also involved in the final effort of the implementation of decisions made at the previous stage.

According to Becker, (1977, cited in *ibid.*) all these phases must be based on information exchange. Sanoff suggests that such exchange is made possible if participation is based on design research³⁴.

The issue of clarity

The first goal, when approaching participation, is to clarify what it should produce. Sanoff (1994) suggests a number of questions that can help clarifying the objectives. The questions can also be usefully applied in all following stages, by identifying participants and roles, rules and goals. Here are just some examples of such questions intended to initiate this first, purposeful, brainstorming process (*ibid.*:112).

- *Is participation intended to generate ideas?*
- *Is it to generate attitudes?*
- *Is it to disseminate information?*
- *Is it to resolve conflicts?*
- *Is it to measure opinions?*
- *Is it to measure a proposal?*

Sanoff suggests also other issues that need to be clarified before starting; among these:

1. *When is participation needed or desired?*
2. *Where should participation lead to?*
3. *Where in the planning process should participation start?*
4. *Who are the parties involved?*
5. *How should people be involved?*
6. *Decide goals in relation to all the participants.*
7. *Identify participation methods according to the resources and objectives.*
8. *Select the most appropriate methods.*

³⁴ As defined in Paragraph 1.4.

9. *Implement them.*

10. *Evaluate them to see how well they achieve the aims & goals.*

Based on his experience, Sanoff identifies five key points that should always be considered both as reminders and as “testers” in any participatory process. These are:

1. There is no best solution to design problems;
2. Expert decisions are not necessarily better than lay decisions;
3. The design process can be made transparent;
4. All individuals and interested groups should come together in an open forum;
5. The process is continuous and ever changing.

1.8 Conclusions

Cities exist for processes of communication and exchange between people and public space is a key medium through which these processes take place
(Hayward, McGyll, 1993: 72).

The need for public consultation on issues concerning the built environment of a community, and on a larger scale, of the urban form, has been highlighted. The potentialities of a design process involving, in the decision making as well as in the implementation phase, both clients and users, have been presented as a way to practise public consultation.

Through a brief description of the development of the participatory process in design in the States and in Great Britain, and of the various forms in which it has manifested itself over the last decades, some key issues regarding the main limits, dangers and advantages of this approach have been raised.

In particular, attention focused on the more common critiques of the participatory processes, those concerning the principles on which they are based, the quality of the products they can achieve and the mechanisms they use.

A way to overcome those obstacles - while maintaining the advantages of participation with regard to the improvement of design guidelines - is to use design research to identify and study people's reaction to urban form, and build on them more informed, context- and issue- focused form of co-operation.

To actually propose an improved form of participatory approach to design, it is necessary to offer a solution to some key issues:

- the communicability among the parties involved, so that fruitful and effective interaction can take place among them;
- the representation of a public view broader than the one generated by the participatory process ;
- The encouragement of the interaction among the parties involved to identify wider ranges of information and the dissemination of such findings.

The general framework to respond to these three main issues has been identified, mainly according to Sanoff's suggestions on how to initiate a project, by defining goals, participants, roles, resources, and how to keep participants involved and contributing to every stage.

Still, more specific solutions are needed for each of the three main issues; this thesis proposes a possible response to each of them. There can be several other possibilities available though, all depending not only on the context in which the process takes place, but also on the specific interests both of those proposing the strategy (the researcher in this case) and those taking part in its development.

Any activity based on public consultation in the decision making process should, in fact, be open, flexible and subject to essential modifications during its development, but this is an optimisation process rather than a time and resources consuming inconvenience.

Regarding the issue of representing a public view broader than that held by those taking directly part in the participatory process, this thesis explores the environment-behaviour field of studies to identify a series of features significant to people when perceiving and evaluating the built environment. From these, the focus moves to a choice of techniques capable of recording -case by case- such features, and to their combination to guarantee that, from the complete analysis of restricted focus groups, broader views can be generated, although with a lower level of accuracy but still providing relevant information.

Finally, regarding the issue of guaranteeing effective interaction among the parties involved, the thesis proposes educational programmes, based on a framework of the

process in which the various analytical methods are combined, and in which to each step is followed by debates, comparisons with other similar cases and feed back.

CHAPTER 2 VISUAL LITERACY

The focus of the thesis is the built environment and how people perceive and make sense of it; the aim is to make use of the understanding of the built environment to improve communities' involvement in the design process. The approach developed is based on the idea of joining design research and the practice of participation, to enrich, verify and support each other.

Visual literacy is considered relevant to this research for two main reasons: first, it is a form of involvement and progressive empowerment of "non experts" in relation to the visual world, based on the key issues of learning, sharing and communicating information on the built environment that has been generated. Secondly, the field of action of visual literacy is the entire visual world, and the built environment is part of it.

Accepting these two reasons as being sound, visual literacy has provided a framework for the development of the thesis based on a) an approach to the awareness of the visual world, b) the critical development and use of a visual language, and c) an active role of communities in relation to the visual world.

The aim of this chapter is to understand why today visual literacy has become so significant and influential, what its characteristics and its approach to perception are, and to study the contribution of visual literacy to the interpretation of the visual world.

2.1 Definitions of visual literacy

The concept of visual literacy is presented in this paragraph through various interpretations from experts in visual arts, educators and researchers in this field. The concept of visual literacy is organised per key issue considered relevant to understand: first of all, the importance of visual literacy, then its fields of competence or areas of action, and finally its approaches, methods and phasing.

2.1.1 The need to be visually literate

Among the first publications that describe visual literacy as a distinctive need of modern culture for the diffusion of cultural objects and images to the public, parallel to the development of technology, are *Thinking Visual* (Arnheim, 1970) and *Ways of Seeing* (Berger, 1972). *Visual realities were seen as constructions of their own culture, carriers of meanings, to be treated more like words than holy relics* (Berger, 1972: 8-10). They were *interpretable and of interest to culture as much as the traditional archives of verbal or textual production* (Mitchell 1993: 1)

One of the reasons inducing this shift in the common art practice is likely to be the feeling of alienation that ordinary people felt after ages of separation of their world from that of the arts. In the '60s art practice as a proper competence of the so-called "art experts" started being widely refused as a non-interacting source of perception, knowledge and stimuli.

Deciding to stop purely contemplating what some others call art, and instead understanding the effort of having a say in it, of finding a way to express ourselves, is the source of visual literacy (Raney, 1997).

Arnheim and Berger's work was highly focused on art and art products, as are almost all the studies on visual literacy; of course, for the nature of visual literacy itself, the connotation art work extended and assumed much wider and popular recognition than it used to.

Inventing new visual technologies, diffusing them to allow the spreading of culture, and consequently the chance of personally manipulating them, is the real change in the attitude to both making and experiencing the art world.

The question is, at this point, whether people are able to make sense of images, whether they can understand what is contained in visual signals, what is the process taking place to learn from and to communicate through images.

Research suggests that this ability is not always much developed in people; therefore visual literacy as an ability of people to make sense of and use visuals is today particularly essential. Such research is carried out, among others, by Arnheim.

A review of what is known about perception ... made me realise that the ... mechanisms by which the senses understand the environment are all but identical with the operations described by the psychology of thinking...truly productive thinking ...takes place in the realm of imagery ... Perhaps the real problem was...a split between senses and thought, which caused various deficiencies in modern man (Arnheim 1970: V).

The need to learn how to make sense of and use images to communicate is real, but for another reason as well, which derives from this first one. If images talk, the language they use isn't fixed, rather, it is subject to interpretations. This is both a positive and negative characteristic. If on the one side it leaves space for freedom of interpretation and richness, on the other it risks to lead to confusion. Visual literacy then, can help in reducing the risk of misunderstanding, still maintaining flexibility and variety.

If the role of visuals as carriers of culture is undisputed, the value of what they can communicate still risks to be underestimated, when compared to the traditional verbal communication, as there is still a lack of visual culture. The question now is how verbal and visual communication can be combined. This point is reinforced by Mitchell who suggests that one of the *provocation of visual culture is that it requires us to ask whether there are dimensions of culture that lie beyond or outside of language, whether images, for instance, are vehicles of experiences and meanings that cannot be translated into language* (Mitchell, 1993: 208).

The need for visual literacy has been discussed in relation to visuals in general; but the focus of the thesis is the built environment. The question is, then, whether for the interpretation of the built environment visual literacy is as relevant as in the arts. That this is the case it is confirmed by Fleming and Levie's idea of cognitive skills as influenced by our perceptual skills: *... What we have learned about our environment and what we consequently come to expect from it determines to an important degree what we give attention to, what we selectively perceive, and how we choose to interpret it* (Fleming and Levie, 1978: 88). There is accordingly a need to train and sharpen perceptual skills in relation to the environment.

The environment includes a whole net of meanings carried by realistic images, which interact with each other, with perceivers and generate communication flows. Visual literacy is required to help people making sense of such communication, to use it and improve it. What is needed is to adapt the commonly used approaches and methods of visual literacy to the study and action on the environment, and in particular of the built environment. Now it is necessary to discuss what visual literacy is and how it operates.

2.1.2 Defining visual literacy

Dondis (1973: 9) writes ...*The major pitfall in developing an approach to Visual Literacy is trying to over define it.*

He therefore provides a rather broad definition of visual literacy, as flexible as its own nature.

Visual literacy ... is both seeing and making visual images through a process of understanding and sharing of meanings of predictable universality (ibid.: 9).

Regarding the key issues in this definition, it seems that these can be identified as competencies in the interpretation and creation of visual images.

Visual literacy has been studied over the last decades, therefore several interpretations have been developed. It is essential to focus on some of these definitions, and compare them with the one offered by Dondis. The discussion will be organised per topic, and for each of them several interpretations will be presented and discussed.

The field of competence of visual literacy

The first question that needs to be addressed is how visual literacy can help people understand their relationships with the environment. Among the answers that seem more encouraging and interesting, one is provided by Dondis.

We must search for visual literacy in many places and many ways, in the methods for training artists, in the technical training of craftsmen and artisans,

in psychological theory, in nature and in the physiological workings of the organism itself (ibid.: 11).

Visual literacy deals with the visual world, and must be seen as a way of thinking, of making sense of information rather than a discipline to be taught and studied.

This definition was one of the first attempts to identify a context for visual literacy, when the field had not yet been explored and its potentialities not yet tested. It is important to know that, after more than twenty years of development, the openness of this context has not been restricted, instead, it has intentionally been maintained as comprehensive and flexible, as the research conducted by visual theorist Raney³⁵ demonstrates. Through an analysis of the meaning of the term visual literacy as used by artists, teachers, visual historians and theorists, she identified an interpretation of visual literacy, where the objects of study of visual literacy are ... as *wide-ranging as possible...* including ... *youth culture, film, television, computer games, scientific instruments, home décor, eating utensils, as well as art and artefacts of all types* (Raney, 1996: 30). This means that the scope of visual literacy is the whole visual world: *visual culture rather than visual art* (ibid.: 15).

ERIC³⁶ defines visual literacy as *a group of competencies that allow humans to discriminate and interpret the visible action, objects and/or symbols, natural or constructed, that they encounter in the environment*. This definition is built upon a review of published articles on visual literacy, perception, communication, education and arts in general and is therefore largely comprehensive; the context identified is the "environment", as inclusive of visible actions and objects, both man made and natural.

³⁵ The study on visual representation was carried out by Raney as collaboration with the Middlesex University and The Art Council of England. The methodology itself of the research, based on interviews and groups discussions with people involved in visual arts, reinforces the author's view on visual literacy as a broad, vivacious, interactive and participatory field of *visual culture rather than visual art* (ibid.: 15).

³⁶ ERIC/AE is the Full Text Internet Library. An Internet collection of links to full-text books, reports, journal articles, newsletter articles and papers that address educational measurement, evaluation and learning theory. The documents have been selected upon criteria that are accepted in the library and information science community.

A similar definition of the context comes from Fransecky and Debes (1972); for them visual literacy is a group of competencies that can help *discriminate and interpret visual actions, objects and symbols, natural or man-made, that are encountered in the environment* (ibid.:7). Objects and symbols, as part of the environment, include meanings that are visually communicated; visual literacy can help make sense of such meanings. When the focus is, as in this case, the built environment, there will be a high number of man-made objects and symbols. Visual literacy is an essential competence for the practice of participation, in the process of creation and evaluation of such objects and symbols; in particular, it is the essential base for the perception, understanding and communication in the participatory process.

Visual literacy is essential for people to deal with the mass media, because their role as carrier of meanings and convention is nowadays constantly increasing. Paul Messaris, professor of communication and researcher on awareness on visual manipulation in movies and advertising for example, defines as action-field of visual literacy *the workings of visual media* (Messaris, 1994: 2) and refers to people's relations with the mass media as something that can be improved with the help of visual literacy. In particular, he *defines visual literacy as a prerequisite for the comprehension of visual media and the related visual conventions*. The role of visual literacy in enhancing cognitive abilities is not, however, only related to the visual media: it can increase awareness towards any kind of visual products, allowing the recipient to discriminate their significance and validity.

Several other interpretations of visual literacy focus on the specific field of the mass media, but this focus is of not specific importance to this research.

Generally, these courses consider visual information as being everywhere: television, computer screens, signs, symbols, books, magazines, movies, and even body language can be carriers of visual messages³⁷.

³⁷ As will be described in the paragraph on the phasing of visual literacy, the study of how to make use of these various carriers of messages becomes important to develop and communicate visual literacy. Such variety can be adapted to both different phases in its development and to different types of it, according to what is its object of

Getting started: critical minds, vivid hands and alert eyes. A sensory approach to visual literacy

The field in which visual literacy operates has been identified; now the question is how those about to embrace visual literacy are supposed to face it, and on what this way of making sense of what we see (intended as a net of interrelated objects and actions) is based.

It has been stated that visual literacy is a particular way to relate to the visual world to make sense of it and its commonly shared values, with the purpose of interacting upon such values. This requires criticism, willingness to understand, listen, participate and interact, to observe and act rather than just contemplate (Raney, 1996). This is the psychological state of mind required; but the question is how the process of making sense of visuals starts.

There are several ways in which we receive visual information; but with regards to our understanding, much depends on our attitudes and moods. We see things according to how we see the world³⁸; therefore much needs to be considered when studying people's perceptions³⁹. The bases of being visually literate is the act of seeing, *a simple and natural act that provides infinite information, without producing civilisation* (Gattengo in Dondis, 1973: 2). For Fransecky & Debes (1972) vision competencies act simultaneously with other sensory experiences, pointing out how visual literacy is not just restricted to visual images but to the visual environment as a whole.

interest. In the case of this thesis, being the object the built environment, some tool will be preferred to others; chapter 3 describes this thesis' particular field of action of visual literacy.

³⁸ According to Gregory, *vision is an intelligent process and ...perceptions are built hypotheses, a 'bet' on what is the highest probability that a thing is in reality the way we perceived it. ... Our behavior is conditioned by the constant anticipation of what will probably happen, rather than by the reaction to external stimuli* (Gregory 1998: 8). The more important our past experiences, the symbols culturally connected to objects, the meanings traditionally linked to them, and the visual stimulation we undergo, the less 'material data' are needed to see (ibid.: 14).

³⁹ A detailed analysis of what affects perception of and response to the environment is carried out in chapter 3; the study includes physical, personal, cultural and other factors.

Seeing and perceiving are two connected stages in approaching visual literacy; we can say that seeing, when linked to the other senses, is at the base of perception. For Gregory, perceptions are largely based on our past experiences, on the symbols culturally connected to objects, the meanings traditionally linked to them. But again, at the base of this multiplicity of meaningful attributes, is a sensory experience made of images, colors, smell, sounds and textures. Combined or alone, they link physical properties of the objects to ideas, and ideas recall experiences. *The more important are our past experiences, the less material data are needed to see* (Gregory, 1998: 14).

When the aim is learning about what is around us, an approach based on the act of seeing, can somehow be considered a privileged start. Considering sight as a direct experience, Dondis in fact affirms that the use of visual stimuli is the closest we can get to the true reality: *when we see we experience what is happening in a direct way, we discover and become aware of something we will recognise and know* (Dondis, 1973: 19). However, Gregory's idea of perceptions as bets on what is the highest probability that a thing is reality when we perceive it, shouldn't be forgotten.

The interpretation of the built environment can vary largely within subjects, according to their different level of experience and background, education, values, expectations and levels of visual literacy. The role that visuals - as carriers of meanings - can play in dealing with such differences is relevant. Visuals can improve the recognition and understanding of such discrepancies and, on them, develop new forms of interaction between groups where variety is seen as richness rather than an obstacle. Learning to “agree to disagree” would mean recognise, accept differences and build on them an approach to the built environment more respondent to people's different objectives and values.

Identifying up to what extent visual literacy can influence and direct environmental perception, address evaluation and finally participation means laying the basis for a new form of dialogic process, where verbal and visual strengths are joined and reinforce each other. The process of dialogue wants to increase the communicability of values and meanings and make them more understandable and efficient, by

identifying the difference between the belief and knowledge held upon such values and meanings, and using it to refute myths and mistakes⁴⁰.

In this sense, the combination of verbal and visual communication becomes fundamental. On the one side, it should be supported in the attempt to reinforce their equal importance and role in communication, on the other it is important to avoid a too strict framework of rules and patterns that would limit the level of freedom of visuals.

Visual products are, for their nature, freer than verbal products. Although some basic common criteria to define images exist and are shared, there are virtually unlimited combinations of visuals, not reducible or controllable. The effective analogy emerges when talking of literacy, which presupposes training, exercise and expertise in using words as much as images. To be either verbally or visually literate, one requires training. At the base of such training, there are tools and rules and their combination and reciprocal influence, all operating, developing in, and supported by, a critical framework of language, where visual and verbal experience are equally valuable, mutually supporting and completing each other.

The position embraced in this thesis is somewhere in between, or better, links the two interpretations on the analogy between verbal literacy and visual literacy expressed by Dondis and Fransecky and Debes. Dondis (1973) refuses the link, the first implying an induced process of reading, learning and writing, the second being more a deductive process of gathering information and experience from the external reality. According to Dondis' interpretation, a visually literate person, *being capable of reading writing etc. is educated*, while [a visually literate person].. *possessing a body of information and experience, has a promise of an educated understanding of them.* (ibid.: 9)

For Fransecky & Debes (1972) the analogy exists: for them visual literacy is both a process involving speech and writing and possessing a deep structure (an underlying

⁴⁰ For Plato, knowledge and beliefs differ for their object and faculties they employ (Gwynneth, 1972). They can however be linked, that is knowledge can start from the existence of strong beliefs, as long as a different approach - based on the collection and analysis of information and their test - is adopted.

idea) and a surface structure (the sounds and visual symbols used to express such idea).

Visual literacy is a potentially powerful channel of communication to be used in connection with verbal literacy. When both deep and surface structures are exploited, they can then improve deductive and inductive thinking on men/environment relationships, allow an understanding mixed with responsiveness and action mixed with flexibility.

Raney (1997:24) refers to visual literacy as *an enormous range of experiences, habits, passions and skills specific to particular cultural circumstances and to particular kinds of objects*. According to what part of the visual world is the object of interest, visual literacy will need to adapt itself and explore it. When the object is the built environment and how people perceive it, then visual literacy can be used to produce practical outcomes. Different disciplines and techniques, involving perception, representation, assessment, evaluation, comparison, can support this process. A similar view is put forward by Anthony Pennings⁴¹, defining visual literacy as *..an emerging area of study, which deals with what can be seen and how we interpret what is seen*. He suggests it is approached from *...a range of disciplines, which study the physical processes involved in visual perception, the use of technology to represent visual imagery, and the intellectual strategies used to understand what is seen* (Pennings, 1998).

2.1.3 Phasing and tools in visual literacy

Having defined the action areas of relevance to visual literacy and approaches to develop it, it is now essential to define it, and to describe more in depth how it can be developed and used.

This necessitates the analysis of the definition of visual literacy as adopted by The Members of the National Conference on Visual Literacy⁴². This definition will be

⁴¹ Anthony Pennings, Ph.D. He teaches multimedia and Internet production, film theory, video post-production and visual literacy at Marist College, School of Communications and the Arts, Poughkeepsie, NY.

⁴² The first Conference on Visual Literacy was held in Chicago in 1970.

commented on and then compared with others, generated in other fields, such as education, visual arts, media production.

Fransecky and Debes (1972: 7) defined visual literacy...*as a group of vision competencies a human being can develop seeing and at the same time having and integrating other sensory experiences. The development of these competencies is fundamental to normal human learning. When developed, they enable a visually literate person to discriminate and interpret visual actions, objects and symbols, natural or man-made, that are encountered in the environment. Through the creative use of these competencies we are able to communicate with others. Through the appreciative use of these competencies we are able to comprehend and enjoy the masterworks of visual communications.*

The key issues in this definition are: 1) visual literacy consists of competencies as has been discussed in the previous paragraph; 2) such competencies can be developed⁴³ and enhance learning. The outcomes consist in becoming able to make sense of and use visual reality.

Developing visual literacy; a phased process

A number of questions need answers: how does the development of competencies practically work and up to what stage? Where does the information and the raw material come from and how is it interpreted? Perception, as stated, is at the base of the whole process. Dondis calls the step following perception experience, and describes it as the process of acquiring a methodology to receive, analyse and make visual messages. For Messaris, visual literacy is a cognitive effort to interpret visual signs.

For Fransecky & Debes(1972), visual literacy can develop only if in parallel to visual communication - *what people are exposed to and use* - and visual technology - *the*

⁴³ The chance of developing visual literacy suggests its link to practice: address the maturation of such skill to change its context of action (in this specific case the built environment), and create more favourable settings for further steps, in a comprehensively improved scenario. Visual literacy reflects reality and it deals with real contexts, and its major outcome is communication. Raney (1996) too sees the practical implication of 'making' as well as 'appreciating' (creative use of visual competencies to communicate)

tool enabling visual communication - are enhanced (ibid.7). When these conditions are satisfied, visual literacy can develop, in a life-long process, to the point of becoming a necessary attribute of well educated people in modern societies.

The Ontario Institute for Studies in Education of the University of Toronto (Brenton, 1998)⁴⁴, on the base of Fransecky & Debes's definition of visual literacy and of an extensive research on "The Importance of Visual Literacy Skills in the Information Age"⁴⁵ adds two concepts. *Visual discrimination*, that is *the ability to recognise and identify visual shapes, forms and patterns* and *critical viewing*, that is *viewing carefully to comprehend and evaluate information presented by television, video recordings and other visual media*⁴⁶. If the above definitions are sequentially linked, one could say that visual discrimination would allow visual communication when joined to critical viewing, and supported by visual technology. As a consequence, the practice of all of them could develop and improve visual literacy to the point of transforming it into a necessary attribute rather than a rare quality⁴⁷.

Kent State University, College of Education⁴⁸, has developed a multimedia programme available online where the phasing described above is translated into

⁴⁴ The Institute defines itself as: *Canada's leading educational institution dedicated to the establishment of a learning society, through immersing itself in the world of applied problem solving and expanding the knowledge and capacities of individuals to lead productive lives* URL: <http://www.oise.utoronto.ca/~bposer/vl/calendar.htm>.

⁴⁵ URL: <http://vicu.utoronto.ca/staff/branton/frameworks1.html>. The site includes a wide literature review on visual literacy, links to several tutorial exercises developed at the Ontario Institute as well as in other Universities and Colleges. It offers moreover a comprehensive library of web links of images collections and art resources that are normally used within academic or high school courses on visual literacy.

⁴⁶ Both definitions are taken from ERIC.

⁴⁷ This is linked to Hortin's definition of visual thinking and mental imagery and to Mittler's idea of higher order thinking discussed after.

⁴⁸ URL: <http://www.educ.kent.edu/vlo/intro/index.html>. The nature and sequence of information provided is well structured and presented, throughout the three phases identified, visual thinking, communicating and learning. A section is dedicated to the perception of visuals and to the factors affecting it, apart from the objective properties commonly suggested in every course on visual literacy, there is an attempt to include personal, socio-economical, and cultural differences. The amount of information offered is of a rather good quality. We suggest viewing the programme as a very first approach in courses on visual literacy. Other courses presented further on, are generally richer in visual stimuli but have a less clear general framework and layout.

action, through the enhancement of three sets of skills: visual thinking, visual communication and visual learning. Visual thinking is defined *as the ability to transform thoughts, ideas, and information into all types of pictures, graphics, or other images that help communicate the associated information* (ibid.).

Visual communication is defined as *the use of pictures, graphics, and other images to express ideas and to teach people*.

Visual learning is defined as the process of learning from pictures and media. Visual learning includes the construction of knowledge by the learner as a result of seeing the visual image⁴⁹. These definitions offer a very clear approach to the subject, which helps clarifying the actions to be taken when interacting with visual information in the sequence described above; it is based on acknowledging that, being visual information everywhere, the problem concerning the clarity of transmission and de-codification of messages is fundamental.

Visual literacy, seen as the ability to make better use of visual images, is treated as culture based and respective of individuals' differences, i.e. dependent on people's age, gender, race, past experiences, education etc. as illustrated in Figure 2.1. It can, at the same time, also help identifying and understand more generally shared values whose meaning tends to be used without specific cultural connotations.



Figure 2-1. Kent State University. Cultural, socio-economic factors influencing perception. Images from:
<http://www.educ.kent.edu/vlo/perception/index.html>

Visual literacy: is it singular or plural concept?

With regard to verbal and visual literacy, both are used differently by groups (age, education, background, economical status etc), and studying it as a channel of

⁴⁹ Definition derived from ERIC.

communication can provide even more immediate answers in identifying such differences. Once recognised, differences do not necessary need to be levelled; instead, what is considered to be fundamental, is to acknowledge them and make them compatible, enriching each other as a base for interaction. An interesting example can be taken from research on groups' appreciation of features in the environment⁵⁰. It will be demonstrated in chapter 3 that preferences for one rather than another architectural style, landscape, building type etc., depend to a large degree on people's education, training and other cultural and economic factors. The difference is not negative in our culture and cities, if we can find a way to make sense of it, using it as a chance to build upon differences of opinions. Differences in visual literacy are welcome as long as all are based on a common ground of understanding. From this point, a reasonable number of manifestations of visual literacy can develop; among these, Boughton identified three depending by whom they are used, depending upon the nature of what they deal with and depending upon the type of the messages communicated. These three manifestations of visual literacy are:

Communicative Visual Literacy,

...it is technology-led and assumes, among other things, that visual literacy can communicate unambiguously and that visual skills are generalisable

(Boughton, 1986 in Raney, 1997:15).

Artistic Visual Literacy.

...it is operative mainly in the art context, as a holistic, phenomenological approach, assuming that art images whether fine, applied, tribal or popular, are complex and ambiguous.

Aesthetic Visual Literacy.

⁵⁰ See chapter 3 for the analysis of the factors influencing perception, and Chapter 4 for specific case study to identify differences in perception among groups.

It focuses less on an object's characteristics than on a person's response to it; any kind of object, art or non-art can be studied in relation to aesthetic response.

According to Raney, communicative, artistic and aesthetic manifestations of visual literacy reflect three ways of relating to the visual reality, based on assumptions, beliefs and expectations.

In particular, communicative visual literacy is the basic level to be achieved and guaranteed as a means for dealing constructively with the differences mentioned above; it is based on the assumption that it is possible to make of visual literacy a basic visual language capable of guaranteeing a clear communication.

Artistic visual literacy is the direct expression of differences; with regard to the built environment, it includes its objects and the values they carry and try to communicate. What for Raney are beliefs in fine, applied, tribal and popular art, for the study of the built environment are more often "statements"⁵¹ given and received in the built environment (superimposed at times), and need therefore to be studied, to make sure that statements can be accepted as, or modified into, beliefs. In this sense, artistic visual literacy is the base of aesthetic visual literacy. The latter deals with personal responses, it allows expectations (and their opposites) to develop; these personal expectations need to be linked to the beliefs and statements encountered in the environment.

For Messaris (Messaris, 1994: 2) too the latter stages of development of visual literacy can enable –based on previous experience and training - one to become aware of the visual world.

A reflection needs to be made regarding the encouragement of the diffusion of visual culture: many see it with fear for the impoverishment of taste and the wide-spreading of lower critical and aesthetic canons.

⁵¹ The word statements is used to stress a negative connotation when compared to beliefs; this derives from the immanence of environmental objects in comparison to art products. People can decide to be exposed or not to the latter, but rarely can escape from the first

Art historian and critic Mitchell believes (Mitchell, 1995: 208) that the mass diffusion of visual culture won't correspond with the disappearance of the genius and the masterpiece in the visual field, *...but the status, power, and kinds of pleasure they afford will become objects of investigation rather than a mantra to be ritually recited in the presence of unquestionable monuments*. From here, the aim of teaching visual culture will be *...to provide students with the critical tools to investigate human visuality, not to transmit a specific body of information or values*.

A final consideration concerns visual literacy as an expression of expectations and subjective evaluations on the visual environment. According to Raney, Fransecky and Debes seem to suggest a response to, or an evaluation of, visual literacy more measurable rather than subject to passion, perplexity, fear or delight (Raney, 1997: 14).

Visual response, although measurable, still remains the expression of personality; quantifiable criteria group responses per category and are more based on subjective evaluations. The problem of differentiating between objective and subjective responses will be identified in the evaluation of personal responses to visual environmental stimuli (chapter 3); some methods have been identified to maintain individuality eliminating the risk of masking subjectivity under too generic objective evaluations (chapter 4).

2.1.4 Visual literacy in practice: tools and resources

Raney suggests that representational and communicative methods used in visual literacy should be comprehensive of the whole visual world, that is *not just drawing and painting but photography, digital imaging, collage, fashion, craft and design* (1997:24); these techniques should be constantly trained and used, as learning is a life-long process.

The following review of some relevant publications on visual literacy available on the Internet presents examples of the basic language with the help of which visual literacy develops. The choice of examples reflects the fact that a great amount of current discussion about visual literacy is now technology led and carried out through the Internet. Since the first conference on visual literacy in 1969, digital

technologies seem to be shifting from printed information to multimedia presentation enriching both verbal and visual communication with sound. It is therefore relevant to dedicate part of the analysis on the concept and methodologies to develop visual literacy to the Internet as a communication, learning and teaching medium, including a study of the technological opportunities it offers.

According to the definition and the basic components of written language (e.g. letters, words, spelling, grammar and syntax), possessing verbal literacy enables potentially endless possibilities of verbal expression. Basic visual components (as letters), organizational principles (as grammar and syntax), and common meanings (as words) exist also within the visual language.

The tutorial on visual literacy offered by Brian Stonehill⁵², aimed at introducing students in visual arts to the understanding and use of visual images, presents a clear list of the basic elements of visual communication, defined as *the compositional source for all kinds of visual materials, messages, objects and experiences* (ibid.). The provided definition of elements and principles that link them are clear, and richly visually documented. Among these are the dot, line, shape, direction, value, hue and saturation, texture, scale, dimension and motion. For each element a set of both still and animated examples, is offered, as the following images show (Figure 2.2 to Figure 2.5).

⁵² The course was active at the Pomona College, Claremont, California until 4 years ago, when it has been substituted by Introduction to Media Studies, which covers interpretive strategies for reading still images, print advertisements, television, and the internet. URL: <http://www.pomona.edu/visual-lit/intro/intro.html>



Figure 2-2. The elements of images. URL: <http://www.pomona.edu/visual-lit/intro/intro.html>.



Figure 2-3. Texture, examples from URL: <http://www.pomona.edu/visual-lit/intro/intro.html>

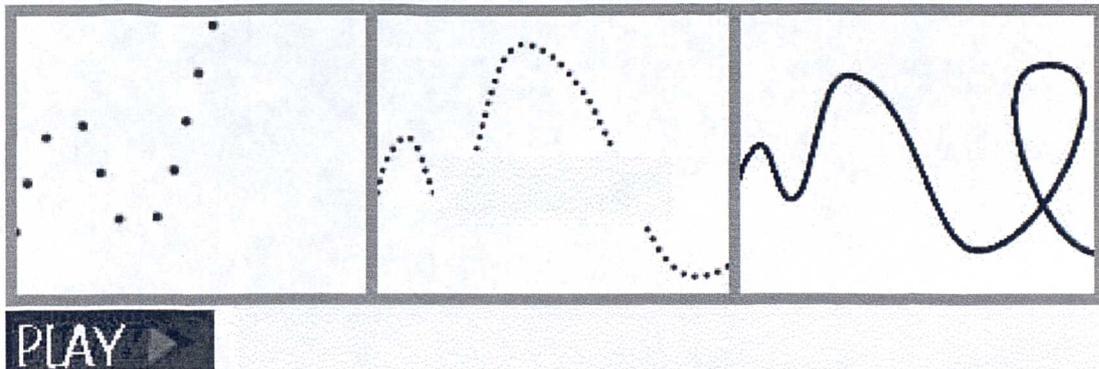


Figure 2-4. Motion picture of a line as constituted by an infinite sequence of dots. URL: <http://www.pomona.edu/visual-lit/intro/intro.html>

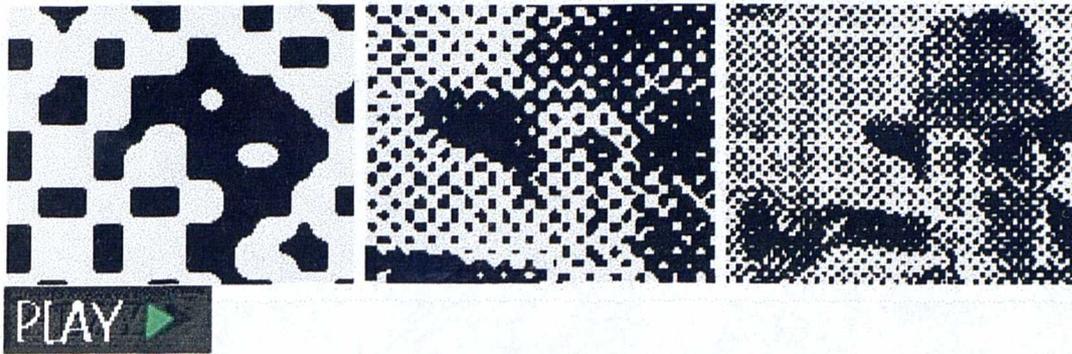


Figure 2-5. Motion picture of a complex image as aggregation of dots. URL:

<http://www.pomona.edu/visual-lit/intro/intro.html>

Possessing a vocabulary of the above elements allows a viewer to understand the basic visual syntax that is, the process leading to the communicative visual literacy, *the ability, through knowledge of the basic visual elements, to understand the meaning and components of the image* (ibid.). A similar catalogue of elements and principles is provided in the Kent State University course on visual literacy for teachers to enhance their capacities of using visuals to communicate information to students.

Here, a very clear explanation of the principles is offered according to how basic visual elements are assembled to create complex images if offered, as shown in Figure 2-6. Several realistic examples and exercises to verify the level of understanding of the viewer/reader enrich the explanation.

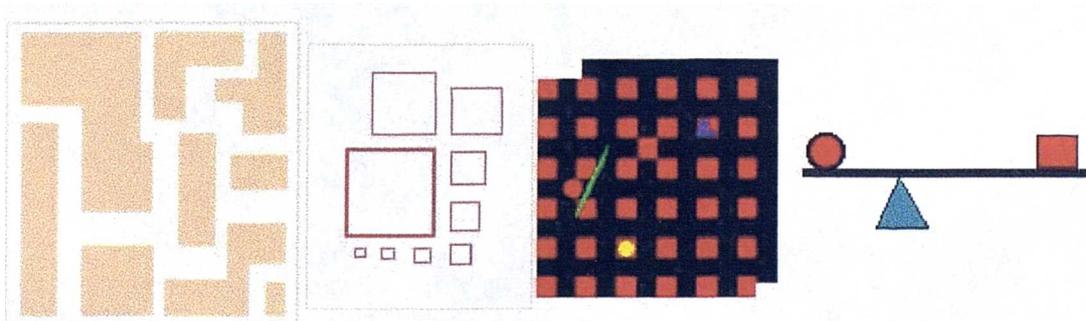


Figure 2-6. The right combination of design elements according to design principles can help communicating visual instructional messages. URL: <http://www.educ.kent.edu/vlo/intro/index.html>

Another interesting course on visual literacy is offered by the Ontario Institute of Education, University of Toronto⁵³. On the belief that exploring the visual world learning can occur, it helps students to develop a holistic approach to visual thinking and learning, and is therefore largely based on training observational, critical and evaluative skills. Within the syllabus suggested, it includes several exercises on visual training and the chance to get feedback on them.



Figure 2-7. A sequence of images students are required to analyse according to the vocabulary they provide part of the course. URL: <http://www.oise.utoronto.ca/~bposer/vl/visvisual1.htm> (visuals 1-5).

1 Does the value (lightness/darkness) of colour create an illusion of depth? How?

2 Do the lines that overlap create an illusion of depth? How?

3 What element(s) defines the shape in this image?

4 What aspects of this image appear dominant or larger than other aspects?

5 What would the physical sensation be if you were able to touch the object(s) in this image?

Back Home 1 2 3 4 5 Design Next

Figure 2-8. The questionnaire proposed for the analysis of visual stimuli. Students are required to answer the questions within a framework of stages. URL: <http://www.oise.utoronto.ca/~bposer/vl/visvisual2.htm>

⁵³ Bev Branton, Meredith Newbigging, Tom Bailey, Wade Sharpe and Brian Poser created this tutorial in 1998 for "Computer Mediated Distance Education" at the Ontario Institute for Studies in Education of the University of Toronto.

The final example is from a course on visual literacy (Makela, 1996) organised by the Department of History at Cleveland State University, Cleveland, Ohio to be used in three courses on Contemporary Japan in Historical Perspective, Traditional Japan, and Modern Japan. It is interesting to notice the several applications in which visual literacy can be useful; in this case training students' observation capacities through visuals is used as a real channel to communicate more complex, historical, cultural and technological information. Students in the course are presented with a series of paintings on Japanese scenic landscapes, and are required to derive information of increasing complexity from a repetitive exposition to each of them.

Further discussions on Japanese traditions, uses and culture derive as a follow up of this first visual approach, and are organised on the base of a framework derived from the visual literacy exercise. This suggests that the order with which we perceive information from the outside environment has influence on our learning process; the same order can therefore be used to frame and organise the sequences of a teaching process based on the use of visual images as a source of information.

**VISUAL LITERACY EXERCISE:
WRITTEN EXERCISE - PART ONE**



You may print out a single page version of the entire written portion of the exercise (both Parts One and Two) with places for your responses, using your own printer, by clicking [here](#) and then using the PRINT icon on your browser.

After viewing the set of images above for the first time, answer each of the following questions to the best of your ability.

1. List the basic features of Japanese geography you observed in the group of woodblock prints reviewed.
2. Describe aspects of human environmental adaptation as seen in the image set (that is, describe evidence as to how the Japanese fit into and utilize their natural environment).
3. Describe the Japanese climate and evidence encountered of Japanese adaptation to climatic variations.



Figure 2-9. The exercise is based on selected woodblock prints from a famous series depicting scenic views of the Fifty Three Stations of the Tokaido Gojusantsugi . URL: <http://www.csuohio.edu/history/exercise/vlehome.html>.

The tutorial consists in a sequence of exercises requiring students to examine sets of woodblock prints and to answer questions on the physical, human and climatic

conditions of the images represented (Figure 2-8). Repeating such exercises, altering observation and questions several times, the detail of information perceived increases, with a resulting more in depth perception of details and a more aware use of such details as a source of information (Figure 2-9, 2-10).

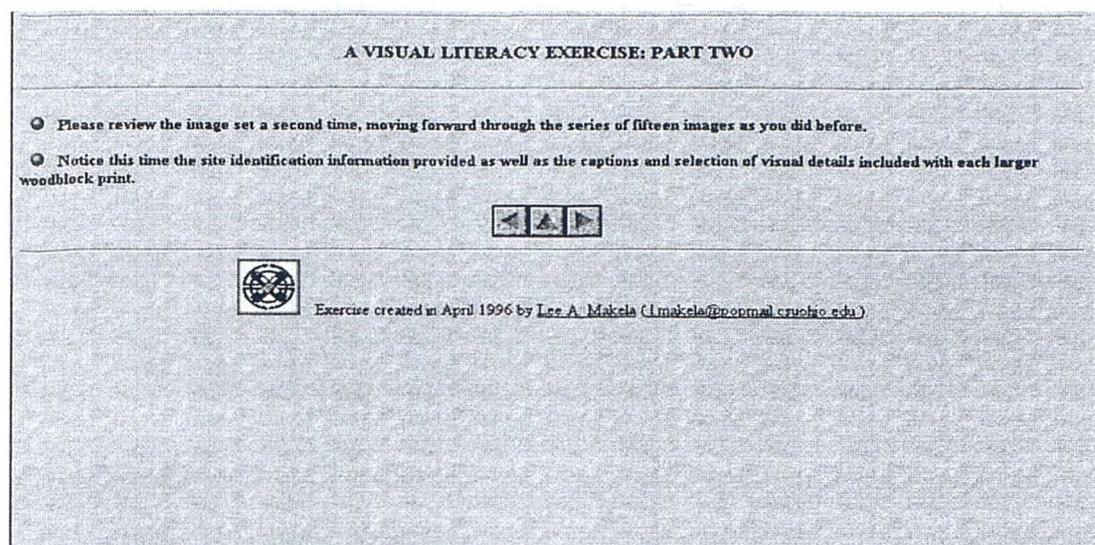


Figure 2.10. While the first vision of images was free, in the second students are required to focus on particulars and speculate on them.

Although visual stimulation interests in this case students singularly, the following phases where discussion takes place are carried out in groups; this allows each student's personal abilities to express themselves at their own step and to develop skills according to each one's requirement.

The sequence of exercises and tutorial presented on visual literacy requires and trains a rather wide range of competencies. From the first two examples focusing on the basic elements that constitute visuals, describing them and providing exercises to train students' understanding of such elements and principles, the two following examples instead make use of such bases to explore more complex conditions. It is important to see how different is the object of study of the last two exercises (landscapes and Japanese woodblock): the focus of visual literacy, in fact, is the entire visual word. Visual literacy is therefore an ability that can be taught, trained, improved and used to develop more comprehensive understandings of the external world.

It is at this point interesting to explore more in details the advantages of visual literacy today, as concerning education first of all but also in relation to its impacts on a day-to-day life. Also, the typical risks of interpreting visual literacy as a tool rather than a skill are explored, with the related pitfalls of considering its value from a limited and restricted point of view.

2.1.5 Advantages and risks of the application of visual literacy

Some very strong opinions on the essence of visual literacy derived both from the literature review and from discussions with those involved with the visual world, mainly artists, architects and educators. It is relevant for this thesis to stress the existence of two types of attitudes towards visual literacy, as identified by Raney (1997): those with some reservations regarding the use of visual literacy and those supporting the use of this concept.

Both views need to be taken into account in the development of this work to define its action field and establish links with other disciplines, techniques and roles of those involved.

The main reservations towards visual literacy can be classified – as suggested by Raney - into three main categories: 1) the risk of confining the term to the simple understanding of the basic visual elements such as colour, form, tone etc.; 2) the risk of visual literacy to be too tight to knowledge and understanding rather than to encourage people to be creative; 3) the use of the terms ‘visual’ and ‘literacy’ in conjunction might appear contradictory, since their nature is extremely different in terms of content and use⁵⁴.

The main supporters of visual literacy describe it as a form of empowerment.

Kennedy (in *ibid.*: 21) sees it as a *tool to understand visual objects, communicate what is received and start dialogues about it*; Burton (in *ibid.*: 22), describes it as a *form of autonomy in gathering meanings from visual things, no longer limited to the image the producer wants to communicate* (Nutter in *ibid.*: 22).

⁵⁴ On this issue, see paragraph: Getting started: critical minds, vivid hands and alert eyes. A sensory approach to visual literacy.

An opinion from point of view of researchers on visual literacy, rather than from those experiencing it directly, is offered by Griselda Pollok (in *ibid.*: 21-23), who considers it *as a metaphor for registering a certain understanding of the significance of the visual.*

From the point of view of educators visual literacy can be used to enhance students' *abilities to evaluate and create visual messages*, as well as to improve their reading and writing skills⁵⁵ (*ibid.*:23).

Based on the recognition of the effective increasing necessity of acquiring visual competencies as a living tool, they suggest the importance of teaching visual literacy as equal to the other parts of the curriculum, recognising visual intelligence as equally relevant to verbal and mathematical intelligence.

It is important to be aware of the risks implied by visual literacy and of its potentialities. An approach ought to include a) the provision of a set of visual tools as a starting point for further developments aimed at enhancing the users' involvement in discussions on visual issues; b) the encouragement of an active role of those involved in a course enhancing visual literacy; c) the avoidance of conceptual restrictions in trying to create a visual vocabulary; d) the suggestion of using visual literacy as a tool to improve the process of participation, which is the major focus of the thesis.

The sequences and the phasing to do so still need to be explored. For this purpose though, it is important to understand how the use of visuals as a communicative and educational channel has developed through the years, to the point of recognising officially the term visual literacy and of introducing it in the curriculum.

⁵⁵ This opinion is sustained by the thinking stream developed from Gardner's ideas; it therefore includes Dickinson, Armstrong, Horting, Mittler, among those quoted in this research. The Benedict Visual Literacy Collection, Arizona State University Libraries, Department of Archives and Manuscripts, URL.: <http://www.asu.edu/lib/archives/visual.htm>, is a collection of resources on visual literacy oriented to education and to enhancing visual literacy in connection to the other types of intelligence as part of the curriculum.

2.2 The origins of visual literacy as a field of research

The fundamental historical phases and ideas that led to the development of visual literacy as a means of understanding and communication are outlined in the following paragraphs.

The very origins of the development of visual literacy are the natural development of a system of communication based on visual cues and expressions rather than words. The more recent history of visual literacy dates back to the large-scale diffusion of visual products to a public of not just "experts" but of common people, via television, magazines, and publicity. Over the last 30 years, visuals have increasingly become a daily source of information, and this necessitated that people adapt their learning and communicative skills.

The following section describes these phenomena and explains why visual literacy can form the basis of participation and empowerment.

2.2.1 The first phase of visual literacy: the body language

John L. Debes, with Fransecky co-founder of the International Visual Literacy Association⁵⁶, identifies the first manifestation of visual literacy in people's capacity to read signs or gestures of the body language. He refers to the observation of chimpanzees and the demonstration that they use body language to communicate with each other in their natural state. Showing that, when culturally exposed to conventional systems of signs language, chimpanzees are capable of internalising such signs and using them creatively. He suggests that visual literacy, from an evolutionary standpoint, may have preceded man (Debes, 1978).

An interesting study on the development of young exemplars of a species of the rhesus monkeys (*Macaca Mulatta*) revealed how –virtually- all primate species have an inherent sociality (Segerstale, 1997). As the extensive interaction with familiar conspecifics is an essential part of an individual's daily life, a complex pattern of

⁵⁶ The International Visual Literacy Association was founded in 1969 (IVLA); after John Debes became the Director of the Centre for Visual Literacy, University of Rochester.

communication develops to facilitate such interaction. Although none of these non-human species has developed a humankind language, they can communicate a broad spectrum of information using a wide variety of sensory modalities (see Figure 2-11). It has been demonstrated that *many human channels of communications derive from, or are at least largely homologous to, facial communicative repertoires of monkeys or apes* (ibid.: 131).

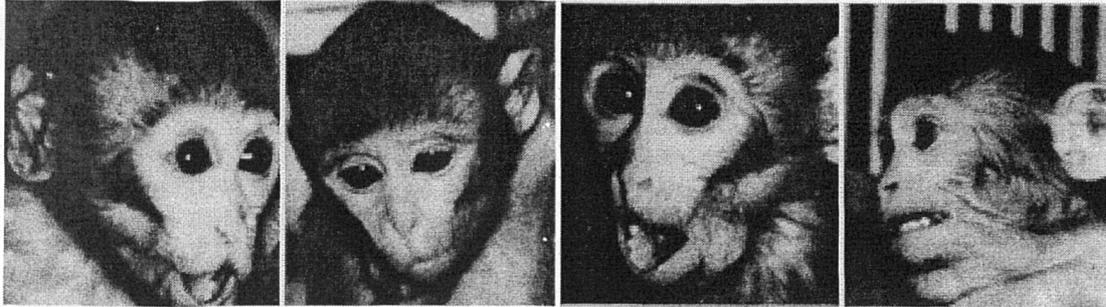


Figure 2-11. Facial expressions of young Macaca Mulatta: surprise, curiosity, fear, anger. From Segerstrale (1997: 135).

It is interesting to notice that as young monkeys mature they become more reliant on visual and auditory skills and base on them always larger parts of their communicative activities. During the growing up process, *a large part of the education is based on visual channels; rhesus mothers can teach appropriate behaviours to different environmental situations by exhibiting the related facial responses to the infants* (ibid.: 137)

From the above study anthropologists have suggested that man used the body sign language for communication much before sounds, writing and even drawing. These actions are still *the first communication channel in young human infants, who indicate their emotional states in the same ways as all the other primates* (ibid.: 136).

The relation between non-verbal communication and human culture is therefore a subject widely based on children's development as affected by the relationship with mothers. From an approach to the mimic response of the infant to the mother's facial expressions and the effects on the development of the child's communicative skills, interesting studies have developed on the changes in children's social and personal development as influenced by the mother's way of dealing with them at the early

stages of life. The degree and mode of maternal stimulation to young infants has been found a fundamental factor influencing further development of the child's competencies:

...Those mothers that emphasise verbal behaviour have children who are more verbal; those that emphasise object manipulation have children who are more dextrous. (Ibid.: 239).

Because the vast majority of studies on the influence of non-verbal communication to the transmission of culture are based on an observational rather than an experimental approach, the results cannot be generalised. It is therefore evident that such communication tools change from one culture to another and that such changes have effects on the development of the emotional sphere of the child.

Fransecky and Debes (1972), confirm the existence of a visual language, of which body signs and body language constitute the "spoken" form, while any visual image carrier constitutes the "written" form.

2.2.2 The second phase: drawing signs to communicate ideas

According to Debes it is likely that the first drawings used to communicate visually were based on the representation of body language expressions and that, dating "civilisation" to the invention of writing as a tool to record data, ...*literate civilisation began when conventionalised representation of objects and conventionalised representations of body language signs were arranged* (Debes, 1978: 176). Such sign languages were primarily sequential arrangements of culturally significant signs. Accordingly, they were very different from the language representational systems that developed later in which the writing represented sounds of spoken language.

Brian Stonehill⁵⁷ of the Pomona College, Claremont, California, supports this idea suggesting that the primitive communication tools, the visual symbols, are precursor of the written word. The shift from one to the other took place through a process of

⁵⁷ Brian Stonehill was Lecturer in the Pomona College of the Media 51 Principles of Visual Literacy class. *The On-Line Visual Literacy Project* (1994) as available at URL: <http://www.pomona.edu/visual-lit/intro/intro.html>.

“reduction of details” shifting the basics of communication from pictorial to more symbolist levels.

Parallel to the reduction of complexity of the visual tool, is the diffusion of commonly shared basic components of communication.

In the age of pictorial reproduction for example, paintings had transmittable meanings: they were used to narrate and transmit stories, culture to those who were not exposed to the institutional means of erudition (Berger, 1972). Giotto's frescoes in San Francis' Church, dated around 1290, are an example of how lay-people were told about exemplar lives and actions considered as model and inspiration - in this case - by the church.

In the Church, frescoes are part of the building itself, they cover it completely; walking along the lower sections of the walls of the nave of the Upper Church, through the Franciscan Cycle⁵⁸, it is like following the Legend of the Saint, as Figure 2.12 shows.

⁵⁸ The whole cycle contains twenty-five frescoes by Giotto and three by other artists. Giotto's Legend contains the following: The following scenes are represented: 1. Homage of a Simple Man, 2. St Francis Giving his Mantle to a Poor Man, 3. Dream of the Palace, 4. Miracle of the Crucifix, 5. Renunciation of Wordly Goods, 6. Dream of Innocent III, 7. Confirmation of the Rule, 8. Vision of the Flaming Chariot, 9. Vision of the Thrones, 10. Exorcism of the Demons at Arezzo, 11. St Francis before the Sultan (Trial by Fire), 12. Ecstasy of St Francis, 13. Institution of the Crib at Greccio, 14. Miracle of the Spring, 15. Sermon to the Birds, 16. Death of the Knight of Celano, 17. St Francis Preaching before Honorius III, 18. Apparition at Arles, 19. Stigmatization of St Francis, 20. Death and Ascension of St Francis, 21. Apparition to Fra Agostino and to Bishop Guido of Arezzo, 22. Verification of the Stigmata, 23. St. Francis Mourned by St. Clare, 24. Canonization of St Francis, 25. Dream of St Gregory.

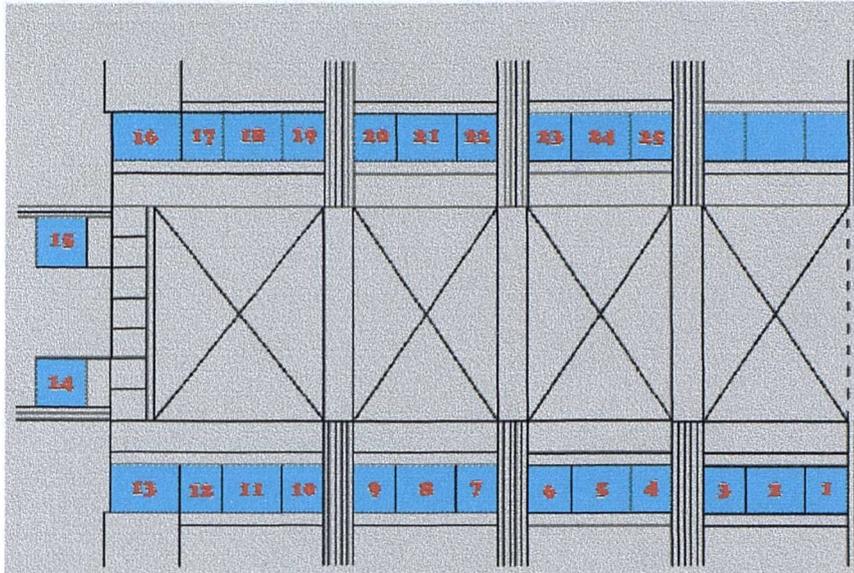


Figure 2.12 Plan of St. Francis' Upper Church, taken from Web Gallery of Art (Kren, E.; Marx, D., 1996),

URL: <http://www.kfki.hu/~arthp/welcome.html>. Image [Online]

<http://www.kfki.hu/~arthp/tours/giotto/francis.html>

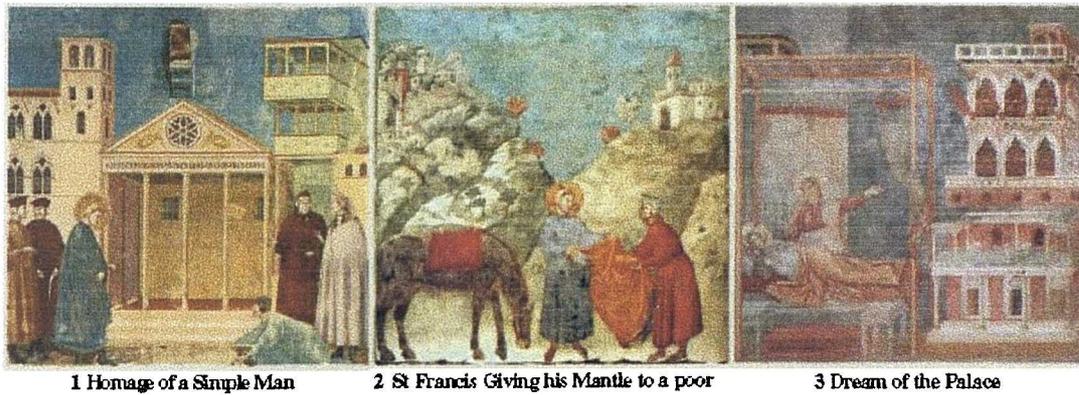


Figure 2-13. Giotto's frescoes in S. Francis' Upper Church, Assisi, Italy. Image from Web Gallery of Art (Kren, E.; Marx, D., 1996), [Online] available URL: <http://www.kfki.hu/~arthp/tours/giotto/francis.html>.



Figure 2-14. Giotto's frescoes in S. Francis' Upper Church, Assisi, Italy. Image from Web Gallery of Art (Kren, E.; Marx, D., 1996), [Online] available URL: <http://www.kfki.hu/~arthp/tours/giotto/francis.html>.



Figure 2-15. Particular from Giotto's Renunciation of Worldly Goods.

Visual narrative was an efficient means of education and indoctrination: colours, shapes, balance were strong communicators of emotions, and this made images effective carriers of values and principles.

An example of such descriptive capacity of images can be found in the particular from the Renunciation of Worthy Goods (Figure 2-15): the contrast between Francis' relaxed expression and his father's grin of anger, also stressed by his gesture of lifting the hem of his gown, communicates emotions and so describes facts.

Art history offers many more examples of this type, such as the iconography representations of the Holy Bible, of the Divine Comedy and many more. Images were strong and powerful, dense in colours and gestures, or in light contrasts and chiaroscuro, as much as Dante's verses. Figure 2.16 presents two versions of Inferno, 10, where Dante meets the heretics and those that had received no baptism before

their death, one by Italian Renaissance painter Sandro Botticelli's in a late 1400s representation, the other by Gustave Doré, French illustrator, engraver, painter, and sculptor who illustrated the whole Divine Comedy in 1860s.

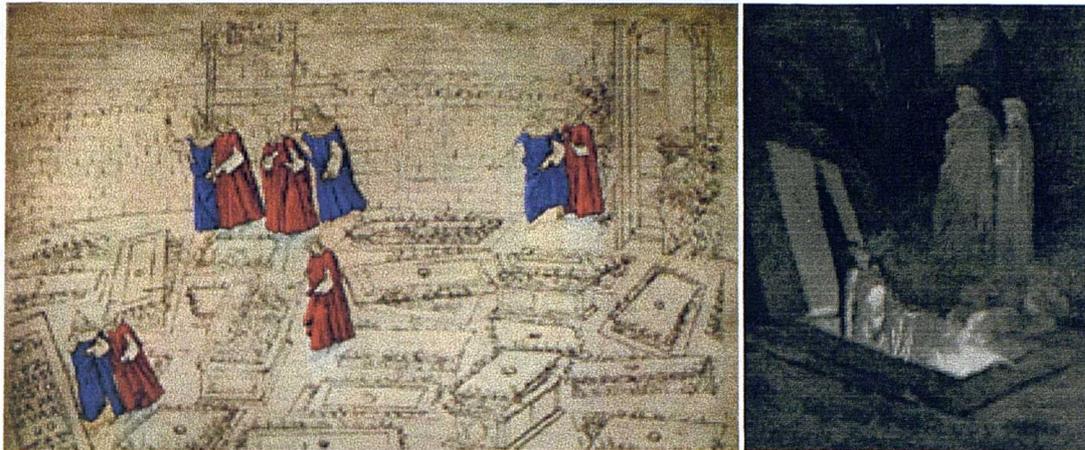


Figure 2-16. Sandro Botticelli and Gustave Doré, *The Heretics*. Image from *Digital Dante*, the Institute for Learning Technologies, Columbia University [Online] Available URL:

<http://www.ilt.columbia.edu/projects/dante/>.

Here follow Dante's verses on his first view of the land of the Heretics (10.7-15), which correspond to Botticelli's and Doré's representation, and to his meeting with Farinata degli Uberti.

*La gente che per li sepolcri giace
potrebbesi veder? già son levati
tutt'i coperchi, e nessun guardia face».*⁵⁹

*E quelli a me: «Tutti saran serrati
quando di Iosafàt qui torneranno
coi corpi che là sù hanno lasciati.»*⁶⁰

⁵⁹ (Longfellow, 1886).

The people who are lying in these tombs,
Might they be seen? already are uplifted
The covers all, and no one keepeth guard."

⁶⁰ And he to me: "They all will be closed up
When from Jehoshaphat they shall return
Here with the bodies they have left above.

*Suo cimitero da questa parte hanno
con Epicuro tutti suoi seguaci,
che l'anima col corpo morta fanno*⁶¹. (10.7-15)

*Subitamente questo suono uscì
d'una de l'arche; però m'accostai,
temendo, un poco più al duca mio*⁶².

*Ed el mi disse: «Volgiti! Che fai?
Vedi là Farinata che s'è dritto:
da la cintola in sù tutto 'l vedrai»*⁶³. (10.30-36)

However, even when a civilisation had developed sound representational systems, iconic and conventionalised semantic representational systems continued to be used together. Some cultures developed sign languages as main means of communication. Among these are the Indian, the Chinese, the Native American; in sign languages, words are constituted by graphic symbols immediately depicting or referring to concepts, due to stylistic transformations.

Around two hundred of the Chinese characters are, for example, pictographs, as the following examples show. Some of such characters are still recognisable, whereas most of them have lost such an immediate reference to their meaning, as shown in Figure 2-17⁶⁴.

⁶¹ Their cemetery have upon this side
With Epicurus all his followers,
Who with the body mortal make the soul

⁶² Upon a sudden issued forth this sound
From out one of the tombs; wherefore I pressed,
Fearing, a little nearer to my Leader.

⁶³ And unto me he said: "Turn thee; what dost thou?
Behold there Farinata who has risen;
From the waist upwards wholly shalt thou see him."

⁶⁴ Zhongwen.com: Chinese Characters and Culture (1996).

木 mǔ
Pictograph of a tree.

大 dà
Pictograph of a standing person.

田 tián
Pictograph of a field with irrigation channels.

山 shān
Pictograph of mountain peaks.

Figure 2-17. Examples of Chinese pictograms. The resemblance with the objects represented is immediate.

Sign language used by deaf people is a particular interesting use of signs to communicate. Developed throughout centuries, it provides deaf people with the same amount of communicative skills as the hearing people systems can do.

Deaf people have been recognised to have ability to reason only in 1500, whereas before they were socially condemned as considered senseless. Since 1500 medicine and sciences started studying deaf people, admitting in the early 1640s the *philosophical verity of that subtle art, which may enable one with an observant eye, to hear what any man speaks by the moving of his lips* (Bulwer, 1648)⁶⁵, as the article presented in Figure 2-18 shows.

⁶⁵ Images and information derived from, Deaf World Web, The Starting Point on the Deaf Internet, the largest Deaf Web Site [Online] Available URL: <http://dww.deafworldweb.org/>.

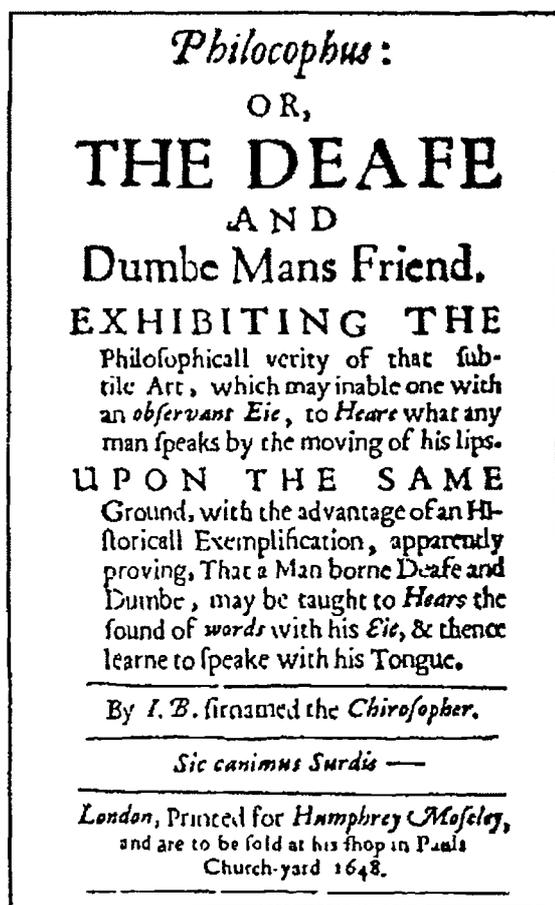


Figure 2-18. London, 1648. The ability of deaf people to communicate through the use of signs is established. Image from: <http://dww.deafworldweb.org/>.

In more recent times, it is interesting to point at the work of the French social innovator Charles Michel Abbé De l' Epeè who in 1755 established in Paris the first free school for deaf children in the world. He encouraged the development of a sign system, which today is still at the base of most of the sign languages for deaf people (Debes, 1978; Smith, R., 1996).

The Abbé did not invent sign language himself but recognised the importance of sign language as the best way to communicate with and educate deaf people, rather than trying to make them use hearing functions (Smith, R.).

Since then, signs in general, of which sign language is a particularly developed case, are capable of including and transferring large amounts of information. Sign language is a unique and wonderful language that uses space and movement for the purpose of communication. Many signs are natural gestures, whereas others are

based on some characteristic of the sign's concept (ibid.), as shown in Figures 2.19 and 2.20.



Figure 2-19. "Nice to meet you". Images taken from: Bruce Street School for the Deaf⁶⁶.

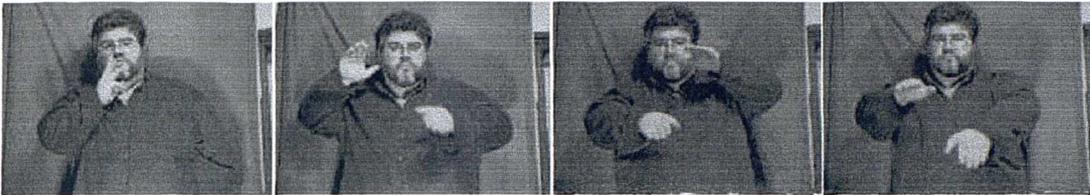


Figure 2-20. This sequence of images describes the sign for the word "ocean". *Right hand in a "W" shape. Right hand starts at the chin (the sign for water) then moves to the side of the head and cups, like an open "C". Left hand cups also and then both hands alternately rise up and down like waves on the ocean.* Images and text taken from URL: <http://www.advanix.net/~ameslan/index.htm>

The process through which information is translated into signs, and in a second phase derived from them, is of interest to this research. Considering the built environment as part of the visual world, it is useful to identify patterns of information legible and intelligible through its forms, and to share such information among those who daily use and perceive this information and need to make sense of and act on it.

⁶⁶ The Bruce Street School, New Jersey, USA for the Deaf is one of the oldest programs serving the deaf and hard-of-hearing children in the USA. The URL <http://www.advanix.net/~ameslan/index.htm> offers a variety of visual information on sign language, including images and videos. Going through the various sources [Sign Language Dictionary, Sign Language Dictionary (with video), Sign Language Dictionary (with animation), Introductory Signing Concepts], an amazing variety of visual combinations shows how the opportunities of communication offered by visual symbols are nearly infinite.

2.2.3 The third phase: visual education - transmitting messages through visual sequences and photography

Since the invention of photography, visual communication has been possible on a broad scale and has implied the growth of visual literacy, which did not become widely effective until visual communication was made easier by visual technology on a large scale (Fransecky and Debes, 1972).

The first products of photography in fact were very close to those of art, representing still images more like paintings than anything else. As soon as photography was associated with the idea of producing sequences of images to represent motion, a development of the idea of comics (sequences of images narrating facts within a temporal development) started being widely diffused.

In 1877 the photographer and inventor Edward Muybridge demonstrated, through a photographic sequence of twelve shots, the real movements of running horses. Since then, he did pioneering work on this subject, and his studies on animal locomotion were an essential step towards the development of motion pictures, as we know today. He developed the Zoopraxiscope, a tool projecting sequential images on continuous strips of paper, based on the principle of the Phenakistiscope⁶⁷.

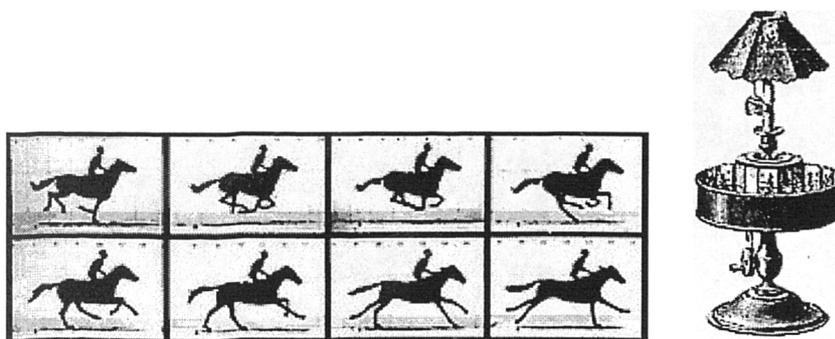


Figure 2-21. Edward Muybridge. Horses' run sequence obtained with the Zoopraxiscope, the Phenakistiscope (Hendrix, 1975: 107, 115)

⁶⁷ The Praxinoscope was a mechanism allowing to see pictures in motion: the images were drawn or painted on a strip of paper that was placed in a rotating drum.

The major steps in using visuals to enhance the learning process, up to Howard Gardner's Theory on Multiple Intelligencies

In education, the importance of visuals as a way of transmitting information started to be recognised during the Seventeenth Century, and soon the idea of combining the teaching possibilities offered by visuals with other skills became relevant as a way to enhance children's learning capacity in schools.

Debes (1978) refers to the Swiss educator Pestolozzi⁶⁸ as one of the pioneers of such a multiple approach; under the slogan “thinking is visual” he made visual education the base of the educational process of the schools he founded, where visual and manipulatory experience were linked⁶⁹. On a daily basis, the relevance of these ideas is deeply rooted within our culture; visuals have become part of the everyday life and this finds expression in sayings like “seeing is believing” and “one picture is worth a thousand words”.

The support for critical and realistic visual learning developed continuously since then. In 1947 Earl C. Kelley, professor of secondary education at Wayne University in Detroit published “Education for What is Real”; the key concept stressed was that *whatever is seen must be interpreted and that interpretation rests upon the motives and purposes and experience of the viewer* (ibid: 180). A potential combination of this investigative approach could be identified with the so called higher order thinking (Mittler 1994), that is the skills of finding meaning and making judgements about complex situations beyond the simple recall of facts (Arends, 1991).

These judgements often take two different forms: problem solving and decision making (Beyer, 1987, cited in Mittler 1994). Mittler (1983, 1994) suggests higher

⁶⁸ Pestolozzi (1746-1827) is known as the Father of Manual Training. He opened experimental residential schools for the children of the poor, using as instructional methods tools and manual labour to teach traditional school subjects (Smith, R.: 1996).

⁶⁹ Pestolozzi's ideas -and more in general the multiple approach to both teaching and learning- are probably the precursors of Howard Gardner's theory on the Multiple Intelligencies and of visual literacy to enable the interaction with the visual world, as a combination of observation, communication and making.

order thinking as way to improve visual perceptual skills, as teaching and learning methods applicable to any sector of both formal and informal education. To stress this, he recalls a Taoist saying (Mittler, 1983: 129):

*To look is one thing,
to see what you look at is another,
to understand what you see is a third,
to learn from what you understand
is still something else;
to act on what you learn is all that matters.*

The Psychologist Howard Gardner⁷⁰ is the author of *Frames of mind* (Gardner, 1994), where he developed and explained the theory of Multiple Intelligencies, challenging the idea that intelligence consists of linguistic or logic-mathematical abilities only, those that schools tend to encourage and measure. He argues for a broader understanding of the intelligent mind, one that embraces creation in the arts and music, spatial reasoning, and the ability to understand others and us. According to his ideas, the seven types of Intelligencies⁷¹, which always exist with a different level of development in everyone (his interest is mainly directed to children's mental development) are independent but at the same time closely related and are all important to fuller human development. Educator Dickinson⁷² (1996) suggests the actual use of Gardner's theory in classes as a way to improve students' learning chances and results. She suggests that it is important to *encourage children to*

⁷⁰ Gardner is a professor of education, co-director of Project Zero at the Harvard Graduate School of Education, and adjunct professor of neurology at the Boston University School of Medicine.

⁷¹ The seven types of Intelligencies according to Gardner (ibid.: 1994): Linguistic intelligence, Logical-Mathematical intelligence, Spatial intelligence, Bodily-Kinesthetic intelligence, Musical intelligence, Interpersonal intelligence, Intrapersonal intelligence and Naturalist intelligence.

⁷² Founder of New Horizons for Learning, a non-profit international education network based in Seattle, Washington, educator, school administrator. URL: <http://www.newhorizons.org>.

explore and exercise each of them, as when an individual becomes more proficient in one area, the whole constellation of intelligencies may be enhanced (ibid.).

Among the mentioned seven types of intelligence, the "visual/spatial intelligence" *...involves visual perception of the environment, the ability to create and manipulate mental images, and the orientation of the body in space. It may be developed through experiences in the graphic and plastic arts, sharpening observation skills, solving mazes and other spatial tasks, and exercises in imagery and active imagination (ibid., [Online] Available).*

Due to its focus on visual perception, visual/spatial intelligence is more directly linked to the concept of visual literacy. It is fundamental, however, to treat and work with it in constant connection with the other six types of intelligencies, in order to achieve the described potential visual benefits that would derive.

At this point it is necessary to recall another idea common to the above mentioned theories on learning through multiple approaches: that learning is a skill that can be developed. This assumption constitutes another piece of information, which is gradually allowing to discover what is visual literacy.

Every child is a genius, states educator and psychologist Thomas Armstrong. His statement is based on the original meanings of the word "genius," which are: "to give birth" (related to the word genesis) and "to be zestful or joyous," (related to the word genial) (Armstrong, 1985).

The word genius then means to "give birth to the joy" and is a capacity that belongs to every child. According to Armstrong, each child comes into life with the characteristics of a joyous being such as wonder, curiosity, awe, spontaneity, vitality, flexibility and many more, and can master a complex system of symbol (their own native language) without any formal instructions. Young children have vivid imaginations, creative minds, and sensitive personalities that need to be trained and encouraged by educators and parents, so that the natural genius can be preserved throughout their adulthood and used daily.

Development and training derive from encouraging children to creativity, vitality, playfulness, and wonder, through simple but challenging activities carried out in an encouraging atmosphere at home or at school.

Learning is a life long process, whose basis must importantly be set at the very beginning.

The idea of learning skills as an incremental process recalls Hortin's concept of thinking as a capacity that can be taught and improved, and the idea of combining the action of thinking with the visual approach to enhance the results of the first (Hortin, 1983). He suggests *visual thinking* and *mental imagery* are processes that can help people to better thinking, and defines visual thinking as:

... the act of seeing the external world, making visual representations of it and using the inner eye or exercising mental imagery, and mental imagery as ... the ability to create images in the mind to understand, remember and enjoy experiences. (ibid.: 174).

His view on thinking and the related teaching approach are based on Paulo Freire's use of photographs to encourage a dialogue between students and teachers and to increase their conscience which will finally result in the rejection of authoritarian forms of teaching.

Freier and Hortin's credo is that every human being is capable of looking critically at the world in a dialogical encounter with others. Given an active, participatory role in education, a student should perceive his or her reality and be able to deal with that reality with confidence and dignity (ibid.: 176).

At this stage it is useful to recall the key concepts so far discovered regarding visual literacy and assemble them to define further directions to explore and to focus on: people can learn how to think (Hortin) and it is recommendable that they are taught to do so from the beginning of their childhood (Armstrong). Visuals are capable of stimulating and enhance such thinking and learning process (Hortin), and this is particularly strong in children⁷³, although this is a skill developing throughout a life long process. Moreover visual training, when joined to other disciplines (Gardner), can help creating a rich environment for a more complete maturation of ideas.

⁷³ *Seeing comes before words. The child looks and recognises before it can speak* (Berger, 1972: 7)

Visual thinking presumes a critical use of visual information, it implies seeing rather than just looking. Forester (1989), suggests the art of listening rather than just hearing as an analogue tool which guarantees us to actually understand interactions, take part in them, share ideas and respect reciprocal positions, build relationships and express concern. Listening allows and facilitates understanding, therefore it is the first step forward critical, meaningful and useful action. It is clear that visual literacy is a skill that can be developed, as an ability to make sense of visuals, understand and "listen" to them, an action that presupposes a mind open to challenges and confrontation.

In this context seeing that leads to understanding is suggested to be linked to listening as making sense of other people's concepts, and this in turn will lead to the improvement of something that has been seen as inappropriate.

2.2.4 Television and books as means of development of visual literacy

Between 1950 and 1956 television became part of a significant percentage of American households and by 1955 it was present in a majority of American homes (Debes, 1972).

This phenomenon is relevant to the development of communication as a tool through which visual language could reach a vast audience; among those experiencing television children were the most affected by the new communication standards. This development has intensely influenced the level of today's visual literacy.

Parallel to television, there was a vast production of magazines and books, which based a large part of the messages they delivered on visual images. Good examples are *Life Magazine* with its single and sequential use of pictures and *Look Magazine* with its in-depth visual essays, also newspapers with their increasing use of a variety of pictures.

It is relevant to notice a wide interest in the use of film-making⁷⁴ as an educational tool in schools, and in general the use of visual-based educational programs for

⁷⁴ Some examples of the practice of using the teaching of film-making at college and high school level are discussed in the section on meanings and interpretations of visual literacy.

relatively non-verbal young people, *as students involved in visual literacy projects sense a new power, a new language facility, that they haven't felt with words* (Fransecky and Debes 1972: 7).

2.2.5 The official "date of birth" of what is called visual literacy: the H-4⁷⁵ course on photography and the foundation of IVLA

Debes and a group of 4-H leaders skilled in photo-journalism and visual communication in the United States, created a new program called 4-H Photography. Published in 1961, the work became the largest program of photographic instruction in the world. The main concern was visual languaging, and 100,000 young people were involved (Debes, 1974). Parallel to this, the first results of the influence of both television on children and the use of visual tools in educational programmes encouraged a group of researchers on visual languaging to join forces. From 1964 to 1966 Debes worked at Kodak on the definition of a "visual vocabulary" enhancing the creation of a complete "visual language" allowing a full communication process. In 1966 the term "visual literacy" was defined by Debes who used Kodak as the fulcrum for the development of the visual literacy movement through the magazine "*Visuals Are A Language*", which began publication in 1967.

It is interesting to notice the composition of the team working on the magazine: Debes, the editor; Fisk, a screen educator; Nelson, an artist and visual communicator; Fransecky, an English teacher; and Ball, an educational writer. Their interests, linked by visual literacy, were related to education, society, communication, and youth.

⁷⁵ 4-H is a youth and adult education program for the understanding among people of the world through assistance, education, exchange and training programs. It was born in the late 1890s throughout various American States, as an organisation primarily concerned with improving agriculture production and food preservation. Today programs range from country study and community 4-H international projects to international exchange and training opportunities for 4-H members, alumni, volunteer leaders, families and professionals. 4-H stands for: My Head to clearer thinking; My Heart to greater loyalty; My Hands to larger service; and My Health to better living; for My home, my club, my community, my country, and my world. URL: <http://www.4h-usa.org/>

The same group of researchers called the First Conference on Visual Literacy in 1969; this date marks the foundation of the International Visual Literacy Association (IVLA) and the start of other research groups using visual language mainly as an educational tool for children with problems in learning and speaking.

2.3 Conclusions: when visual literacy can help action

From the above discussion, it resulted that when images, but more in general the visual domain, are approached according to certain rules and sequences, they can help the development of people's levels of visual literacy. This can, in turn, work as another way to collect information, organise them and address them to specific goals. Considering reasoning as a process aimed at achieving goals, an appropriate use of visual signals can facilitate the thinking and reasoning processes.

More precisely, the sequence of tools and steps to follow (visual vocabulary and rules), will require first of all to develop and train visual capacities and skills. As shown⁷⁶, this can take place through a study of the basic visual elements, such as colour, mass, line, texture, shape, points, value and of the design principles, such as balance, variety, unity, movement, depth, harmony.

It is then fundamental to become familiar with such a visual vocabulary, therefore training in applying it to situations of increasing complexity should be carried out. At this stage aims and goals can guide the process of visual thinking; these can be adapted to any circumstance, as shown in the examples from the Ontario Institute for Studies in Education of the University of Toronto and from the Department of History at Cleveland State University, Ohio.

Since this a form of reasoning that involves the use of visual as a source of information, the rules of normal reasoning are still valid. Among these, taking care of different points of view different from the one chosen, inferring only what the

⁷⁶ The examples of visual literacy tutorials and exercises from the Pomona College, Claremont, California and Kent State University show examples and suggestions on which information should be provided and how to provide it in the very first stages.

evidence implies, checking inferences for their consistency with each other and identifying the assumptions which lead to the inferences and verifying them.

If the examples described have shown how to develop a way to think through the use of visuals, then the following step regards how to transfer it to general situations, i.e. how to make assumptions from the information collected (meta-cognition). This implies becoming aware of one's own process of learning, developing strategies based on this awareness and finally choosing strategies to apply all that, within certain learning situations and conditions.

It has been demonstrated that *vision cannot be absolutely perfect and infallible as the knowledge we get produces a high level of hypothesis and increment of the info available from our eyes* (Gregory, 1998: 10). In modern societies, the control upon people by the external objects is always less direct, hence the necessity of developing a new process capable of making the best out of the information derived from such external objects, and in the case of this research, the built environment.

As will be described more in detail in chapter 3, also men's *relation with the environment* takes place in phases (Lang, 1974): the first is environmental perception - the perceiving and gathering of information from the environment through purposeful actions within the environment. The second is environmental cognition - the thinking of and relating together the inputs perceived; this phase undergoes the influence of group membership, culture, the physical environment and personality. Finally, evaluation and spatial behaviour, the output responding to what has been learned. For Lang *behavior is neither totally determined by the physical environment nor does it exist without reference to its spatial context* (ibid. 93).

If visuals can help reasoning, and if reasoning, visual literacy and our approach to the built environment take place through similar sequential phases, then it is reasonable to think that the structure and the way of functioning of visual literacy can be applied to the study of the built environment. This would make such a study a process based on observable and connected stages, where flexible but reproducible patterns could be established, diffused and adopted in different circumstances sharing a need, willingness or interest in making use of different perspective on physical environmental issues.

From the definitions on visual literacy reported, the main research fields involved result to be theories on visual perception, that is the study of the fundamental visual elements and principles and of the physical processes involved in visual perception. Then, the use of the technology to read and represent visual imagery. Finally, education, as an integrated approach of different disciplines (verbal, visual, manual) to produce capacity of reading, analysing and making visual images. To link visual literacy and the study of the built environment, such fields must be related to issues more specific to the latter; among these, the attribution of meanings to the built environment, the factors influencing environmental perception, cognition and behaviour. Finally, the outcomes should be linked to architecture and public art.

Visuals have been demonstrated to be rich carriers of meanings and experiences; the interpretation, use and reaction to such images, then, can be helpful in understanding what would cause misunderstanding and incomprehension when just verbally communicated. The study and research of meanings associated to visuals in fact can provide immediate, direct and spontaneous results that not always verbal communication can offer. Hence, visual literacy and the skill of communicating and learning through images, when critically developed, trained and practised, if linked to the skill of critical listening (Forester, 1989), could assure an improved and richer interaction between groups discussing on, in this case, the meanings and values carried through the environment.

To see how this could happen, it is necessary before to clarify the object of action; this implies studying how people's interaction with the built environment takes place, and it will be carried out in chapter 3.

CHAPTER 3 ENVIRONMENT-BEHAVIOUR STUDIES AS INPUTS OF THE PARTICIPATORY PROCESS

The evidence that resulted from the two previous chapters is a need for user involvement in the design process; on the base of a particular approach to the study of the relationships between man and the environment, the thesis suggests to start such involvement in the very early stages of design activities.

The argument is that user involvement at the early stages of the design process could have a significant impact on its whole creative process as well as on the post occupancy period, by reinforcing consensus, organising ideas and increasing the acceptability of the decisions taken. The involvement at the early stages of design suggests that the consensus of a very large number of people would be considered, and this might incur two major risks. In practical terms, the process might be very expensive and time consuming; regarding its substance, it might not be informative enough. User involvement should be productive and representative, based on issues significant to the whole range of users that will, in the future, make use of the outcomes of the design process.

The thesis focuses on the physical, and in this specific case the built, environment and in particular how it can be made more respondent to the needs of its users. The first concern then is to identify the environmental characteristics, together with other societal and personal factors, that can affect such interactions. This will be done in three phases, which consist in studying first how people perceive such characteristics; secondly, how they make sense of them and thirdly, how they evaluate them. These three phases constitute the study of environmental behaviour information.

Such information must be used to guarantee that the design process is more respondent to specific contextual characteristics; the results of these three phases, will be the identification of a range⁷⁷ of environment-behaviour factors, but only in

⁷⁷ Just a limited number of factors has been analysed, those considered more significant for the study of the urban form for local communities.

general terms, that is, they won't be context-specific. The next concern will be to give to such information a practical value, by making such factors observable and useable. The second step therefore consists in identifying ways to obtain the same information from specific user groups, that is to identify the techniques capable of gathering responses to those factors that can affect user interaction with the physical environment (obtaining environment-behaviour information). The final issue to be addressed is how such research can be applied in specific case studies, and to organise the information collected within "action" processes which are aimed at developing "higher thinking capacities" and maximise the co-operation of community groups in the use of limited resources. The issues on the techniques to identify and quantify the significant environment-behaviour factors and on the question how to apply them in specific contexts will be covered in chapters 4 and 5 respectively; this chapter discusses the current findings concerning man-environment interactions.

The processes described in this chapters and the information provided are targeted to an 'average' reader and not to professional psychologists. Such data will in fact serve as an informative base to conduct experiences in participation; they are not aimed at continuing the debate on environmental psychology or at developing new theories on environmental perception and/or assessment.

3.1 The significance of the visual qualities of the physical environment to people

Despite the new technological capacities to traverse the world at high speeds and in a short time - which menace to reduce places to no more than particular geographical locations, just a matter of specific experiences - places cannot be simply considered as points of geographical interest. They can, in fact, reveal something about human ways of being in the world (Michael Hough, 1990, cited in Stefanovic, 1998), as Bachelard's "The Poetic of Space", suggests.

I am the space where I am. Bachelard (1958: 47, cited in Stefanovic, 1998).

3.1.1 The importance of visual environmental quality to perceivers

A variety of studies on subjective responses to environments indicate the importance of the aesthetic dimension of environmental qualities: Canter (1969), Hershberger (1972, 1974), Lowenthal (1972), Russel (1988, in Nasar, 1988), Kaplan & Kaplan (1974, 1988), Groat (1988), Bourassa (1991), Dias Lay (1994), Hubbard (1994) are just some of the studies concluding that *individuals respond to their surroundings in highly evaluative ways and that visual quality is important* (Nasar, xxiii). The effect of environmental quality is sometimes taken for granted in studies suggesting recommendations for new developments or describing existing housing estates (Sherman, 1988).

In particular, Canter (1969) found that for both architects and non-architect the main factor in response to simulated environments was an aesthetic one, the degree of pleasantness. Many of Hershberger's studies (1974), based on the identification of different meanings that users' groups attribute to the physical environment (Hershberger, 1972), deduce that the environment cannot be used in absence of such meanings. In a study to characterise how people identify the everyday outdoor milieu Lowenthal (1972, in Broadbent, 1980), used a grid method to identify semantic evaluative parameters and found that aesthetic qualities are ranked highest among those used to evaluate spaces. Russel (1988) attributes modalities of people's use of the space to its effective appraisals, that is its affective qualities. Kaplan & Kaplan (1988) relate environmental evaluation to a cognitive process influencing two dimensions, pleasure and interest, deriving from an interaction between physical elements and their properties, and the process to analyse them.

Talking about contextual compatibility Groat (in Canter, 1988) refers to Crozier and Chapman (1984) who discuss the area of experimental aesthetics including as part of its concern the cognitive process in the perception of art forms.

In reference to Costonis (1982), Bourassa (1991) defines the aesthetic response as combination of the reaction to 1) symbolic meanings, 2) non-sensory aspects of the environment, 3) the environment's sensory attributes. Among these, the symbolic aspects (of the environment) are more significant than any canons of visual beauty.

In a research conducted in Brazil on the performance of environments through the study of outdoor spaces Dias Lay (1994) discovers that the users' perception of visual appearance facilitates or resists the creation of positive collective images of the site. This affects also the evaluation of the environment by making it desirable and easy to understand.

In a study on diverging evaluations on the built environment by planners and the public Hubbard (1994) notices that both groups tend to express evaluations using aesthetic terms although planners relate them to more physical and relational parameters, while the public relates them to more symbolic ones.

Sherman writes *...people admire, love, respect and generally respond positively to beautiful things; they are rarely indifferent, and even more rarely hostile. In Easterhouse, a Glasgow overspill estate, one of the few public objects to gain respect and remain undamaged is a splendid mosaic mural...it is art that makes life, interest, importance...and I know of no substitute, whatever force and beauty of its process* (Sherman 1988: 9).

From the above, it results that the visual quality of spaces is significant to people; the research adopts this assumption as the basis for the establishment of a process involving users in design.

A second assumption is that, if visual environmental quality is significant to its perceivers, it will affect their attitudes towards the environment itself. This is both an incentive and the starting point to identify the methods and the framework of a participatory process: the fact that environmental qualities affect perceivers is also the reason for supporting and encouraging user involvement in the design process.

The question that needs to be answered is how significant the effect of environmental qualities on behaviour is and what aspects of them play a major role in this process. A lot of research has been conducted both to demonstrate the existence of environmental affection on behaviour and to identify its characteristics.

3.1.2 On the effect of environmental quality on human behaviour

The importance of the visual quality of the physical environment on human behaviour and well-being has been the object of a large number of research projects. Empirical studies by Maslow and Mintz (1956); Blumer (1969); Berlyne (1971); Newman (1972); Lang (1974 & 1994); Lynch (1960); Rapoport (1977); Rapoport (1980); Baxter, Acker, Kuller and Newman in Mikellides (1980); Sanoff (1986); Hiss (1987); Broadbent (1980); Nasar (1989); Neary, Symes, Brown, (1994) Bell (1994), are just a few of them. Through their work these authors have constructed evidence that physical cues can have a social connection, stimulating some reactions and inhibiting others. Some examples will explain this.

One such example is mentioned in Broadbent (1988). In 1927 researchers from Harvard University conducted studies for Hawthorne electric Company in Chicago; among the experiments carried out, one observed the behaviour of five girls (too small a sample) employed to assemble - within a test room - telephone parts over a period of eight weeks. The aim was to discover how, when the normal circumstances of work were suddenly changed (the test room did not allow any contact with former colleagues of the five girls), working conditions could lead to fatigue. The girls were selected under specific characteristics: two of them were friends and therefore expected to be co-operative. The physical conditions of the test-room were also monitored: temperature, humidity, lighting conditions varied. Regular observations - the observer was acting as supervisor - over the eight weeks revealed that three factors were influencing human behaviour, and in the specific case the productivity of workers:

- The sensory environment, i.e. the characteristics of the room;
- The people interacting;
- Other people observing the experiment.

The experiment seemed to conclude that, other than the physical environment, other characteristics were also influencing the behaviour of the girls.

An experiment by Maslow and Mintz's (1956, cited in Broadbent, 1988) was aimed at investigating the effects of physical environments on people's judgements. A

group of 32 students in psychology were required to rate pictures of people on a scale of adjectives organised in terms of energy, well-being, fatigue, unpleasantness. The 32 tests were carried out in 3 rooms of different characteristics (beautiful, average, ugly) and repeated over three weeks, so that each respondent would be monitored on the answers given in each room. The results obtained demonstrated an effective link of the answers to the quality of the environment they were given in: respondents in the "beautiful" room would provide more accurate answers and their ratings would be higher than those given in the "average" and "ugly" room.

Anthropologist Hall, (1966, cited in Broadbent, 1988), studying proxemics, identifies components influencing people's preferences on the use of space, in terms of distance (intimate and public), visibility and interactions.

Discussing environment affecting behaviour, Blumer (1969), introduced the concept of "symbolic interactionism" that occurs in three phases (ibid.: 164):

- *Human beings act towards things on the basis of the meanings these have for them;*
- *The meanings of things are derived from the social interaction process;*
- *These meanings are modified through an interpretative process used by people in dealing with the things they encounter.*

From this derives that the meaning of things is not their intrinsic property but it is something that is attributed to them by people as a reaction to these properties.

Therefore Rapoport (1982) points out that there is a risk regarding interpretation of environment as carrier of meanings: that of encoding (attributing meaning to environmental features) and of making sense of them. Since the ways of decoding meanings derive from the culture that creates them, meanings will have group characteristics; it follows that meanings can enhance shared reactions.

A substantial amount of research has focused on the constancy of ways of expressing evaluations among groups, through empirical studies on preferences, responses, .

Berlyne (1971) has demonstrated that the character of visual stimuli influences behaviours such as attention, time of observation or choice.

Newman (1972) cites aesthetics –image and milieu- in public housing as affecting the sense of community and crime.

Kuller (in Mikellides, 1980) demonstrates that a long-term exposition to poor environment could affect people's reception of stimuli, reactions and thinking.

Rapoport (1982: 13) writes that people react to environments in terms of the meanings the environments have for them. The meanings attributed derive from cultural and functional processes, which are linked to some extent to the culturally shared concepts of aesthetics.

Lang states that *the patterns people chose for their habitats are mainly based on the associational meanings those environments have for them* (1994: 330).

Mikellides (1980) refers to the "Wall-Game", an article by Alida Baxter which appeared in the *Herald* at the end of the '70s. Baxter, a house-wife talking about her experience of life in a multi-story European flat, described the forced changes in her family's life style due to the environment they were living in, whose anonymity and low standard materials were the cause of major adaptation in the routine of the family. This is only an example but the characteristics of the multi-storey building described correspond largely with multi-storey buildings all over Europe. Lack of identity and anonymity (...*we know our neighbours' name because we receive their wrongly-delivered mail*; *ibid.*: 22), lack of privacy due to the use of low cost and low quality materials or badly organised spaces are considered among the major problems.

Alida Baxter's article presents a case of *breaking the social conventions* and of adaptation of the personal behaviour, habits and communication system to factors external to the private routine which intensely affected the normal life of the family leading to a kind of neurosis.

Wilson (1996), in a study on the influence of architectural education on formulating preferences for architectural artefacts, demonstrates that the criterion at the base of

students' selection of preference was their architectural style and the related aesthetic properties rather than any other functional or technological factors⁷⁸.

From these examples, it seems evident that the environment has influence on behaviour; nevertheless, despite the much larger publication to prove the existence of a dependence between space and behaviour, it is not possible to take it for granted.

None of the named studies has reached a definitive conclusion of the existence of a kind of determinism between the environment and human behaviour. All conducted studies have tried to prove this connection through empirical tests, but the existence of a "necessary" dependence has never been and is likely never to be, proved, as human behaviour is, for its own nature, affected by too many subjective factors.

Generalising the findings of similar researches would be risky, as Mikellides (1980: 9) explains, when he presents a list of theoretical assumptions from different research findings about people's response to environmental stimuli, for instance:

- *Introverts have higher privacy standards than extroverts;*
- *Red and yellow are more exciting and blue and green more calming colours;*
- *Crowding results when there is lack of space;*

He then provided a list with the opposite results:

- *Introverts have lower privacy standards than extroverts;*
- *There is no difference between the 2 sets of colours and the sensations they stimulate;*
- Etc

The second list contains those answers deriving from his tests, but they tend to be against the common expectations. This example wants to stress the arbitrariness of environmental psychology studies though without underestimating them; they have

⁷⁸ The 150 people interviewed in the project were students of Architecture from two different Universities in England and in Scotland; in particular, an equal number of students from the two universities was examined for

empirical value. Since it is seemingly impossible to define universal rules to establish a legacy between people's perception of the space (and consequent reactions to it), and the space itself, it becomes fundamental to analyse such perceptions as comprehensively as possible, to leave only little to chance.

The thesis proposes to respond to this difficulty through the involvement of users in the design process, which is based on a comprehensive study of processes capable of describing the development of environmental evaluations and preferences, and a rather inclusive analysis of factors that can influence them.

Nevertheless, it must be acknowledged that not everyone agrees with the idea that environmental properties can affect human behaviour.

Arguments against the environment affecting human behaviour.

Although the dependence between environments and people is very often so strong that it cannot be ignored, it is relevant to be aware that there are some that totally disagree with the idea that the environment can affect people's needs and living habits.

They consider such an idea insulting to the human intelligence (Mikellides, 1981: 21). Some others sustain more moderate positions considering the environment as just inhibiting or facilitating some of our routine behaviours until the human capacity to adapt enables us to re-establish control on the situation⁷⁹.

each year of their curriculum, to identify incremental and observable variations in their response.

⁷⁹ Housing for the poor often, vandal-proof radiators and walls *may convey a self-threatening message of inferiority of residents and may actually challenge them to destroy these objects... The environment can convey negative information that may adversely affect behaviour* (Bell 1994: 400-401). This statement calls for the choice of a position between what is known as Architectural Determinism, Environmental Possibilism and Environmental Probabilism. Architectural Determinism *holds that the built environment directly shapes the behaviour of the people within it*; Environmental Possibilism *views the environment as a context in which behaviour occurs*; Environmental Probabilism *assumes that while an organism may choose a variety of responses in any environmental situation, there are probabilities associated with specific instances of design or behaviour* (ibid.: 416). Probabilism considers, at the same time, both our culture and the physical attributes as active properties to the environment, confirming what Norberg Schulz calls "sense of place" and describing the concept of "living a place". At the same time it confirms Maslow's hierarchy, without anyway imposing a "necessary"

Hovey (1928 in Broadbent, 1988) studied the effects on people's behaviour of distracting environments, by asking 171 people, divided in 2 groups, to undergo intelligence tests in 2 different rooms, one very quiet and the other very noisy (rumours, sounds, visual distractions). He demonstrated that the results obtained didn't change as a result of the different environment.

3.2 Conceptualising the physical environment

In order to identify a participatory process based – as suggested by Sanoff (1992) - on design research⁸⁰, it is fundamental to treat two major issues: first, to locate man-environment relationships in contexts, therefore brief interpretations of the concepts of place and environment are provided. Secondly, to present the field of research of such interactions: environmental psychology and environmental aesthetics. On the bases of this, a framework will allow the present research, which focuses on man-environment relationships, to form a basis for the implementation of participation.

The question is how to “study places”, in order to understand human ways of being, when the net of men-environment relationships is subject to rapid transitions.

3.2.1 The physical environment and people

According to Rapoport, a place can never be clearly defined, it is a concept inclusive of too many elements and interactions that make it vague by nature; when definitions are found, they are always illogical (Rapoport, 1994, cited in Stefanovic, 1998).

Therefore a more focused definition of environment as the setting of human actions is needed. Rapoport (1982), defines the environment as a set of *not random or casual, but patterned relationships between things and things, things and people and people and people* (ibid.: 11). As culture does, environment influences people's lives

relationship between people's needs, actions and situations, but leaving a level of freedom related to one's personality.

⁸⁰ As defined in chapter 1, design research provides information on people's relationship with the environment, and in particular on the processes of perception, cognition of and reaction to it.

and the relative settings for their actions according to schemata working as templates⁸¹.

Rapoport distinguishes between *general* environments, where the above relationships are organised mainly on spatial terms; and *well designed* environments, where they are organised in response to four principles: space, time, communication and meaning (Rapoport 1977, cited in Rapoport, 1982).

Defining communication as happening among people, and meaning as communication from the environment to people, Rapoport stresses on the importance of environments in *reflecting, modulating, challenging, controlling, facilitating, and inhibiting* communication through its physical characteristic and the related capacity of conveying meanings (Rapoport, 1982: 181).

Similarly, Ray Studer (Studer, cited in Lang, 1994) defines the environment as the result of the interaction between people, their actions and space. In particular, the environment is the *place of their performances* (ibid: 185).

We cannot be without being-in-place. To be is to be in-the-world. The way in which you are and I am, the manner in which we humans are on the earth, is Buan, dwelling. (Heidegger, 1971: 147, cited in Stefanovic, 1998).

The conceptualisation of human environments must be aware of such complexity, as well as being sensitive to the technological and societal changes; it must be dynamic and flexible, as suggested by Clitheroe, Stokolos and Zmuidzinas's (1998, cited in Gärling, 1998).

Nevertheless, the physical environment, being a main source of information (together with the social environment), as well as *the test of our adaptive capacity by the organism* (Lang, 1974: 92) requires study and understanding.

The phases through which information is obtained and personalised from the environment –which one can call gathering, processing, use and response- have strong repercussions on the environment itself which therefore becomes more than

⁸¹ Behaviour settings help explain this concept: they are consistent patterns of behaviours occurring in specific places and transcending individuals (Bell, 1996:140)

just a number of physical properties. Its conceptualisation then, cannot be just a *phenomenological cumulative description of discrete objects* (Stefanovic, 1998: 33), but it must be inclusive of their interactions and consequences, that is of its effects on perceivers; it must be inclusive of all Rapoport's four categories.

Environmental psychology is the discipline that links individuals, their space and the interaction between them.

3.2.2 The fields of research on the visual aspects of the physical environment

Environmental psychology is described as the study of the interactions between individuals and their physical environment (Gärling, 1998). Bell (1996), providing a similar definition, adds a specification to the concept of relationships, calling them “molar”, that is comprehensive both of the stimulus and of the perception of them, not purely as a cause-effect set, but as a process depending on various factors. Among them are environmental stimuli, past experiences of the perceivers, their ability to impose structure on the landscape, their auditory and olfactory associations with the landscape and their personal characteristics.

Environmental psychology also, assumes that as the environment influences behaviour, so can behaviour have influence on the environment⁸².

Environmental psychology deals with four major sets of features: places, persons, psychological processes and environmental problems. According to Gifford (1998), most of the research developed so far focuses on the last three because, to some extents, they allow a generalisation of findings, while places, being spatially determined, tend to deny such possibility. Gifford's suggestion for further research in man-environment studies, is for a dynamic model where units can be studied, taking into account specific places, even if contextually defined⁸³. He is not far from Clitheroe, Stokolos and Zmuidzinas's idea (1998, cited in Gärling, 1998) of a

⁸² The research of this thesis is based on the assumption that individuals are affected by the physical environment, and tries to develop new ways to control such affection and shape action on it.

⁸³ The same concern for the contextual role is expressed by the so-called contextual perspectives in psychology (Stokolos, 1987), which will be described in chapter 5.

dynamic and flexible way to conceptualise human environments and from others mentioned later. Dealing with the four sets of features at the same time could be a way for environmental psychology to achieve Rapoport's well designed environments based on the four principles of space, time, communication and meaning.

Fundamentally, all these recommendations respond to Sanoff's idea (1992) of linking the study of man-environment interactions to their perceivers through an active approach, using methods that can be generalised and adapted, that is that are flexible. The value of this approach is its dynamism together with its specificity, to the point that it can be the base for participation⁸⁴, where participation is a generally practicable, but context-based process.

This thesis focuses mainly on understanding environmental preferences and on how to use them to optimise design. Environmental aesthetics is a branch of environmental psychology more focused on design solutions; in fact, it studies how perceivers are affected by environmental experiences *...to translate that understanding into environmental design judged favourable for the public.* (Nasar, 1988: xxi). Nasar defines it as

...the merging of two areas of inquiry: empirical aesthetics and environmental psychology. Both areas use scientific methodologies to help explain the relationship between physical stimuli and human response. Empirical aesthetics is concerned with the arts (painting, music, literature and dancing) and environmental psychology is an applied field concerned with improving the quality of the human habitat. By combining a concern for aesthetic value, a problem focus on human habitat and a methodological emphasis on applicability, environmental aesthetics becomes a unique research field (ibid.: xxi).

⁸⁴ Participation of users in the design process. The methods to study man-environment interactions are several, to the point that –using certain combinations of them- it could be possible to have a rather complete view on man's interaction with its city, district, neighbourhood, street, house, flat, public space, building appearance, presence of natural elements and much more.

Traditionally, the concept of aesthetics has been linked to elitist meanings, to the point that talking of aesthetics in relation to the city seemed to be more a form of perpetuation of control rather than an attempt to guarantee good design (Alcock, in McGill, 1997). Alcock identifies three forms of urban aesthetics in the history of city form; the first he calls the subjective approach or "aesthetics of proportions", and is based on the idea that viewers respond appropriately to visual stimuli of high aesthetic quality. This implies that people's aesthetic quality is similar, but it also recognises that there are differences in "taste", distinguishing between good and bad among groups of observers. The second form of urban aesthetics is what Alcock calls "aesthetics of the plan" (ibid.:43); it is based on the objective value of geometrical arrangements of forms and supports classical ordering rules as well as geometrical hierarchies. Its limits consist in the universality of the values it proposes; the question is who guarantees they are understood, accepted and most of all responsive to needs, culture. The third form of urban aesthetics is "artistic aesthetics", an elitist and abstract expression of ideas through urban design; for Alcock this is the clearer form of designers' domination with social effects and repercussion.

Alcock suggests therefore a fourth form of urban aesthetics, which he calls "social aesthetics", based on the importance of subjective experience of space, and aiming at taking care -in meaningful and constructive ways- of such experiences.

This idea is supported by the study on the relevance of aesthetic aspects of the city form for perception, as well as by the studies suggesting how different groups of people have different parameters to experience and express aesthetic evaluations (Groat, Hershberger, Hubbard, Wilson). Alcock's social aesthetics can then be seen a response to Nasar's idea that, with regards to decisions about the visual quality of large-scale facilities in the environment, these are often domains of design professionals. They both come to the conclusion that *...Because these facilities are experienced on a regular basis by large numbers of people, they may have a substantial influence on the evaluative image of a city* (Nasar: xxiii). This research embraces this definition of social aesthetics.

Environmental aesthetics, as a field of research, offers several approaches to the study of environmental preferences, mainly distinguishable in perceptual/cognitive and affective approaches. Both the approaches to the study of evaluations and the

methods identified to measure such evaluations can help design, as Groat (1979) shows.

After finding and classifying relevant differences in the perception and evaluation of Modern and Post-Modern architecture between architects and non-architects, Groat suggests these criteria to be not very useful if considered as a “surrogates” of the users’ criteria in attributing meanings to buildings. According to Groat, it is necessary to realise the conceptual contribution that clients, users, and the public - as well as architects - can make in the process of giving buildings meanings.

This leads to the suggestion that environmental aesthetics studies should work as the “base” to provide material of discussion for the development of comprehensive solutions significant to both professionals and lay-people.

Environmental aesthetics becomes functional to researchers and designers⁸⁵ seeking for universal principles that can explain commonalties and differences in response to environmental stimuli as base for improving their co-operation with their clients; it is therefore *more than the monitoring of volatile tastes... The consideration of the theoretical underpinnings of environmental aesthetics can enrich the questions, solutions, and approaches considered by researchers, designers, and educators in the field of environmental-design research* (Nasar 1988: 3).

⁸⁵ The interest in understanding the principles of aesthetics has a long history in philosophy, design and research. From the early Roman principles (canons of beauty, as named by Vitruvius), the medieval “golden section”, up to Modernism (Le Corbusier’s “modular man”) to more recent interpretations of the term, the concept of aesthetics included always more comprehensive connotations (Nasar: xxii). From being a prescriptive formula of ‘golden rules’, aesthetics comprehend nowadays a large spectrum of manifestations more based on environmental, psychological and more practical factors. Recently, a new interest in aesthetics influenced both theory (Berlyne, Wohlwill, Bourassa), practice with designers as Venturi and Rapoport who used aesthetics to criticize modern architecture and propose different solutions, and public policy in considering aesthetics as important and in need of quantification for environmental decision making (Stamps & Nasar: 1997).

3.2.3 The plan for a context-responsive and dynamic approach to the study of man-environment experience

At this stage an attempt is made by the researcher to organise a framework for further research on environment-behaviour information as discussed in what follows.

Several approaches have been made to find out how people get acquainted to the external environments. Among them, four approaches have been selected to organise the framework of action of this thesis.

The first approach considers perception as a cognitive, selective, relative and dynamic phase during which information are collected and stored within a so-called “immediate memory” (Gibson, Fleming, Gattengo). All these theories stress the strong role of past experiences on perceivers.

The information gathered during the perceptual phase, are then processed in two further steps called cognition and evaluation (Lang, Nasar, Amerigo and Aragonese).

The second approach, is based on Kelly's Theory on Personal Constructs (Kelly, 1955); according to it people have theories on how things happen, derive hypothesis and finally test them, either to validate or invalidate them.

The third approach is the research on the role of aesthetic aspects of the city form on the behaviour of perceivers (Canter, 1969, Hershberger, 1972, Lowenthal, 1980, Russel, 1988; Kaplan & Kaplan, 1974; Bourassa, 1991; Nasar, 1988, 1998; Berlyne, 1971).

The fourth approach stresses that aesthetic evaluations differ among groups (Groat, 1979; Hershberger, 1972; Hubbard, 1994, 1996; Wilson, 1996), and that therefore evaluation from expertise cannot be considered representative of a wider group of users.

From a combination of the above issues, one can derive that people have opinions on environmental settings and that they develop such opinions under the influence of personal, societal and physical factors. Therefore, one can argue that designing environments on standard taste cannot lead to satisfactory solutions; instead, design

should be based on the recognition of a complexity of interpretations, and developed on their research, thought within organised and observable units.

To work on such units, one can refer to the large amount of empirically tested findings and of theories on aesthetic evaluation available, as well as to a detailed array of methodology for their measurement.

This leads to the idea of using these premises and tools to frame the research of those environmental evaluations in a way that allows representative groups of users to define them, according to Kelly's constructs, and compare them among groups.

Apart from suggesting this action framework, the available literature is also a tool to enrich and complete such group/personal constructs, providing findings from similar research, at times theoretical, at times empirical. The expected outcome is a complete range of environmental experiences to be used to address better design and its solutions.

The suggested framework is complex, because it includes a large number of different variables (physical, personal, societal factors, the derived construct); therefore it requires to be developed within controllable settings. The environment, and in this case the built environment, is the "set" including such flow of information and experiences; two major components and their interactions constitute it: contents and behavioural settings⁸⁶. Contents are the physical structure of the environment and its properties, while behavioural settings are consistent patterns of behaviour occurring in specific places and transcending individuals (Barker 1968, Wicker, 1987 cited in Gärling, 1998); behaviours and the relative physical setting together serve functions and human needs (Studer, cited in Lang, 1994). The knowledge of behavioural settings allows predicting behaviours in specific environments.

People's evaluation of the physical environment will depend on the interaction between these two components and the personal characteristics of individuals. The

⁸⁶ Referring to behavioural setting as the "human counterpart" of the physical space may appear reductive but, if one sees them as the result of previous man-environment interactions, when physical and societal affection have determined reactions, then they can be considered representative of people's adaptation to their environment.

processes leading to perception, cognition and evaluation will be briefly described in paragraph 3.3, with a particular focus on the factors occurring during each phase.

The factors affecting environmental evaluations

A model that gives an idea of this complex net of inputs/interactions/reactions, is proposed by Clitheroe (1998) who studied the interactions of individual or group behaviour with the socio-physical-temporal settings in which they occur and identified four major groups of factors affecting a response by an individual or a group⁸⁷. These are personal factors, formal social factors, informal social factors and physical factors.

In particular, Clitheroe includes in the group labelled "personal factors" personality traits, interpersonal dynamics, attitudes and communication processes. Among the formal social factors, he includes the relatively stable relationships between individuals or groups, a group's standard approach to problem solving, or a hierarchical authority structure.

Informal social factors include relationships between individuals or groups; finally, physical factors include aspects of the natural settings, manmade structures, objects, surfaces and ambient conditions, as shown in Figure 3-1 (ibid.: 106).

⁸⁷ These four groups of factors exist independently from what he calls prompts, that is *the starting point of an intentional or unintentional psychological and/or behavioural process* (Clitheroe, 1998: 105).

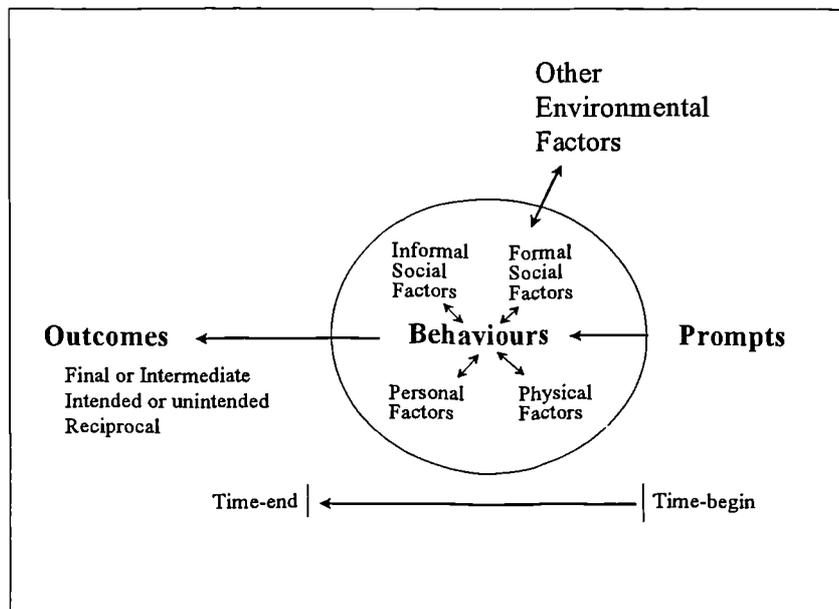


Figure 3-1. Clitheroe's representation of the context (Clitheroe, 1998: 106).

Nasar (1989 in Altman, 1989) suggests a framework to organise parameters similar to Clitheroe; the relationship between physical, cognitive and evaluative/behavioural aspects is probabilistic, and affected by contextual variables, which he divides in socio-demographic and environmental variables; to these is linked experience. In this model, environmental affection has two levels of dependence: an immediate one, where perception and cognition depend on physical stimuli; and a mediated dependence related to socio-demographic variables. Experience plays a major role in this second level of affection, but influences perception and cognition as well.

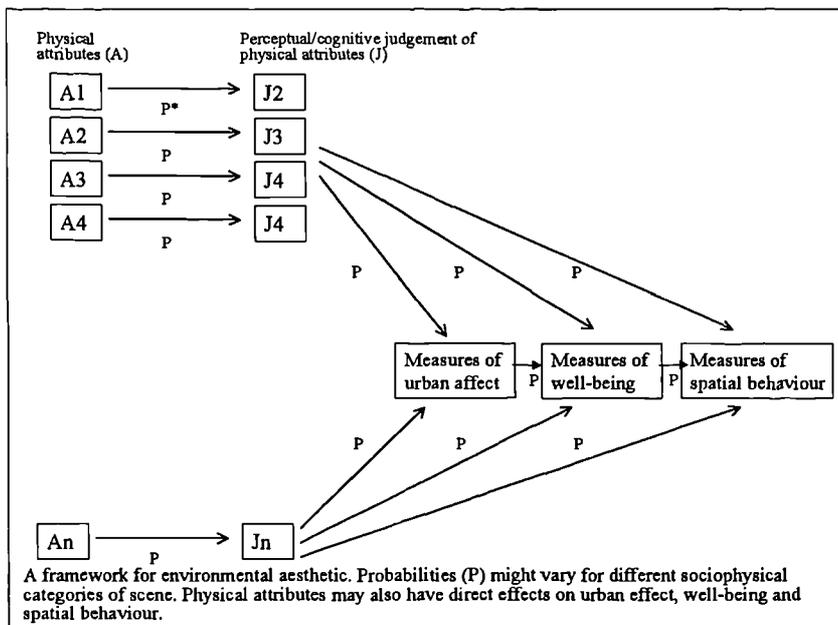


Figure 3-2. A framework for environmental aesthetics (Nasar, 1989, in Altman, 1989: 37). Probabilities (P) might vary for different socio-physical categories or scenes. Physical attributes may also have direct effects on urban effect, well-being, and spatial behaviour.

Each of this level of environmental dependence can be measured; perceptual/cognitive aspects can be measured through physical dimensions, whereas evaluative aspects require forms of measurement more sensitive to perceivers' feelings related to physical surroundings.

The two models presented have focused attention on the major factors one has to consider when studying environmental affection and on the forms of measurement one needs to consider when evaluating it.

Canter (1977, in Canter, 1988) suggests the approach to the study of actions in relation to places to be active, based on a clear awareness of roles in specific contexts, and dynamic in recognising and adapting itself and its procedures to changes in patterns and meanings of places and activities.

Due to the main interest in user participation, this research is trying to respond to Gifford's suggestion to link the study of man-environment interaction to specific contexts. This necessitates that spatial locations are given to the above processes.

The context

The objective of this study is to be process-aware, context-specific and variables-sensitive, therefore it is necessary to organise the whole perceptual, cognitive and evaluative process within observable units.

Therefore, such units need to be identified; in particular, it is possible to consider the environment as a large milieu enveloping human behaviour⁸⁸, behavioural settings as consistent interactions between individuals and space; situations as less structured interactions in time and space. Similar to Gärling's definition (1998), context can be seen as the container of special combinations of environment, behaviour settings and situations.

Despite such inarguable interconnection with human behaviour though, the environment maintains its own identity, as Brislin (in Altman, 1980) notices, pointing out that it exists not only in people's head, but also physically, independently from the organism that perceives it.

Several methods and approaches have been developed within the field of environmental psychology and aesthetics to search for environmental attributes having affect on human experience.

An action programme to study environmental affection

To respond to a net of interacting factors such as those described by Clitheroe and Nasar, it is necessary to consider a complex set of issues including objective characteristics of the physical environment, cognitive processes and analytical methods of measurement. Furthermore, it is suggested here to treat each of this parameter as interrelated to the others. The question is how. The study of the above parameters as interrelated is possible prior the choice of a temporal sequence is chosen among the various theoretical suggestions explored.

⁸⁸ The environment is the *space of people's performances*, according to Studer (cited in Lang, 1994: 185).

Moreover, the choice for a temporal sequence of cognitive stages implies a series of substantive and logic dependencies among them; on this the approach adopted by this thesis is based.

If phases are related, and follow an order (the “goodness” of the order can be changed and, of course, the choice can be argued) and once such an order is established, it is possible to adopt evaluative methods to study each phase and measure its outcomes. Also the evaluative methods will be related among themselves and each of them will depend on the outcomes of the previous ones (basically, to each phase corresponds an evaluative method).

The objective for combining phases and evaluative methods is to join their reciprocal strengths and contain their limits; this applies mainly to the methodological phase⁸⁹.

The following two sections (3.3 and 3.4) contain respectively 1) an interpretation of the perceptual-cognitive process that are chosen to explain how people come to evaluate and act towards the environment, per stage, and 2) the meanings people attribute to physical settings and the environmental, personal and societal factors that can affect such perceptual-cognitive processes. The combination of these two phases leads to the selection of 3) methods for the analysis of such factors⁹⁰.

Finally, a combination of evaluative methods is proposed, combining the analysis of factors, using a sequence of methods based on the cognitive process identified, and which follows the principles of visual literacy.

⁸⁹ Regarding cognitive processes and the analysis of factors affecting perception, this investigation mainly refers to the so-called theoretically derived methods, while it refers to the empirically derived ones when considering the research of a combination of methodologies (see paragraph 3.6). Therefore, only in the last case a rather high level of specificity is possible, allowing to consider specific problems and the limits of each method. On a theoretical level instead, advantages deriving from single theories are easily assessable, but just at a prescriptive stage, the one suggesting the use of some of them rather than others, and in a certain sequence rather than another.

⁹⁰ The analysis includes procedures of both assessment and appraisal. The selection of methods is presented in chapter 4.

3.3 People's preferences: is it a matter of mind eye or, taste?

The first question to be answered is why the environmental cognitive process should be studied in order to understand man's behaviour in the environment. According to Fenton (1988: 102) *cognition affects preferences and preferences determine behaviour.*

To be able to control environmental behaviour, therefore, two major issues need to be studied: first, how information is derived from the physical environment, and secondly, how preferences are derived from such information.

Regarding the way information is derived from environments, it is generally agreed that it is a three-phase process, including perception, cognition and evaluation/behaviour. Regarding the way in which preferences are derived, several theories have been developed, each of them attributing a different role to some factors, either physical, personal or deriving from experience, each linked to a particular phase of the whole cognitive process.

In the following, perception, cognition and evaluation are analysed with particular reference to urban settings, and the formation of preferences is discussed. Then, a classification of the main factors considered particularly significant in affecting preferences is analysed.

3.3.1 Seeing, remembering and acting as premise for preferences

Fleming (1979) distinguishes between pre-attentive, peripheral, wide-angle vision and attentive, foveal, narrow-angled vision as the two phases during which the process of vision takes place. Although pre-attentive vision is a pre-requisite of attentive vision, the latter is a process of analysis and synthesis of the data acquired in the first instance by the attentive vision, and both are strictly related and vision moves constantly between the one and the other. From them, the number and type of information perceived depend, and from such information, depends the process of analysis and the significance that follows from it. It is interesting to know that a similar process takes part in the auditory system (*ibid.*), but this issue and the reason for the interest in the process will be discussed later.

Lang (1974) cites Simon (Newell; Shaw; Simon, 1958) who describes cognition as an information-processing process. In particular, he identifies three types of memory: immediate, acquisition and permanent memory. Inputs from perception enter the immediate memory and remain there stored for a very short time; then, they pass into the second bigger acquisition memory, when data become familiar and are sorted into representations. Finally, after having been conceptualised, such information enters the permanent memory and there is stored long-term, recalled and used in several different circumstances.

Several “strategies” can explain how data are selected and stored and pass from one memory to the other through thinking and learning phases; they will be described later on. Here instead, it ought to be stressed the importance of understanding this process in relation to design.

Simon has noticed that, once the strategy is selected, problems are solved by making use of the data collected rather than the people and their interest. The role of individuals is, however, still fundamental because the types of strategies that can be chosen depend on the capacity to create a repertoire of choices and sequences and the selection of strategies depend on their evaluative capacity. Strategies, therefore, depend to a large degree on experience, and experience depends on the data collected, organised and stored within immediate and permanent memories. The environment, and in our case the physical environment, is the source of the data that enter our memory; research has studied the strategies that individuals use for problem-solving when concerning environmental experience. In this context the focus of attention is on some of them, as well as on the environmental data on which they are based. Then, context specific cases are studied to identify strategies and characteristic factors that individuals use to solve problems in those specific situations⁹¹.

⁹¹ Strategies and factors that are derived from literature will not distinguish between types of perceivers; therefore it is assumed that they are equal for different groups, or that the differences have already been levelled through a process of completion similar to the one that will be used here. In the case of context specific examples instead, a distinction is made between spaces and respondents (perceivers); therefore, there might be strategies and factors, which differ with regard to age groups, professions and according to the respondents involved. Generally, work

The aim is to increase the number of both strategies and factors that people normally have and use as repertory, presenting them with a larger number of alternatives. For instance, if one is working with a community group and has to evaluate a square (its qualities for that community), one needs to look at its environmental characteristics that enable/ disable certain behaviours to take place in that square (including also cognitive behaviours). This will be done, in a first instance, as an analysis of the strategies and factors that this specific group uses to relate to that square⁹². In a second phase, groups will be presented with other arrays of strategies and factors, derived from previous research and literature. In this way it is hoped to increase the choice (of strategies) that they will have available. According to the definition of visual literacy given in chapter 2, such a wider array of alternatives, together with new thinking methods, should improve the group's "levels" of visual literacy. In a certain sense, it is argued that such levels are determined by the amount of choice that people have available in their memories, that is of the repertories from which they can derive and select strategies of action for problem solving. Therefore, improving levels of visual literacy does not mean giving someone the "gift of seeing things", or to appreciate shapes and colours when he/she is not able to do so. It is the view sustained in this thesis that visual literacy will stimulate people with a larger repertoire of information on which they can base their behaviour in relationship to the environment.

3.3.2 Environmental perception

Try to think of some place that is very special to you. Perhaps this is a place where you would like to take a close friend if he or she has not seen it. Perhaps this is a place known only to yourself, or perhaps the location is famous. It may be wild or urban, but what is most important is that it is special to you. Now that you have pondered for a few moments, consider a question. Do you think

will be carried out with community groups of different age groups, and professionals (architect and planners working with that specific community group).

⁹² The method that will be used to discover this information will be described in chapters 4 and 5. Here it suffices to remind that such personal templates of data correspond to Kelly's personal constructs (Kelly, 1955).

the methods of science and empiricism can capture all the perceptual experiences that make the place meaningful? Even if they could adequately describe all the physical characteristics, would they be able to understand the influence of this place on you? (Bell, 1996: 66).

Bell, quoting Ittelson defines environmental perception as the process through which we perceive the environment, involving *cognitive (thinking), affective (emotional), interpretative and evaluative components, all operating at the same time across several sensory modalities* (1970, in Bell, 1996:66).

From these quotations two issues arise. First of all, the observer's approach to the environment is very rarely purely contemplative; in most cases it is based on associations, comparisons, selections of elements, and related to activities, experiences and expectations. The second issue, which is linked to the first, is the question of how to evaluate⁹³ perceptions.

Regarding the nature of perception, Fleming (1974) is of the same opinion: for him, perception of the physical environment is relative, selective, dynamic and is a function of the stimulus, experiences, interests and needs⁹⁴ of the perceiver.

According to Gibson, meanings already exist in the environment and they are *readily available to an appropriately attuned organism mobile enough to experience it.*

From this he concludes that the interpretation of the environment is direct rather than interpretative and that *perceptual patterns convey much information quite directly – without elaborate processing by higher brain centres* (Gibson, 1950, 1966 quoted in Bell 1976: 23).

⁹³ Historically, perceptions were considered as the *response of human sensory systems to simple stimuli* (Goldstein, 1989, in Bell). Traditional approaches to the study of perceptions were the phenomenological (based on subjective reports of personal experiences), empirical (based on the analysis of observable events) and biological (at least part of what we perceive is based on the simple mechanical transmission of nervous signals). More recently, perceptions are interpreted as the *processing of complex meaningful stimuli*, and several approaches have been developed to study them.

⁹⁴ With this regard, a useful definition of “need” can be the one proposed by Lang (Lang, 1974: 84): a need is *a force in the mind that organises perceptions, cognition, and behaviour to transform an existing, unsatisfying situation.*

Gibson's perception of the environment is holistic, that is he assumes that human beings perceive the properties of the environment not as distinct but interrelated within meaningful patterns. What he calls *affordance* is the sum of fixed properties of the object people perceive. Bell, referring to Gibson, explains this assumption as follows: *if an object is solid and rigid, if it is raised off the ground, if its top surface is fairly horizontal to the ground, then the object affords sitting or sittability* (ibid: 24). Affordance implies an evaluation of the environment in terms of its functions and of the interaction that the perceiver can have with it. Gibson deduces that affordance is a species-specific perception; what has affordance "shelter" for a bird (a tree) has affordance "food" for a giraffe.

The whole process assumes more relevance in relation to Gregory's theory on perception. He states that vision is an intelligent process and perceptions are built hypothesis, a 'bet' on what is the highest probability that a thing is in reality the way we perceived it. ...*Our behaviour is conditioned by the constant anticipation of what will probably happen, rather than by the reaction to external stimuli* (Gregory, 1998: 8)

The more important our past experiences, the symbols culturally connected to objects, the meanings traditionally linked to them, and the visual stimulation we undergo, the less 'material data' are needed to see (Gregory: 14). But such experiences, symbols, meanings must be developed and trained.

It derives that *vision cannot be 'absolutely perfect and infallible' as the knowledge we accumulate produces a high level of hypothesis and increment of the information available from our eyes* (ibid. 10).

In modern societies the control of people over the external objects is always less direct; it is accordingly necessary to develop a new process capable of making the best out of the information derived from such external objects.

This is the interpretation of perception that this thesis adopts; but there is a problem. If environmental external inputs soon assume constant and shared meanings – at least for groups of the same cultural-social background - to the point that their perception automatically produces information and starts more complex cognitive processes, then the perceptive stage is fundamental, and needs study, training and exercise.

Already Gattengo, (cited in Dondis, 1970), referring to visual literacy, and in particular to the aspect of perception linked to vision, defined visual perception as a simple and natural act that provides infinite information, without producing civilisation. That is, perception is only one step in the more complex process of cognition, understanding and choosing.

Nasar (Nasar, 1988), on the same issue, points at the importance that the symbolic association between the built world and the meanings people give to it: ... *because elements of the built world and meanings have become associated in situations that people find rewarding, they continue to seek these associations. The initial deterministic relationship between function and form is carried on as a symbolic association because the form has come to provide people with a sense of identity* (Nasar, 1988: 25).

For Lang, the physical environment is *a nested set of spaces to get to know which we build a map of them* (Lang, 1974: 87). If experience is a factor that plays a role in understanding space, attention must be paid to produce a cognitive approach modelled on what Lang, quoting Ittelson's, defines as *multimodal environments* (Lang: 87), referring to the fact that they provide redundant information (for all the senses) of phenomena. The redundancy of such information highly affects a space's perception, and consequently, cognition.

3.3.3 Environmental cognition

Without further analysis of the data acquired, environmental perception would tie perceivers to the present situation; environmental cognition then is the process of developing plans projected into the future on the base of all those factors underpinning perception, that is all experiences, expectations, physical properties and needs. The development of plans is carried out with the help of strategies; these are based on issues of concern to people; cognitive maps are the conceptualisation of such plans.

Cognitive maps

Cognitive maps have been widely studied by psychologists, behaviour researchers, planners, geographers, and are defined as *sketchy, incomplete, distorted, simplified and idiosyncratic personal representation of the environment we experience* (Bell, 1996: 79), where everything is organised in terms of places (spatial limits), spatial relations (distances, inclusions), and travel plans.

So, *cognitive maps are a very personal representation of the familiar environment that we all experience* (ibid.: 80); as a way to organise the information perceived, they have significant influence on our reactions to environmental settings in determined circumstances.

In organising information, cognitive maps establish hierarchies, orders and roles among features, functions and meanings, trying to reduce complexity to manageable levels, where the amount of inputs is controllable. The nature of cognitive maps then responds to a fundamental human need, that of orientation which is, according to Sanoff's definition, the need of *...knowing our relative position in a place* (Sanoff 1991: 73). Orientation highly affects the capacity of enjoying and appreciating novelty, procuring ease and encouraging action and exploration. However, lack of orientation, which can be due to an overload of unorganised variety or a too limited amount of variety, produces discomfort, irritation, anxiety, insecurity. To this regard, Canter demonstrated that the relationship between individuals and their surroundings influences their evaluation of physical elements (Canter, 1960 cited in Ramadier and Moser, 1998).

When concerning clients' participation in design, studying users' cognitive maps, with their features and links, can be useful to designers and urban planner in understanding a) the effects of actual environmental situations on people and b) provide bases for new design.

Being based on perceptions, and being perceptions dependent on several factors, physical, personal and societal, cognitive maps will largely vary in their nature.

Bell (1996) distinguishes among sequential maps and spatial maps, the former informing about the predominance of elements sequentially encountered, the latter

about the emphasis one sees in the spatial organisation. Shifts in the qualitative differences between them can be indicators of the level of maturity of one's knowledge of the environment. (ibid. 82). With a more focused concern for city perception, Ramadier and Moser (1998) distinguish between 'propositional' and spatial representations, where the former is a response to the symbolic meanings of physical elements⁹⁵, and the latter an 'analogical' representation which develops from such symbolic interpretation. Spatial representations follow symbolic representations, as the 'analogical' application of propositions (ibid).

If one accepts this double nature of environmental representation, and moreover if one accepts Ramadier and Moser's suggestion that spatial representations depend on propositional ones, then one must derive that such representations will largely vary among individuals. This means that such representations will be subject specific and not only context specific⁹⁶.

The question is therefore whether within such varied representations there are some consistent and persistent factors that can help understanding and making use of such representations. If so, the next questions are which variations in such factors determine different responses and affect the resulting representations, and how the knowledge so achieved can lead to more user-sensitive design.

Many authors have dealt with these issues. The first studies (Trowbridge, 1913 and Tolman, 1948, cited in Bell, 1996), were fundamentally focused on finding, with the help of experiments, whether such maps were actually present in animal and human minds (Bell, 1996: 80). The first attempt to use cognitive maps to improve environmental design was carried on by Kevin Lynch (1960). Lynch, urban planner, focused his research on studying how people's feelings regarding environmental

⁹⁵ Also for Ramadier and Moser, environments are the product of the interaction between physical space and individuals that act in it, and are perceived through schemata based on cultural, societal and personal factors (Ramadier and Moser, 1998). Therefore, the role that symbolic meanings have in the formation of a cognitive representation of settings cannot be forgotten.

⁹⁶ With regard to client participation in design, studying cognitive maps of users, with their features and links, can help designers and urban planners understand a) the effects of actual environmental situations on people and b)

quality could be used to affect urban design; he studied such feelings through the structure of mental maps of the city that people carry in their mind. But this just concentrates on the physical structural elements of the city, leaving out other cues, such as use cues.

He analysed through enquiries and surveys the main elements that people use to create such maps, the process by which they are generated, and thirdly the use people make of them in their everyday life. Five elements were found to constitute such maps: paths, edges, landmarks, districts, nodes; their combination enhances orientation and way finding, what he calls legibility, and identification, which he calls imageability. In particular, *imageability* of a place is the sum of ...*properties (shapes, colours, arrangements) the place has that allow the observer to create in his/her mind strong environmental images of it* (Lynch, 1960: 9). The higher the imageability of a place, the more people will observe with interest and attention at it; the more people will look at it, the more they will get familiar with it. This closeness allows people to experience a sense of place, which will then lead them to what Hiss (1991) calls simultaneous perceptions⁹⁷.

Many studies following Lynch's work tested his findings and the persistency of the five elements in respondents' view. These have been conducted in extremely different urban situations (United States, South America, the Netherlands, Italy, the Middle East, Paris, Mexico, Spain); all of them have confirmed their importance and frequency of use (Appleyard, in Broadbent, 1980).

provide bases for new design. But one must be aware that cognitive maps based on perceptions and perceptions depending on physical, personal and societal factors will largely vary in their nature.

⁹⁷ Tony Hiss writes on *simultaneous perceptions* (ibid.: 3) as the fundamental tool people have to relate themselves to the external world. This form of perception, which operates at any time, allows us to experience any place, as it has a mechanism that allows us to "drink" in whatever is possible from the surroundings.

It is not exactly a sixth sense, but it uses all senses to perceive at the same time.

For simultaneous perceptions to happen, we need a place that seems comfortable and interesting, where the information presented to each sense is complex but not overpowering; if these conditions are present at one time, our senses will be prepared for what is called sensory alertness. The question is what makes a place comfortable and interesting. A wide range of factors, physical and non-physical, contribute to do so; some characteristics are discussed in this chapter.

Among them, the case study of how people see Milan and Rome, by Francescato and Mebane (in Dows and Stea, 1973), confirms the importance of Lynch's five elements among people's common tools to "experience" the city. Moreover, it identifies the existence of discrepancies in urban cognition according to education, age, and in general to the way these tools are used. This confirms once more that people are influenced both by the physical and the social environment; it also suggests that environmental layouts and environmental information should be sensitive to specific and variable situations. Francescato and Mebane's suggestion is for understanding *the nature of what we see and the way we perceive it* to be able to influence, with design, human feelings and thinking (ibid.: 98).

The consistency of some elements for the creation of mental maps is accordingly widely accepted⁹⁸; their interaction and properties determine legibility and imageability, which then effect spatial cognition and in a second stage, evaluation.

It is now necessary to discuss the variations of the characteristics of the "anchor points", which generate different responses and representations; these characteristics can then be grouped to create a catalogue of physical and symbolic facets that can be useful in design.

Urban cognition

Urban cognition is connected to Lynch's concept of imageability, and refers to the knowledge of where one is (orientation) and how to get to desired destinations (way-finding) (Nasar in Altman, 1989).

What needs to be established is what affects the choice of some anchor points rather than others, or makes them more imageable than others.

It has been proved that the quality of imageable elements varies, (ibid.: 35). Harrison and Howard (1972) demonstrated that appearance, location and meaning affect the

⁹⁸ The fact that these five elements are physical, does not deny Moser's idea of propositional representations preceding the spatial ones. To these elements, meanings are attributed, which reflect degrees of importance, and give to Lynch's elements the value of *anchor point* (Wapner, 1981; Holding, 1992 cited in Ramadier & Moser, 1998: 308) or *reference point* (Sadalla et al, 1980; Holding, 1992 cited in Ramadier & Moser, 1998: 308).

choice of imageable elements. In a study on the characteristics of the urban features more frequently mentioned as anchor points among respondents from Ciudad Guayana⁹⁹, Appleyard (in Broadbenet, 1980) found that these are both physical and emotional; he then focused his attention mainly on their symbolic value.

In particular, he found three characteristics of both buildings and spaces, and some of their relative properties, to have major impact on observers' attention and memory; these were:

- *Distinctiveness* (imageability), influenced by intensity (what Appleyard calls measure of presence) and *singularity* of the contour, size, shape, surface, quality of elements.
- Visibility, influenced by location, focus of action and measured by the *viewpoint of intensity* (number of people who might regularly see it), the *viewpoint of significance* (its presence at important decision points or points of transaction on the city's circulation system) and *viewpoint immediacy* (distance and centrality in the line of view).
- Role and inferences were considered as constituting the *community significance*, a dimension measurable by its use intensity, use singularity and by its symbolic, political, economic, aesthetic or historic significance (ibid.:140).

Other studies have confirmed the factors identified by Harrison and Appleyard, together with building significance, accessibility from street, uniqueness of style, naturalness (mainly for buildings).

In conclusion there are, accordingly, some space-buildings aspects that have a main role in imageability, such as exposure, significance and visual contrast; they are anyway highly affected by specific socio-physical milieu (Nasar, in Altman, 1989).

⁹⁹ A group of 300 respondents from 4 residential areas of Ciudad Guyana were interviewed; the first set of questions provided socio-demographic information. A second set –requiring a list of relevant points or places in the city- provided a list of 122 elements (buildings, establishments, landmarks). The final part required to draw maps of the city with the salient features named and another with the route from one point to another of the city with the relevant features encountered.

Imageability affects notation and memory, but does not necessarily determine appreciation, that is positive feelings towards what is observed. Still, imageable features are those towards which it should be possible to guide evaluation, because they are easily identifiable, and more used as references.

When concerning the built environment, the study of the properties affecting evaluation, and consequently determining preferences, is the domain of environmental aesthetics.

3.3.4 Environmental evaluation

Environmental aesthetics, as a discipline, has been discussed in paragraph 3.2.2, when identifying the study fields involved in the present research.

Environmental aesthetic is concerned with issues that generate the urban environment that will be judged favourable by the public. Moreover, it studies the scientific methodologies to explain the relationship between physical stimuli and human response. This research will focus specifically on urban form. Environmental aesthetics then becomes urban aesthetics.

Urban aesthetics

Referring back to Nasar's framework for environmental aesthetics (par. 3.2.3), a *probabilistic interaction of physical, perceptual/cognitive, affective factors and of psychological well-being and behaviours determine affective (positive) responses to the physical surroundings (Nasar, 1989). It seems then that, manipulating the visual characteristics of the physical environment can be a way to affect perceptions and behaviours, even within a complex net of probabilistic relationships among all the factors interested.*

To act on visual properties and determine desired side effects on affection, well-being and behaviour, a lot of research has been conducted, with the aim of identifying how these three aspects depend on such visual properties. In particular, studies on the interconnections between aesthetic properties and affection are carried

out through assessment and appraisal methods¹⁰⁰; between aesthetic properties and well-being through observation of psychological well-being; and between aesthetic properties and behaviour through direct observation. Nasar notices (Nasar, in Altman, 1989) that the majority of efforts have been concentrated on the first interaction (aesthetic properties and affection)¹⁰¹.

Again, this research focuses on this aspect. In particular, when studying environmental evaluation, a major distinction is necessary between those parameters affecting perception and cognition (naturalness, complexity, clarity/order and openness, but also function etc.), and those affecting affection [evaluation, arousal, distress ... (Ward and Russel, 1981)].

A complete analysis of such factors is carried out in paragraph 3.6, with the aim of creating a facet-catalogue of significant aspects to consider when studying peoples' evaluation of urban spaces¹⁰².

A further stage must be analysed. Both perceptual/cognitive and aesthetic evaluations can determine preferences, and the study of preferences can say much on behavioural reactions and well-being states.

3.3.5 Responses to the quality of the visual environment: how preferences are generated

According to Kaplan (in Nasar, 1988), preferences can guide behaviour and learning and therefore it is important to study them. Being aware of preferences related to space can be of major use: it can, for example, explain how cognitive maps are formed, why buildings are preferred to others, they can explain behaviour and help

¹⁰⁰ See paragraph 3.6.1 for a definition of assessments and appraisals.

¹⁰¹ While this research focuses mainly on the study of affective factors determining environmental response, (although based on perceptual and cognitive experience), as regarding well-being and behaviour and their relation to aesthetic properties instead, only qualitative and sporadic observations have been carried out in the present research.

¹⁰² Factors and the methods for their assessment/ appraisal will be presented; some of them will be compared with the results found in the experimental phase; those not identified instead will be used to increment the evaluative criteria the respondents have used in our specific cases.

predicting reactions to specific environments, etc. Parameters affecting preferences can be used as indicators of favourable human habitats. In this case, they can address the participatory process increasing, in the long term, user satisfaction.

A first¹⁰³ classification of the approaches developed to explain how environmental preferences are formulated distinguishes on the one side between the "sensation based theories" and the "aesthetic theories", and on the other between the "information based theories" and the "decision theories" (Lang, 1974).

The first group studies respectively the sensations one undergoes, and the aesthetic judgement as determinants of preferences; the second group studies how experience, decision-making processes and choices affect the formulation of preferences (Lang, 1974).

Stephen Kaplan (cited in Nasar, 1988) suggests a way in between these two major approaches. He refers to Zajonc's idea of preferences as not the simple product of rational calculation nor the pure expression of taste; they are instead based on categorisations, assumptions and inferences which can take place both consciously and unconsciously (Zajonc, 1980 cited in Kaplan, 1988 in Nasar, 1988).

Kaplan moves a step forward: for him preferences are *evaluative capacities* to make sense of inputs deriving from the physical and societal environment¹⁰⁴ (ibid.: 63); they are the outcome of a complex interaction between cognition and affect.

The concern of the present research is to understand if the attributes proposed or identified in previous research are of effective relevance to public perception and its

¹⁰³ In paragraph 3.6 a more detailed analysis of various approaches to the study of environmental perception and evaluation is presented, distinguishing among their methods and contents.

¹⁰⁴ The Kaplans (1974, 1982 cited in Garling, 1998) specify that preferences are related to certain levels of complexity of the information gathered, in order to guarantee modest levels of challenge and interest, to the point of achieving levels of balance within the environment. But this is not of interest at this stage; Kaplan's definition of preference as *evaluative capacity* is what counts; on its base environmental perception, cognition and evaluation will be discussed.

daily experiences, when concerning certain types of environmental settings, and in particular the built environment.

However, the major physical, cultural/ societal and personal factors that can affect environmental experience need to be discussed first.

3.4 The way in which understanding, preferences and choices are developed: the meanings attributed to the physical environment are carriers of information

There is an intermediary level between the physical environment on the one side and perceivers' response on the other; it is constituted by the meanings that perceivers attribute to physical objects.

For Rapoport (Rapoport, 1982) people react to environments according to the meaning environments have for them, and the attribution of meanings is a cultural and functional process, linked to some extent to shared concepts of aesthetics. He derives that the environment is a sort of carrier of communication among different groups of users who are bound to have, by nature, culture, education, different understandings of the meanings so communicated.

According to Norberg Schulz (1979), people's opinion about places is mostly affected by culture, personality, social status.

Lang (Lang 1994: 330) introduces the concept of *associational meanings*, that is the effect that the environment we have grown up in and the education we received have had on us. He suggests that these social characteristics have physical-spatial implications on our relation with the environment, which means that people relate to the environment on the base of the meanings they attribute to it.

Recalling the interpretations of environment presented in Chapter 3.2.1, it can be concluded that the environment is the immanent active container of human activities, constantly engaged in two way interactions with its users, constantly co-operating with them and meaning something to them.

Despite such a commonly recognised communicative role, it has been accepted (Nasar, 1988), that the built environment conveys meanings in a subtle way, very

less directly than verbal communication does¹⁰⁵. Consequently, the correspondence between the object and the meaning it conveys must be understood. If symbolic meanings are primarily socio-culturally conveyed, who cannot understand this language will not be able to interpret the environment as the designers have intended it (Nasar 1988:14).

The problem of understanding differences in meanings exists also for those studying people's response to them. In this work we sustain users' involvement in design. It is essential to avoid that researchers superimpose their own meanings on users. The problem of cross-cultural studies¹⁰⁶ then becomes significant (Brislin, 1980). Cross-cultural studies are based on the idea that it is not possible to carry out full environmental research just observing one culture, because no culture, alone, contains all the environmental conditions that can affect human behaviour.

In the same way this study needs to take in consideration the reactions to the built environment by people of different educational and social-economic background in the same culture (for instance users and professionals). Such differences lead to the attribution of different meanings to the physical environment. Brislin alerts researchers to the difficulty of working in cultures with unfamiliar language or communication schemata, as well as on the relevance of the concepts they investigate. Chapter 6 will come back to this point with examples.

3.4.1 Types of meanings

Hershberger (1974, in Lang, 1974), distinguishes among several types of meanings attributed to the built environment, mainly classifiable in 1) immediate, those linked to the use of an object (or environment) and b) derived (symbolic) meanings, those

¹⁰⁵ Chapter 2 has stated the role of visuals as carriers of information and then of communication, in a parallel with verbal communication.

¹⁰⁶ Cross-cultural studies try to assure that environmental assessment carried out by researchers, includes analysis of how such project will affect the culture and the behaviour of people for whom the project was designed (Brislin, in Altman, 1980).

linked to the emotional qualities of an observer¹⁰⁷. Each of them heavily depends on culture, values, experiences and needs; designers find the second group particularly difficult to understand and respond to.

Lang attributes such difficulty to the nature of the meaning itself: defining a symbol¹⁰⁸ as *something standing for something else* (in Nasar, 1988: 13), it is the result of a cognitive process whose meanings depend on what the observer attributes to it. Therefore, it is inclusive of several, not always predictable factors¹⁰⁹.

In particular, he distinguishes between representational and responsive meanings, where the former include presentational and referential meanings and the latter affective, evaluative and prescriptive meanings.

Presentational meanings refer to the recognition of the geometrical form constituting environmental objects, referential meanings mainly to the recognition of their use. Together they represent the first impact of the built environment on perceivers, therefore it is important that they are clear and that there is no misunderstanding between those creating them and those reading them. This raises the question of encoding and decoding meanings in the built environment.

There is a second level of derived meanings, which Hershberger calls responsive, and they include affective, evaluative and prescriptive meanings. The first, affective meanings, are linked to one's internal response to representation, one's emotional response to visual stimulation, and are largely affected by personal experiences and individual characteristics. The second, evaluative meanings, derive evaluations of

¹⁰⁷ This distinction is quite close to Rapoport (1982) when he talks about designers and users as perceiving meanings differently. Hershberger (in Lang 1974: 147) distinguishes between representational and responsive meanings, and suggests that they are linked and sequential (whereby responsive should follow representational); he notices however that in reality the two groups tend to be used independently by designers and users.

¹⁰⁸ A symbol differs from an image, which is the imitation or reproduction or similitude of something and from a sign, a conventional figure that stands for something else (Lang, in Nasar, 1988).

¹⁰⁹ Culture is a system of shared attitudes and symbols common to a group of individuals; within such a system, there are regularities in thinking and behavioural attitudes of individuals. However, a high level of difference among sub-categories of individuals is present, determining sub-cultures within the same main culture [e.g. architects versus lay people; in this case, architects belong to two cultures: the professional and the societal culture (Lang, in Nasar, 1988)].

objects on the base of the emotions arisen in the previous stage, and largely depend on the observer's values and his/her actual purpose of observation. This type of meanings can be found in architectural variables, such as building configuration, spatial configuration, materials, illumination, and pigmentation. Regarding 'spatial configuration', Beck (ibid.: 17) defines five dichotomous spatial variables *as carriers of extremely different associational meanings*: diffuse versus dense, delineate versus open, verticality versus horizontally, right and left in the horizontal plane, and up and down in the vertical one. Nasar refers to Rapoport (1977 cited in Nasar, 1988: 19) regarding the origin of associational meanings: *This type of symbolism is thus beyond the control of the designer; it is acquired over time and through an idiosyncratic occurrence*. Responsive meanings can also be found in non-physical variables, such as the names of places, the activities taking place in them, the past events that occurred in the place.

The third, prescriptive meanings, are those deriving action from the previous ones, that is suggesting how to act in the circumstances suggested by the sequence of previous meanings.

3.4.2 Building meanings, reading meanings

Discussing man's relationship to the environment, Rapoport defines the concept of "activity" by identifying four components:

1. *The activity itself;*
2. *the specific way of doing it;*
3. *Additional, adjacent, or associated activities that become part of the activity system;*
4. *The meaning of the activity* (Rapoport, 1980: 17; 1982: 15).

Architecture, and on a wider scale the built environment, are the product of an activity which can be defined as the "human action in response to the natural environment". The *specific way of doing it* derives from the fact that only a small number of professionals are in charge of structuring and conducting such action through their experience and social-economic and cultural background.

The *associated activities* comprise the whole set of spheres (social, economical etc.) that the process of shaping the built environment can influence. Such influence can be direct (i.e. provision of services and facilities within an estate) or indirect (i.e. influence of the quality of the provision of services and facilities on the community resident in the estate).

The *meaning of the activity* is an idea representing rules and values shared by a specific culture. The *meanings attributed to the environment* can have effects on people.

Since people are different, with regard to culture, education and personal experience, their interaction with the environment is different. When talking of design and participation, two major groups are involved, designers and users.

For Rapoport (1982: 15) these two groups are *very different in their reactions to environments*: designers perceive and react to them on *perceptual* terms (that is according on the object's meaning), while users react to them on *associational* terms. To guarantee communicability of meaning through environmental cues, the designer should know in advance how users will read and react to the environment to avoid misunderstandings.

As mentioned, for Rapoport (1982: 14) and Gregory (1998) people naturally tend to formulate in their minds judgements and opinions on the environment before they specifically start to analyse it. This is a "habit" or natural attitude deeply rooted in people's nature that, unless "modified" later-on (during the personal development into more specific fields, like architecture for example), remains linked to processes of enculturation. This is one of the reasons for the difference of opinions between the so-called experts and the lay-people, and it is connected to the different ways those two groups perceive the environment.

What happens when we see and think differently

Some interesting examples demonstrate the misunderstanding –or different interpretation of meanings- by groups of observers and users, as cited by Rapoport (1982).

Referring to Knobel (1979) Rapoport describes the changes that occurred to a residential scheme at Bentley Wood, where the inhabitants, for no functional or practical reasons, have modified the original design.

Such changes affected the arch in the hallways, the wallpaper, introduced a fireplace with historical associations, a Doric portico, an elaborate front door with decorative handles, and so on. They were considered as a “tragedy” by the designer, who saw in them the *destruction of the sense of equilibrium, the loss of a sense of openness of the house and of the simple, understated entrance* (Rapoport, 1982: 24).

In other cases Rapoport describes the users’ disappointment at comparing modern schemes to the more traditional ones. He then reports (ibid.: 25) people’s comments on a modern house composed of two cubes with a 78 foot long blank wall of rough reddish boards, hardly any window, a flat roof:

Lack of windows recalls tombs... "It's not even a house! You can't call that thing a house! I am damned if I know what you can call it.... The materials are "junk". The residents rejected it as "opposed to normal homes" To the question: "how does a normal home look like?" they answered that it was sufficient inserting windows, a porch and a peaked shake roof" (Crowe, in ibid.: 25).

In both examples users introduce personalising signals. Rapoport points out that by personalising the environment people try to add personal meanings to the “imposed” ones in order to control the product. High levels of personalisation can be both signal of high inacceptance of the product or the opposite.

Hertzberger’s Old People’s Home in Amsterdam, in Figure 3-3, was *designed in perceptual terms by the designer and evaluated in associational terms by the users, who saw the white frame and black in-fill elements in terms of crosses and coffins* (ibid.: 20).

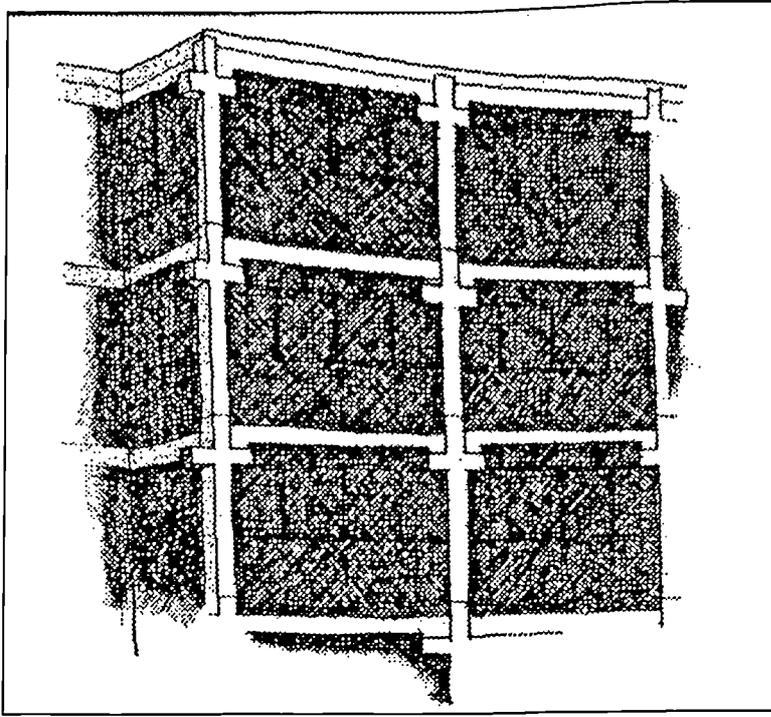


Figure 3-3. Old People's House, Amsterdam (Rapoport , 1982: 20).

Another example is related to how the concept of height (ibid.: 25) has been variously interpreted within years, and how different meanings have been attributed to it.

Height is usually related to “status” and it is common to think that the higher off the ground, the higher the status (Rapoport: 27).

But there are some cases that totally deny such common sense.

In Northern India, for example, the higher the temple the higher the level of holiness it expresses; in Southern India it is the opposite: the closer the temple is to the ground, the higher is the level of holiness connected, as shown in Figure 3-4.

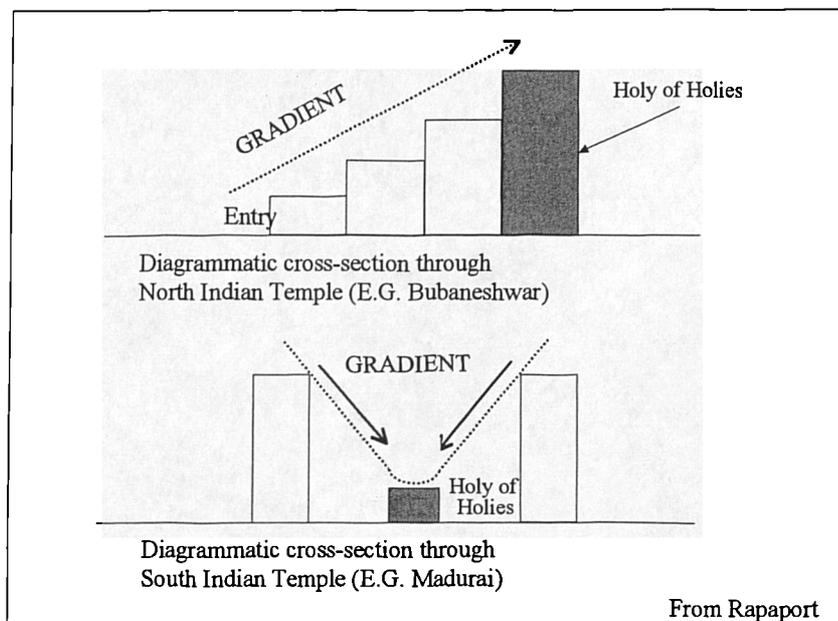


Figure 3.4 North and South Indian Temples (Rapoport, 1982: 108).

In traditional Thailand, commoners always have to be lower than nobles, and no one could be higher than the king. In Chiniot, Pakistan, there is a house built in 1886 which belongs to a noble, where the entrance door is made of two parts. One for the owner and his family who had always to enter on the horse, and one, smaller than the height of a normal person for any other who enters the house, so to push them to bend themselves in sign of submission to the family.

In more recent times, the use of high-rise blocks does not carry any such meaning.

Whilst at the beginning these high-rise blocks were generally accepted because of better environmental conditions and housing standards than those had experienced before, they were soon understood to be sub-optimal for families with children. This, in turn, led to tower blocks, which became prison, symbols of violence and vandalism.

Understanding each other: when architecture talks

Whenever the environmental meanings are clear, comprehensible and recurrent, they easily become part of people's memory and work as reminders of behaviours. As people's relationship with environments is based on interaction, the more the cues are recognisable, the less effort is required from people to set up such interaction.

In the past the built environment was characterised by a large number of cues, which could be interpreted as meanings from large numbers of people; the related sets of behaviours then were quite easily identifiable. Nowadays the number of visual cues provided by the built environment tends to decrease and their identity to be confused. In fact, whenever clarity decreases the number of information provided by the environment should naturally increase, to support the needed amount of references. This phenomenon is called *redundancy*, and consists in the provision of further inputs to “adjust” an environmental deficiency; it happens when the environment is not culture-specific, that is when it loses its peculiarities and tends to be uniform to others (Figure 3-5). The immediate effect of this lack of specificity is called *the disease of our age*, and concerns individuals forced to act without clear referents (Rapoport, 1982: 151).

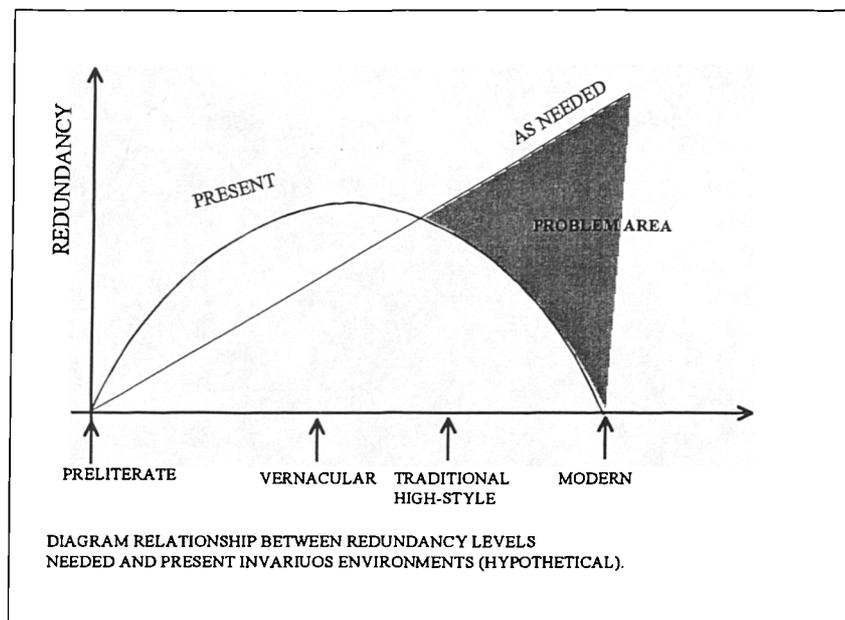


Figure 3-5. A relationship between the effective and needed amounts of visual cues in different periods. (Rapoport, 1982: 151).

If meanings are clear, understandable and consistent, they tend to be memorised and categorised; some researchers have stated that people tend to classify the world within “domains” like nature/ culture, private/ public, men/ women, front/ back, sacred/ profane, good/ bad etc. Similar binary categories have been identified in reference to the environment. According to Olver and Hornsby (1972), within each

polarity the physical cues are organised within 5 categories, that allow people to identify the environment with clarity and on common bases with the other people.

The 5 categories are:

- Perceptible; it comprehends colour, shape, size, position;
- Functional; it describes how the cues are used;
- Affective; it refers to the emotional response (likes/ dislikes);
- Nominal; it is connected to the names in verbal language;
- Fiat; it expresses arbitrariness.

By shaping environments, designers “include”, encode meanings within the objects they create. Interacting with the environment, users decode the visual cues that are provided by the environment, as shown in Figure 3-6; Rapoport’s scheme about the process of encoding/ decoding environmental information describes this process.

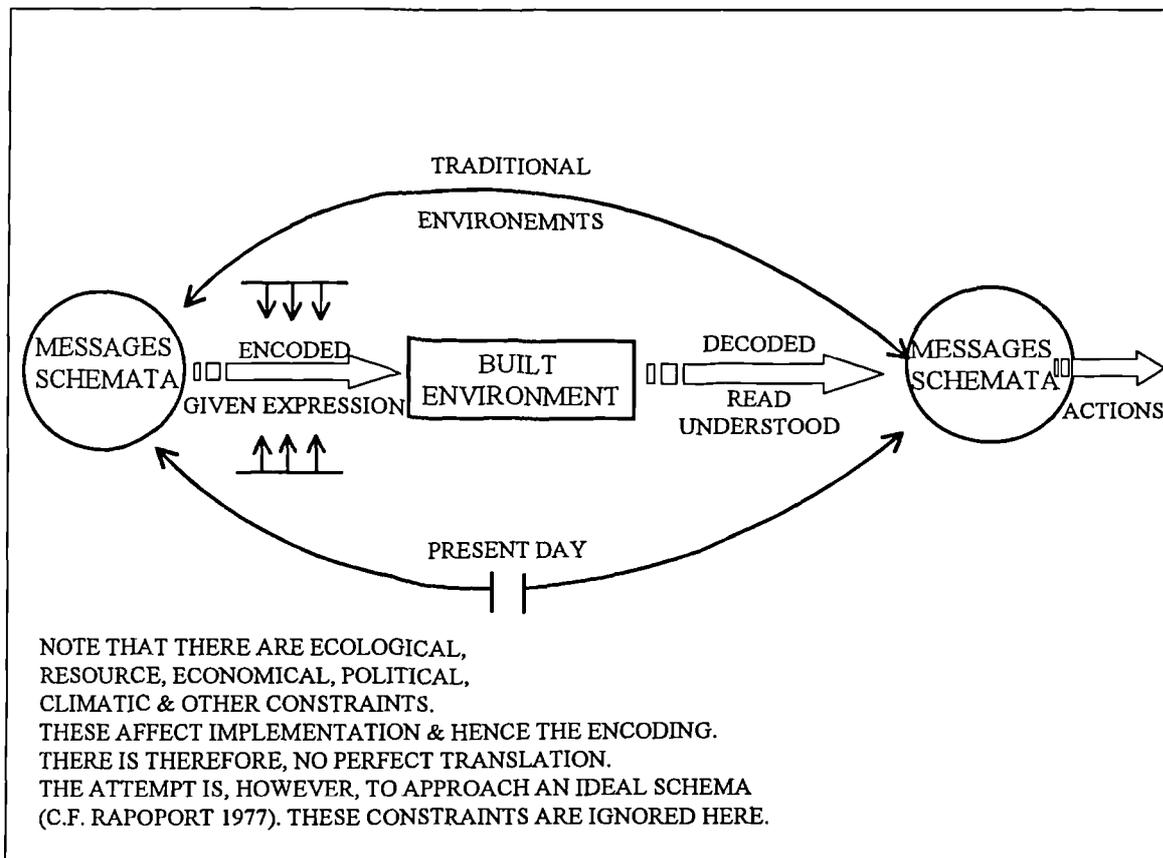


Figure 3-6. Encoding/decoding of environmental information (Rapoport 1982: 82).

According to Blumer's Symbolic Interactionism Theory (Blumer, 1969), the meanings designers encode¹¹⁰ must be representative of the values, preferences and uses of that specific society, because human beings act towards things on the basis of the meanings these have for them.

The question then is, how the encoding process can happen in such a way that the intended meanings can be de-coded. What assures that:

- the meanings encoded will be comprehensible by the decoders?
- the meanings encoded will be significant to the decoders?
- the meanings encoded will be representative of the decoders?

For the decoding process to be exact the encoded meanings will have to be attributed on the base of (1) the perfect knowledge –by designers- of the users' decoding systems, and (2) a real interaction between designers and users, to encode together comprehensive and representative meanings. The first alternative demonstrated to be a failure so far, since rarely the two sets of meanings and consequently the two sets of reactions correspond or are at least compatible (see Hershberger, Groat, Lowenthal, Hubbard, in paragraph 3.2.2, and as will be described more in detail in what follows).

The second alternative presupposes either a constant participatory process where the whole users' range is represented, or the setting up of a methodology of analysis which guarantees the classification of the designers' and users' meanings, with a reciprocal understanding and a related development. The thesis follows the second alternative, which takes up Groat's suggestion ...*Designers must be aware of conceptual contribution that clients, users, and the public- as well as architects- can make in the process of giving buildings meanings* (Groat, 1979: 79).

¹¹⁰ It follows that meaning of things is not their intrinsic property but something that is attributed to them. Since the way of decoding scenarios derives from the culture that creates them, they must have group characteristics, that generates a common response.

3.4.3 Through the mind, looking for meanings: an overview of action

Based on an interest in users' understanding of environmental meaning, as well as of their response to it, this thesis, following Groat's suggestion, will base participatory design on the study of these processes of interpretation.

In doing this, four major phases come up, the first regarding environmental experience, the second the derivation of meanings from such experience, the third the study of methods available for their study, and finally a way to make use of them as inputs for participation. Figure 3.7 summarises this process.

Being interested in users' responses to environmental characteristics, one cannot select –a priori- which particular type of meaning to study; all of them could assume different importance according to the cognitive stage in which have reached. The following combination of study fields, including a classification per method (theoretical versus empirical) and per topic (perception/cognition versus affection), allows a comprehensive overview on factors having a role in environmental response. These include symbolic and physical factors, their interaction, and finally a study on where to find them and how they are generated.

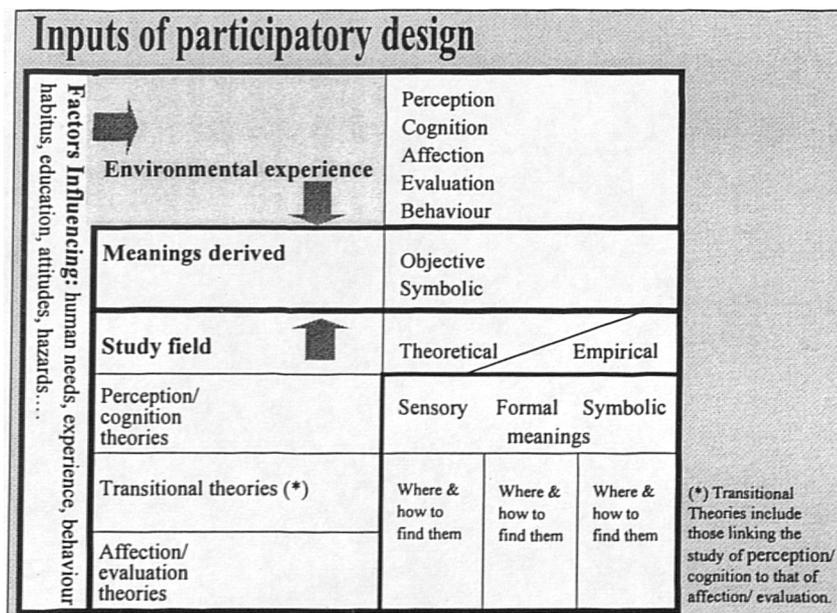


Figure 3-7. The information describing the processes of environmental experience; and overall view including the approaches to their study and outcomes.

3.5 A review of factors affecting environmental experience and determining the attribution of meanings to physical factors

Research in environmental experience studies the factors (cultural/ societal, physical and personal) playing a role in its various phases factors. In paragraph 3.2.3 Clitheroe's and Nasar's systems of factors affecting environmental experience have been described. On the base of such classification, an overall view of some of such factors is now carried out, with a main distinction in personal, societal and physical factors. The classification adopted in this research is flexible, that is, it assumes that the three main categories of factors will always influence each other, and cannot therefore be considered as independent one from the other.

Among the personal factors, human needs, experience, archetypes, personality and personal attitudes are included; the present research focuses principally on needs - presenting three theories on human needs and how they are related to environmental experience.

Societal factors are strictly linked to personal factors, the main link among them being experience; among the societal factors, a particular focus is given to the role of cultural codes and education, and their influence on attitudes and group relationships in environmental experience.

Formal and sensory factors also relate to the two previous categories: geometry, order, complexity, novelty, sameness and differences are objective properties of the physical space, but the way they are perceived and how people make sense of them responds to personal/cultural schemes.

As a consequence of the interaction of these factors places assume identity, character and connotations that influence how the same spaces are perceived. A reflection on the consequences of this process concludes the paragraph and leads to the study of the research approaches that tackle the mentioned factors.

3.5.1 The question whether human needs can affect environmental experience and whether they limit or enhance it. Three perspectives: Maslow, Max-Neef and Coeterier

The environment plays an important role in the degree of satisfaction of human needs: it can support them, satisfy them, being an impediment to them. When experiencing environmental situations people have expectations, much depending on their personal condition at that moment, as well as on their status and on their more general social characteristics. Whatever their present conditions, they play a major role in the whole perceptual cognitive process, affecting the amount and type of environmental stimuli perceivers can absorb, how they process them and to what purpose; the satisfaction of their human needs therefore affects environmental experience.

Maslow's hierarchy can structure research on environmental experience

Maslow formulated one of the first theories on human needs; for him, people's actions are determined by personality and urges, which he calls needs and organises in a scale of complexity as follows.

- Biological/Physiological needs - air, food, drink, shelter, warmth, sex, sleep.
- Safety needs - protection from elements, security, order, law, limits, and stability.
- Belonging and love needs - affection, and relationships within the work group, family.
- Esteem needs - self-esteem, achievement, mastery, independence, status, dominance, prestige, managerial responsibility.
- Cognitive needs - knowledge, meaning.
- Aesthetic needs - appreciation and search for beauty, balance, form, etc.
- Self-actualization needs - realising personal potential, self-fulfillment, seeking personal growth and peak experiences.

For Maslow, needs manifest themselves according to the above hierarchical form, which indicates their temporal sequence. Needs must be satisfied in the given order;

needs of levels 1 to 4 are deficiency motivators; needs of levels 5 to 7 are growth motivators and relatively rarely found. According to Maslow, individuals must satisfy each need in turn, starting with the first, which deals with the most obvious needs for survival itself.

Only when the lower order needs of physical and emotional well being are satisfied, do people become concerned with the higher order needs of influence and personal development.

Conversely, if the things that satisfy our lower order needs are swept away, we are no longer concerned about the maintenance of our higher order needs.

What determines one's belonging to one rather than another level of Maslow's scale is one's socio-economic, cultural and personal condition; generally, the lower the need, the lower the socio-economic level. The physical environment is a "background" factor that enhances the other conditions.

Despite this classification, levels are not strictly determining people's behaviour and concerns: belonging to a low socio-economic level and having to deal with the related basic needs does not imply that someone cannot be interested in or concerned with higher level needs. Still, Maslow's classification provides a useful template of priorities for the study of environmental experience, but should not be taken as determinant of interests and behaviours: the physical environment constantly communicates messages to perceivers, despite their status. What changes from level to level, is the degree of awareness of such meanings, and the individuals' possibility and inclination to deal with them (Lang in Nasar, 1988).

A lot of research has demonstrated the relevance of needs satisfaction for people's interaction with physical settings. Harrison (in Broadbent, 1980) refers to Gulick's (1963) concept of socio-cultural association to derive that social space would differ for social groups. Fried (1966) demonstrated that poor populations suffer extreme psychological distress when forced to move from *their* social space to *another*. Greemie (in Priester, 1974), talking about '*conceptual space*', suggests that only people with highly developed self-images and a sense of belonging to a physical or conceptual territory can face the stress of uncertainty linked to continuing change in their milieu. Spivack (ibid.) introduces the concept of *setting deprivation* to prove

that environments deprived of *all the necessary settings for the total human behaviour spectrum* provoke stress and social disorganisation within populations (ibid.: 33).

Harrison refers to various studies, which demonstrated the important role of meaning to people in the perception of physical space. Among these, Cooper's study (1968) suggests that built-in design diversity may not be as significant to many residents as personal activities and involvement in structuring social space is. Cooper refers to the concept of archetype to explain different ways of perceiving the house between low and high-income people (see chapter 2). Crothers (1970, in Broadbent 1980: 167) suggests that friendship ties are more meaningful than physical factors in producing satisfactory communities.

When linking studies on environmental experience to participation, it is important to be aware of how Maslow's (1954) classification applies to the groups involved at any one time. In figure 3.7, such classification finds physical expression in the section called "Where and how to find meanings": environmental variables are carriers of meanings which people will look for –according to their needs status.

Needs and satisfiers encourage a form of participation¹¹¹ based on design research

A considerably different interpretation on human needs is given by Max-Neef, a Chilean economist involved for many years with the problem of development in the Third World¹¹². His work is dedicated to reorient development (Nax-Neef, 1991), by stimulating local needs and helping communities to identify their "wealth" and "poverty" according to how these needs are satisfied¹¹³.

¹¹¹ Max-Neef is particularly well known in developing countries where new strategies for wealth distribution are experimented. In particular, his theories were presented to the researcher by Mr Dale White, a Catholic Priest from Johannesburg, in December 1998 during the UNCHS Conference "New Partnerships for Action", aimed at sharing world-wide experiences on community involvement for sustainable actions and local entrepreneurship.

¹¹² Max-Neef's main argument regards the inappropriateness of conventional models of development, responsible of having increased poverty, massive debt and ecological disaster for many Third World communities

¹¹³ This task is carried out in the Centre for Development Alternatives in Chile.

Max-Neef 's theory on Human Scale Development is defined as *focused and based on the satisfaction of fundamental human needs, on the generation of growing levels of self-reliance, and on the construction of organic articulations of people with nature and technology, of global processes with local activity, of the personal with the social, of planning with autonomy, and of civil society with the state.* (Max-Neef et al, 1991:12).

He distinguishes between needs and satisfiers, where the first are few, finite, classifiable, constant in time but different in the way they express themselves, and interrelated and interactive among themselves.

Needs do not have to be satisfied according to a temporal order, as Maslow sees it, rather simultaneously and complementarily. Fundamental needs are subsistence, protection, affection, understanding, participation, recreation, creation, identity and freedom. Among these, the primary levels (subsistence and to a certain degree protection), are physically limited, that is the number of conditions that satisfy the needs are finite (the more one has, the fewer another can have). The other needs are auto-generating, that is once they are perceived, they become stronger and lead to people's personal development.

Satisfiers are conditions that can facilitate or prevent the solving of needs; according to this, they are distinguished in violators or destroyers, pseudosatisfiers, inhibiting satisfiers, singular satisfiers, or synergic satisfiers. Among these, synergic satisfiers not only satisfy one particular need, but also lead to satisfaction in other areas.

The table in Figure 3.8 summarises all of them, with a further subdivision in existential categories of being, having, doing and interacting.

Fundamental Human Needs	Being (qualities)	Having (things)	Doing (actions)	Interacting (settings)
Subsistence	Physical and mental health	Food, shelter work	Feed, clothe, rest, work	Living environment, social setting
Protection	Care, adaptability autonomy	Social security, health systems, work	Co-operate, plan, take care of, help	Social environment, dwelling
Affection	Respect, sense of humour, generosity, sensuality	Friendships, family, relationships with nature	Share, take care of, make love, express emotions	Privacy, intimate spaces of togetherness
Understanding	Critical capacity, curiosity, intuition	Literature, teachers, policies education	Analyse, study, meditate investigate,	Schools, families universities, communities,
Participation	Receptivity, dedication, sense of humour	Responsibilities, duties, work, rights	Co-operate, dissent, express opinions	Associations, parties, churches, neighbourhoods
Idleness	Imagination, tranquillity spontaneity	Games, parties, peace of mind	Day-dream, remember, relax, have fun	Landscapes, intimate spaces, places to be alone
Creation	Imagination, boldness, inventiveness, curiosity	Abilities, skills, work, techniques	Invent, build, design, work, compose, interpret	Spaces for expression, workshops, audiences
Identity	Sense of belonging, self-esteem, consistency	Language, religions, work, customs, values, norms	Get to know oneself, grow, commit oneself	Places one belongs to, everyday settings
Freedom	Autonomy, passion, self-esteem, open-mindedness	Equal rights	Dissent, choose, run risks, develop awareness	Anywhere

Figure 3-8. Max-Neef's classification of needs and existential conditions. Available [online] URL:

<http://forests.org/ric/Background/maxneef.htm>.

This approach aims at meeting the requirements of small groups, through community-based processes by allowing deep reflection about one's individual and community situation, leading to critical awareness and, possibly, action at the local level.

Both Maslow and Max-Neef's views are of relevance to this thesis; they need to be compared. Two visually descriptive models can be of help: Maslow's theory is commonly assimilated to a pyramid, where fundamental needs constitute the base

and self-actualization needs the top. Horizontal layers (the various scales of needs) should not be perceived as completely strict; their boundaries are open and allow freedom of movement according to individuals' circumstances and inclinations.

Max-Neef's idea instead is closer to a wheel, as shown in Figure 3-9, where needs can be seen as the radii, and synergic satisfiers as the circle itself, that is the condition interrelating needs and guaranteeing they are solved jointly. Destroyers, pseudosatisfiers and inhibiting satisfiers instead can be seen as the smoothness of the surface of the circle: its bumpiness determines how easily needs are satisfied. Needs and satisfiers/ dissatisfiers all act simultaneously, and the combination of some of them can influence the effectiveness of the remaining ones. From this interactivity derives Max-Neef's relevance for group involvement: his classification suggests a way of co-operation by making use of and enhancing reciprocal strengths. Moreover, it is a self-contained system where groups can, on the base of their own conditions (characteristics), be strategic. Max-Neef suggests a critical approach to the reality of community groups, not far from the principles of visual literacy and from Sanoff's idea of linking design research to participation. In the case of this research, his "wheel-model" supports community education on visual environmental cues (but this could be extended to any issue of relevance to the community), by supporting the growth of autogenerating levels of needs and the development of new satisfiers.

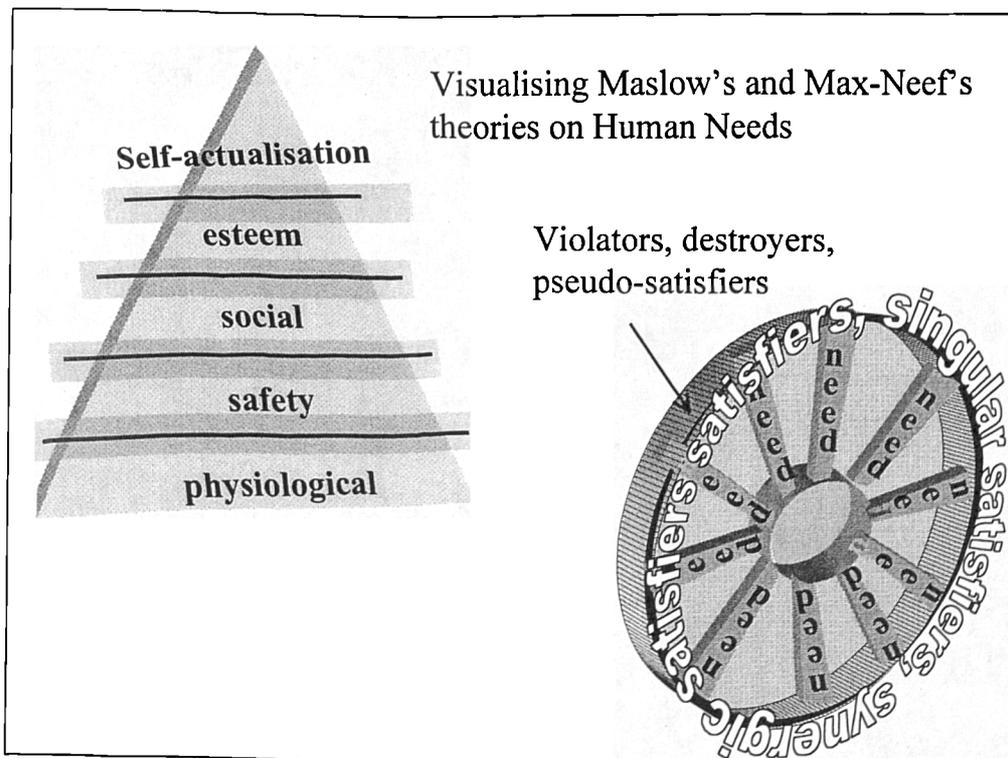


Figure 3-9. Maslow's and Max-Neef's theories on human needs. For Maslow these follow a hierarchical order, whereas for Max-Neef they tend to manifest at the same time, or at least to be co-present.

When needs and physical settings support each other

Maslow's and Max-Neef's theories are general on the nature of human needs; it is necessary now to link them to physical settings. Lang (1994) analysed Maslow's scale of needs in relation to physical settings identifying, for each level of needs, the environmental attributes that can contribute to their satisfaction.

An interesting interpretation of Max-Neef's idea, in relation to physical settings, comes from Coeterier (in Neary, 1994) and is based on Berlyne's aesthetic theory.

Psychologist Berlyne (1960; 1974) formulated one of the first theories on aesthetics in 1960; for him, people's preferences for environmental stimuli depend on a balance between arousal and uncertainty. People are always striving for the fulfilment of two opposite feelings, one reducing and the other enhancing the need (what Berlyne calls "conflict"). The relationship between these two opposites and their relative equilibrium repeated for several needs (that manifest simultaneously as for Max-

Neef, not in sequence as for Maslow), constitutes the complementary interrelationship of people to the environment.

Coeterier (1994) defines the relationships between people and their environment in terms of causes, effects and external conditions. Needs are causes, some of them related to the external environment. Effects are the fulfilment -or dissatisfaction- that derives from transcending a need. The environment, with its properties, constitutes the external conditions in which causes and effects act and can heavily affect them.

Needs and external conditions mutually affect each other: a need can be exasperated or facilitated by external conditions; in turn, environmental responsiveness to needs can affect the feeling of attachment or alienation toward those environmental settings.

The outcomes of his research help explain this interpretation. In a study conducted in the Netherlands, aimed at identifying the environmental attributes with a potential effect on people's experience of the urban scene, he studied the main reasons attracting people to the town-centres of Amersfoort and Utrecht¹¹⁴.

The main reasons attracting people to the town-centre were found to be: *1) the purpose of gathering information, 2) recreation, 3) the need to belong to a greater whole, 4) the need of taking part in a richer variety of possibilities for action* (ibid.: 304).

In particular, such behavioural attitudes –determined by human needs-were found to be enhanced -or reduced- by several environmental factors, which Coterirer classified in *existential, functional and visual conditions* (ibid.301).

Existential conditions are linked to the provision of feelings of security, stability and safety within physical settings. *Functional conditions* are related to the role of the environment, or part of it, as supporter of people's daily activities, as well as to its flexibility in leaving choice to users, that is its capacity of not programming too

¹¹⁴ The analysis was carried out through in-depth interviews and opinion pools with samples of the inhabitants of the two cities.

much of such activities¹¹⁵. *Visual conditions* are related to the capacity of the environment to offer visual variety and stimulate the users' curiosity.

According to Berlyne's theory, people search for balances of such conditions, to satisfy optimal levels of arousal and curiosity.

Coeterier analysed in detail the three groups of conditions; the results are sets of environmental factors that can influence needs' satisfaction and hence environmental perception and evaluation. In particular they are:

- Diversity¹¹⁶ of people - obtainable through organised happenings and by maintaining residential functions in the city centre - influences people's perception of liveliness and need of self-expression and socialisation.
- A good diversity of functions enhances the choices available and responds to one's needs for leisure, creativity, identity and freedom. In particular, he found them to be enhanced by the variety of shops and specialised activities in the town centre, of a good choice of routes each with a multi-functional lay-out. More specific activities, such as coffee shops and little restaurants, street-life, public services, exercising of trades, culture and recreation, protection of economically weak functions also play a major role in the satisfaction of such needs.
- What Coeterier calls *diversity of urban detail in buildings and public spaces* (ibid.: 305) is greenery, historical buildings and places, spatial differentiation and proportionality both in blocks and streets, of decoration (street furniture, decorative pavements), of an information structure of mobile and/or temporary objects, posters, advertisement boards.
- Social and physical accessibility, that is: parking facilities, access to public transport systems, traffic regulation, to shop in certain areas have heavy affect on

¹¹⁵ This recalls the concept of self-efficacy, as described in chapter 1.4.1, that is the capacity of perceivers to derive and organise information from their surroundings, and to be able to predict if the settings can or not support their goals and purposes. Settings supporting such process are called *manageable environment* (Winkler, 1981 cited in Twgger-Ross and Uzzell: 208).

¹¹⁶ For Berlyne, but this will be discussed in section 3.6.1, diversity has in this case, a specific connotation: it determines preferences only when it reaches a level, not too much to be confusing, not too little to be boring.

needs satisfaction and therefore on environmental experience. A shopping area where the prices and facilities offered are too group-specific becoming socio-economically exclusive, risks to discourage other clients, with major repercussions on their potential sense of belonging to that place, their curiosity, enthusiasm, self-esteem, tranquillity and spontaneity and maybe even of their security.

- The management and regulations of spaces - including the service of maintenance, safety and surveillance, the availability of squares for pedestrians and not only for parking cars, as well as the freedom for private citizens to organise things, apart from affecting the feeling of safety one has - can also satisfy the need for creativity, self-expression that people have.

Referring to psychologist Herzberg (1968), Coeterier distinguishes the five categories, as also Max-Neef does, in satisfiers (their presence gives satisfaction but their absence doesn't lead to dissatisfaction) and dissatisfiers¹¹⁷ (they must be present in a minimum quantity but more does not assure higher satisfaction). Dissatisfiers are connected to Maslow's lowest needs, while satisfiers to his higher needs.

Coeterier's view can be seen as a critical, practical and positive balance of Maslow and Max-Neef's theories: it links behaviours (actions to satisfy needs) to needs and identifies conditions of different nature that influence the resolution of a need. He characterises such conditions and organises them in several categories. In all this, he formally recognises Maslow's hierarchy of needs (distinguishing the main categories of conditions in satisfiers and dissatisfiers) but supports their interaction and co-existence.

3.5.2 The role of past experiences in environmental experience

Someone asked to the Rabbi, "When do you Jews start educating your Children?" The Rabbi answered, "Twenty years before they're born!"

¹¹⁷ In particular, satisfiers are diversity of people, functions, urban details and dissatisfiers accessibility and management. Dissatisfiers determine if people go to a place, while satisfiers the length of that visit.

More than anything else, the example set by the parents is the greatest influence on a child's life (Forester, 1999).

The major argument regarding the role of experience is carried out between the so-called Nativists (Bell, 1996) who assert that *human perception comes to us fairly automatically*, and members of the *learning theories* supporting the idea that *perception is highly dependent on learning through direct observation* (Bell 1996: 70). Bell belongs to the second group and sustains that experience and learning play a role in organising perceptions. Social and cultural factors - such as gender and roles, socio-economic status and exposure to modern architecture - affect people's way of experiencing the environment, therefore they can determine how they learn to perceive it. This assertion has been demonstrated by extensive research.

A classic example is given by the Muller-Lyer illusion lines (Figure 3-10). Among cultures emphasising rectangular construction and cultures emphasising circular constructions, perception differs according to the familiarity to linear dimensions. African cultures, for example, belong to the second group; since they are used to rounded constructions, they tend not to incur in the mistakes of horizontal-vertical illusions; for them therefore, the two arrows of the left drawing will have the same length. In the drawing on the right side, the vertical and horizontal line will also appear as equal. On the contrary, for most of us, used to linear environments, in the left drawing the top arrow will appear longer than the other, and in the right drawing the vertical line will appear shorter than the horizontal one (Brislin, 1980). The reason seems to lie in the fact that, living in environments where construction is rectangular, we tend to infer three-dimensional space from any assemblage of linear elements, whereas in non-linear cultures there are no automatic assumptions on what is not daily experience.

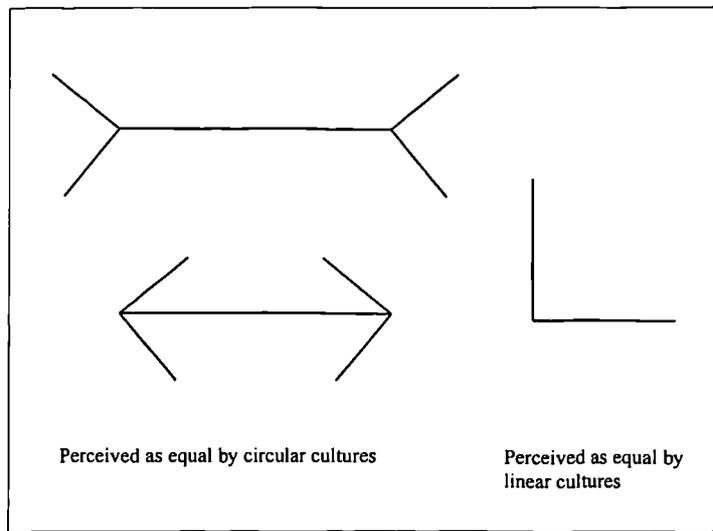


Figure 3-10. The effect of experience of perception. On the left of the image: the Muller-Lyer illusion (Bell 1996: 75). On the right side if the image, two equal lines appear of different length (Brislin: 1980: 53).

Gregory’s view adds something to the learning theories, focusing on the phenomenon of vision. He considers vision as an intelligent process, to the point that he defines perceptions as *built hypothesis*, as “*bets*” on what is the highest probability that a thing is in reality the way we perceived it (Gregory 1998: 16).

Therefore, the more our past experiences - the symbols culturally connected to objects and the meanings traditionally linked to them - are important, the less we need material data to see. Also, our behaviour is conditioned by the constant anticipation of what will – probably - happen, rather than by the reaction to external stimuli.

An interesting study on the effective role of such a background of experiences and “built hypothesis” on our perception of real places was carried out by Lowenthal (in Broadbent, 1980). He hypothesised, as “learning theories” do, that everyone has in his/her mind a defined image of places made of physical cues, activities, feelings, space, judgements and that such images are strongly rooted in our minds and affect the way we perceive new environments. The aim of the study was to discover the differences between images perceived during actual observation (derived from

pragmatic data) and mental pre-conceptions¹¹⁸ (derived from a semiotic approach) of the same images.

A total of 300 respondents were involved in a comparative study between reactions to real environmental experience and simple environmental evocation through names of physical features and properties.

A more detailed analysis of this study will be presented in chapter 4, as an interesting application of the semantic differential method¹¹⁹, which is one of the major techniques studied in this thesis. Here it suffices to point out that the research has shown, in empirical terms, that it is necessary to rethink the basic concepts of design, where many of our stereotypes should be modified. Demonstrating major differences between *what we think we like or should like about certain types of environments is often not what we do like (or dislike) when we actually experience them* (Lowenthal in Broadbent: 58), this study supports the necessity of an extensive research in the environmental perception field. In particular, it demonstrates that preferences are not the result of pure taste, instead they are comprehensive evaluations on functional, symbolic and aesthetic parameters and depend on the mental models that experiences of comparable events have built in us.

Such models are similar to Kelly's constructs (1955) which, although being personal, can show commonalties among groups and derive in large parts from past experiences. Due to the consistency and predictability of constructs, it can be argued that they can be used as informative inputs of the design process.

¹¹⁸ Those carried in the minds of respondents and regarding general physical features and the related properties; they are the result of culture, education and personal experiences.

¹¹⁹ As will be shown more in detail in Chapter 4, the semantic differential is one of the first and most common analysis methods used in environmental evaluation when concerning personal responses. Although largely criticised for its semantic nature, and nowadays substituted by other techniques, it has still great potentiality in principle, but requires modification of the way in which the sets of criteria are derived.

3.5.3 The role of cultural codes in environmental experience

When discussing the societal factors affecting environmental experience, Rapoport attributes a major role to culture. He defines the concept of culture by distinguishing three main aspects (Rapoport, 1980: 9):

- *Culture as the way of life typical of a group;*
- *Culture as a system of symbols- meanings transmitted through symbolic codes;*
- *Culture as the sum of adaptive strategies for survival related to ecology & resources.*

He then describes environmental design ...*as a particular spatial organisation depending on purposes, rules, activities, values and ideal images* and environment as a set of *not random or casual, but patterned relationships between things and things, things and people and people and people* (ibid.: 11).

These three aspects of culture suggest the existence of a two-way system of inter-dependence between people and the environment: both influence each other according to codes, systems, resources, that is according to specific conditions.

A logical extension of Rapoport's idea is developed by Hubbard who, criticising studies on object perception and evaluation which de-contextualise individuals from their social and cultural milieu, supports theories of environmental evaluation where the meanings attributed to the environment derive from individuals' experience (Hubbard, in Neary, 1994: 126).

Such environmental meanings are constructed through established *codes, which are socially transmitted and thus based on learning and culture*. Being socially transmitted, the codes are not individual properties, but *structures of perception, cognition and action common to all members of a group* (Pennartz, 1989 cited in Hubbard, in Nasar, 1994: 126).

He refers to Bourdieu's definition of *habitus* as the *socially constituted system of cognitive and motivational structures* (Bourdieu, 1977 cited in ibid.: 126), which influence people's world, to suggest that there are common perceptual codes shared

by members of various groups and from here that major differences in interpretation may exist between different socio-cultural groups.

Once such a system has been established, it will have an effect not only on groups' cognitive processes, but also their evaluative process, and the action derived from it¹²⁰. With regard to this effect, Bourassa argues that cultural rules are the basis of behaviour and are transmitted socially rather than genetically (Bourassa, 1991: 90); such rules are manifested in the activities of groups of people.

Bourassa refers to Costonis's (1982: 89) cultural theory of aesthetics,¹²¹ which defines aesthetic response as comprised of *reactions to symbolic meanings, non-sensory aspects* of the environment as well as *to the environment's sensory attributes*. Assuming that symbols, the most distinguishing features of human culture, are the vehicles for the transmission of culture, he derives that cultures not only seek their identity in symbolic forms, but also seek to maintain themselves through such forms. The environment, and in this case the built environment, works as a major container of those symbols, therefore human evaluation of -and action on - the environment is aimed at establishing identification with it and exercising control over it.

Stressing the importance of studying responses to visual environmental properties, he proposes "cultural aesthetics", as an approach capable of taking into account i) the attitudes people bring with them to the landscape together with ii) the formal and iii) sensory properties of the environment, and perceivers' response to them¹²².

Despite the relevance of these three categories of factors, for Costonis and Bourassa, the symbolic aspects of the landscape are more significant than any other factor or

¹²⁰ Generally, the theories supporting the influence of personal and cultural factors on environmental perception and cognition tend to assume a further influence of these factors on behaviour.

¹²¹ In particular, it is called the *cultural stability-identity* hypothesis (ibid.: 91); it attributes human interest for the aesthetic dimension to the need of establishing and maintaining identities with environmental features, against the so called *visual beauty hypothesis* which asserts that visual beauty – when it exists per se in the environment - requires warrant protection.

¹²² Formal, sensory and symbolic dimensions of environmental experience can be linked to Hershberger's classification of environmental meanings into responsive and representative meanings (see paragraph 3.4).

canon of visual beauty. Both perception and role of such symbolic aspects depend on perceivers' cultural and societal characteristics, which Bourassa distinguishes in two dichotomies, as shown in Figure 6-11 (ibid: 108):

- Familiarity (insiders-outsiders) = existential status;
- Expertise (expert, non-expert) = professional status.

	Professional status	
Existential status	Expert	Non-expert
Insiders	Local planners	Local citizens
Outsiders	Foreign architects	Most tourists

Figure 3-11. Framework for cultural groups and their role in the perception of visual codes (ibid.: 109).

Accepting that these two dichotomies have a role in how visual environmental properties are perceived, understood and evaluated, then both the contextual characteristics of groups and their level of expertise as concerning the visual evaluation must be taken in account¹²³.

Referring again to Baxter's article "The Wall-Game"¹²⁴ (Mikellides, 1980), it is interesting to reflect upon it, on the bases of culture-specific issues. The article describes the living conditions of a family after moving to a flat in a high rise building. The focus of the writer's complaints is the low level of privacy guaranteed by the housing characteristics, specifically as result of the low degree of the sound insulation of walls. This could not provide the required intimacy to the users of different spaces, due to their cultural incapacity to screen out the sound, as people in other cultures do.

¹²³ This thesis responds to the first point, in its attempt to develop a method of community involvement in design based on a context-specific study of factors. The role of expertise, is discussed more in detail in the next paragraph. Recognising the effect of visual education in environmental experience, and the different roles of the actors in participatory design, this research proposes a strategy to combine the advantages of such differences and expertise.

¹²⁴ See paragraph 3.1.2 for more details.

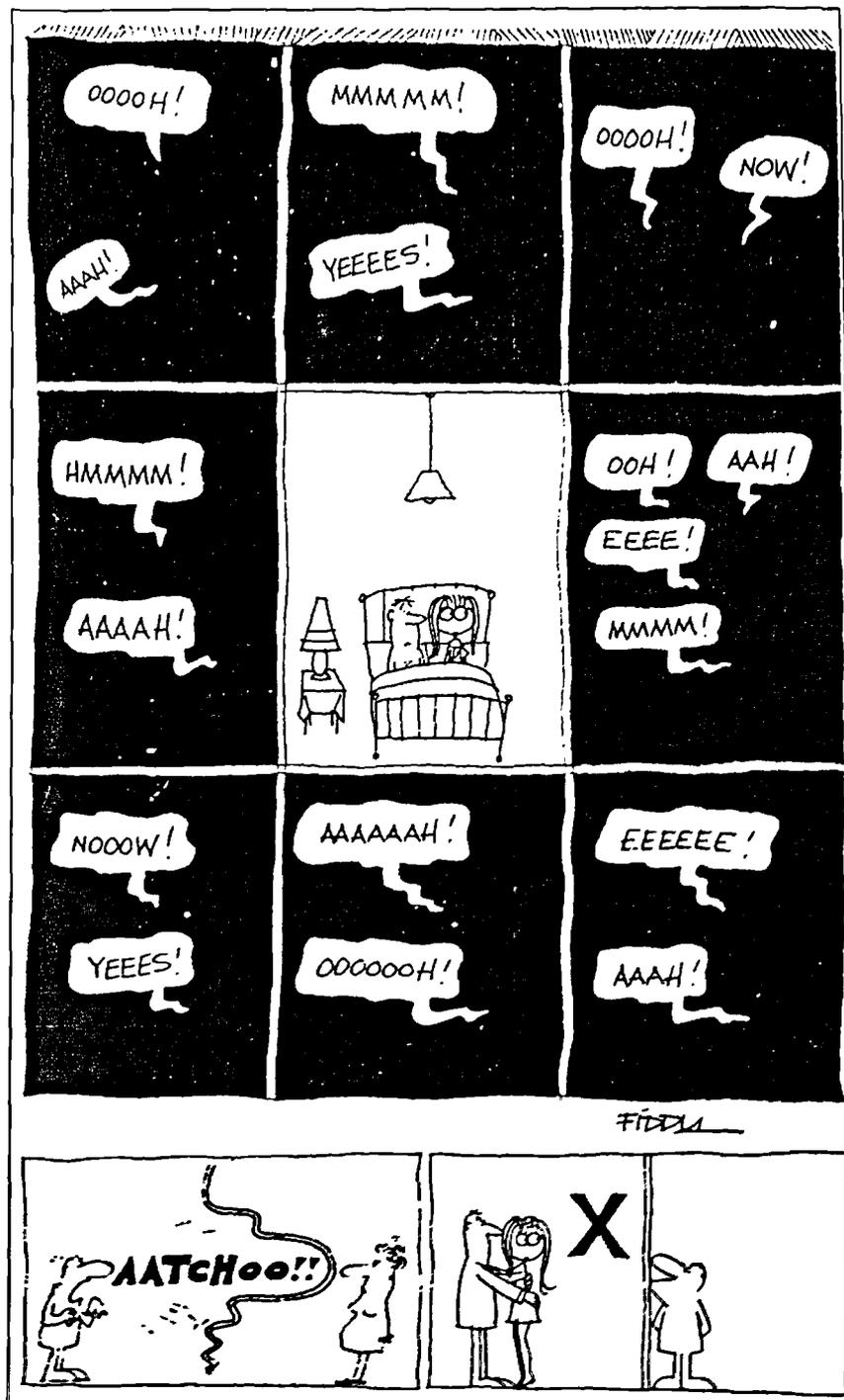


Figure 3-12. "The Wall Game". "Alida Baxter's neighbours are such very close friends" (Mikellides, 1980 22)

In traditional Japanese houses, screens substitute walls as people *rely on their own power of concentration to screen out sounds* (ibid.: 23). This shows a relationship between culture and habits on the one side, and the environment on the other. According to the education provided (which deals with both practical and social

aspects of life), and in addition to the personal experience one develops during the growing-up process, life and behaviour will be “modelled” by rules and habits. Each of these “culture- specific” components of life will have a “spatial translation”, that is will have repercussions on the way space is used.

This leads to another factor having strong repercussions on environmental experience: education.

3.5.4 The role of education in environmental experience

Both the roles of professional education, as well as the average levels of visual competencies are fundamental inputs to design research. In particular, the study of physical settings, based on the analysis of their visual properties, requires the co-operation of the "client expert" and the "professional expert".

The studies of Groat (1979, 1981), Hubbard (1994, 1996), Canter (1969, 1988), Hershberger (1972, 1974), discussing the meanings that different groups of people attribute to physical space, have already been mentioned. The results they have obtained that point at major differences in groups' evaluation due to education will be summarised next.

In a study on meanings in architecture, Hershberger (Hershberger, in Broadbent, 1982) aimed at discovering whether there was any correspondence between the meanings architects intend for buildings and those that laymen attribute to them. In his research¹²⁵ Hershberger compared the role and effect of architectural education on evaluation by comparing representational and responsive meanings of buildings provided by architects, non-architects and not yet qualified architects.

The comparison involved four groups of 26 students each from the University of Pennsylvania; among these one group consisted of graduating students of architecture, one of undergraduate students of architecture, one of non architectural students; a fourth group was taken from a different University (Drexel Institute of Technology). The choice of students of different disciplines but from the same

¹²⁵ Hershberger used semantic differential scales; see Chapter 4 for details on the technique.

University aimed to achieve comparable levels of general culture. The fourth group instead was meant to stress the influences on evaluations, as a result of different educational backgrounds.

Respondents belonging to the same group tended to be more homogeneous than the students in general and this demonstrated that in this case homogeneity evolved as a result of education.

The conclusions derived by Hershberger suggest three possible directions in order to level the difference of interpretation between architects and non-architects. 1)

Reorient architectural education to avoid that architects develop different ways of seeing things in comparison to laymen; 2) providing within the Universities the necessary culture to make such differences comprehensible, 3) educating people to understand and appreciate the points of view of the architects¹²⁶.

Leff (in Preiser, 1974) carried out a study similar to Hershberger's, to identify differences in building evaluations between architects and non architects. He achieved similar results although in Leff's case the differences between groups were found to be slightly stronger and more detailed in comparison to those identified by Hershberger. Moreover, Leff showed that professionals tend to be more predictable in their evaluations than lay-people, suggesting once more the necessity of the direct involvement of clients and users in the whole design process.

The difference in the results is due to the technique adopted; in Leff's case it was an evolution of the semantic differential method toward the definition of sorting methods, such as the multiple sorting task, which will be analysed more in detail in chapter 4.

Groat and Canter conducted in 1978 a study meant to identify the meanings perceived in Modern and Post-modern buildings by professional architects and lay people. They demonstrated that the essential aspect of people's interaction with

¹²⁶ This thesis aims at the third objective, although there is the hope of achieving also the second aim disseminating its aims and approach in architectural education, and make co-operation between professionals and clients a common approach to design rather than a sporadic and not properly planned attempt.

buildings is the meanings they associate to them, and that education has a fundamental role in shaping such meanings (Groat, 1979).

The research, which involved twenty architects and twenty accountants, consisted in multiple sorting task exercises where respondents were required to work with 24 images of modern buildings fitting three categories: Modern, Transitional and Post-Modern¹²⁷. The results showed that architects & non-architects were very different with regards to i) the criteria used to evaluate buildings; ii) the opinions expressed on the same buildings; iii) the range of evaluative criteria and sets of specific judgements. In particular, concerning post-modernist buildings the main findings were that: i) they were more successful in evoking unique sets of associations; ii) the opinion architects/ non-architects were very divergent; iii) post-modernist buildings were not necessarily preferred to Modern Buildings. Moreover, architects and lay people had different sensibilities towards architecture; and finally post-modern buildings, designed to appeal to these two sensibilities, do in fact evoke meanings successfully.

The findings of Groat and Canter should be largely taken into account, both in design education and profession. In particular, these are i) that a building design ought to be appropriate for the building type and use, ii) that a building in the historic mode is more likely to be appreciated and understood by non-architects if it can be interpreted as related to a single stylistic tradition, iii) that the buildings non-architects find most appealing may be those that many architects consider the least serious architecture. From here stems the suggestion to apply design research to practice, recognising the relevance of the public in *the process of giving buildings meanings* (Groat 1979:12).

The case studies show evidence of how much education and training can affect people's response to buildings, public spaces and in general to the design of the physical environment. At the same time, they also provide suggestions to set up an

¹²⁷ The multiple sorting task technique is described in chapter 4.

informed and useful dialogue between the various groups involved/ interested in the various phases¹²⁸ of design.

All the above cases regard the differences in the perception and attribution of meanings to buildings by architects and lay people. Hubbard (1994, 1996) has researched similar differences between planners - *producers of the environment*, those with design training - and non-planners - *users of the environment* without design training - (Hubbard, in Neary, 1994:128) with the aim of bridging the gap between professionals' and users' preferences on architecture in general regarding the issue of contextual compatibility¹²⁹.

The background for his research consisted of British studies demonstrating that planners are a relatively homogeneous group sharing distinctive attitudes to issues such as *their environment, their political superiors, their view of society as a whole* (ibid: 128).

Moving from a critique of those studies on object perception which *de-contextualise individuals from their social and cultural milieu* (ibid: 126), he supports environmental assessment as dependent on the meanings ascribed to the environment by virtue of individual histories and experience. On the base of previous demonstrations of the existence of common perceptual codes shared by members of various groups, and of major differences in interpretation between different socio-cultural groups, he researches the main distinction between them as a result of their environmental experience and expertise (Bourassa, 1991).

In particular, the major factors influencing perception and preferences were found to be (Hubbard, 1994, 1996):

¹²⁸ Chapter 4 presents an overall of techniques to evaluate people's response to different environmental stimuli, differentiating in the object of the evaluation, the type of respondents, and identifying for each of them the most appropriate technique Chapter 5 instead presents a combination of some of such methods, which follows the theoretical approach chosen in this research.

¹²⁹ The issue of contextual compatibility is discussed in chapter 4 with particular referent to Groat's work. It consists in visual continuity among buildings and open spaces.

- That 70% of planners' sorts were concerned with physical aspects of the developments to compare;
- That 45% of the public's sorts were based on 'ethno-demographic' concepts (preferences, feelings, and associations).
- There was no significant association between the evaluations of planners and those of the public groups.
- The public showed a preference for more derivative architectural styles, for continuity in the townscape.
- Planners showed a preference of more high-tech and late-Modern styles, and more fashionable and 'up-to-date' architecture styles.
- In comparison to architects planners give more importance to the functionality of buildings and their contribution to the public realm.

With this study he proves that: i) an appreciation gap exists between planners and the public; ii) that environmental appreciation of planners differs both from the laymen's and the architects'.

A further study was conducted by Wilson (Wilson, 1996) in order to find out whether public and professionals think differently, and if so how and why. The results very clearly identify strong differences among groups and suggest the need for further research: professionals generally hold a different *system of constructs*¹³⁰ through which they understand and evaluate the environment. It is developed in two phases: conceptualisation (concepts to organise and understand architecture; it is descriptive, objective and non-evaluative); and evaluation, that is the formulation of evaluative judgements (ibid).

The study confirmed that architects use a different system of constructs than non-architects, demonstrated that this system of constructs is developed during the period of training, and that for students of architecture the main concept used to organise

¹³⁰ The system of constructs identified by Wilson recalls Kelly's (Kelly, 1955) theory on personal constructs (par. 3.3.1), and prepare the route for a method capable of discovering and taking care of such constructs during the evaluative process. But this is discussed in chapter 4.

and express evaluation is that of architectural style. In particular, the results proved that 1) architectural education systematically instils an evaluative system characteristic of the profession in general; 2) the specific school of architecture can influence variations in architectural evaluation.

A total of 150 British architecture students at different stages of their education (from each year of training excluding the year out) were asked to evaluate buildings¹³¹ from four styles (Modernist, Post-Modernist, High Tech, Neo-vernacular).

Here again, as in Lowenthal's study, a comparison between empirical and theoretical evaluation was carried out: when asking students which criteria they would normally use to evaluate buildings, the most frequently criteria mentioned were:

- Construction or material used in the building;
- The way the building addresses its functions;
- Theoretical ideas behind the design;
- Form/ scale of the building;
- Contextual fit;
- The account the building takes of the user.

When however analysing the data of some exercises carried out by the same students, it emerged that the main criterion for the selection of preferences was architectural style.

Moreover, comparing preferences on single buildings among the years, it was found that changes do occur in the students' evaluative judgements as a result of the time spent in architectural education. First year students are considered to be closer in their preferences to lay people. They were found to prefer Neo-Vernacular architecture. This suggests that Neo-Vernacular architecture rather than Post Modern architecture (as suggested by Jencks, 1977) is preferred by lay people.

¹³¹ The technique adopted, called Smallest Space Analysis is a non-metric MDS technique (see chapter 4).

The above studies show evidence that, concerning the evaluation of the built environment, education and training affect both group and personal preferences. If, therefore, educational programmes are set up on the base of the recognition of differences and gaps between groups of people, they could help improve people's perception, understanding and use of their environment¹³².

Symbolic aesthetics is a discipline that *focuses on factors that through experience produce connotative (associational) meanings such that the object implies something else giving pleasure*. (Nasar 1988: 3,11). If architectural space is intended as Norberg-Shulz (1971) does, that is as the *concretisation* of existential space¹³³, (Lang in Nasar 1988: 17), then the study of personal and societal factors can help understanding how space is perceived.

As shown in the previous chapters, there is always a stronger need to respond to the *demand by clients that buildings be in styles with which they can identify* (Nasar 1988:12). Symbolic aesthetic is still a very open field of research and interest; its further development becomes fundamental to enable designers to create environments and policies capable to satisfy the symbolic needs of their clients.

The study carried out by Day (1996) clearly confirms such a need. In research on communities' response to architectural innovation, respondents from an American town of 2600 inhabitants were contacted to identify on what bases a new modern institutional building inserted within an historical street was evaluated. The building consisted in two very distinct parts: the main block maintained a rather high level of compatibility with the surrounding buildings (in terms of façade attributes and proportions); the atrium instead was a highly modern glazed intervention. Since its construction, residents always used and praised it, in all its parts, despite designers' uncertainty for the glazed atrium, therefore an investigation was conducted to find out the reasons for such a wide positive response. As regarding the main block of the

¹³² As the predictability of evaluative responses is affected by training (Leff, 1974), this thesis argues that involving groups of users in environmental research, to capture evaluative responses, can facilitate the development of representative and consistent views to be used as a tool for the practice of design.

¹³³ Existential space is defined as a psychological concept that identifies the constructs that people develop when interacting with the environment (ibid.).

building, interviews and multiple sorting tasks exercises revealed that its high level of contextual compatibility with the surroundings was the reason for its acceptance. As regarding the atrium, which had a very low degree of similarity with its context, the reason for its appreciation was the feeling of comfort it seemed to inspire to respondents, that is the symbolic meanings that people attributed to it. This example shows that care and research can help modern developments to be respondent to people and well accepted by them.

Symbolic aesthetics, alone, does not yet cover the wide range of factors that can affect appreciation of the physical environment; formal and sensory aesthetic can complete it. These disciplines, apart from dealing with physical and sensory properties of the environment, also link them to their perception and interpretation and therefore include symbolic and derivative meanings, as will be described in what follows.

3.5.5 The role of senses, forms in environmental experience

Sensory aesthetics ... *is concerned with the pleasurableness of the sensations received from the environment. It involves the arousal of one's perceptual systems, is multidimensional and results from colours, odours, sounds and textures of the environment* (Nasar, 1988:11).

Formal aesthetics ... *focuses on the attributes of the objects as they contribute to aesthetic response* (ibid.: 3). *Formal aesthetics in architecture is concerned primarily with the appreciation of shapes, rhythms, complexities and sequences of the visual world, although the concepts can be extended to the sonic, olfactory and haptic world.* (ibid.:11)

Together, symbolic, formal and sensory aesthetics can help studying the city form. Reporting Cullen's definition of townscape (1971)...*One building is architecture, but two buildings are townscape. For as soon as two buildings are juxtaposed, the art of townscape is released,* Sanoff (1991:117) suggests in fact that experiencing townscape means experiencing a visual and sensuous insight into surroundings. The fact that the capacity of appreciating townscape does not naturally stem from living

in the city, but must be acquired and trained, suggests also that other values are added to the townscape, such as the associational ones.

Among the physical properties that affect experience, the most common are order and complexity, rhyme, sameness and differences, mystery, analogies. When perceived, the form of space has several manifestations on perceivers; such manifestations have then repercussions on behaviour, on the way spaces are read and used. Also, the form of space is perceived accordingly to behavioural habits, cultural codes, and personal attitudes. For this reason, each physical factor needs to be studied - and has value - only in connection to this wider overall experience.

The beauty of order and complexity

For Smith (in Canter, 1988:202), *aesthetic appreciation represents an extension of brain programs relating to adaptation and survival*. Being the attempt of having control on the external environment the fundamental strategy for survival, it follows that the strategy of extracting order from complexity is related to aesthetic appreciation.

The origin of aesthetic appreciation is thus linked to the classification facility of the brain, and aesthetic pleasure consists *in the reward for successful adaptation to the new information resulting in a more comprehensive model of the world and thus less chance of being taken by surprise* (ibid.202).

Architecture is everywhere, of large scale and therefore unavoidable; then, it is one of the principal sources of novelty and surprise and occasionally shock. For Smith, the main conditions of success in architecture and urbanism are *that wholeness overweighs particularity and that orderliness wins but not too easily* (ibid.202-203), which means that the urban form has to have enough complexity to make the perception of unity a worthwhile mental achievement.

In buildings and urban form, complexity and order should manifest themselves in binary sets, that is pair identities with logical connection but also significant level of autonomy. Such binary sets should counter-balance themselves, maintaining differences within a reasonable band of similarity.

Binary sets can be of various types, such as balance/equivalence; inside/ outside; round/rectangular, sculptured/plain; and can be determined through the conditions of harmony; ambiguity and symbolism (the function of symbolism is to re-establish conceptual order where formal order is missing).

The right balance between order and complexity is called *optimum ratio of order and complexity* (discrepancy to affinity), and is satisfied if the whole results as more than a fortuitous collision of parts. Both binary sets and ratio of order and complexity can be found in architecture, within *at least four distinct components, which transcend time and culture* (in Mikellides, 1980: 74). These are:

- Rhyme and pattern: rhyme is when an object has in the same time familiarity and novelty¹³⁴; it presupposes the simultaneous existence of complexity and pattern with the latter - meaning not repetition but substantial affinity - a bit predominant.

For Humprey (in Mikellides, 1980) rhyme gives a representation of how the external world looks like, how it works and can help predicting characteristics and events, planning behaviour and reducing the thought load. Such representations constitute the framework of the categories that organise the way people analyse and evaluate the built environment.

- Rhythm, in architecture, is a property connected to repetition. Smith cites studies showing how our brain is naturally attracted and *...gets pleasure from rhythmic presentations varying from the simple binary kind to the complex repeated sub-system which are evident in poetry, music and architecture*. Pleasure from rhyme is connected to the natural *feeling of protection* that animals feel in a situation *when can recognise subtle variations of rhythm* (in this case “rhythm” is the perception you get from any situation) (in Mikellides, 1980: 78).
- Balance is a form of order that results from a scene where some elements, though different among each other, don't create disturbance by dominating each other. Balance allows the co-presence of different parameters like tone, colour, masses,

¹³⁴ Smith cites stimulus novelty as the most universal reinforce known among higher species (ibid.).

texture and symbols; it can be therefore perceived on a perceptual and on a cognitive level.

- Harmony is the feeling one gets from observing elements co-existing whose difference is evident enough to be recognisable, but not to allow the dominance of one of them.

As mentioned in the introduction of this paragraph, formal factors are intertwined with symbolic factors, in a dualistic process of cause/effect in environmental experience. For Smith though, culture does not affect the perception of these formal factors, but the entity and complexity of their manifestation.

Order is also sustained by the Gestalt theory as a source of aesthetic pleasure: *...formal aesthetic pleasure derives from our subconscious response to the degree of order, and the mechanism for attaining order, in the geometry of built form* (Lang, 1994: 322). According to the principles of Gestalt theory, people are naturally sensitive to geometric forms, and to different levels of complexity of such forms.

Connected to the Gestalt Theory, Anne Tyng (Lang, 1994: 322) stresses that *an individual is able to integrate greater and greater amounts of the unconscious into his/her conscious life*. Suggesting that psychological growth and maturation is accompanied by an empathy for particular geometrical forms - *from the bilateral, twofold or fourfold symmetry to more complex rotational, helical and spiral ones* - Tyng links behavioural control to appropriate architectural symbols and manifestations (Nasar, 1988:25). Knowing how such a correspondence takes place, design could be made more responsive to socio-personal characteristics.

Other factors contribute to the creation of frameworks through which one relates to the environment, such as the perception of sameness and differences and of analogies.

The beauty of difference and sameness

Kelly (1955) has been mentioned for his theory of personal constructs, according to which one sees and interprets things. The question is on what bases such constructs are formed; for him, such bases are constituted by the recognition of sameness and difference. These are evaluated on the base of certain numbers and dimensions that

help one to quantify and qualify contrasting stimuli and, as a consequence, form preferences.

The nature of such numbers and dimensions is influenced both by one's mental attitudes and by the conditions offered by the environment. That is to say, for example, that if one's categorisation process is a form of protection adopted for survival (as for Humphrey), the more dangerous is the environment, the less spontaneous will be the categories one must create.

This interpretation becomes fundamental in complex environments, where the number of information, and therefore the contrast sameness-differences is high. If the environment contains more information that one can comprehend at once, such an overload of information can provoke detrimental effects on people, who will find the definition of categories confusing and distracting (Bell, 1996:66).

It follows that if the number of information provided by an environment is large but not excessive, complex but structured, varied and interesting but not distracting, the mental process we use to create such categories will likely be immediate, instinctive and natural.

Constructs to read the physical environment are also built on the base of other factors. For physiognomic theories for example, buildings have expressive properties that are directly understood by the observer. These spontaneous meanings derive from a directly perceivable analogy between the visual structure of the object and a corresponding generic characteristic of the shape. Many of these analogies derive from nature or the human body (Arnheim, 1977 cited in Nasar, 1988:24).

3.5.6 When the physical characteristics of the environment are much more than that: their relationship with archetypes, the unconscious and behaviour

As mentioned, the perception of physical properties is often linked to personal meanings, symbolic references and archetypes; in this case, their perception leads to complex considerations that regard past experiences and culture bounds.

On the influence of archetypes and hazards on environmental experience

Cooper (in Lang, 1974) refers to Sigmund Freud's theory on the "individual unconscious" - in which are deposited the suppressed and repressed memories of infancy and childhood - and to Carl Jung's theory of the "collective unconscious" - which links man to his primitive past and where are deposited certain basic and timeless nodes of psychic energy, the archetypes. For Cooper, archetypes - although they surpass one's comprehension¹³⁵ - often find expression in physical elements which, as a consequence, acquire meaningful values, conditioning their use; among such elements, the architectural ones.

An example of these symbols and archetypes is the house, which can be seen as an unconscious projection of the self. The house both encloses (interior) and excludes space (façade). As people become accustomed to this 'niche' in the world they project something of themselves onto its physical fabric. Cooper cites studies conducted on American housing typologies to show how the *difficulty of people to come to grips with the housing problem, and the resistance to subsidized housing or to the State's providing houses for people* can be attributed to such archetypes (ibid.:133). She also cites a study conducted in the United States indicating that, on an overall of 748 people - of all incomes - interviewed in thirty-two metropolitan areas, 85% described their ideal house as:

- *Free-standing, square, detached, single-family and yard.* This can be linked to the need of territoriality and the idea of ownership (ibid.:133).

Moreover, the following characteristics also resulted from the data collected:

- An apartment was rarely seen as a home as it gives no territory on the ground; this was perceived as a *threat to one's self image as a separate and unique personality* (ibid.:134).

¹³⁵ For Cooper, a symbol has always behind it a hidden, profound, and only partly intelligible meaning, which represents its roots in the archetype.

- Low-income groups - living in dangerous and hostile settings constantly threatening the self - see the house as shell, a fortress-to-be-defended¹³⁶.
- With higher economic and psychic stability, groups tend to see *the house as an attractive, individual expression of self-and-family with picture windows so that neighbors can admire the inside* (ibid:135).
- Comparing communal living typologies (the '*urban commune*') with traditional family houses, it resulted that in the former generally the private spaces were better maintained, while in the latter the better maintained were the common ones, such as entrances, living room and frontages (ibid.:135).

Studying the links between physical space and archetypes can be useful to understand one's relationship with space - helping designers "predict" use, attachment, preferences, meanings¹³⁷.

Information of this type cannot be obtained through traditional statistical analysis methods, but requires specialised input as much as user involvement. Direct interaction between designers and users can help in doing so.

The discussion on physical and personal stimuli, environmental conditions, societal codes, experience conducted in the above paragraphs has identified factors that affect environmental experience. It is important to know that rarely such factors act alone; in the majority of the cases, they are combined, amplifying each other and making the complexity of the effects. Also, people's prolonged exposure to them leads to changes in their perception and, often, to the formation of attitudes; the concept of *attitude formation* refers to the *tendency of evaluating an idea or an object in a positive or negative way* (Bell, 1996: 31). This tendency, which has repercussions on affect and emotions, has at its basis a process of learning.

¹³⁶ In particular, this was found to be a strong perception among low-income blacks (mainly women) living in ghettos.

¹³⁷ The expression "predicting meanings in architecture" derives from Hershberger (in Lang, 1974). For him, this needs to be based on 1) a solid information background and 2) the recognition - by the designers themselves - that it is a major challenge that designers must face in order to improve architectural design from both the architect's and the users' point of view

Bell (ibid.) studied the factors that influence a particular manifestation of attitudes for environmental settings: people's perception of the natural hazards and their awareness of the risk of being potential victims of such hazards. Such factors are the state of well being proper of a group of people, the type of resources used by a group of people, people's personality, the frequency of the disaster, and personal experience. In particular, it has been demonstrated that when the hazard is closely related to the well being or resource use of a community, the inhabitants are more aware of the danger. Moreover, it has been demonstrated that the frequency of the disasters and personal experience influence the cognitive judgements of potential harm.

The perception of natural hazards is a particular case of how attitudes which are developed from experience can influence further exposure to the same type of experience; here it is interesting to notice that the same influential process can take place in more daily scenarios.

If this is the case, then the attitudes so determined should be studied and considered in design: they can reveal user habits, likes, dislikes, adaptations, refusals; also, attitudes can lead to behaviour.

When attitudes can determine behaviour, this happens in phases, that is according to plans; for Berlyne (1960) and Kaplan (1982), plans therefore can influence perception and aesthetic appreciation. During the development of plans, environmental features play an active role in enhancing experiences and - with time - developing attitudes. For Kaplan for example, features such as order, complexity, coherence work as immediate stimuli, whereas features such as legibility and mystery have a more organisational role, and act in time.

The monitoring of attitudes can help designers in controlling the use of space, in a way that is sensitive and respondent to users rather than imposed on them.

Plans, attitudes, all contribute to add character to the physical space; the character - or identity - of a place can, in turn, also influence environmental perception. Heath (in Nasar, 1998) has identified several examples that explain how this process develops:

- Places of high aesthetic quality tend to become landmarks.

- Where places of high aesthetic quality are also significant paths or nodes of the pedestrian or transportation network, their aesthetic affect will be reinforced.
- Goffmann (1959, in *ibid.*: 9) distinguishes between *backstage* and *front* spaces, as connected to formality and informality of human behaviours, deriving that:
- A high degree of formal order is most appropriate in “front” areas, where it serves to reinforce formal behaviour. It follows that in responding to - or inhibiting - behaviour, the city expresses social values, and that it has the potential of enhancing (or contradicting) values systems. Social importance is generally linked to formality of behaviour which, it has been argued, is supported by order, or “good Gestalt” in the physical environment.
- Importance is expressed by association with scale, quality of execution, quality of materials and details (Arnheim 1966b, Herzog, 1976, in *ibid.*), complexity.

In this paragraph, several factors - physical, personal, societal - affecting environmental experience have been identified; the result of this investigation was that they often act in combination, and have repercussions on attitudes, habits, behaviour. Due to the aim of this research to use information on environmental experience in design development, it is - at this stage - necessary to identify an approach to the study of such information which is capable to consider its several aspects.

To do so, a description of the main approaches currently adopted in environmental field is carried out in the next paragraph. From such an overall view, suggestions will be drawn on how to link some of those approaches.

3.6 Deriving a study method from the analysis of some significant approaches in environmental experience studies

A vast body of research on environmental experience has been described. Although the discussion of the individual contributions is of high interest for this research, the overall view presented is still rather confusing. Recently attempts have been made to structure such research into categories, distinguishing between the following approaches:

- empirical and theoretical approach (Gärling, 1998);
- perceptual/cognitive and affective/emotional approach (Hanyu, 1997);
- subjective and objective approach (Fenton, 1988);
- formal and symbolic¹³⁸ approach (Nasar, 1988; Lang, 1988).

Characteristics, approaches and major findings of each of these experiences, are helpful for the construction a framework for this thesis.

3.6.1 Research approaches to the study of environmental experience.

The first two classifications - of empirical/theoretical and cognitive/affective studies - refer to the approach used, while the other two - of formal/symbolic and subjective/objective - refer to the content of the research carried out.

Empirical studies search for how people conceptualise the physical and perceptual, cognitive or affective representation of the space. They are *descriptive systems of spatial and non-spatial characteristics of the environment* (Gärling, 1998).

Theoretical approaches instead are based on assumptions on how individuals interact with the physical environment.

Perceptual/cognitive research mainly refers to the study of mental maps and the physical factors used in them; they tend to overlook the emotional/ affective qualities of such physical elements, although they recognise their existence.

Affective/emotional research instead focuses on the affective quality of places and looks both for measures of preference and – in some cases - for their interconnection to perceptual/cognitive constructs (Hanyu, 1997).

Four major groups emerge from the overall panorama of studies that have been identified as significant to this research; an overall analysis of their findings is

¹³⁸ The distinction formal versus symbolic focuses mainly on environmental aesthetics rather than on the whole range of environmental experiences; anyway, on the belief that environmental perception and assessment are related (Craik, 1971), it can be relevant in the study of environmental experience.

presented in what follows. Some of them, whose method/technique of analysis is considered particularly interesting, are more thoroughly discussed in chapter 4.

1. Among the perceptual/cognitive studies, generally investigating how people conceptualise space, a further distinction can be made as shown in Figure 6-13.

Some of them are based on an empirical approach and directly deriving theories from it, or indirectly touching the affective/emotional sphere of the cognitive process.

Other studies explore the whole range of perceptual/ cognitive and affective/emotional phases, and mainly derive affective and emotional responses from the perception/cognition processes.

2. Then there are those studies that both involve theoretical constructs and empirical testing based on such constructs, but place themselves in between the perceptual/ cognitive and the affective/ emotional processes as shown in Figure 6-13 under the label "transitional space". They tend to link, to the perception of physical characteristics, the affective responses, and finally people's preference for the settings that possess those characteristics; they are, however, not yet entirely theories based on preferences and aesthetic response, or at least they largely link them to the cognitive process.
3. There are yet other studies completely based on people's preferences. They are either derived from empirical analysis or based on theoretical constructs then tested in practical experiments. A common base for the latter is that among the parameters they identify as affecting environmental preferences, interest and arousal¹³⁹ play a major role. Because of the approach they adopt and the focus on perceivers' response, they tend to study how people describe environments.

¹³⁹ Interest and arousal are strictly linked to cognition.

4. Finally, a space –the intersection of the transitional spaces- is occupied by those suggesting integrative approaches¹⁴⁰ of other methods and researches for specific purposes.

The table in figure 6-13 summarises the mentioned approaches and the major representatives for each of them.

	Gärling (1998)		Gärling (1998)
	Theoretical studies	<i>Transitional space</i>	Empirical studies
Perceptual/cognitive Hanyu (1997)	Lynch (1960) and Francescato (1969) Ittelson (1973) Harrison (1972, 1980) Appleyard (1969) Ramadier Moser (1998) Craig (1971) Nasar (1990)		Lynch (1960) and Francescato (1969) Ittelson (1973) Harrison (1972, 1980) Appleyard (1969) Ramadier Moser (1998) Golledge (1978)
<i>Transitional space</i>	'Neighbourhood studies' Nasar Stamps (1997), Kaplan S. (1979) Wohlwill. (1973, '76, '79) Fisher & Nasar (1992) Kelly, '55 (1955)		'Neighbourhood studies' Nasar Stamps (1997), Kaplan S. (1979) Wohlwill (1973, '76, '79) Fisher & Nasar (1992)
Affective/ emotional Hanyu (1997)	Appleyard (1969) Harrison (1972) Nasar (1990) Craig (1971) Mehrabian & Russel (1973), Berlyne (1971), Nasar (1974, '82, '90)	Fenton (1988), Gärling (1998)	Osgood (1969) Nasar (1979), Appleyard (1969) Hershberger (1969) Groat (1979), Hubbard (1994, '96) Mehrabian & Russel (1973), Berlyne (1971), Nasar (1974, '82, '90)

¹⁴⁰ Generally, integrative approaches are adopted in context specific cases, as it is for Fenton, who suggests – when studying natural landscapes- a method integrating objective and subjective approaches to environmental aesthetics.

Figure 3-13. Approaches to the study of environmental experience. The definition of each category should not be taken as fixed; moreover, the location of each study/theory in the various categories does not exclude their overlapping with others. This table should be interpreted as flexible summary of relevant studies of environmental experience.

There are two further distinctions to be done: objective/ subjective (Fenton, 1988), and formal/ symbolic approaches (Lang 1988, Nasar 1988). Objective approaches assume *that nature's objects and events have inherent aesthetic value as causes of aesthetic experiences of people* (Willard, 1980: 297, in Nasar, 1988: 108). Subjective approaches assume that it is *the individual's perception and construct of the environment that determines aesthetic value* (ibid.: 109).

The second distinction is made by Nasar (1988) between formal and symbolic aesthetics, the former having a concern for the visual structure of environments, and the latter for the associative meanings attributed to it (Lang, in Nasar, 1988).

Both empirical, theoretical and perceptual/cognitive/ affective methods distinguish between formal and symbolic factors determining affection (Fenton and Reser, 1988, in Nasar, 1988).

The concern of the objective versus subjective approaches is for the significance of the parameters considered as influencing evaluation. Whether they are derived from objective measurements or from the ratings of perceivers, the question is who assures that they are really salient to perception, in specific contexts and to specific perceivers (Fenton: 110).

A further question is how, in the attempt of being sensitive to perceivers, to find out which aspects (formal or symbolic) generate more affection and at what stage this happens.

It is felt that a combination of some of the investigated approaches can be helpful in solving these two major questions.

A brief overview on some approaches to environmental experience

Up to here the investigation has concentrated on factors affecting environmental experience; it is now essential to return to the studies in order to determine the approaches they have adopted. A brief description of some of the listed approaches

follows; moreover, the main factors identified as responsible of affection and as determinant of preferences will be identified.

Lynch (1960) first and Francescato & Mebane (1969) then, studied the influence of physical factors on the legibility and imageability¹⁴¹ of the physical space. They identified the elements that influence legibility, and the use people make of them in their everyday life; Francescato and Mebane, using an analytical approach¹⁴² similar to that developed by Lynch, studied how societal and physical factors affect urban cognition and the use of such elements. Their studies are highly focused on the cognitive process through which external elements are perceived, analysed and become significant and, although recognising the importance of affective and symbolic meanings, they don't analyse them¹⁴³.

Ittelson (1973, 1978), studying environmental perception, discovered that it includes cognitive, emotional and interpretative dimensions and that evaluations are strictly related to the cognitive personal constructs of the observers. On this base, he suggests an individualistic approach to the study of the physical environment, which is fundamental to our research and approach to environmental studies as a base for participation.

Appleyard as well as Harrison and Howard (in Broadbent, 1980), focused their study on the properties of the elements creating legibility. In particular Harrison and Howard identified appearance, location and meanings as affecting the imageability of such elements, and Appleyard identified distinctiveness, singularity, visibility (formal factors) and community significance (symbolic factor). These studies demonstrate that the affective responses can be studied and play a major role in enhancing/ reducing the cognitive process of the physical settings.

Mainly concerned with the spatial cognition process (the conceptualisation of physical settings) is Golledge (Golledge, 1978, in Gärling, 1997) who, following

¹⁴¹ See paragraph 3.3.3.

¹⁴² More detailed information about the method are provided in chapter 4.

¹⁴³ Francescato and Mebane distinguish between groups' characteristics in the development of cognitive maps, and read the differences discovered under the light of gender, age, education.

Lynch's theory, formulates the anchor point hypothesis on the assumption that people personally conceptualise (understand, structure and figure in their mind) the environment according to anchor points that become predictors of behaviours and cognitive processes. Again, these are landmarks, nodes, paths, edges and districts, and are all linked among themselves; to each of them are linked sub-groups of elements, in a cognitive hierarchy similar to water circles, with degrees of salience and distortion depending on their distance from the anchor points.

Ramadier & Moser (1998) develop another approach to environmental cognition; for them, symbolic meanings deriving from cultural and societal factors have a fundamental role in the cognition of settings and determine the spatial representations that people create in their minds. Affection in this case is clearly influencing cognition.

Quite close to Ramadier and Moser is the study of Twigger-Ross and Uzzell (1996) which investigates how place and identity processes can affect continuity, distinctiveness, self-esteem and self-efficacy, and finally motivate people to actions towards their space (see chapter 1).

Then there are studies, which are more concerned with specific factors in people's responses to environmental stimuli –both at cognitive and affective level. Among them are the studies by Appleton (1975, in Hanyu, 1997; 1982) Wohlwill (1976, in Hanyu, 1997), and Kaplan S. (1974), Kaplan R. (1974), Kaplan S. 1982 (in Nasar 1988); Fisher and Nasar (1992); Stamps and Nasar (1997). They were concerned with finding those factors affecting perceivers' experience of environmental situations (and preferences in some case). These were found to be linked to the level of security, interest, coherence, variety, mystery, preferences, that the settings were capable of generating in observers, or to more specific neighbourhood characteristics [Amerigo and Aragones (1997), Moudon (in Neary, 1994), Dias Lay (in Neary, 1994), Skjaeveland and Gärling (1997)].

Wohlwill (1973, 1976, 1979), identified complexity and order as two major physical characteristics affecting preference¹⁴⁴ for physical settings. His work, focusing on the research of the links between those factors and preferences, leads to the definition of the quasi-objective procedure for the measurement of preferences, a system to link objective characteristics to subjective responses through the definition of comparable evaluative parameters. These achievements are mainly linked to the issue of contextual compatibility, where - on the base of a quasi-total consistence between coherence and preference and of the exact measurement of coherence - he suggested the predictability of preferences for specific scenarios on the base of fittingness.

Appleton's (197; 1982) and Kaplan's (1982) studies instead can be grouped under the label of the so-called ecological model; Kaplan focuses mainly on the study of preferences, and the process that leads to them as an interaction between cognition and affection.

Studying the role of preferences on human behaviour and mammalian species, Kaplan links preferences to settings with evolutionary significance and identifies three components that link the affective and cognitive domain: pleasure/interest, content/process and mystery (for Appleton environmental preferences are linked to the perception of prospect and refuge). Kaplan's three main dimensions, none of which purely belongs to either the aesthetic domain or to the cognitive domain, can act singularly or in a combination.

Facets of affect	Facets of cognition	
	Content	Process
Pleasure-pain	Good and bad things	Managing uncertainty, recognising, predicting, evaluating, acting
Interest	Interesting things	

Figure 3-14. Facets of affection and cognition. For Kaplan, The properties of settings affect what is perceived and how it is perceived (Nasar 1988:59).

¹⁴⁴ His studies (Wohlwill, 1979) focused also on more specific environmental settings, such as the concept of contextual compatibility, which he found to be evaluated by people on the base of its measure of coherence.

For Kaplan mystery, which is not a surface property of physical objects, requires interpretation, which takes place unconsciously and affects reactions. The degrees of mystery of settings were found to be affecting both the approach and the reactions (pleasure/interest) to those settings [both in terms of content –what was observed- and process – how elements were recognised and predicted (Nasar, 1988:58)], as shown in Figure 6-14. People’s experience of settings then was guided by the research for content and informational properties, and preferences to be determined by the restorative degree of environments.

At the base of Kaplan’s study on how mystery and interest can affect preferences, is Rachel Kaplan’s (Kaplan, R., 1974) study on the role of coherence, variety and choice in constructing cognitive maps. From this, she derived some fundamental environment characteristics that could affect the creation of cognitive maps, that is the cognitive perception of physical space.

Coherence is defined as depending on *the redundancy of the elements and textures that help make the display hang together* (Prieser, 1974: 266); coherent environments allow the observer to make sense of it, to find order and uncover rules and relationships among its elements.

Variety instead is concerned with the availability of novelty, challenge and uncertainty (Kaplan S., in Prieser, 1974) within the environment; the environment is supposed to be capable of providing the observer with new stimuli once the *unknown becomes known* (ibid.: 279), to offer always new domains to be comprehended and new problems to be solved.

Coherence and variety are seen as being linked and treated together; *choice* is defined as a *logical outcome of the circumstances satisfying the first two* (ibid.: 278). The presence of choice is relevant as related to the fact that people tend to prefer alternatives chosen by themselves rather than by others.

Although coherence and the vast majority of research dedicated to it have been over stressed, the other two factors become fundamental for the creation of mental maps. Variety and choice are not only related to the physical space, but to activities, emotional loading and experiences, and choice presupposes the capacity of selecting

among these whole sets of physical and non-physical features, that is the role that perceivers can play in relation to the environment.

Further research on preferences summarises the factors affecting preferences; it is interesting to mention the so-called *collative/ arousal model* (Hanyu, 1997) developed by Berlyne (1971), which provides a quite complete panorama of some of the factors discussed so far. Its comprehensiveness has been appreciated also in more recent studies and for example adopted by Nasar (Nasar, in Altman, 1989)

For Berlyne aesthetic response depends on several physical factors, which he summarized in five groups of variables using similar scales of evaluation; they are:

- Collative variables; they include measures of incongruity, complexity, novelty, surprise and produce feelings of uncertainty;
- Organisational variables; they include measures of order, unity, coherence, clarity, compatibility and provide structure to mental images;
- Psychophysical variables; they are connected to intensity and use measures of size, color, brightness;
- Ecological variables; they are connected to naturalness, architectural styles, environmental nuisances;
- Spatial variables; they are connected to prospect, refuge, and mystery.

Among these, the most influential on preferences are, for Berlyne, the collative variables; furthermore, when these are present in moderate levels they can generate the highest aesthetic appreciation (*inverted U-shape function*, Hanyu, 1997: 303), while when they are present in high levels, they generate the highest arousal (proportional dependence).

Hanyu refers to further research which has confirmed the relevance of such groups of variables. Although he has denied Berlyne's u-shaped dependence between these and aesthetic evaluation, he generally found this dependence to be linear except for complexity.

Also focused on arousal and pleasure are Mahrabian and Russel (1973, in Nasar, 1988); they suggest that affective appraisal¹⁴⁵ of environments is determined by these two main dimensions of emotional meanings. From them it is possible to predict people's desire to approach/avoid environments; such desire though needs to be based on the knowledge of spatial locations in environments, therefore they strongly link affective responses to perceptual and cognitive stages.

Affective appraisals have been widely studied and measured¹⁴⁶ through direct verbal responses, to the point that consistency of affects to environmental scenarios has been proved. In particular, a scale of terms including affective qualities of places is available, with variations into categories and dimensions.

The two main dimensions in this scale are (Nasar, in Altman, 1989):

- Arousing / sleepy;
- Pleasant/ unpleasant;

From their combinations derive all the other states:

- Arousing + pleasant → exciting;
- Arousing + unpleasant → distressing;
- Unpleasant + sleepy → gloomy;
- Sleepy + pleasant → relaxing.

¹⁴⁵ Affective appraisals are judgements of environmental properties on the base of affective qualities (Russel, 1988, in Nasar, 1988: 121), capable of predicting human behaviour.

¹⁴⁶ Russel cites several researches carried out both in English and other languages, on the base of significant samples analysis, to show evidence on the consistency in the use of the same dimensions (pleasant/unpleasant and arousing/ sleepy) as descriptors of affective qualities of the environment.

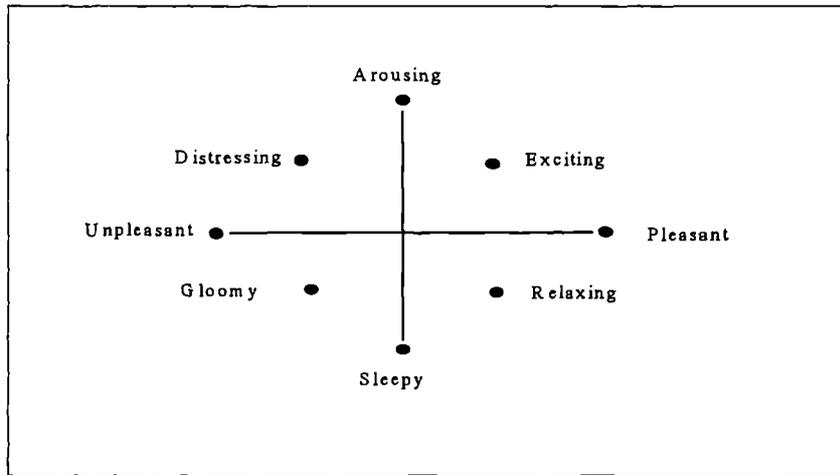


Figure 3-15. A spatial representation of descriptors of the affective quality of environments. Dimension of environmental affect (Russel, in Nasar, 1988: 122).

In Figure 6-15, *physical settings are described by the location of affective descriptors, being affective qualities of spaces systematically interrelated* (ibid: 122).

This means that "affective appraisals" - the appraisal of affective response to the environment - are relative to places and circumstances (which is fundamental for this thesis). Moreover for Russel, affective appraisals are also sensitive to exposition to other precedent stimuli (Nasar, 1988: 127), that is they are capable of registering variations in people's responses determined by their affection to their precedent stimuli.

The study of affective appraisals becomes useful to link physical properties to affective evaluation, to a certain extent offering a method to identify (if not to quantify) Kaplan's idea of preferences as evaluative choices. They offer a process to "make sense" of physical properties and link them to the behaviours that could be determined by them. The problem here is to understand to what point this translation can be generalised, because it would be rather unrepresentative to be able to derive behaviours if they were just attributable to individuals and not to groups.

The belief that *consensus among judges can be used to establish a judged property as a property of the object judged* (ibid.:127), has been significantly proved. This

suggests that affective appraisals can work for environmental objective, and not only for subjective measurement¹⁴⁷.

Not derived from Russel's theory, but logically close to it –at least in this thesis- is the behavioural-settings theory (Barker, 1968; Wicker, 1987), according to which the physical environment can be described on the base of the behaviours taking place in it. It bases the conceptualisation of the physical environment on behaviours taking place in it, and derives that the knowledge of behavioural settings can help predict behaviours.

Finally, there are all those studies (Osgood, Hershberger, Leff, Groat, Hubbard) focusing on respondents' description of the environment on the base of their own natural language. Most of them have already been mentioned for their finding on the differences in environmental response among groups, or on the influence of cultural and educational factors. The methods used (mainly semantic differential and multiple sorting strategies that will be described in chapter 4), have been helpful for the selection of a strategy (see chapter 5) sensitive to contextual issues and to respondents' point of view. Such a strategy is flexible enough to include as well, in different phases, the facets resulting from the above literature review.

In conclusion, this overview of research identifies some factors having major effect on environmental experience and evaluation.

If, then, the affective appraisal theory can establish a correlation between preferences and physical properties (mainly collative variables), and if they both can be observed and quantified, then behaviours can also be “monitored”, studied and up to a certain degree predicted. The monitoring of behaviours on the base of preferences, the dependence of preferences on observable variables, and the demonstrated constancy in aesthetic evaluation become then both the base of the suggestion made by this thesis of a participatory approach as a way of achieving consensus and satisfaction in urban/ architectural projects.

¹⁴⁷ See definition of assessments and appraisals in the next paragraph.

Measures of environmental stimuli.

In environmental studies, two methods exist to capture the qualities of physical properties and the related evaluations/preferences; these are called environmental assessments and environmental appraisals (Gärling, 1998).

These methods can also try to describe how such preferences influence behaviour, by providing either objective or subjective measurements of physical factors and their properties, as perceived and processed.

In particular, an environmental assessment is the objective *effort to describe properties of the physical environment, which are predictive of the behaviour of users* of the assessed environments (Bell, 1996: 42, and Gärling, 1998: 69). In the case of purely physical properties –such as levels of pollution, air quality, and noise levels- the measures, directly obtainable from the environment, are included into an objective indicator called Environmental Quality Index EQI¹⁴⁸. In the case of environmental qualities perceived by a human observer -such as the assessment of air, water, noise pollution, residential quality, scenic resources, transportation system- the Perceived Environmental Quality Index (PEQI)¹⁴⁹ is used (ibid.). Finally, in the case of emotional responses such as annoyance or pleasure, the Environmental Emotional Reaction Indices (EERIs)¹⁵⁰ are used.

An environmental appraisal is the study of *subjective emotions directed towards something in the environment* (Bell, 1996: 43), therefore they are bound to vary

¹⁴⁸ EQIs are objective measures of physical characteristics, such as the toxic release, air, water and soil quality, effects of dust on breathing etc. These factors are measured through the help of technological equipment, according to the specific case.

¹⁴⁹ PEQIs are more dependent on the people, therefore they are not based on modern technologies but on attentive psychological analysis and measurement. These indexes are generally used to evaluate the impact of projects on the population, the perception of environmental characteristics in different periods etc. (Bell: 42).

¹⁵⁰ EERIs include evaluative methods based on people's verbal responses.

among individuals and according to stable characteristics such as age, expertise and culture, and less stable characteristics such as moods¹⁵¹.

Gärling (1998) suggests a combination of appraisals and assessments to obtain a more complete picture on environmental influence.

3.6.2 The transitional space: suggestions towards an integrative approach

In order to facilitate the organisation of factors affecting environmental preference, a combination of the four main methods identified in paragraph 3.6 is suggested to give a temporal and logic organisation to the vast number of facets that will be mentioned. In particular, theoretically derived approaches help organise the framework of research, consider a sequential progression from perceptual to cognitive and finally to affective stages, while empirically derived approaches offer research methods -to identify significant environmental factors- that can be applied to the individual stages identified. Perceptual/cognitive and affective methods guide temporally the exploration of the physical environment, following the “higher thinking capacity” suggested in visual literacy.

The idea of linking different methods into an integrative approach is not new.

Gärling (1997), after an overall view of environmental studies, suggests that the way ahead should consist in integrating these various forms of knowledge.

Fenton and Reser (1988: 108) produce evidence of the fact that –at least until then- there has not been any successful result in combining theory and methods in studies on environmental perception and preferences, although that seemed the prerequisite for the improvement of the discipline. In a study on landscape-preferences they propose a way in between the common a-theoretical approaches focusing solely on stimulus quantification and the a priori theoretical approaches assuming influences of factors often meaningless to perceivers. In particular, they suggest an integrative combination of the two approaches, what they call *interactional perspective* (ibid.:

¹⁵¹ The study of subjective responses is the domain of social science; the major debate to this regard is about how significant and consistent can be considered the study on such factors, and the related methods of analysis, which are bound to be mostly empirical. See chapter 5 for more details.

109), which could solve their reciprocal limits and allow to identify the relative contribution of perceiver and perceived in determining the behavioural product, that is a perception, a judgement, or an environmental preference.

Moreover, if applied to the study of the built environment, Fenton and Reser's interaction of empirical and theoretical methods responds to both the contextual theories and Gifford's suggestion of maintaining research in man-environment studies, tied to specific places (Stokolos, 1987; Gifford, 1998).

3.7 Conclusions. A logical/ temporal framework of analysis with a suggestion of factors to be included in the different stages of the process

The chapter was aimed at studying the processes of environmental experience related to the visual dimension of the built form, and to use its findings - in terms of which factors affect people's interaction with the physical environment - to inform the design process.

The focus on the visual aspects of the built environment is due to the high level of influence that these -among other aspects - can have on people, and in particular on how they perceive, understand, evaluate and react to the built environment.

This view is linked to the interpretation of environment that this thesis has adopted, intended as a nested set of spaces in which human action takes place, affecting it and being affected by it, through a complex set of mutual influences exercised by several types of factors.

Once established the role of the visual impact on the experience of space, the chapter tried to study such impact, by identifying the phases through which it takes place, and the personal, societal and physical characteristics that can influence it. A review of current studies on environmental perception, cognition and evaluation helped to establish a sequence of phases that can describe thoroughly, but at the same time with high degrees of flexibility, how one gets to perceive places. In particular, the chapter studied how information is collected, organised and finally how action can take place on it and according to it. With regards to the built environment, the same

process has been studied in the urban space, with a particular concern on the processes of urban cognition and evaluation.

With regards to the built environment, the chapter studied the relationship that people establish with it, as a form of communication, where objects work both as carriers of information and can engage people in more personal interpretation. It also explored the concept of meanings attributed to the built environment, with a main distinction between representational and responsive meanings.

To the perception of environment as an "enabler" of communication, is linked the question of how such communication can take place in a way that makes the information flow understandable and effective. Exploring risks and advantages of such idea, derived the conclusion that it is necessary to involve users and designers of the built form in sharing meanings and defining codes. The question of how to do that - in a way that takes care of the existing interaction between people and the environment - lead to the next step, that of studying what role personal characteristics, idiosyncrasies, human needs, culture, education and physical factors can play in environmental experience.

These factors can be labelled under three main categories, namely personal, societal and physical, although a clear distinction among them should not be done, due to the mutual influence they have on each other.

A review on Maslow's and Max-Neef's theories on human scale development revealed how human needs can affect environmental experience, enhancing or restraining it. On the base of Coeterier's view, Max-Neef's theory has then been transposed in urban settings, to identify a number of environmental conditions that affect the satisfaction of needs and therefore determine ways in which one's interaction with the urban form happens.

The chapter then explored how experience, cultural codes and education can also affect how one experiences the built form. From a comparison between nativist and learning theories, the chapter embraced the concept of perceptions as "built hypothesis", developed by Gregory, to demonstrate how perception, which by its nature is something that takes place anew, can still be influenced by a range of habits and schemata. This can be both a risk and an advantage, according on the habits and

schemata one has. Kelly's theory on personal constructs confirms this view. The focus, then, concentrated on the nature of such schemata, and on which factors they are sensitive. To understand constructs in more detail, the role of habitus, familiarity and education are studied, to find out how cultural processes can affect what one experiences, and therefore interpret. An exemplar case is education: through research carried out to assess how professional education influences - in environmental evaluation - the formation of evaluative schemata, the chapter highlighted major discrepancies between professionals and lay-people, suggesting the need to make use of such differences.

Formal properties of the built environment, such as degree of order, complexity, unity, sameness, differences, coherence also have an impact on how one reads space, and are therefore considered among the factors affecting perception. In conclusion, figure 3-16 describes the model of environmental affection adopted in this research; all factors depend - directly or indirectly - upon each other, and have repercussions of the overall environmental experience process, but also on the way the physical space becomes "place".

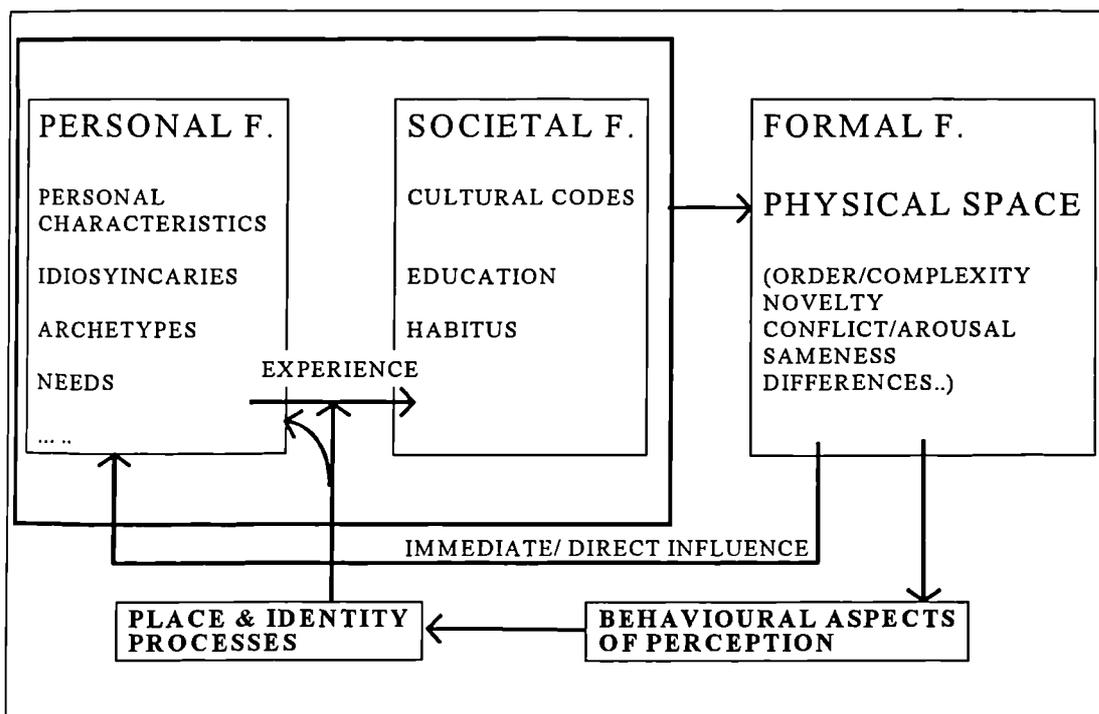


Figure 3-16 The factors playing a role in the process of environmental experience, as they have been studied in the chapter, and their reciprocal influence.

At this point, the question was how to capture such differences, so that they are representative of the whole process of environmental experience. The chapter, therefore, explored several current study approaches, with particular focus on the theoretical/empirical and cognitive/affective; moreover, it considered the approach to the research, distinguishing between subjective and objective studies, and also the nature of the content studied, whether formal or symbolic.

In conclusion, the chapter suggested to adopt a way in between these approaches, to join their advantages and solve their limits. In order to do so, it is necessary to select analytical techniques for the assessment of the phases of environmental experience. This issue is discussed in the next chapter.

CHAPTER 4: THE TOOLS TO CONDUCT A COMPREHENSIVE STUDY OF ENVIRONMENTAL EXPERIENCE

Reasoning, says Shopenauer, is of feminine nature: it can give only after it has received. Without information on what is going on in time and space the brain cannot work. (Arnheim, 1970: 1)

With the aim of improving the involvement of users in urban design, chapter 3 has described the process of visual experience of the environment in main phases— perception, cognition, evaluation and behaviour- together with the major personal, societal and physical factors playing a role in these phases. Studies on environmental experience have been distinguished according to the approach they use (theoretical/empirical and subjective/ objective) and the field of cognition/ affection or formal/symbolic research explored.

Of such studies, the major outcomes were outlined, in terms of the facets affecting one (or more) of the temporal phases identified; moreover, the influence of culture and personality (needs and experiences) on the interaction with physical settings, has been considered.

In conclusion, it was suggested that it would be possible to develop meaningful ideas and responsive solutions in design by analysing directly with users and designers the entire environmental experience as a continuous process -from its perceptual to its behavioural phase.

A complex set of factors -physical, cultural and personal- plays a role in the process of interaction with the physical space; as shown, complete understanding of such interaction can only be achieved if those factors are considered. This chapter proposes a discussion on analytical methods currently used to register and assess environmental experience. It is argued that such methods are useful to obtain fractions of information, and therefore suggests to combine them within a framework where they are linked to join each other's findings and strength, and overcome their limits.

4.1 Organising the study of environmental experience

Due to their nature -either physical, cultural or personal- factors playing a role in environmental experience are generally studied through the analysis of physical objects, of the psychological stimulation that derives from them or of the abstract concepts that people hold in their minds about spaces and spatial conditions. As shown in chapter 3, research in the field of environmental psychology has widely explored all three of these possibilities.

Considering that the aim is to discover people's perception and evaluation of places, and to actually combine their experience so that it can then be used as design input, places must be known to people. This means that they must be able to perceive, understand and formulate an opinion on them. So it follows that spaces must be studied, but also the psychological stimulus they transmit, and the concepts through which they are transformed from objective into subjective characteristic. The question is whether, with regards to the study of space, people, or ideas one is more informative than the others, and whether, therefore, the study of environmental experience must focus on the most informative one.

Focusing on the perceived image of neighbourhoods for example, Garcia-Mira and Sabucedo (1997) argue that it is not possible to provide observers with a clear image through the use of pictures of places (the representation of physical objects). For them these can in fact produce just partial information of such places. Therefore, instead, the only way to obtain comprehensive views of places, would be to get them directly from people, that is through the concepts they hold of such spaces in their mind.

It is argued here that all three approaches - the study of spaces, of people's response to them and of the concepts they hold in their mind - do not exclude each other, but each of them can generate only partial information on environmental experience. Therefore it is essential to work with all three of them together; to do so, a framework must be identified. This framework, must at the same time identify 1) a temporal sequence of actions to be undertaken and 2) link the sequence of action to a

spatial framework (the settings of the study). Since the study involves different people, it must also structure their contribution.

Amerigo and Aragonés' study (1997) on residents' perception of, and satisfaction with, neighbourhoods explains how to conduct research according to a temporal sequence. Nasar's idea of a progressive perception, from city level to ever-smaller scale, suggests the spatial framework for the present study. Finally, cross-cultural studies suggest how to involve different actors. These frameworks, supported at the same time by a selection of methods for data-collection in environmental research, will constitute a comprehensive and flexible analytical tool to be used to inform the design process.

4.2 The temporal framework

Moving from the existing literature on the assessment of residential satisfaction as a means to evaluate residential quality, Amerigo and Aragonés (1997) identified a way of studying how individuals interact with their residential environment.

Environmental experience is distinguished in three phases: perception/cognition, evaluation and behaviour. To study each of them, they have adopted different methods of research, each tuned to register specific parameters and features related to each phase.

From residential satisfaction to a wider evaluative template

Amerigo and Aragonés base their structure on two major branches of studies on residential satisfaction; one considers residential satisfaction as a criterion to evaluate residential quality (satisfaction is a dependent variable), the other focuses on research into residential mobility. In this second case, *residential satisfaction is considered as a predictor of behaviour and, therefore, an independent variable* (ibid. 47). In doing so, they establish a hierarchy where phases of environmental experience (perception, evaluation and behaviour) are linked, and in each of them actors and actions can be observed.

Figure 4-1 shows how the process of environmental experience develops: first of all, when objective attributes are perceived, they undergo changes, because people

interpret them on the basis of the whole set of personal and cultural factors studied in chapter 3. The translation of objective into subjective environmental attributes takes place through a mental activity of recognition of the objects (environmental cognition) and of drawing inferences, that is developing a judgement of such attributes, in terms of appreciation and satisfaction (environmental evaluation). Behaviours follow interpretation, although this cannot be generalised as strictly depending on personality.

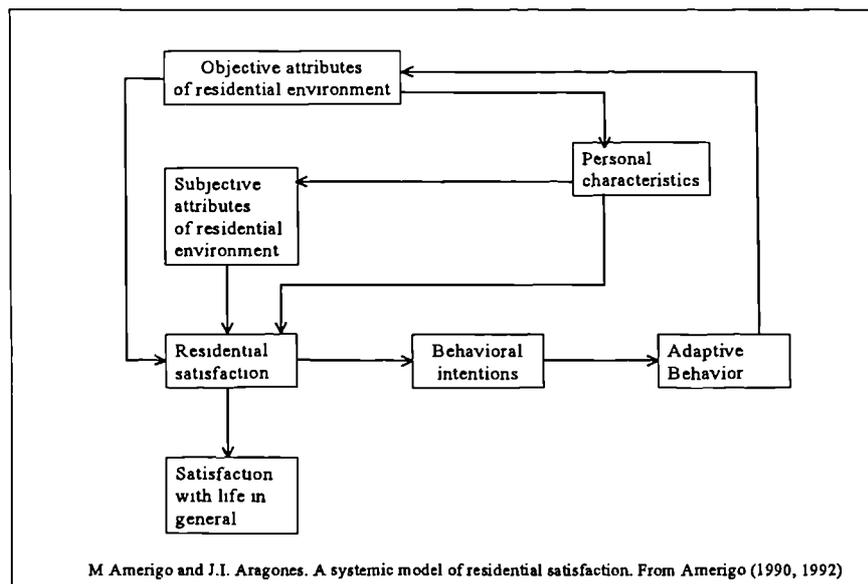


Figure 4-1. A systemic model of residential satisfaction. (M.Amerigo and J.I. Aragones, 1997: 48).

Nasar (1998) similarly structures environmental experience within perception, cognition, affect, affective appraisal and aesthetic response, as represented by Figure 4-2. People's characteristics (personality, affective state, intentions, cultural experience) and the resulting aesthetic response (affect, psychological response and behaviour) are also related and affect each other.

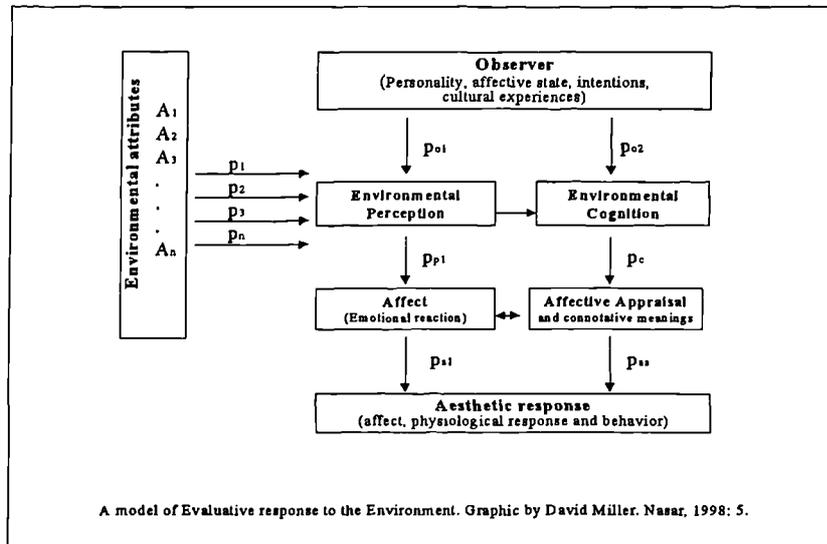


Figure 4-2. The process of acquaintance between men and the surrounding environment (Nasar, 1998; 5).

For Amerigo and Aragones as well as Nasar, perceptual, cognitive, affective, evaluative and behavioural processes do not necessary take place in sequential order. Instead they overlap in time, and this is a source of mutual enrichment for each phase. However, such constant interaction makes the study of each phase more complex. Hence the idea of developing a combination of analysis methods, which is first of all flexible and capable of registering physical, personal and cultural facets.

It is argued here that the study of complex processes such as environmental experience through single analytical methods may capture just a few data. Figure 4-3 explains this idea: each of the methods studied can register a specific set of data, according to the factors it is sensitive to (the "filter"). Methods that can register the use and frequency of physical elements for example, will not necessary be able to capture information on meanings and emotions linked to such elements. A sequential combination of filters and output filtered can provide a complete overall view.

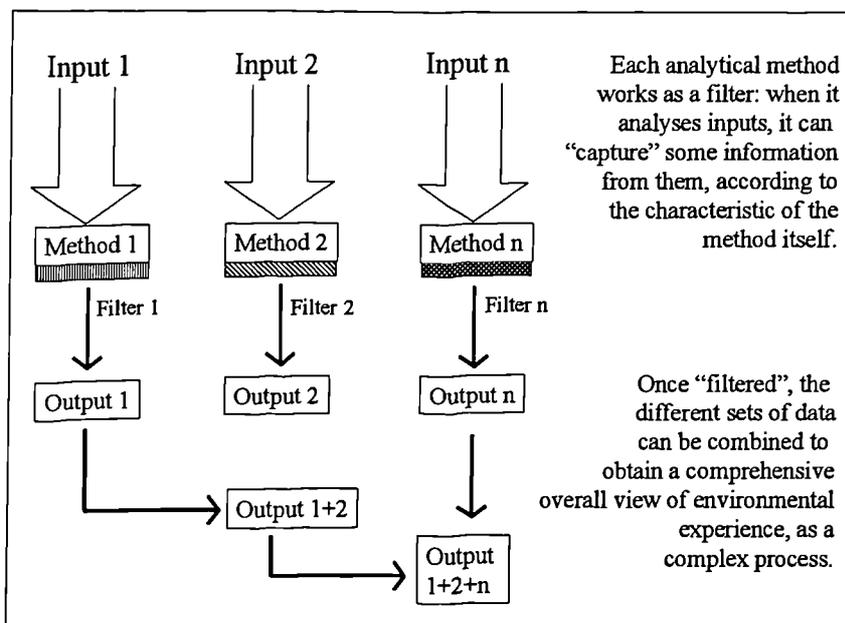


Figure 4-3. How participatory design can enrich the information-flow in participatory design.

This approach is close to the study by Amerigo and Aragonés: since for them each phase of the process implies different forms of engagement in people, it was evaluated and measured with different techniques.

In-depth interviews with groups of residents from 3 different housing estates (i) council houses in the periphery of Madrid, ii) similar council estate but undergoing major repair or rebuilding and iii) from substandard housing in the city of Oviedo) were carried out. The questions - structured in three levels of analysis, one for each phase - were grouped as follows:

- Part one of the questionnaire regarded personal socio-demographic data;
- Part two wanted to identify environmental quality indices (PRQIs = Perceived Residential Quality Index, see chapter 3);
- Part three wanted to determine people's satisfaction with their environment;
- Part four wanted to assess the behaviour of individuals in their residential environment.

Apart from part one of the questionnaire, all the others relate to one aspect of people's interaction with the place (cognition, affection and behaviour). Part one instead links cognition, behaviour and affection to the characteristics of residents.

Cognitive level according to Amerigo and Aragonés

After each round of questions, the answers were analysed through content analyses; from the second round of interviews investigating the perceived environmental qualities, a series of PRQIs was derived. Figure 4-4 shows how it is possible to tune the method to the purpose of this research additionally using analytical tools.

Amerigo and Aragonés 1988	Amerigo and Aragonés 1990	Amerigo and Aragonés 1992	Amerigo and Aragonés 1992
Comfort with the neighborhood unit	Relationship with neighbors	Relationship with neighbors	Relationship with neighbors
Comfort of house		Quality of house	
Safety	Residential safety	Urban insecurity	Urban safety
		Comfort/ non overcrowding of house	Overcrowding
	Basic residential infrastructure		Infrastructure: facilities
Privacy			
Thermal insulation	Neighbourhood infrastructure		
	Deterioration		
	Urban activity and noise		
	Open natural space		
	Miscellaneous		
			Health infrastructures

Figure 4-4. Perceived Residential Quality Index (PRQIs) in council housing or dwellings of low socio-income status (Amerigo and Aragonés, 1997:50).

The third set of questions was about the affective response to neighbourhood conditions. This time the content analysis of the answers allowed them to distinguish between objective and subjective dimensions of the response and their role in satisfaction/ preference. Amerigo and Aragonés' study has demonstrated that

subjective factors have stronger influence on the perception of preference for residential estates than objective factors do¹⁵².

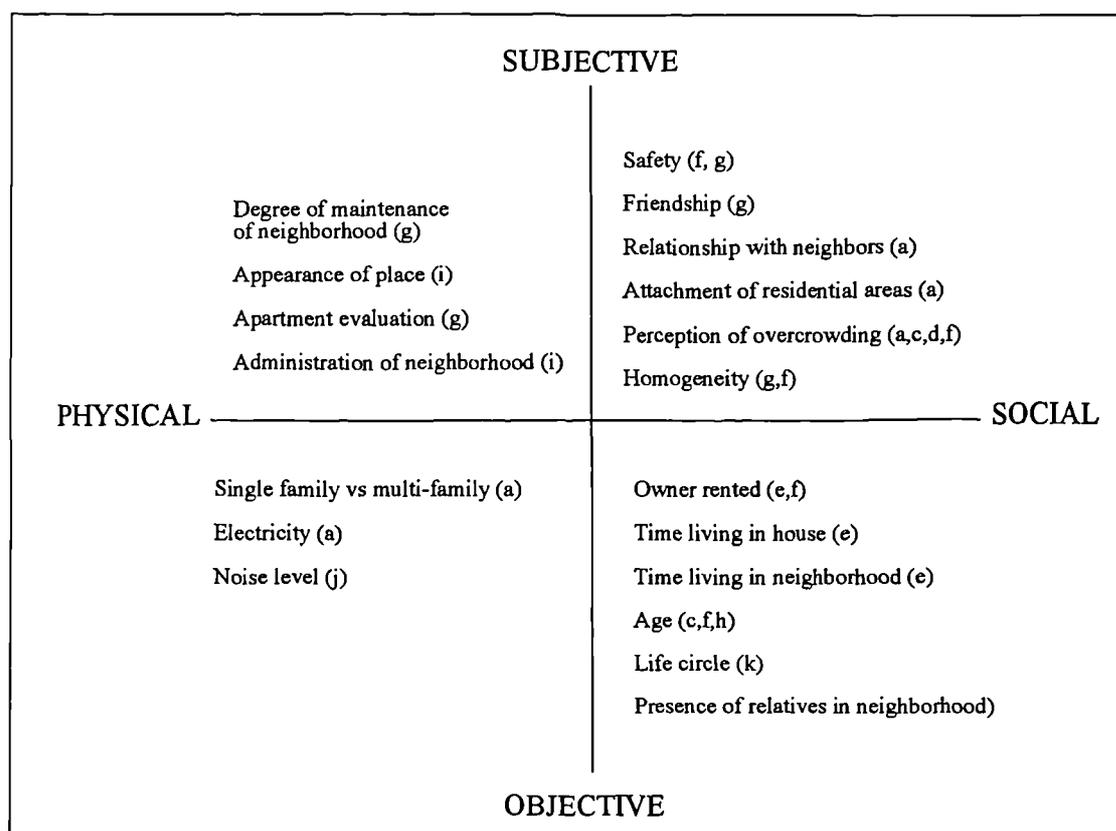


Figure 4-5. List of predictors of residential satisfaction. (Amerigo & Aragonés, 1997; 52): a) Aragonés and Corraliza (1992); b) Christiansen et al (1992); c) Bonn (1991); d) Aragonés, Amerigo and Sukhwani (1992); e) Rent & Rent (1978); f) Loo (1986); g) Weideman (1982); h) Amerigo & Aragonés ((1988); i) Anthony, Weidemann and Chin (1990); j) Miller et al. (1980); k) Hourihan (1984).

Finally, as concerning residents' behaviour, the interviews found that factors such as maintenance of the house and neighbourhood, good relationships with the neighbours, participation and neighbourhood activities were descriptors of behavioural approach to the residential environment.

This example showed how it is possible to use a time-framework to organise the research; it is now time to identify a spatial framework.

¹⁵² Since the present research is focused on community groups, and residential estates are a key issue, it is important to use methods that can register subjective responses.

4.3 The physical framework

According to Nasar (1998), people's evaluative image of the city is hierarchical: they have images of their region, city, neighbourhoods, roads and houses; to each of these images corresponds a level of detail which expands with the increase in their familiarity with the place. Time and movement also play a role in perceiving places: changes within the day, seasons, the age of the perceiver, the purpose behind the visit to places can have significant repercussions on the images perceived.

To make participatory design effective and meaningful, the object of design must be of concern to those that in future will interact with it¹⁵³. The first step to undertake when setting up such a collaborative project then, would be to identify those settings of the urban scene that mostly attract interest and concern such future users. Then, the study should focus on those factors affecting their perception, *likability* and use. It is also fundamental to include concerns and views of all the people involved in it,

¹⁵³ Although the term "user of physical settings" has been adopted in the previous chapters, it is now the right time to add some reflection to its meanings, because it is from now on that the knowledge of person-environment relationships will be used for design purposes. For Gee (1994), calling people users has two negative implications: on the one side, it means treating them as if they were entities whose behaviour was observable, hiding all what makes them human. On the other, the word user implies that *the world* - other people included - *is a resource for the purpose of humans* (Gee, 1994: 113), giving to the meanings attributed to it a mere utilitarian value, excluding others such as psychological, sociological, aesthetic, symbolic and so on. To this utilitarian notion of the individual interacting with the environment Gee counterpoises an interpretation based on commitment, complexity as well as utility, praxis and phronesis, poetic intuition and meditative thinking. The figure of the 'man-interacting with the environment' which results from this interpretation is not far from the type of commitment that visual literacy requires - making and not just learning or seeing - and is certainly a correct description for those willing to play a role in the environment.

Gee encourages professional designers and environmental psychologists to come up with a new term to substitute and enrich 'user'. It is the opinion of this research however, that one term, alone, would probably risk to understate some of the intended qualities. Probably, then, it will be always necessary to specify the complexity of man-environment relationships, or to make sure that no misunderstanding on the term user ever raises from the start. User, participant, actor etc. are all definitions with limited value if taken per se: they communicate just part of the truth. As the nature of the interaction is complex, perhaps the terminology used to define parts and roles of such an interaction should respect its complexity, adapting itself case by case. In doing so, as long as the initial complexity is established and awareness raised on it, perhaps the problem of finding a specific terminology would no longer exist. This also responds to Gee's idea (quoting Arendt, 1958, in *ibid.*: 118) *that one can only be human among other humans via speech and action, word and deed.*

whether they are users or designers. A further step therefore will require to identify the differences of such interpretations and, as described in chapter 1, make use of them on the base of the principle "agreeing to disagree".

The following review of methods aims at providing these sets of information.

4.4 Cross-cultural studies: what they are and why this research can be considered as such

Cross-cultural studies, in behavioural/social sciences try to respond to the theoretical and practical impossibility –in environmental research- to achieve complete knowledge on man-environment relationships just on the base of one single culture. In fact one culture, alone, cannot possess each possible variation of environmental conditions and the correspondent human responses/adaptations to them. Cross-cultural studies base environmental assessments on the study of the influence of development projects on cultures and on the behaviour of their members; in doing so, they study representatives of groups from different cultures, whose experiences can reveal differences and similarities and be predictive of behaviours (Brislin, in Altman, 1980).

An interesting advantage of cross-cultural studies is that researchers are encouraged to get in touch with cultures different from their own which is, no doubt, an enriching process both for theoretical and empirical research. Such studies in fact, are either carried out through direct empirical testing of environmental experiences, or through content analysis of existing research.

To a certain extent, the present research - although not on cross-cultural issues - can learn from cross-cultural studies, because different groups within one culture are analysed. The interest in involving communities in design in fact implies that at least two different groups of “actors” will have to be considered; designers and users then, are two different categories of the same culture, with different environmental experience.

“Etics” and “emics” as guidelines for the analysis of environmental experience and for the selection of analysis methodologies (tools)

Talking of cross-cultural studies, Brislin (1980) introduces the concepts of “etics” and “emics”. “Etics” refers to the attempt of finding -in different cultures- unifying principles, together with the theoretical tools to carry out comparisons among them; “emics” instead refers to the attempt of focusing research on the specificity of each culture, with no use of generalisation. That is to say that “etics” is culture-general while “emics” is culture-specific.

When working with different cultures, it is fundamental to find a method to distinguish between what information is “emics” and what is “etics” (Brislin, 1980). A way to do so is to collect evaluations on the same issues from each culture, and compare the answers; what differs, is “emics” and what coincides it “etics”.

This approach is important in participatory design: here generally the different groups of a community, such as clients and designers, confront each other on the same issues; therefore, all their views must be known and shared. A project on environmental assessment addressed to users and designers must on the one side be context and group specific; on the other – at least as a process - it should be extensible to different contextual circumstances.

But “etics” and “emics” also appear at another dimension of this research. As mentioned in chapter 1, environmental evaluation is proposed as a means to engage communities in design issues which should start at the early stages of design, and involve –somehow- the community as a whole. Then, the issues of how to represent “the” view of the community becomes fundamental. Again, a line between what can be “emics” and what can be “etics” must be drawn.

In participatory design, and in particular when large groups of people are involved, it is difficult to think of involving each of them at every stage of the study. The process should be seen as phased, and each phase addressed to specific groups of the community. In social sciences, to capture a holistic view of a phenomenon (“etics”) while working with -or observing- a reduced number of elements (“emics”), requires the help of “technology”. With technology this research intends those assessment and

appraisal methods to capture the perception and evaluation that people have of their environment.

The following section presents methods to achieve “emics” information (to gather specific evaluations/ images of specific and specific groups of the community) and “etics” information (to use the specific results to capture more holistic and comprehensive views of larger portions of the community). This also conforms to the temporal and spatial framework chosen.

Among the methods researching for group-specific information, those based on the research of personal constructs¹⁵⁴, such as multiple sorting, map sketching and open-ended techniques are presented. Among the methods to gather group-general information, the semantic differential offers strong potentialities; finally, the emotional loading profile technique can be a useful and clear way to communicate the results of space-evaluation analysis, and to use them as guidelines in design.

4.5 Methods of analysis in environmental studies

Chapter 1 has shown why it is important to explore the world as respondents understand it and chapter 3 has recognised that people build their own understanding of such a world around the categorisation schemes they employ in their lives. Hence the task of choosing how to respond to the first issue, understanding and respecting several different individualities.

4.5.1 Map sketching and sensory walks

The first task is to register which elements and facts are immediately perceived by people when experiencing the city.

¹⁵⁴ When carrying out cross-cultural studies, the techniques adopted should be not verbally limited (Hubbard, 1996): *studies completely relying on verbal accounts are not sufficient for comprehending the content of social (environmental) representations* (Hubbard, 1996: 87).

Map sketching

Nasar (1998) and Kitching (1994) have demonstrated that the analysis of evaluative maps that people hold of the city can be used for the analysis and improvement of it. This suggests to use mental maps for the collection information on the perception of the city form, and then to use such information in discussions on design issues.

Chapter 3 has presented some views on and interpretations of mental maps and of the amount and nature of the information these can provide. The focus here is on the map-sketching technique in combination to open-ended questions, as used by Francescato and Mebane to study (1973) how people perceived two big cities, Milan and Rome¹⁵⁵.

The aim of the map-sketching exercise was to find out differences in the cognitive maps of people according to age, income, length of permanence in the city and gender. In particular, it wanted to investigate i) the differences in composite images of the cities; ii) whether people, according to their socio-cultural and age difference were able to figure such differences within representations; iii) find out if map-sketching could serve as an investigation tool usable in other circumstances.

The sample chosen for the analysis, based on Parr's theory¹⁵⁶ (Downs and Stea 1973) included different age groups which may have different environmental needs connected to 5 stages of urbanity: childhood, adolescence, adult domesticity, adult emancipation, the old age. Researchers required in the first instance people to draw maps of their city as a whole, indicating the main features they remember. Then, it required to draw the route between two very well known places in the city, pointing out again the main features people remembered on the way from one to the other. In addition, the researchers were asking respondents questions of evaluative nature, to add more personal input to their spatial representation.

The study by Francescato and Mebane confirms whether Lynch's elements are used for orientation and which of them plays a major part in the building of a complex

¹⁵⁵ An application of this method to the study of how people perceive Glasgow is described in Chapter 6.

¹⁵⁶ For Parr, different age groups may have different environmental needs.

system of significant physical features. Finally, it shows how people, according to their socio-personal characteristics, map them within such representations.

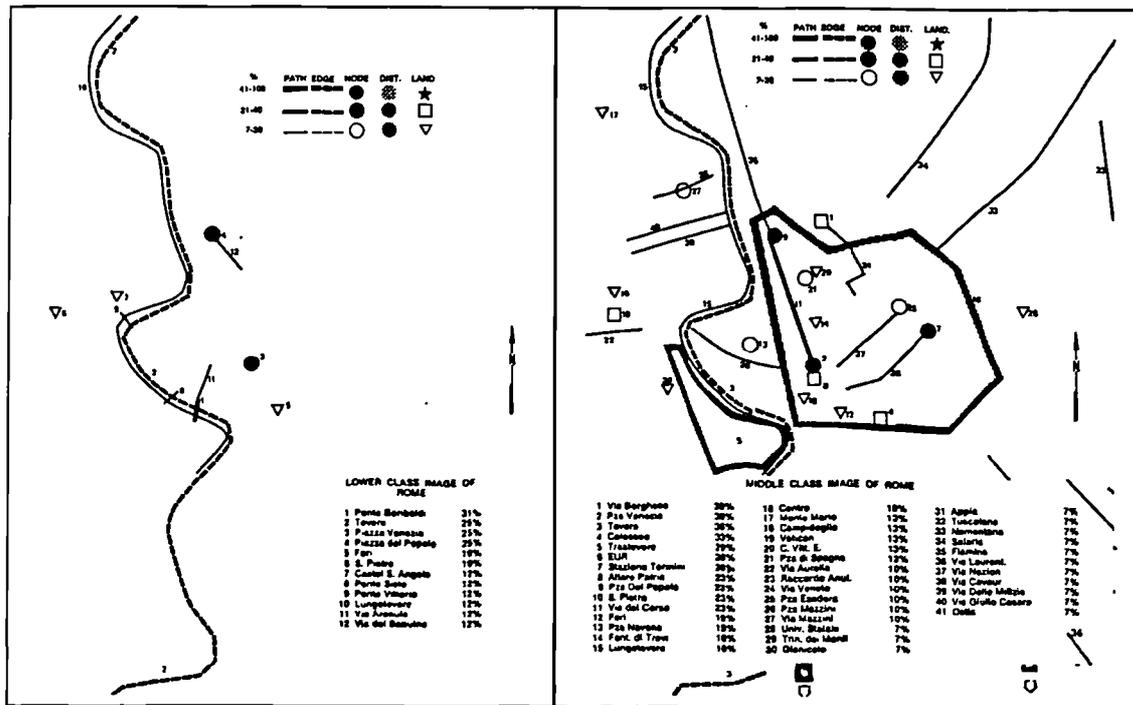


Figure 4-6. Map-sketching of Rome. Differences between the maps drawn by low income and high income people. Middle-class groups drew a greater average number of elements than respondents from the lower-class. Several assumptions have been drawn from these maps; on the one side, that mobility influences the exposition to districts and regions, and therefore who is less exposed to them draws them less often. An alternative explanation is linked to the fact that low-income people might have developed experience restricted to their home environment, and therefore they draw maps of small areas in the city. This hypothesis shows that more introspective research is needed.

The approach becomes therefore useful to discover, from a general point of view, what is people’s first conceptualisation of a complex space (a city in this case), and also on what base they conceptualise it, whether functional, symbolic, cultural or a combination of them. Moreover, the approach can also identify those features that are of more concern to people, and up to a certain extent it relates them to their socio-personal characteristics. Then, when combined with questions, it can also address further research of such features. However, to be used to make design more user-respondent, it is a very specific source of information, which needs therefore to be followed by further research on perception, evaluation and behaviour.

Sensory walks

Of the same nature as maps, but with more insight into perception, are sensory walks, a process that collects sensorial information and relates it to spaces in a sequence.

When studying a physical setting, Sanoff suggests Goodey's (1977) sensory walks to *get acquainted with the familiar and to re-examine the world through senses and emotions* (Sanoff 1991:117), and to form the base for further descriptive, analytical or experimental activities. The technique used in sensory walks consists in opening people to what the target environment offers, by enabling one sense at a time – sight, smell, hearing, touch, taste - imposing a stronger and more conscious use of the others. There are various methods to conduct this exercise; a simple and effective one consists in providing people with a map of the target area, in asking them to take a walk through it, and to repeat it for each sense. In each trip visitors are required to record the immediate impressions that the place gives to the sense. Then they are required to look for a place, sit down and discuss impressions with a resident of that area and finally to record the salient features encountered along the route, together with the residents' view. Since sensory walks can be carried out with many variations, also the way to record impressions varies widely; the symbols in Figure 4-7 are indications of how the exercises could be carried out.

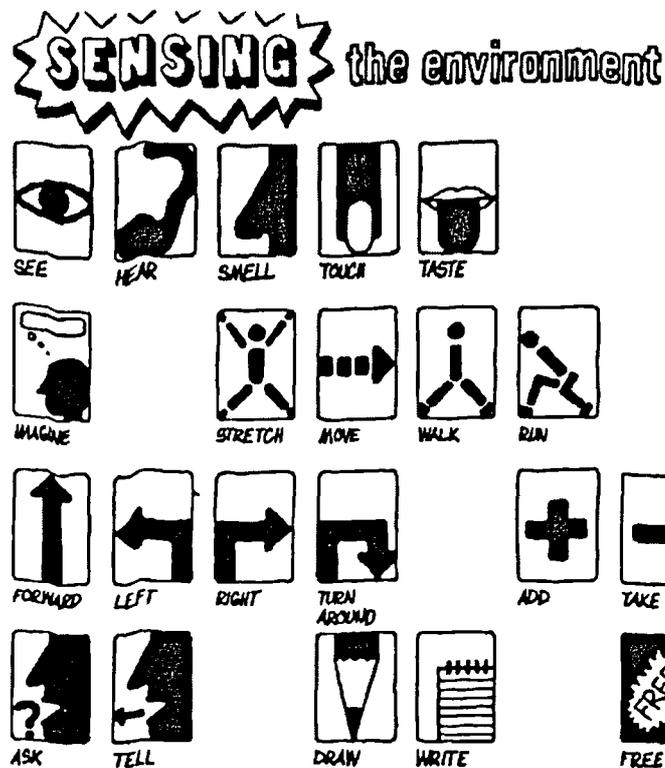


Figure 4-7. Sensory walks. Graphic symbols used as guidance for a sensory walk (Sanoff 1991: 118)

Sensory walks are useful exercises both for those who are familiar with the target areas - who are thus required to experience them in unfamiliar and new ways - and for those who are new to those settings - who come to learn about them gradually and according to an organised framework. The confrontation of these two views can then guarantee an enrichment of such views.

An ideal setting for such an exercise would be an area where both clients and designers¹⁵⁷ could be involved in a study of its characteristics, addressed to actions for its improvement. If joined to a map sketching procedure carried out by the same two groups, together these two activities would guarantee that the study was conducted on an area of effective relevance to the clients, and also that new perspectives were adopted in doing so.

¹⁵⁷ Chapter 6 describes a case study where the researcher, together with a group of clients and designers, carried out map-sketching and sensory walks exercises as starting point for the analysis and evaluation of a neighbourhood. Such a neighbourhood was selected as the setting for an urban renewal design process.

4.5.2 Looking for personal conceptual systems

Human beings for certain purposes can be treated like particles in Bernoulli's volume of gas; in other words, their behaviour in the mass can be observed, analysed statistically and used to predict their probable future behaviour.

(Broadbent, 1988: 97).

To make urban form more respondent to those who will interact with it, refusing standardised solutions, individual characteristics must be studied, and information must be drawn from them. Then, ways must be explored to make use of such focused knowledge so that it can have impact on the design of the city form.

Among the fields of research of social sciences, is the study of subjective meanings and client-oriented perspectives on personal meanings (Shepherd & Watson, in Canter, 1985:81), to understand the conceptual system that individuals use when interacting with their environment. Considerable amount of research has developed as a response to those theoretical beliefs supporting the role played by personal characteristics in human behaviour. Among such beliefs, this thesis has found of particular interest Kelly's Theory on Personal Constructs (1955), and the empirical approaches to the study of man-environment interaction that have been derived from it (Scott and Canter, 1997).

According to Kelly (1955), people perceive the world according to the meanings (constructs) that they apply to it; such meanings are chosen by people independent of any influence other than their own will. Therefore, each of us has his/her own way of seeing the world, which influences past, present and future actions. When talking of places, for Canter (1997), from the meanings that people attribute to them depends the pleasure such places hold for them. This means that the study of personal constructs and meanings is a fundamental step to understand people's preference and evaluation for places; several ways have been developed to do this, as described in the next paragraph. Open-ended and multiple sorting procedures are among the most common approaches; the main advantage of these methods is often interpreted as their limit. It is often necessary, for practical and economical reasons, to compromise on the size of the sample studied in order to obtain the precision and detail of information that these methods can offer. The procedure to achieve such

detail of information requires, in fact, time for the collection of information and its analysis, and is in the majority of cases based on the personal and direct involvement of the researchers before any form of interpretation can be taken.

The need for large amounts of information on vast scale samples seems, however, to be always more necessary as a way to increase the reliability of the data obtained. If on the one side, large-scale samples can effectively contribute to the reliability of the information, on the other, as counterpart, there is the risks to have to compromise with the quality of information collected.

Quantitative and computer based results that achieve the goal of collecting and processing large-scale data are widely available (Canter, 1985: 81); they generally collect data to fit known (standard) methods of analysis, but this implies the risk to adopt procedures which are not strictly appropriate for the issues studied. The major limits of computer methods are the following.

- 1- The data adopted are – just - those having a *strong, clear and linear order* (rating scales are preferred to qualitative scales) (ibid.: 82).
- 2- The structures of the set of variables are maintained equal –in number and type- for each respondent.
- 3- Since the computational efficiency of a model highly depends on the nature of its assumptions, computational models tend to favour assumptions underlying linear dimensions, because they can generate dimensional explanatory models (ibid.; Groat, 1982).

Having said this, to find out about the conceptual systems that people hold of things, it is clear that procedures that are really sensitive to their answers must be based on other assumptions, as open-ended and multiple sorting procedures do. Both methods are, however, often feared by researchers because the results they obtain are difficult to interpret (Canter, 1985). Yet, by talking to people in a relaxed, open-ended way, they allow the researcher to learn about the concepts people use in a particular context. For Canter... *research would be more effective if it allowed the interviewed to express his/her view on the issue researched* (ibid.: 83).

A description of multiple sorting procedures follows next; free as the open ended questions are, they structure the answers collected into a controllable form.

Multiple sorting procedures

Multiple sorting methods (MS) are analyses where respondents are required to group given objects into categories of their own choice; ... *The essence of a sorting task is to establish the individuals' own understanding of their personal conceptual systems* (Canter, 1985: 110).

There are several types of MS that differ from each other for a certain number of restrictions imposed by the researcher on how to organise the answers.

One of the first forms of MS was the Repertory Grid Technique by Kelly (1955), developed to identify people's personal constructs; it allows the interviewer to get a mental "map" of the view of the world that interviewees hold, and to register it with the minimum of observer bias. Respondents are required to build the maps pairing elements according to properties that such elements have/ don't have¹⁵⁸. For Kelly, such maps should not be analysed by the investigator, but discussed by the investigator and the interviewee together, to enhance the latter's capacity to understand his/her own constructs. Constructs have two meanings: they represent, on the one side, the systems derived from experience, on the other the systems that condition how we adjust ourselves to such experiences. Therefore, constructs help understanding the past, but also predicting the future actions of an individual.

The Repertory Grid was then developed as Role Repertory Test by many researchers, but more restrictions were introduced to control the researched information, its format and its analysis, to the point that it was masking the various possibilities to explore personal constructs (Fransella and Brainster, 1977, in Canter, 1985).

Not far from the more controlled version of the Repertory Grid (ibid.), is the Q-sort technique: it is between a traditional sorting procedure searching for personal constructs and a semantic differential (see paragraph. 4.5.3). It requires respondents

¹⁵⁸ Asking respondents to study objects within a context, comparing them to others to identify differences is ... *a great preventer of sloppy thinking* (Stewart, V.; Mayes, J. , 1998).

to sort elements in “controlled” categories, which means that such categories are imposed increments of an adjective scale; this is done for two reasons. The first is to facilitate the processing of the data obtained, and the second to reduce the differences between individuals’ “calibrations”, i.e. the importance they attribute to variations in their evaluation.

Also Ward and Russell (1981) used to impose fixed conditions to sorting procedures; in their method, both the number of categories and the sorting criteria were fixed. This was meant to facilitate the creation of similar matrices, probably to allow a certain level of control on the manipulation of data gathered. The data collected through multiple sorting are generally organised in matrices where the number or types of categories sorted and the respondents are the inputs¹⁵⁹. If either the number or type is fixed, then the data analysis is more manageable.

The types of elements that can be used in a MS are infinite: photographs¹⁶⁰, labels, activities, it just depends on the scope of the analysis (Canter, 1985:93); the more familiar respondents are with the objects though, the more richly they conduct the sorting.

The data collected through MS can be analysed using different procedures, such as content analysis or multidimensional methods¹⁶¹. The first can be carried out also manually (not just through the use of computer based techniques), whereas the second is computer based; therefore it can offer more detailed results than the former, as will be described later on. The choice for one or the other depends mainly on the nature of the object of study. MS procedures, in fact, allow examining a variety of domains such as differences among people, among elements sorted and among categories of constructs that people hold. In general, multidimensional methods are recommendable for a study of differences among people, while content analysis can be enough to reveal differences in the two other cases. The following graph explains the factors that sorting procedures can explore.

¹⁵⁹ See the paragraph *multidimensional analysis methods*.

¹⁶⁰ Regarding the use of photographs in MST, see Paragraph *Environmental simulation methods*.

¹⁶¹ See Paragraph *Content Analysis and Multidimensional Analysis* for more details.

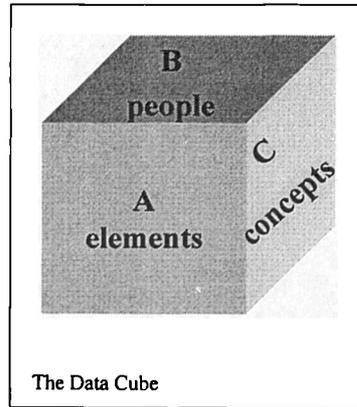


Figure 4-8. The Data Cube. (Canter, 1985: 96).

This thesis argues that an analytical procedure capable of exploring all the three domains would be ideal in participatory design, where different groups of people are involved; to do so, the analysis procedure must be able to register differences among people. But different people will also select and give importance, in their environmental experience, to different objects, and will finally have different ways to see, understand and interpret them (constructs).

Directly related to the domain of sorting procedures, is the nature of the sorting, which can either be *exploratory, heuristic or descriptive... or hypotheses testing* (Canter, 1985: 94). The nature of sorting also determines who generates the elements to sort (whether the investigator or other sources), and if such elements need to have a defined structure or simply be samples of a wider category of elements.

If the method offered to design participation is to be able to perceive all the above differences, it will also require 1) to identify what is of more concern to users (what was called heuristic nature); 2) to register how the focus identified is perceived, i.e. which constructs people use to experience it (what is called exploratory nature); 3) it must be able to record parameters and constructs of different groups of people and show evidence of their difference (hypothesis testing). It is assumed here that multiple sorting techniques are, on their own, not enough to cope with all this, therefore other methods will be required in addition to those already discussed.

A limit that is often attributed to multiple sorting procedures regards the level of reliability they can assure, as a result of their high flexibility. Believing in Fransella

and Bannister (1977), the reliability of a method also measures its insensitivity to changing circumstances; it is not, therefore, *a valuable psychometric property* (ibid.:110). Still, in the case of MS methods, it is possible still to talk of reliability; it can be attributed to how well the investigator explains the intention of the sorting to respondents, and to how much the two understandings coincide (ibid.).

Among the forms of multiple sorting procedure, the Multiple Sorting Task (MST) is free from any of the limitations discussed. It consists in asking respondents to make discrete categorisations of a set of elements on the base of judgements of relative similarities among such elements (Groat, 1982). This means that neither categories nor meanings are imposed to respondents, and that *the distribution of elements in the categories is as important as the meanings attributed to such elements* (Canter, 1985: 88). Even without the restriction in comparison to the other forms of multiple sorting mentioned above, this procedure still guarantees a systematic analysis of the data – the advantage of the so-called “*technique for its own sake*” (ibid.: 86); this is why this technique is of interest to this research.

The fact that responses don't depend on the use of different vocabularies apart from their own, guarantees that their judgements are uncontaminated by the preconceptions of investigators. Nevertheless, a problem of competencies still exists; Canter calls it *sorting competence* (ibid.: 109). It is related to respondents' capacity to carry out a multiple sorting task. In particular, it can manifest itself at two stages: in understanding what is required, and in actually sorting objects into categories. Again, the investigator can limit it by clearly explaining to respondents what is expected from them, and making sure that there is no misunderstanding from the very beginning¹⁶².

MST methods can be used in several contexts, as shown in chapter 3 through some case studies, such as specific judgements on buildings (Groat, 1982), urban

¹⁶² Many factors can affect the results of a sorting, if its initial aims are not clear. For example, the profession of the investigators can lead respondents to assume that their answers must be related to the investigators' figure (Canter, 1985).

developments (Hubbard, 1996). MST though is a technique used not only in environmental sciences, but also in social and medical psychology¹⁶³.

In environmental psychology investigations, two limits are frequently attributed to MST: first that, by showing images to people, there is the risk that they link the environmental interpretation of the image to the purposive activities taking place in such environments (Groat, 1995; Canter, 1997). This means that there is a difference between what observers can get from an image or a picture, and what they can get from the place it represents to them. The second is that, since it is mostly up to the investigator to select the images to present, he/she will propose places significant to him/her, and maybe insignificant to the respondents.

In response to this, Canter (1997) cites the experience of Hull and Revell (1989) who were directly asking respondents to take pictures of the places to be analysed in sorting. This thesis argues that such procedure could affect the actual sorting procedure. In fact, according to Kelly's theory, how people see things, and the constructs they build on it, affects also how they react to them. Therefore, if respondents choose and photograph a place or part of it, because in that moment some of its characteristics (physical elements, activities or other personal factors) attract them, the results of the sorting of such images could be influenced by the same factors. Instead, the images selected (and therefore the elements they contain) should be significant to respondents, but not chosen by them (see chapter 5 and 6). This guarantees that such images work as new stimuli for the respondent and that at the same time the misunderstanding between place and picture is limited.

On environmental simulation methods

In order to carry out the MST, respondents are required to sort a set of objects. In the case of environmental evaluation, the most frequent and effective simulation procedure for *transmitting architectural values* is through coloured photographs (Groat 1982:9). Judgement ratings to colour slides in fact have been demonstrated to

¹⁶³ It is very useful in environmental psychology sciences because it allows the use of graphic images, rarely used with other techniques (Canter, 1985).

be generally nearer to judgements made in actual environments than those made by other media (Hershberger, in Lang, 1974), and coloured photographs have been successfully used as environmental surrogates in a number of MST studies (Hubbard, 1996).

Daniel and Meitner (Daniel, T; Meitner, M, 1997) have demonstrated the increasing role of visual simulation to communicate future environmental conditions in environmental planning, when public participation is involved. In particular, through a study on the visualisation of landscapes, they have shown that full coloured high-resolution images, in comparison to low resolution (4bit), black-white and abstract images, obtain the higher consistency in respondents' preferences or aesthetic evaluation, as the images show.

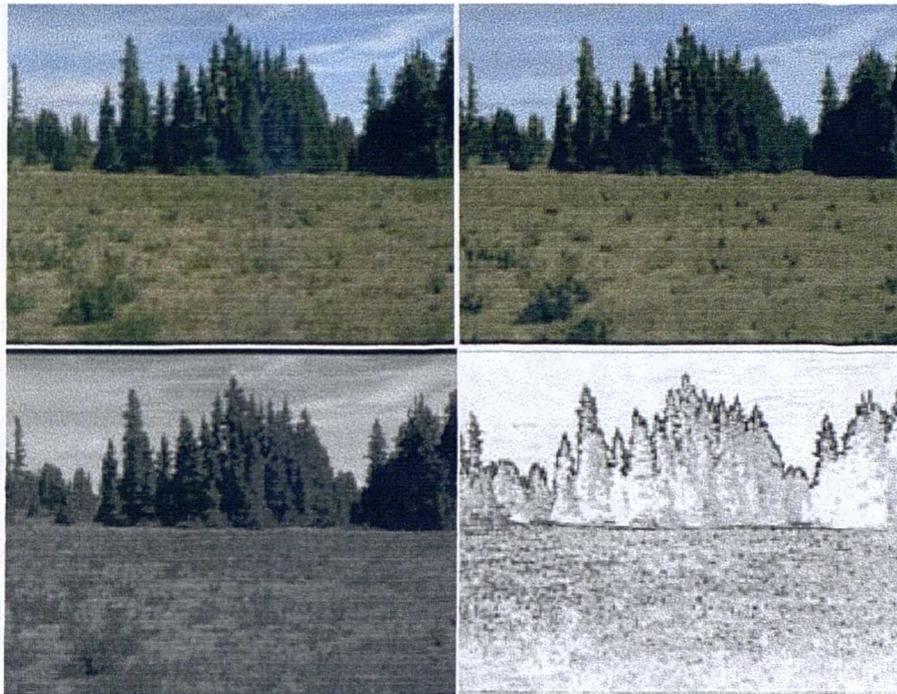


Figure 4-9. Environmental simulation. Full colour abstraction, 4 bit Color, Greyscale, Achromatic abstraction from (Daniel, T; Meitner, M, 1997, URL: <http://ag.arizona.edu/EPLab/abstract/abstract.html>).

The data obtained through multiple sorting require further analysis. As mentioned, content analysis and multidimensional analysis can help in doing so.

Content analysis

Content analysis is a process that consists in summarising a number of topics through a set of constructs different from those used to collect them (Groat 1982:7; Stewart, V.; Mayes, J., 1998). When linked to MS, content analysis is a “reductionist” process which identifies the most pertinent concepts, precepts or ideas among those identified through the MS (Hubbard, 1996), and then assigns all the elements to them.

Practically, content analysis is rather easy to carry out; it is useful to write each element identified in the MS on a card, and group cards per categories, and finally name each category with a name which is representative of its contents. Since such groupings are *a fancy name for what you have just been doing by categorising other people's constructs* (Stewart, V.; Mayes, J., 1998), it is fundamental to carry out reliability checks on both the categories names and category assignments.

Multidimensional (Scaling) Analysis

As mentioned, the information of multiple sorting can be elaborated through MA methods. At their origin is the research of similarities in judgements of pairs of stimuli, as a better procedure in comparison to verbal descriptors, which have been found to be *highly subjective and conceptually incomplete* (Shiffman et al., 1981: 19, quoted in Canter, 1985: 85). Perceived similarities are complex phenomena that cannot be captured simply through a single rating; instead, they often are based on several factors (multiple categorisations).

These techniques are very often linked to the MST with the aim of increasing the accuracy of interpretation of the data collected. In general, they allow further analysis of the pattern of similarities in the use of constructs among the respondents as individuals (Hubbard 1996), by allowing to register people's preferences for different types of objects. The data input of matrices of similarities, dissimilarities, or

correlations are pairs of parameters (generally respondents and their answers)¹⁶⁴, whereas the output are two-dimensional maps where relationships between objects are expressed by their relative geometrical distance¹⁶⁵. This very basic form of MA is called MSA-I (Multidimensional Scalogram Analysis) (Groat, 1982). The data from the MST can be used directly as input for the MSA-matrices. The matrices contain on the one the side respondents' characteristics, and on the other their sorting. The results are two-dimensional plots that can locate respondents as points in the space according to the similarity of their answers, or the objects of the sorting as points on the plot distributed according to respondents' categories.

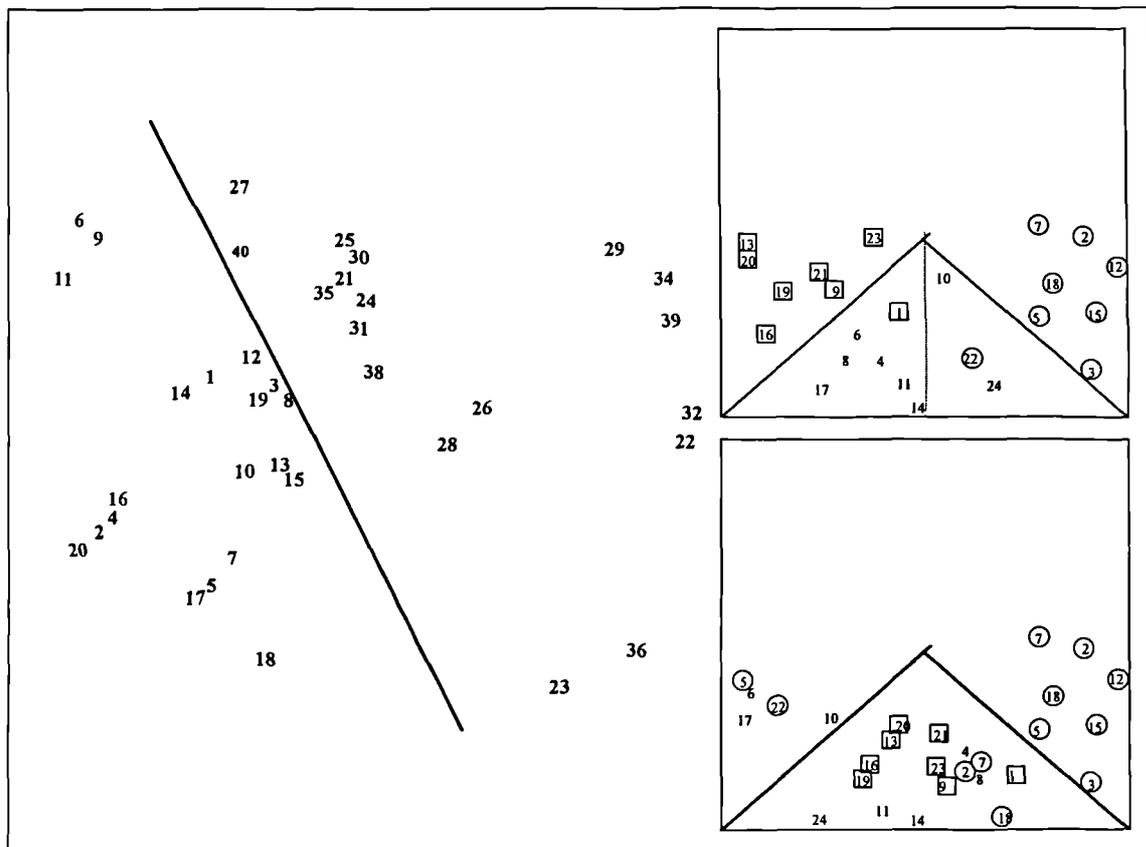


Figure 4-10. Use of personal constructs among groups. Two groups of respondents conducted a MST on 24 buildings. Accountants (1-20), Architects (21-40). The image on the top-right represents the relationships

¹⁶⁴ STATISTICA, URL: <http://www.statsoft.com/addition.html>, a statistical data analysis, graphics, data base management, and custom application development system featuring a wide selection of basic and advanced analytic procedures for science, engineering, business, and data mining applications.

¹⁶⁵ In cross-cultural studies, classic multidimensional procedures allow, for example, to visually represent the relationships between respondents and their MS answers in two-dimensional graphs.

between 24 the buildings and their style, as intended by architects, while the picture bottom-right for the accountants.

[O post-modern, Transitional, □ Modern] (From Groat, 1982: 17, 18).

A more refined form of MSA is represented by INDSCAL¹⁶⁶, also known as individual difference scaling (IDS). This procedure generally follows a MSA analysis, in the effort of eliminating any verbal affection from respondent's evaluation, on which MSA still depends as it uses, as inputs, the verbal categories named during the MST or those derived from content analysis. In this case, each respondent is related to each object used in the sorting (not to construct; therefore, it is not "verbally labelled", but coded or numbered) included in a sorting. The outcomes are results of the sorting procedure, irrespective of sort type or description, and exclusively based on respondents' psychological factors. Data are also read on multidimensional scalograms, disposed according to dimensions, which are groups describing the specific attributes/ categories obtained through MS. IDS is also capable of registering the importance (salience) of each dimension to each respondent (Garcia-Mira & Sabucedo, 1997), from the number of times it has been included in a sorting.

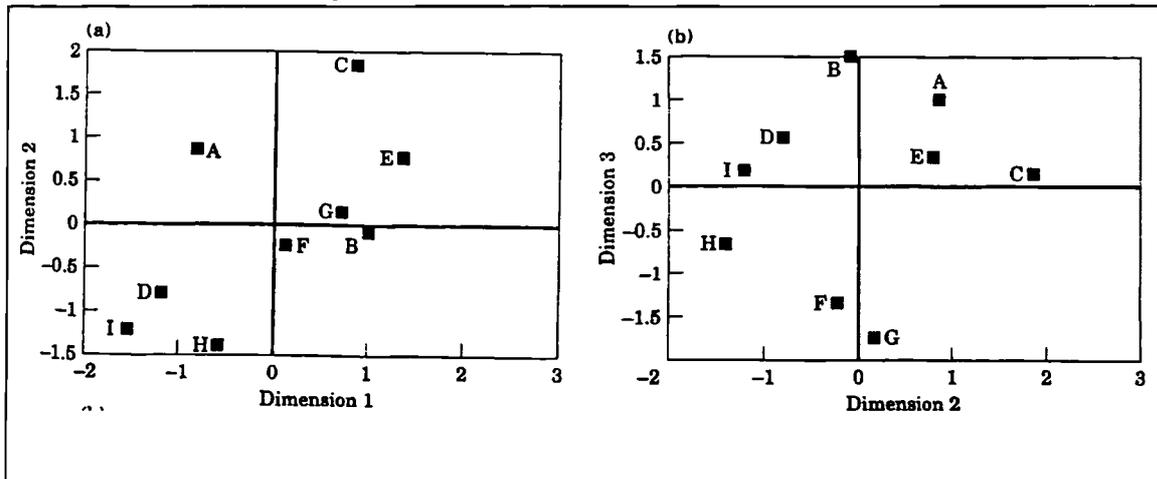


Figure 4-11. Neighbourhood evaluation studied with IDS. In this example Garcia Mira & Sabucedo (1997:

246) represent how the overall evaluation of nine neighbourhoods can be described on the base of three dimensions expressed by respondents; the proximity of the □ between themselves and their relationship with the

¹⁶⁶ Two applications of this technique are the case studies by Garcia-Mira & Sabucedo (1997) and by Hubbard (1996).

axes describes the evaluation of each neighbourhood. The neighbourhoods were evaluated on 162 scales; according to their relationships, three dimensions resulted on the basis of their similarity and weight.

A major advantage offered by MA methods, is that they can also register associations between factors. This means, for example, that if n factors are identified as affecting a person's environmental preference for a space, MA can also register whether some of them tend to appear together and to mutually influence each other. In a study conducted in Santiago de Compostela, Garcia- Mira and Sabucedo (1997), for instance, demonstrated that the three principal factors affecting the perception of neighbourhood quality were social status, the quality of planning and maintenance and spaciousness. However, to each of these principal factors other properties tended to be associated in respondents' answers. In particular, to status was associated the concept of centralness and the presence of symbolic elements; to planning and maintenance that of safety, security and uncertainty, to spaciousness that of communication with the city and legibility.

This confirms Canter and Rees's idea (1982, in *ibid.*) that the evaluation of spaces depends on how much they support our aims and objectives, and is therefore a complex process involving several factors at the same time. The role that MA analysis can offer in finding comprehensive space evaluation results is, therefore, with no doubt fundamental but it is laborious and does not involve people in the process of analysis. Therefore the question is whether the use of MA can be substituted by any method allowing the direct interaction between the subjects involved in the process of analysis.

Both the perception and the conceptualisation of human environments are dynamic and flexible processes (Gifford, 1998), since they involve a complex interaction of situations, experiences and physical characteristics (Garling, 1998; Fenton, 1988). The present research, in linking environmental evaluation research to the involvement of users in design, must operate in flexible contexts through action research, directly involving people in each stage of the process, starting from environmental evaluation.

The type of information offered by MA would be very useful in participatory design, but also other approaches can obtain equivalent types of information (a good

representation of experiences, situations and evaluations). This is a complex task that requires first of all interaction and dialogue between those involved in the design process; dialogue and understanding therefore should be encouraged.

The Smallest Space Analysis is another non-metric MDS technique to represent a number of variables as points in geometric space. It is based on a matrix relating respondents to the objects to be analysed; the intersections of these two variables represent the 'measures' of appreciation of each object per respondent. The closer together points get, the more similar is the evaluation of the objects made by the groups of respondents (Wilson, 1996). Although very close to the INDSCAL method in the results produced, it is not based on data from MST but from preference ratings of given objects, as the case study by Wilson has shown in chapter 3.

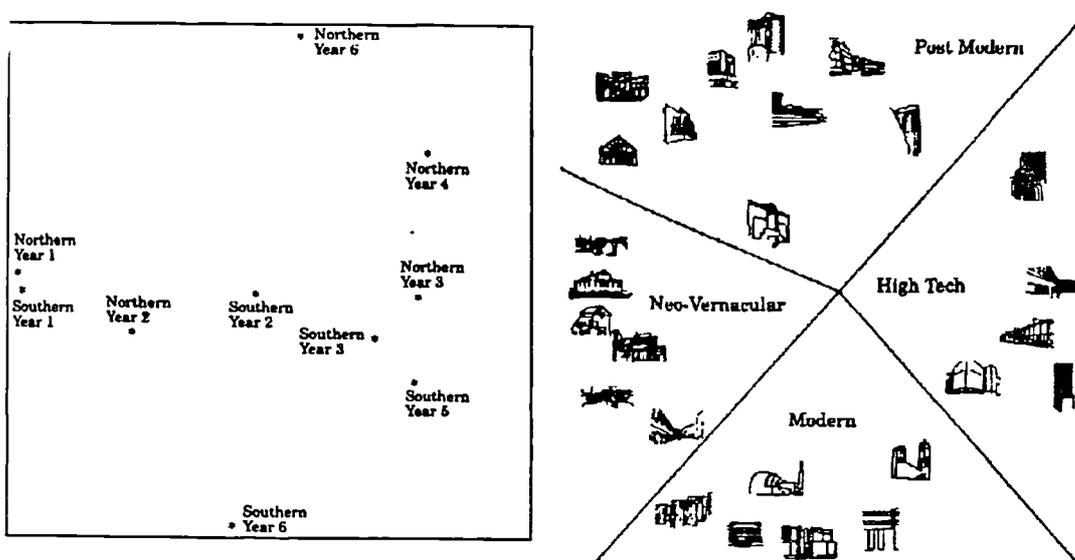


Figure 4-12. Building evaluation in schools of architecture. Wilson's study on how in different schools of architecture students' evaluation for building changes during the course years (proximity of points in the graph on the left). The graph on the right shows the criteria of evaluation provided by mature students: again, the proximity between buildings shows how styles tend to be related in students' mind.

The techniques described so far provide very specific information sensitive to specific groups of respondents and also to individual subjects. The next step consists in finding a way to obtain views on environmental issues from larger groups of respondents.

4.5.3 Semantic differential methods for the evaluation of preferences and aesthetic response. Limits and advantages of standardising differences

*"There were six men of Hindustan
Of Philosophic mind
Who went to view the Elephant
But all of them were blind."*

They seize, literally, on various features of the elephant, its legs, trunk, tail and so on, and then come to blows over what the elephant is "really" like. Their investigations revealed many things about the elephant, but "elephantness" eluded them. (Heat, 1974:182).

Semantic differential (SD) procedures are frequently used in social and environmental psychology research to capture respondents' evaluation on situations of different nature (Hubbard, 1996). They consist in providing respondents with bipolar adjectives describing properties of objects¹⁶⁷, and asking them how well such adjectives describe the experience they get from that object. Respondents are required to rate the presence of each property on generally 5-7 scale points. Being the rating scales chosen by the researcher, they limit respondents' interaction with the structure (the essence) of the object (Heat, 1994) and they risk to be a verbally limiting technique. In fact, they assume the respondent to be using criteria similar to those of the researchers, which as a matter of fact rarely happens¹⁶⁸ (as demonstrated by the MS technique).

Canter (in Groat, 1982) studied the main limits of the semantic differential technique. The aim of searching for independent dimensions (by adopting pre-stated criteria for the whole range of respondents) may be psychologically invalid; in fact, standardised bipolar adjectives naturally preclude the possibility of finding psychological

¹⁶⁷ The object of semantic differential scales depends on the study area it is used in; in environmental psychology, it is frequently used to evaluate spaces, buildings.

¹⁶⁸ Hesselgren (1988) for example, writes that in using semantic differential scales to pin down perceptions, almost each researcher developed his/her own semantic scale.

differences between subject groups. The second problem regards the risk to mask group differences when grouping responses.

An attempt to make semantic differential more respondent-responsive

Hesselgren's semantic scale (1987) tackles this problem. He created a rather exhaustive semantic list of bipolar adjectives to describe people's reaction to the view of an object, distinguishing between descriptive, emotional and evaluative reactions, trying also to capture meanings that can be linked to impressions.

To include all this, Hesselgren worked with existing semantic scales, among them Rikard Kuller's factor analysis (1980), and with emotional loading research. Kuller's work is an investigation of descriptors that can be labelled under primary attributes (factors). He identified eight of them: *pleasantness, social status, enclosedness, originality, complexity, affection, unity and potency* (Hesselgren, 1987: 252). However, for Hesselgren, Kuller's work was missing references to the semiotic and the emotional loading aspects.

Therefore he moved to the study of emotions, and used Plutchik's work on Primary Emotions (1974, cited in *ibid.*), as the base for the analysis of the basic behavioural patterns that can help explaining primary emotions. For Plutchik, emotions, which are uncontrolled by a conscious mind, affect behaviour; since it is possible to observe behaviours, it also becomes possible to study emotions through the study of behaviour. He therefore identified the primary behaviours common to any living being, and the related emotions, as described in the table of Figure 4-13, including an intensity scale for each of them.

Behaviours	Primary Emotions	Dimensions of intensity of emotions
Destruction	Anger	Rage, wrath, anger, annoyance, irritation
Reproduction	Joy	Ecstasy, rapture, joy, happiness, pleasure
Incorporation	Acceptance	Love, affection, fondness, acceptance, tolerance
Orientation leading to unexpected circumstances	Surprise	Amazement, astonishment, surprise, strangeness, bewilderment
Protection	Fear	Terror, fear, apprehension, timidity, diffidence
Deprivation	Sorrow	Anguish, grief, sorrow, dejection, pensiveness
Waste production	Rejection	Loathing, aversion, dislike, boredom, tiresomeness
exploration	expectancy	Suspense, anticipation, expectancy, attentiveness, interest

Figure 4.13. Plutchik's System of Primary Emotions (Hesselgren, 1997: 254).

Hesselgren moved on and included such behaviours/emotions into bipolar descriptors to be used in semantic differential as shown in Figure 4-14; the scale he proposed anyway is still not comprehensive enough to capture everyone's emotions in any circumstance.

Scale						
not at all	1	2	3	4	5	
						Semantic Differential
						Overall judgement
						How much do you appreciate the house (environment)?
						What I see is
						Varying
						Monotonous
						Uniform
						Disconnected
						Looks Modern
						Looks old
						Can see the building material
						Can see how the house is built
						Can see how the building is to be used
						The experience of it arouses within me
						Anger
						Joy
						Acceptance
						Surprise
						Fear
						Sorrow
						Rejection
						Expectancy
						I find that the building (the environment) has
						The parts in harmony with each other
						The parts in disarmony
						I find the building (the environment) is
						Beautiful
						Ugly
						Interesting
						Uninteresting
						Fun
						Boring
						Delightful
						Unpleasant
						Safe
						Unsafe
						To me new and unexpected
						To me old and familiar

Figure 4-14. Hesselgren's Semantic differential scale (1987: 268).

Hesselgren's scale is a way to stimulate people to become aware of their own emotions in relationship to specific circumstances; this is believed to be the strong point of semantic methods. New developments in statistics and factor analysis should take in consideration the suggestive and active role of semantic scales, rather than

considering them as definitive state of facts, simply meant to collect standardised inputs, and this is the challenge this research has taken up.

When semantic scales are part of a process: turning their limits into strengths

Although this positive view on semantic scales is encouraging and agreeable, the method still has a limit. Hesselgren increases the degree of freedom of semantic methods on the base of behaviours, emotions and descriptions that are still derived from external sources (his and Kuller's scales, and Plutchik's emotional loading) and not, instead, contextual and circumstance-specific.

To explain this, it is necessary to analyse the structure of semantic models. They can be seen as constituted by three phases: 1) the definition of the evaluative parameters, which is normally intended as a contribution of the researchers, 2) the actual semantic scale in itself and finally 3) the data collection, which is the contribution of respondents.

Hesselgren tries to achieve a degree of freedom in the third phase of the semantic scale, what has been called the 'data collection', and he does so by giving a rather open structure to the semantic scheme, based on the system of emotions described above. This research argues that it is possible to achieve a different degree of flexibility, but in the first phase, that is the definition of evaluative parameters.

To do so, the evaluative parameters used as polar scales, should be context specific and directly derived from respondents' view, therefore not depending on the researcher at any degree¹⁶⁹.

These two levels of flexibility differ in substance: the flexibility of Hesselgren's scale is lying in its application, whereas the flexibility of the scale used in this

¹⁶⁹ There are several other ways of building semantic scales, which can overcome two problems: that of researchers' influence on the bi-polar adjectives and that of groups of people not providing all embracing sets of parameters. Frey's technique for example (1973) - in a case of people's involvement in the design of housing - tried to respond to both issues by providing respondents with an exhaustive list of bi-polar adjectives derived from content analysis of previous research. Respondents were asked to ponder such parameters eliminating those they felt irrelevant by scoring them the value 0, and adding new parameters they felt relevant but that were not included in the list proposed.

research lies in its creation. Both, nevertheless, derive from the understanding that the semantic scale must be linked to other sources of information directly deriving from respondents, rather than relying just on the scales identified by the researcher.

The value of each scale depends on the use of it; in Hesselgren's case, leaving much space to rather general emotions and evaluations, it is likely to be useful when respondents will be involved again after their response has been gathered. In the present research, semantic scales can instead be used to gather overall views of large groups of people (a community) on the base of significant parameters; this requires a rather more strict control on the answers researched. This means that in Hesselgren's case rules will be required to come up at the data analysis phase, whereas in this research, which is contextual-specific, rules have to come first.

Canter (1985) has identified a second problem of semantic differential methods, which is related to the group aggregation of results, which in traditional semantic cases risks to mask important individual differences. It is again possible to respond to this by suggesting to base the phase of collection of evaluative parameters on other methods which reveal to be more flexible in recording such differences. But still, the strongest argument to respond to this critique is the direct involvement of respondents during the study.

In conclusion, as suggested by Wohlwill (1976, cited in Canter, 1988) semantic differential, when used alone, is a descriptive method of how respondents use the adjective scale, *insensitive to cross-cultural* (ibid.: 82) and intra-individual differences. Moreover, it doesn't tell anything about the role played by specific environmental characteristics. Anyway, procedures as the SD remain popular and it is argued here that they should still be widely used, because of the advantages described.

4.6 Conclusions: the need for a multi-phased approach to study environmental experiences and address them to participatory design

The discussion on visual literacy has identified some fundamental characteristics. First of all it consists of visual competencies that can be developed and trained: visual thinking¹⁷⁰, learning and communicating. Then, it should constitute the base of a common learning process rather than being the exclusive domain of a few “visually educated people”. From the content analysis of environmental studies carried out in chapter 3, several phases characterising environmental experience have been identified and studied: perception, cognition, evaluation/preference and behaviour.

The question that arises at this point is whether these two sequences of phases can be related, that is, if a correlation between them can be established, as shown in Figure 4-15.

Visual literacy	Visual Thinking		Visual learning	Visual Communication
	Visual Discrimination	Critical viewing		
Environment	Perception	Cognition	Evaluation/preference	Behaviour

Figure 4-15. Approaching environmental experience and visual literacy as an entwined process.

Such a correlation would allow that each phase of environmental experience works as a base for the training of visual literacy competencies, and also, that the development of the levels visual literacy could affect how environmental experience takes place. It is also important that the two processes interact as a whole, to affect and inform themselves constantly and reciprocally.

Such a combined process could encourage the training of the capacity to recognise and identify shapes and figures, and of vision as a way to understand the visual

¹⁷⁰ Recalling the definitions related to visual literacy provided in chapter 2, two phases called visual discrimination and critical viewing can be seen as part of the visual thinking stage leading to visual learning and then used in visual communication.

dimension of human existence. According to Bourassa (1991) part of the *human culture* is visual, and tends to identify and maintain itself into built –or visual- forms. Since the built environment is a way through which human culture manifests itself, the attempt to understand it could then be a way to learn more about its users. If studying environmental experience is a way to understand *human culture*, then visual literacy can be seen as a way to make use of such understanding, on the principle that visual literacy means creating as much as learning and thinking.

This leads to the primary goal of this research, the development of a process to engage people in the design of the built environment, on the base of the understanding of people's individualistic interaction with the built environment.

To make this idea operative, chapter 4 has been devoted to study some methods of analysis to capture information on the various phases in which environmental experience takes place (which factors -physical, societal, personal, cultural etc.- influence it and how, then, they affect experience). The information so obtained can then be used as a base to inform, train and develop visual literacy competencies.

The characteristics of the methods described in the chapter have shown how each of these methods is targeted to gather and deliver information according to the type of "filter" that the method uses to collect and analyse data. The chapter has also shown why none of such methods - taken singularly - can provide a satisfactory and comprehensive picture of how people experience the environment. From here derived the idea of developing a structured sequential model to conduct research in environmental experience. The definition of the methods followed a precise sequential order. To combine them within an overall analytical tool, it is important in fact to link each other's output and input, so that each method can add further information to the results obtained by the previous one.

The aims of such an analytical process would be: 1) to be respective of the perceptual and cognitive processes identified in chapter 3; 2) to be carried out following the phases of development of visual literacy, and 3) to be functional to design procedures that can involve and engage actively communities.

The approach suggested could be called a “multi-phased model”. Its framework of action would be comprehensive and flexible, and the advantages it could offer would be numerous, interchangeable and reproducible.

Chapter 5 describes in detail how this analytical model works, identifying step by step the settings explored, the contribution required to participants, the tools to analyse the data and finally the outcomes that it could provide, whereas the third case study of chapter 6 shows an application of it.

CHAPTER 5 A MULTI-METHOD STRATEGY (MMS) TO ESTABLISH HOW COMMUNITY GROUPS PERCEIVE URBAN APPEARANCE

This chapter proposes a strategy to study how community groups perceive, understand and evaluate the built environment. It links together several traditional methods such as map sketching exercises, open ended questions, multiple sorting techniques, content analysis, semantic differential and emotional loading profile. This strategy is based on the temporal and spatial frameworks defined in chapter 4 and can be considered as a tool to carry out cross-cultural studies.

The strategy aims first of all at identifying, within the urban panorama, a category of spaces of major concern to different groups of people. Then, it identifies both the physical and not physical factors that contribute to the likability of each category of space because likability is of major interest as *the probability that an environment will evoke a strong and favourable evaluative response among the people experiencing it*. It is believed in fact that when the appearance and meaning that people see in or attribute to the city are incompatible with their activities, they cause sensory overload, fear and stress (Nasar, 1998: 3).

Such knowledge is used to improve the reciprocal understanding of users and professionals when they work together. Eventually, this strategy should provide designers with the ability to develop a design brief for users, in real cases, contexts and conditions. Both mutual understanding and a design brief influenced by the users could guarantee that the design outcomes would be responding more positively to user aspirations and needs.

Figure 5.1 (p. 238) schematises the main phases of the process, each with the expected outcomes, and also with the feedback that should be carried out to confirm the results achieved, to modify them or finally to conduct again the exercises relative to those phases. The scheme also shows how each stage is based on the outcomes of the previous one. On the one side this strengthens the whole process aimed at studying environmental experience, on the other it helps to assure that the issues analysed have relevant foundations, guaranteed by the linked process. The overlaps so generated between each phase are intended as a consolidation of the hypothesis on

which such phases are based. As it will be explained in the conclusion of the chapter, overlaps, reiteration of exercises, feed-back all play a role in reinforcing the reliability of the strategy.

In the process described in the flow-chart, the first step, called "analysis of how people perceive the city" is not essential; if target groups and areas of actions are given in fact, it is not necessary to carry out an exercise to identify them. From the second step on, all the phases are necessary and should be carried out according to the sequence suggested. The second phase allows to select, within the action area, sub-areas where to concentrate the design process. Phases three-seven allow to identify, from the co-operation of community group, designers and process leader, a set of evaluative criteria to capture large scale evaluation on the action areas and on the strategies proposed. In phase eight such a large-scale evaluation is carried out, and the results can be used in the design process.

In the figure (p. 238), the first four phases are carried out through map sketching exercises and open-ended questions, and the data analysis through content analysis. The following phases include a multiple sorting task with the relative content analysis, the compilation of a semantic differential scale and finally the data analysis and the graphic representation of the results.

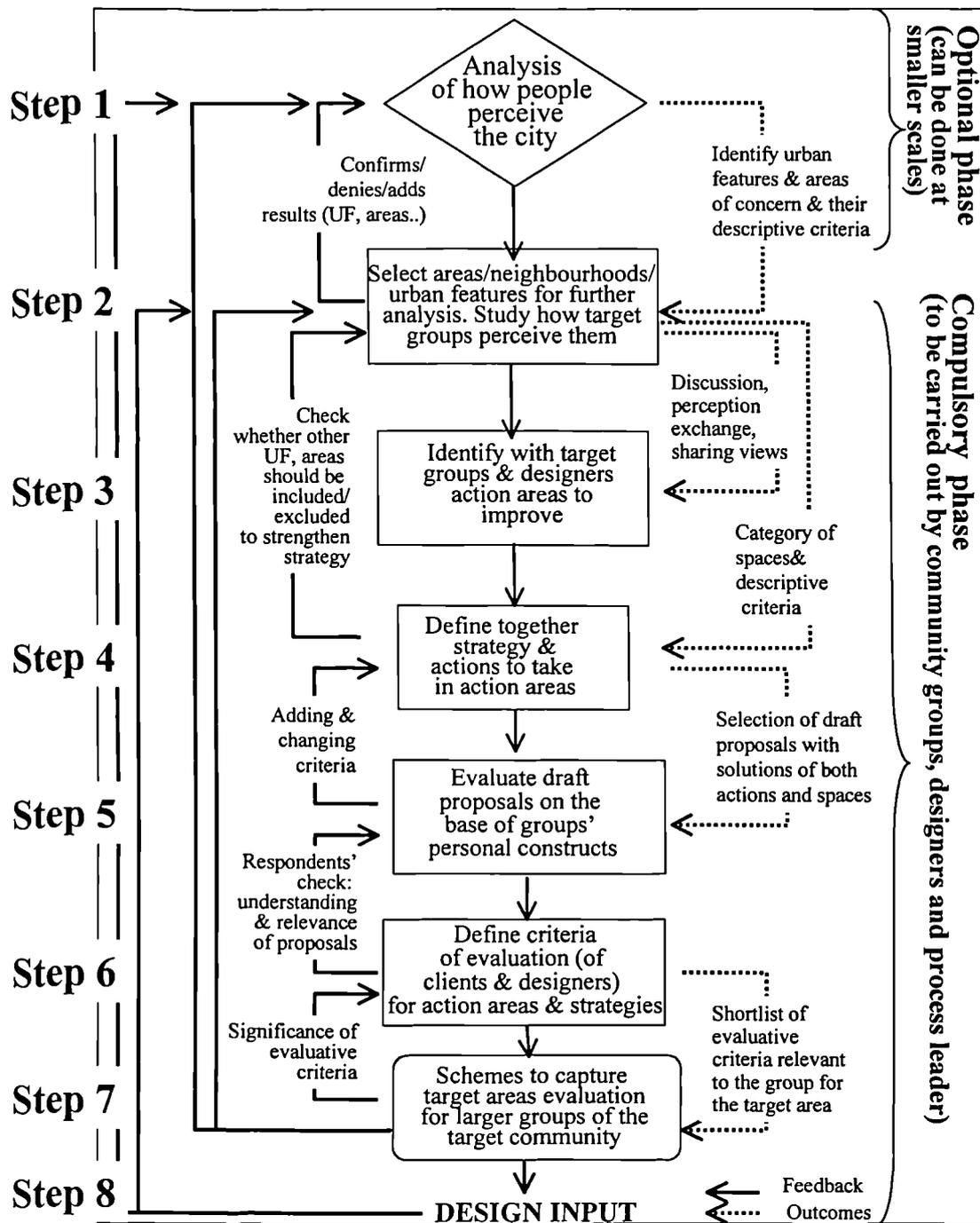


Figure 5.1. Flow-chart describing the sequential strategy.

Paragraph 5.1 describes the roles of the groups involved in each phase, the respective competencies and the whole sequential process that leads a team of designers and users together through an area analysis and the development of strategies for it.

Feedback, reliability checks and overlaps between phases are discussed in relation to the validity, reliability and discriminability of the process in paragraph 5.3.

5.1 Potential users of this evaluative strategy

The primary role of the suggested strategy is informative and educational, although, indirectly, it also seeks to create and then reinforce community identity, on the base of the understanding of its context, of its surroundings, of the related processes of settlement and of the activities taking place.

With the intensification of the discussion on sustainability, issues related to the practice of planning, designing, building and managing communities all must come to terms with the understanding that to create places one requires to recognise geographic and cultural characteristics including topography, climate, historical origins, cultural values and social integration¹⁷¹. All this on the belief that planning communities must consider local aspects as well as global issues influencing a particular region and expressing these in collective forms. The approach proposed in this chapter tackles only some of the above issues due to practical restrictions, but due to its flexibility the range of fields it can explore could be expanded¹⁷².

There is widespread acknowledgement that research aimed at discovering perceivers' reaction to urban form can be helpful to define design guidelines and to assure effective improvements in future community projects. Community involvement is practised for a considerable time in the USA, where 93% of communities with populations over 100,000 and 83% of cities with population over 10,000 use some

¹⁷¹ These issues are in accordance with the UNCHS' principles of sustainability outlined in The Habitat Agenda and The Istanbul Declaration (UNCHS, 1996).

¹⁷² An interesting example where such principles are applied is "The Sustainable Community Design Project". Funded by The Canada Mortgage and Housing Corporation (CMHC) and carried out at the Faculty of Architecture, University of Manitoba, the project (SCD) identifies the features of community organisation and built environment that distinguish projects as ecological and of sustainable design. The aim of the project is to provide a comprehensive repository of cases, and to generate discussion among and between groups of professionals and community associations. For more information, see the site: http://www.cadlab.umanitoba.ca/la_www/sustainable/contents.htm.

form of design review to control urban appearance (Lightner, 1993 in Nasar 1998). In such cities, community groups get organised to identify and control the definition, use and application of such guidelines (Stamp & Nasar, 1997; Nasar 1998).

In this thesis, groups are formed to include both users and designers, each with specific roles, and a thematic focus¹⁷³ which works during the entire analysis of the urban appearance of selected areas and the problem-solving phases.

Following the American example - without being specifically interested in the political relevance of these bodies - each group should be constituted by a balanced number of professionals and lay-people. This would assure that the negotiation process, based on Forester's (1989) listening procedure described in chapter 1, takes place in an environment where all voices are equally represented. In the present case, groups could be joined by anyone in town who would want to learn more about some issues concerning their city.

The aim of the group would be, as the result of a cooperation of experts, to expand the horizons - the levels of visual literacy - of each represented group, preventing the damage caused by what Sanoff calls *limitations of the experts* (1992: 73). As mentioned in chapter 1, there are two groups of experts in the form of participatory design selected as the base of this thesis: clients and designers, neither of them being the "educator" or the "educated". ... *In reality, the expert is the least able to create a new idea since the problem is often described in technical terms of the expert's language so that it is impossible to view the problem in a different way* (Sanoff, *ibid.*: 73).

Chapter 4 presented a literature review of methods in environmental evaluation, with a focus on cognitive maps and open-ended questions, on methods searching for personal constructs of respondents and on the semantic differential technique.

¹⁷³ Stamps III and Nasar (1997: 11) refer to 'design review' (*a US governmental process aimed at improving the appearance of buildings and the community*), and to 'visual impact analysis' as activities/ procedures related to the 'planning commissions'. These are groups of 'consultants', mainly without design background, whose aim is not to provide professional planning input but rather *to balance professional design advice with a more citizen-oriented viewpoint*.

Finally, the combination of such methods to capture people's perceptions of the appearance of the urban form was suggested.

5.2 Activities to discover the reactions of perceivers to urban form step by step

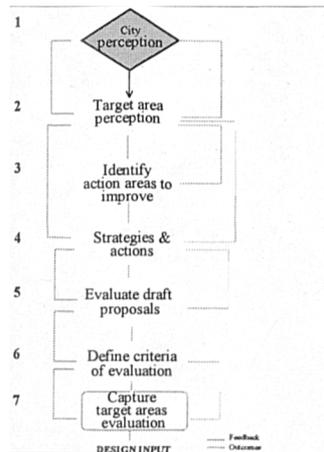
Whatever the focus of attention is, the sequence of each individual step taken in the multi-phased strategy (MMS) should be maintained as illustrated here, for two reasons. First, the result of each step is logically feeding information into the following ones and secondly, the analytical techniques used are essential to capture the type of information required by each step.

This approach, developed as an action research; having chosen the spatial and sequential frameworks, the researcher tested the sequence several times with different groups of users and designers; it was only after several tests (described in chapters 6.1.1, to 6.1.3) that each step of the process became well defined. However, as already explained, the major aim of this analytical tool is to be group and context specific; therefore this chapter focuses on the essential sequence rather than offering detailed information of the results that can be achieved, which are described in one case-study.

It is first of all recommended that one person is appointed as “process leader” of the process, a person that neither belongs to the group of users nor to the group of professionals. It is necessary that such leader has knowledge of the applied survey methods and of the theoretical background of the project. It will be up to this person to establish contacts with the other participants, and in general to manage the whole process, including the organisation of meetings, the data collection and analysis.

Once the leader has been appointed, it will be up to him/her to conduct the first step of the process. The entire sequence of operational steps is described in what follows.

Step 1.



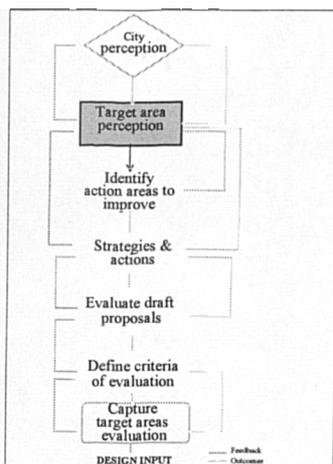
A cognitive maps exercise needs to be carried out at the very beginning of the process¹⁷⁴. This is aimed at identifying the areas on which the further stages of analysis will concentrate, as well as the groups of participants that will be involved in working in such areas, both as users and as professionals.

The method applied is the map-sketching.

Related to the cognitive maps exercise is a set of open-ended questions which should also provide the first information on the physical and non-physical factors contributing to the likability of the features that have been drawn in the maps. Such questions are:

"What do you like/ dislike of ...? What will you remember of ...?" Both cognitive maps and the answers to the open-ended questions are indicators of the images people carry in their mind of their city/neighbourhood/spaces.

Step 2



The process leader should now carry out a content analysis of the collected information provided in the maps and in the answers to the questions. This phase should provide a number of issues and places that attract people's concern, and on this analysis further actions can be based. This first enquiry phase is largely based on the study of concepts, ideas, memories and habits that respondents have; places in themselves, with their own physical characteristics, still do not play a relevant role.

Referring back to the classification of environmental studies between those focusing

¹⁷⁴ The first two steps are optional; very often in fact it can happen that an action area - on which to carry out design consultation processes - is already defined.

on concepts, psychological reactions/ stimulation and physical objects, this phase belongs to those studies that reveal the concepts of spaces that respondents hold in their mind.

The outcome of the content analysis will be a number of characteristics of spaces and urban areas which are classifiable in the three major categories: identity (the salient elements), location (where they are) and likability (the qualities associated with them) (Lynch, 1960; Appleyard, 1969; Harrison, 1972; Francescato & Mebane, 1973).

Step 3

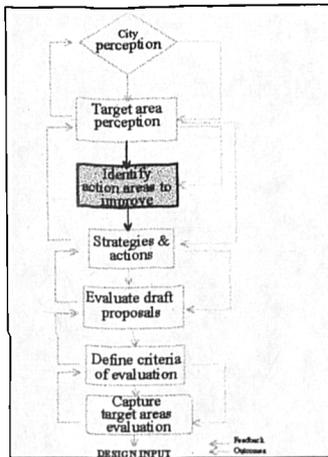
Whereas step 1 and 2 were concerned with the general image that people hold of the city, but did not provide more detailed indication for design, this step focuses on the specific spaces highlighted, and has therefore to become issue specific. Areas for action are selected at this stage.

Step 4

Once an action area has been chosen, it is important to identify community groups working/living in it that agree to commit themselves to a rather intense analytical process carried out during 3 to 4 weeks. The more representative this group is of the community in the action area, the more successful the results will be; at the same time though, the number of people involved must be manageable. The group, including the person in charge of the process and professionals, should not exceed fifty people; higher numbers of participants in group discussions have been demonstrated to be inhibiting and not encouraging of a free flow of opinions (Sanoff, 1990). Moreover, it is also important to choose a base within the area where the meetings would be held. It is recommended that the area has already shown interest in carrying out improvement actions to its physical space. At this point, also the professionals that will work in the area should be identified¹⁷⁵.

¹⁷⁵ In the action research presented in chapter 6, the 4th Year Housing Design Studio, Department of Architecture, University of Strathclyde represented the professionals.

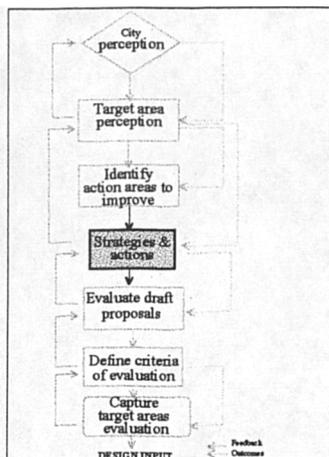
Step 5



Once the organisation of the “team” is completed, a further map sketching exercise should be carried out. The community groups should indicate the main sub-areas, activities, landmarks, boundaries, barriers, view-points etc. in their area and also describe them verbally. This process aims to identify target areas in the neighbourhood requiring intervention, renovation, improvement, as well as the provision of the type and amount of services required.

In parallel to the work of community groups on maps, the designers should carry out sensory walks in the area, to capture their own impressions of it. These should be then compared with the maps drawn by the residents. The comparison offers the first opportunity for a discussion on the perceived quality or deficiencies of the area expressed in maps and walks; after that the action areas for further stages can be confirmed.

Step 6



The task of this step is to identify - for the now chosen action areas - the type of improvement required and prepare the design brief. This means searching for the characteristics, attributes and activities for each selected space as considered important and meaningful by the future group of users.

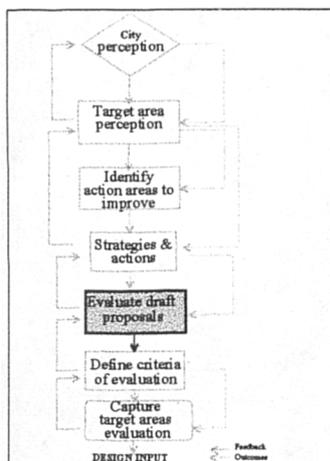
Step 7

At this point, the process leader and the professionals should leave the community group and work on the information collected. Knowing the physical location of

spaces where the action will take place, and also the type of action required, they should now carry out further investigation on base of the information obtained from the open-ended questions and descriptions that followed both map-sketching exercises. The aim of this step is to generate a number of alternative draft proposals and cases where similar problems have been resolved. An average of between 20 to 25 high coloured resolution images should be gathered, and reproduced in the same format, so that the images do not differ regarding exposition, point of view, resolution etc.

Should, for example, the first map-sketching exercise show that public spaces and squares were the most frequently mentioned and commented urban space, and should neighbourhood X be selected for further research as presenting major problems in its public spaces; then, the second map-sketching exercise would focus on the public spaces within this neighbourhood.

Step 8



Aim of the next step is to find out which criteria the community groups use to perceive, evaluate and use the selected space.

This task is pursued with Multiple Sorting Task¹⁷⁶ exercises (MST) carried out on the draft proposals. The community groups will be required, in fact, to carry out a multiple sorting of the set of images collected and, as part of this, to classify each sorting target areas with a “label” describing the criteria chosen for the sorting. Moreover, respondents are also asked to identify, within each sorting, the most and the least preferred space/image, and to explain reasons for the preference. This should provide a list of adjectives that, joined to the labels of each sorting and to the answers from the previous open-ended questions, will constitute a list of descriptive and evaluative criteria for the action area.

¹⁷⁶ As explained in chapter 4, Multiple sorting techniques allow to identify preferences (choices), evaluations (reasons for the choice) and decisions (classification) directly form the constructs and models which respondents hold about the world, with limited interference from external observers (Scott and Canter, 1997).

was a square, the sub-groups could be the overall design of the square, the boundaries of the square, the street furniture, the atmosphere that people perceived in it, the activities taking place etc. Then, the descriptive parameters (DP) of the content analysis (not the adjectives) should be related to such sub-groups. For example, if parameters such as “the appearance of the buildings surrounding the square”, or “the scale of the buildings surrounding the square” or “the materials of the buildings surrounding” were mentioned, they should be linked to the sub-group called “boundaries of the square”, as the example in Figure 5-2 shows. The same process must be carried out for each sub-group, until all the parameters have been associated to each of them. Then, it is recommended that an order is maintained within each subdivision. For example, if in the sub-group “boundaries of the square” the parameters would be - in the order the graph shows - visual appearance, scale, materials, safety, maintenance, then also the descriptors of the sub-division “open space”, “streetscape” etc. should follow a similar logical order.

Action area...a square, for example		Criteria obtained form the multiple sorting task					
SUB-GROUPS in which the space square can be sub-divided	PARAMETERS obtained from MST and OPEN-ended questions.	C O R I N G					
		5	4	3	2	1	
i.e. BUILDINGS surrounding the square	1 Appearance of the building surrounding	Pleasant		X			Unpleasant
	2 the scale of the building surrounding	Comfortable		X			Oppressing
	3 the materials of the building surrounding	Make sense			X		Confusing
	4 safety	Calming	X				Scaring
	5 .....	.....					.....
	6 .....	.....					.....
i.e. OPEN SPACE and general layout of the square	1 look of the open space	Pleasant			X		Unpleasant
	2 the scale of the open space	Adequate		X			Inadequate
	3 the materials used	Inviting			X		Repulsing
	4 safety	Encouraging			X		Inhibiting
	5 .....	.....					.....
	6 .....	.....					.....
i.e. STREET SCAPING SCAPING including sitting facilities, signing greenery, lighting..	1 the overall appearance of the streetscape	.....					.....
	2 .....	.....					.....
	3 .....	.....					.....
	4 .....	.....					.....
	5 .....	.....					.....
	6 .....	.....					.....
i.e. Type of ACTIVITIES taking place in the square	1 .....	.....					.....
	2 .....	.....					.....
	3 .....	.....					.....
	4 .....	.....					.....
	5 .....	.....					.....
	6 .....	.....					.....

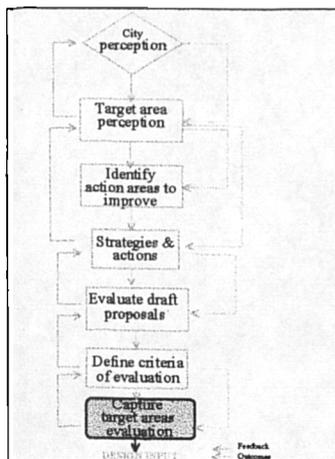
Figure 5-2. An example of semantic differential based on the results of map sketching, open-ended questions and MST exercises. The criteria describing the action area, a square for example, should be subdivided into the sub-groups most frequently mentioned during the previous phases.

Step 10

At this point it would be useful to compare the semantic list obtained with Hershberger's Primary and Secondary Semantic Scales (and the parallel alternative scales) (in Nasar, 1988), which he developed to describe how observers evaluate buildings and the meanings these have for them¹⁷⁸. This exercise could reveal further suggestions to the definition of the semantic list; similar semantic scales have been developed for other types of objects (buildings, open spaces etc.) (Hesselgren, 1987), but Hershberger's lists seem to be the most useful because they are extremely detailed¹⁷⁹.

Once the semantic list is completed, what has been called the "contextual" phase can start. It is meant to identify and study larger responses from the community, regarding the perception and evaluation of the neighbourhood spaces selected in the second map sketching exercise.

Step 11



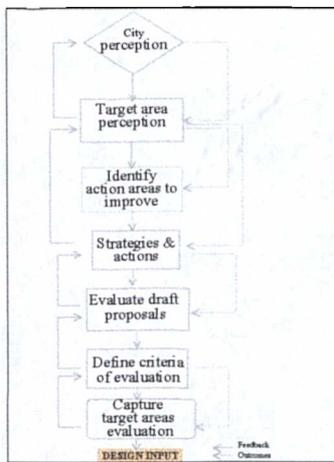
On the basis of the key areas identified, and of the semantic scales developed, members of the team should go around the neighbourhood asking randomly selected respondents to fill in the semantic differential questionnaire (SDQ). It is recommended that the survey is carried out in the target areas rather than in community buildings. Apart from responding to purely practical reasons, this procedure also follows Canter's suggestion

¹⁷⁸ See a complete comparison between Hesselgren's scales and the semantic differential developed in the action research presented in chapter 6.

¹⁷⁹ In chapter 4, discussing semantic methods, Hesselgren's scale was presented as a step forward within semantic studies, because it is more flexible and less dependent on a priori evaluations. Here instead, the comparison between the semantic scale obtained in step 9 with those of Hershberger is encouraged; this does not diminish the input of the community groups, it simply means getting more ideas from more established research. Important is that the whole group should carry out the comparison, and that each new element from both scales would be discussed, evaluated, integrated or excluded (see footnote 169).

that field-studies guarantee better answers than photographic simulation (Canter, 1997), allowing respondents to consider experiences linked to the space rather than just drawing information from the image and having to derive evaluations from it. Also, according to Nasar (1998), the polar adjectives in the semantic questionnaire should be randomly listed altering the positives and the negatives, to avoid biases in responses. The ranking scale of the semantic list here adopted goes from 1 to 5 rather than from 1 to 7; this has shown to create confusion and alienation in respondents who, as a consequence, tend to award mid-values (Hesselgren, 1987). Nevertheless, in those cases where greater levels of differentiation are required from respondents, to register more refined differences of evaluation, it is opportune to adopt 1 to 7 ranking scales.

Step 12



Once all the answers of the compiled SDQ have been collected, they should be differentiated into as much subdivision as the number of sub-groups identified in step 9. Partial and total scores can be drawn at this point, as the figure 5-3 shows.

	mean value for Param. 1	mean value for Param. 2	Param. 3	Param. 4	Param. 5
ACTION AREA	from all responses	from all responses			
(a square, for example)	mean value for	mean value for			
BUILDINGS	x_1	x_2	x_3	x_4	x_5
OPEN SPACE	y_1	y_2	y_3	y_4	y_5
STREET SCAPING	z_1	z_2	z_3	z_4	z_5
ACTIVITIES	...	...	...	...	...
MEAN	tot1	tot2	tot3	tot4	tot5

Figure 5-3 An example of how to organise the mean values of all the answers collected from the SDQ.

In the example, mean values (of each parameter and of the overall image) can at this point be translated into graphic format. In doing so, the Radar graph can be chosen

because it is capable of presenting, at the same time, a comparison between an ideal model of performance of the object studied and the actual registered performance. In the graph, the radii indicate the independent variables, and the values on them the scoring that such variables obtain, whereas the overall figure shows the performance of the dependent variable.

In the example, the representation of the performance of the public space could be done on two levels. Figure 5-4, shows how the performance of spaces could be read. The blue polygon shows the performance of the whole square as dependent on all the main sub-divisions. The green polygon instead shows the performance of a sub-space as dependent on its Distinctive Parameters. To draw the graph, it is necessary to select the values of Figure 5-3 (the green for the partial performance, and the blue for the overall performance).

Action area... a square, for example	DISTINCTIVE PARAMETERS	Adjective list obtained from the MST
MAIN SUB-GROUPS	DISTINCTIVE PARAMETERS	SEMANTIC SCALES
FIRST LEVEL SUB-GROUP A	1 Distinctive Parameters of SUB-GROUP A 2 Distinctive Parameters of SUB-GROUP A 3 Distinctive Parameters of SUB-GROUP A 4 Distinctive Parameters of SUB-GROUP A 5 Distinctive Parameters of SUB-GROUP A	
FIRST LEVEL SUB-GROUP B OPEN-SPACE	1 Appearance of the open space 2 the scale of the open space 3 the materials used 4 safety 5	
FIRST LEVEL SUB-GROUP C	1 Distinctive Parameters of SUB-GROUP C 2 Distinctive Parameters of SUB-GROUP C 3 Distinctive Parameters of SUB-GROUP C 4 Distinctive Parameters of SUB-GROUP C 5 Distinctive Parameters of SUB-GROUP C	
FIRST LEVEL SUB-GROUP D	1 Distinctive Parameters of SUB-GROUP D 2 Distinctive Parameters of SUB-GROUP D 3 Distinctive Parameters of SUB-GROUP D 4 Distinctive Parameters of SUB-GROUP D 5 Distinctive Parameters of SUB-GROUP D	

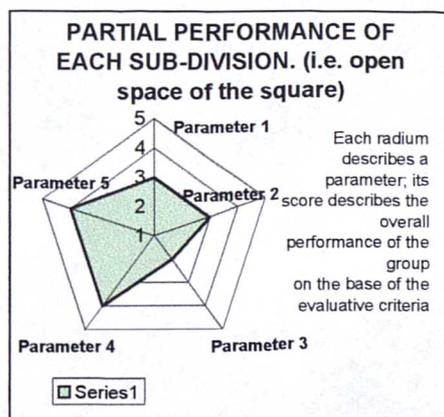
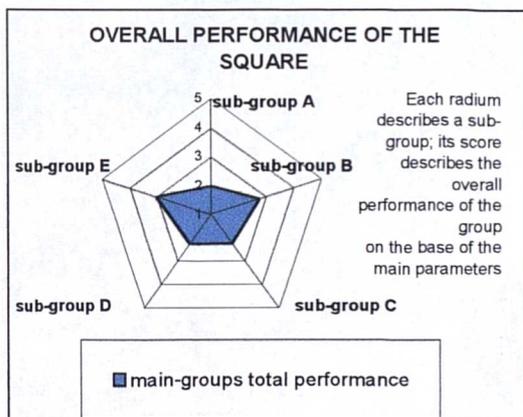


Figure 5-4. How the semantic differential results can be used to describe the performance of spaces.

In the graphic format, the partial and general overall performances of the space are represented by the coloured polygons, the ideal performance of the space by the complete polygon; in both cases, the independent variables are the radii of the figure.

At this point, the performance of the space is completely represented, both in detail and as an overall. The “quality” of performance of the space depends on how much the polygon tends to the complete form, the ideal polygon where the radii are 5 units long. Ideally such a complete polygon corresponds to a space containing the characteristics identified by respondents in the open ended and MST phases, and fulfilling them according to the highest score of each adjective used to evaluate them. It is possible to calculate the area of the polygons obtained. The formula to calculate the area of the regular polygon with n radii, where R is the length of each radius, is:

$$\text{Area} = \frac{n * R^2}{3} * \sin\left(\frac{360}{n}\right)$$

Formula to calculate the area of the irregular polygon with n radii; numbered from 0 to n-1.

R_0 R_1 R_2 R_{n-1} are the lengths of each radio.

$$\text{The area is} = \sum_{i=0}^{n-2} \frac{1}{2} R_i * R_{i+1} * \sin\left(\frac{360}{n}\right) + \frac{1}{2} R_{n-1} * R_0 * \sin\left(\frac{360}{n}\right)$$

The relationship between the real and the ideal polygon (a number < or =1) indicates how far the conditions of the studied space are from the desired ones. This relationship will be useful at the end of the design process, not much in the initial stages. During the initial stages in fact, what counts is the shape of the polygons obtained, as indicating the characteristics towards which action needs to be addressed.

For example, looking at the radar “open space”, the factors 1, 2 and 3, appearance of the square, the scale of the spaces and the materials used seem to be weaker than factor n.4, the feeling of safety perceived in the square. If these indications are used in the design brief, designers will be warned to take into consideration, for example, the use of new materials to influence the appearance of the space, making sure also that this would improve the feeling of safety perceived or at least not reduce it. At the same time, intervening with the space layout and the relationships between parts of the space to increase the feeling of scale, they will be advised not to carry out changes that could affect the positive perception of safety of the space.

The same procedure of analysis should be adopted for each sub-division; for each of them the designer should carefully analyse factors affecting it, and how their modifications could affect each other.

5.3 Reliability and extendibility of the methodology used.

As the proposed MMS touches the field of social sciences, it is necessary to discuss its validity, that is its theoretical foundations, but also its reliability, that is the consistency and the stability of its achievements in repeated trials (ERIC). Finally, the MMS must be tested regarding its discriminability, that is its capacity to distinguish between what is substantial to the process and of effective interest to those to whom it is offered as a method of analysis.

For its nature, the major pitfall of this research seems to be its subjectivity, as it is based on subjective responses, and on restricted samples of respondents, at least in the first stage of the analysis. Regarding the subjectivity of the data studied, social sciences are bound to be based not on mathematical or statistical certainty, but on reiterative studies based on experiments and attempts. Still, people’s interaction and response to the built environment can be studied and predictions can be made, even without the aim of achieving any definitive answer, although a certain constancy in people’s appreciation exists, as demonstrated in chapter 3.

Regarding the size of the samples studied, these are in the present case relatively small and certainly not representative of the population of Glasgow (in the first cognitive mapping exercise) or of the whole communities studied (in all the

following exercises). The researcher is aware that such a choice can have effects on the quality, amount and significance of the data identified; to respond to such a reduced sample of respondents, large importance has to be based on the interaction among them at the different stages of the project.

The study is meant to work as a suggestive tool for design, because it represents interests and requests of groups that have a direct say in the process of information collection. It is not trying to provide a detailed picture of how general groups of users see general types of spaces, therefore the small and strongly context-based samples of people are also meant to respond to this issue.

A further question that can be addressed regards the usefulness of the results obtained through social sciences when applied to environmental research; the fact that they often confirm already established beliefs leads often to question their value. The present research argues that group images, even when representing a consensus among significant numbers of individuals, still have high value to city planners and designers because they provide them with reliable bases for decisions. If designers and users had the same shared values in evaluating the image of the city, designs and plans would be commonly recognised and accepted and no mismatches would exist, but this is not the case, as research presented in chapter 3 has shown.

Finally, although based on techniques sensitive to the personal constructs of respondents, there is still one objection that has arisen regarding the capacity of the MMS to comprehensively include personal inputs by the respondents, such as culture, individual experiences, changing attitudes etc.

The suggested analytical strategy should not be considered as disconnected from the dialogue and interaction between the various groups of participants –either users or professionals. The dialogic phases, together with the visual simulation and the sensory stimuli to which groups are exposed, constitute an educational process, when visual literacy and the interactive skills of each participant are stimulated, challenged and developed. Such dialogic phases represent the moments when personal factors can be seriously taken in account. Despite the various techniques available, when the aim is to work with users for the users, it seems that nothing can substitute their direct interaction and dialogue. Apart from achieving pertinent information,

interaction and dialogue could also assure the mutual enrichment of both professionals and clients. The contact and dialogue among participants also guarantee the discriminability of the MMS, since those directly interested in the analytical process are able to address issues of concern, purifying them from other issues of lower interest. The possibility of focusing research on specific topics of relevance to a neighbourhood, as is the case here, allows to confront it at the same time with experts' inputs, and develop best fitting solutions.

As will be described in chapter 6 in the case study conducted together with 4th Year Students from the University of Starthclyde and the Cranhill community action group in Glasgow, such interaction has provided a useful guidance and a structure to the decision making and design process. Moreover, it has on the one side educated the community groups regarding the feasibility of the strategies identified, and on the other the designers to research for responses that, without the users' inputs would not have been as respondent to that specific community¹⁸⁰.

Regarding the issue of reliability, three aspects need to be considered: i) the repetition of exercises and/or phases, ii) the overlapping of phases with each other, and iii) the feedback between each stage.

Regarding the first issue, some exercises are repeated –as part of the MMS- to encourage respondents to refine their approach to the built environment according to some parameters, so that it is likely that their interest will be more addressed in the decisions taken. In addition, the whole exercise has been repeated with different groups of users and community groups, so that, time after time, adjustments and changes have been possible, to produce a final analytical tool capable of being flexible but also informative and receptive of contextual identities.

¹⁸⁰ In this specific case, during the development of the strategy, an indicative amount of services desired and facilities derived from the participation of the community. A period of research carried out by the students followed; from it students demonstrated that the area of Cranhill was not capable of sustaining, alone, such a provision of services. Therefore, a new and more comprehensive strategy including the adjacent communities was developed, under the aim of increasing the area serviced by the facilities requested. The study joined context-based information to urban indicators such as the Urban Task Force; as a result it demonstrated that policies can serve local specific needs; incompatibilities and rigid rules, when used as guidance and stimulus for debate can strengthen and improve the effectiveness of local action.

As mentioned, some overlaps take place during the first phases of the process, mainly those involving map-sketching and open-ended questions exercises. Apart from confirming or denying the findings of each stage, such overlaps strengthen the links between phases and make sure that the whole process is carried out reflecting issues of significance to specific teams and action areas.

The reliability of the MMS is also guaranteed on a semantic level, through the feedback and reliability checks conducted after each content analysis; these reduce the verbal distortions that can derive from reinterpreting responses. The feedback and checks on verbal answers are also aimed at developing, in each specific case, a vocabulary that is used by the community group, but also to expand it.

Specific comments should be made on the role of the project leader and on his/her influence on the process. In each step (from map sketching to Emotional Loading Profile), the influence of the project leader will be present. In the map sketching exercise, for example, the choice of maps to be drawn will be influenced. In the open-ended questions, both the questions and the request of focusing the answers on specific issues (architecture and urban space in this case) are intensely influenced by the project leader; respondents should, therefore, also be encouraged to provide answers of more various nature. In the Multiple Sorting Task exercise the choice of images could be affected by the leader, although the previous stages are meant to reduce such influence to a minimum by deriving the criteria of selection directly from respondents. The various content analyses also risk to overshadow the original view of respondent; as suggested in chapter 4, reliability checks on both the labels of each category and on the categories assignment should be conducted.

Then, there is need for an evaluation of the techniques adopted; as explained in chapter 4, semantic differential, a tool largely used in social science, is nowadays substituted by other techniques less relying on a priori scales (Groat, 1982). Having recognised its potentialities and the easiness of its applicability, this research wanted to make use of such strengths but also to overcome its weakness. Hence the idea of basing the definition of semantic scales, not on content analysis of existing semantic research, but on action research, based on MST and other techniques able to register people's personal constructs. In doing so, the semantic scales that derive are capable

of registering individual psychological differences, because they are based on individual differences of respondents coming from the same background as the respondent that will make use of such scales (Canter, 1977 in Groat, 1982).

Chapter 4, describing the domains of action that can be explored through multiple sorting techniques, stated the intention of developing an exploratory, heuristic, descriptive and hypothesis-testing method. It was also recognised that MS on its own could not be so inclusive; the MMS proposed instead tackles all these domains. It can register differences among the people participating in the study - through map-sketching, open-ended questions, sensory walks, MD and SD - but it can also identify the different constructs that different groups use to experience the objects studied (MST). Regarding the capacity to register the different relevance of the objects chosen as focus of study, it satisfies it through the map-sketching procedures and open-ended questions, which allow to narrow down the focus of investigation on elements of effective concern.

Finally, the whole process can be considered as hypothesis testing; it starts in fact involving different groups that are assumed to have different approaches to environmental experience. The information gathered from both groups is confronted at each phase, so that such groups identify the reciprocal differences, and fill the gaps. This continuous confrontation seeks to “level” differences by making them acknowledged by clients and professionals.

The strength of this proposal is its iterative nature, with its continuous adjustments to shifts in the responses, suggestions and criticism; nothing is imposed and ready to use. Instead, the MMS ought to be seen as a brainstorming process.

5.4 Conclusions

The intent of this study is to combine design research and participation to respond to Groat’s suggestion of consider public’s view as much as professionals’ view in design (1879). Maps, open-ended questions, MST, SD and ELP exercises become tools to gather information on target areas and perception of neighbourhoods. They guarantee that the views of people are represented and considered; they link action strategies to the community assuring useful developments of the mission statements. This process

of developing continuity, distinctiveness, self-esteem and self-efficacy, by working on place and identity processes, seeks to motivate people to actions that will improve their built environment (Twigger-Ross, Uzzell, 1996).

The information and evaluations that can be derived through the proposed MMS can help designers to focus their design strategy for an area on issues of real concern to the community. Although this procedure deals with just the initial part of the design process, it can have strong repercussions on the whole development of the design, introducing professionals to a new and responsible approach to the clients and users.

This process also shows how participation of people in the design process does not substitute people for designers; instead, it stimulates them to become more aware of their needs and opportunities and so to brief the designer more thoroughly. This approach, aiming to educate the professional as much as the client, should work as an antidote to the figure of the paternalist professional, developing more trust and availability in both.

There is one further issue that needs to be considered: the reiterative process suggested is time-consuming, and therefore can deter community groups and designers from using it (3/4 meetings per month, for a repeated number of months, are generally a great commitment, even if carried out during non-working time). It could though be well accepted by groups of youngsters, elderly, unemployed people. Nevertheless, if the dedication to this process is constant and “follows the rules” suggested, it would “guarantee” important benefices to the community and the professionals that use it, both in physical terms - assuring high-quality design solutions - and in social terms, guaranteeing the enhancement of participants' visual literacy and experience.

CHAPTER 6. VISUAL LITERACY - EXPERIMENTS AND APPLICATIONS

Involving community groups in the design processes concerning their city or neighbourhood can play a constructive role in creating responsive environments and achieving a high level of satisfaction for communities (chapter 1). Interaction between clients and professionals is essential to encourage the resolution of disputes at the design stage rather than once actions have been taken, since their different roles and expertise could enrich the process of co-operation.

The built environment, the theatre where clients and professional interact, has been identified as a fundamental resource of (non-verbal) communication among them (chapter 3). Research has demonstrated that people tend to attribute meanings of a different nature to the built environment, and then to adapt their interpretation of and action towards it according to such meanings. For effective communication to take place, the characteristics of the built environment that provoke people to attribute meanings should be comprehensible to them. On the bases of this understanding, chapter 3 has also shown how research in environmental experience can play a role in facilitating such communication.

It has then been demonstrated that it is first of all necessary to look at and listen to the types of affection that environmental characteristics may generate in people (Nasar, 1998; Rapoport, 1982) to assure the appropriate correlation between meanings and physical environmental characteristics. Chapter 4 illustrated a number of methods that can be used for the evaluation of environmental experience. One way to use the information obtained from such methods is to establish and carry out a dialogue between the parts involved in participatory design, and this has been presented in chapter 5. Visual literacy, based on the key issues of learning, sharing and communicating information through visuals, has provided the framework that has constantly - during each stage of the research - helped to look for information, collect it, and use it, on the principles described in chapter 2.

This chapter now demonstrates how the phases described above have been applied in practical cases. It is organised in two sections.

The first section, an "experimental phase", consists of i) a survey carried out by the researcher in Glasgow to identify people's spatial perception of the city and ii) two workshops conducted in schools¹⁸¹. The survey was meant to identify some urban features of particular significance to people, so that further research could concentrate on them, utilising some of the methods studied. The school workshops were meant to experiment with the use of visual images as a way to learn and communicate information. Considering participatory design as a form of debate and dispute-solving among people, the survey allowed to identify the "topics" of discussion, and the workshops to experiment with and exercise new forms of discussion, where images and words counted equally.

The second section, an action research where visual literacy principles are the base of further and more structured activities of environmental evaluation and action, consists of a complete application of the multi-method strategy (MMS) described in chapter 5.

For all survey and workshop described in the chapter, aims, tool, outcomes and problems encountered are described, so that recommendation can be derived for future development and improvement.

6.1 The experimental phase

This section briefly describes the map-sketching exercise and the two school workshops conducted in schools.

¹⁸¹ Glasgow 1999 UK City of Architecture and Design commissioned the two experiments carried out in a Primary and a Secondary school as part of the programme "residencies" which encouraged, among several other activities, the involvement of a number of professionals - such as architects and artists - with schools. A complete database of "residencies" is available in Glasgow 1999's Web Site, at the URL:
<http://www.glasgow1999.co.uk/EDUCATION/MILLENNIUM/index.html>.

6.1.1 How people see Glasgow¹⁸²

During summer 1998 the researcher conducted a survey on "how people see Glasgow" based on Francescato and Mebane's work (1969) described in chapters 3 and 4. The aim of this survey - part of the "Visual Literacy Research Programme, Reading the City", launched by Glasgow 1999 in collaboration with the University of Strathclyde - was to study people's visual awareness of the city, identify categories of urban physical features of concern to them, and assess the relationships pertaining across a range of variables related both to people and place.

The method applied and activities conducted¹⁸³

Francescato and Mebane's study on how people perceive Milan and Rome seemed an ideal approach to obtain the three sets of information mentioned above. Their method was therefore adapted and applied in a survey with the help of a three-section questionnaire: in the first section a set of questions was asked on personal data (gender, age, education, place of stay, transports used¹⁸⁴). The second section consisted in a series of questions about people's likes/ dislikes and impressions of Glasgow¹⁸⁵. Respondents were required to concentrate mainly on architecture and the form of the city, and issues related to them. This section included only open-ended questions, to avoid constraints to answers and probe their feelings, thoughts and constructs (Nasar, 1998: 152).

The third section of the questionnaire recorded people's image of the city through two map sketching exercises. The first required respondents to draw a map of the city

¹⁸² Part of this research has been funded by Glasgow 1999 UK City of Architecture and Design; one of its goals is to raise awareness of environmental issues in an increasing number of people in the city. This aim has been pursued in several ways, including carrying out short courses and workshops about architecture and the built environment in schools and community based housing associations.

¹⁸³ See Appendix 1 for the complete questionnaire and for the detailed results. Dr. Wasim Rashid helped the researcher in the data collection and analysis.

¹⁸⁴ The questions of the first section derive from Appleyard's study on the perception of building qualities (1969).

¹⁸⁵ Respondents were asked to generate a list of places they would have pointed out as significant to a tourist, and a list of places they would have remembered as lasting impressions of the city.

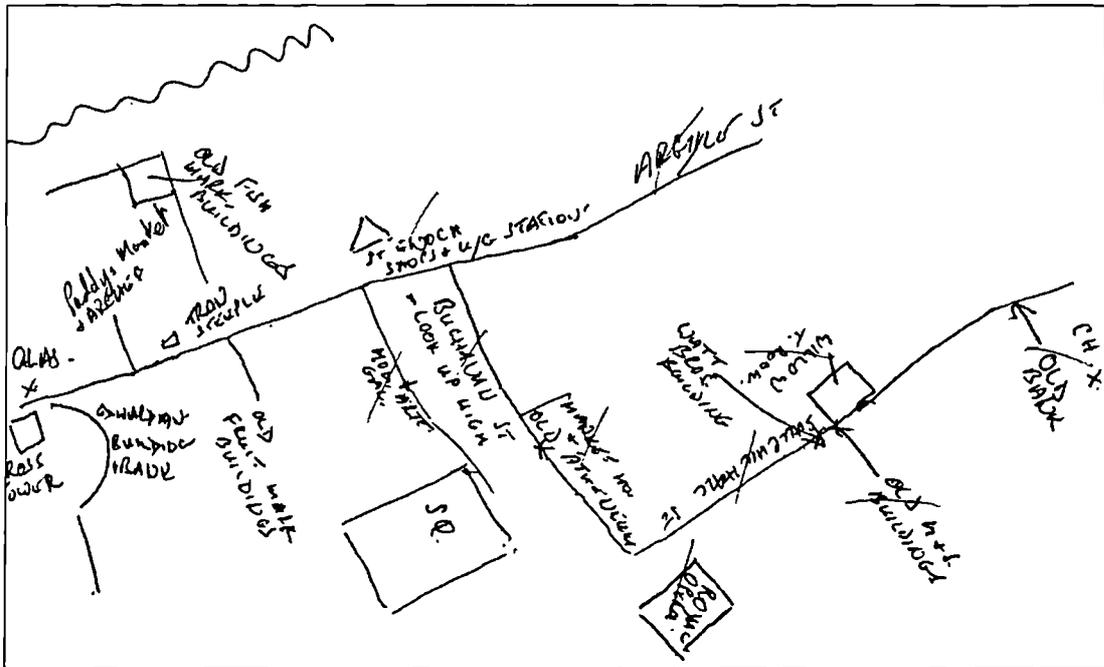


Figure 6-2 Map drawn by a community educator, male, aged 30-60 and resident in Glasgow for over 10 years. "Can you draw the route you would walk from Glasgow Cross to Charing Cross with the most relevant things you would see?"

The sequence of the three parts of the questionnaire demonstrated to be well accepted by respondents; the first personal set of questions established a contact between them and the researcher, the second set of questions prompted them to recall images and organise them, and the third to draw them. The fact that no restrictions were imposed to the answers resulted in a variety of maps, as illustrated in the following paragraphs.

Conditions under which the survey took place

Sixty-one interviews - lasting between twenty and fifty minutes - were conducted according to the non-probability sampling criteria (Nasar, 1998). To avoid bias in the selection of respondents, the choice of respondents was based on selecting criteria. Among these, the choice of the place where the interviews took place, and the balance of gender and age¹⁸⁷.

¹⁸⁷ All interviews were carried out in public spaces, to involve a varied selection of socio/demographic groups. Such spaces included entertainment/ cultural places, up-market retail places, low/middle-market shopping streets,

Outcomes

Three types of information were drawn from answers and maps, providing a first answer to the questions addressed by the "Visual Literacy Research Programme, Reading the City". The first consisted in lists of features/places with their immediate evaluation, the second in cognitive maps of the overall view of Glasgow as well as of a main route in it and the third in interpolations between personal data, open-ended questions and maps.

Figure 6-3 shows the answers to the open-ended questions organised in main categories; Figure 6-4 describes the main categories identified and figure 6-5 shows an example of interpolation¹⁸⁸.

public squares highly frequented by different groups of people, randomly selected streets. All interviews took place in the city centre and the eastern part of the city. Furthermore, interviews were conducted at different times of the day, to include both workers, retired people and youngsters, and at different days of the week, including Saturdays and Sundays. This helped balance the choice of localising interviews in the city centre/ eastern part, since during weekends larger groups of people from other parts of and from outside the city tend to visit the city centre.

¹⁸⁸ Several tentative hypotheses may be derived from data-interpolations. For example, the fact that non-natives and people under 30 tend to be more aware of paths than the other categories. This can have something to do with the fact that these two groups tend to move mostly by foot (which has revealed to be the transport system connected to the more intense perception of urban features). These two groups seem to be more aware of nodes as well, as if they are those that use them most frequently.

Highly educated people are more aware of landmarks (and in most cases can describe them or know their history and social value), district and edges than less educated people. This can be due to their higher level of mobility, both in terms of where they work, and in terms of their use of different parts of the city, which tend to be related to the degree of education.

People over 30 tend to be more aware of edges than those under 30; this can be related to their familiarity with the main physical structure of the city, in terms of development of areas, geographical referents, and urban history. Many of them connected, for example, the Clyde to Glasgow and its naval industry, the East with the railway line in Gallowgate to the poor areas and the noxious industries of last century.

Summary of results.

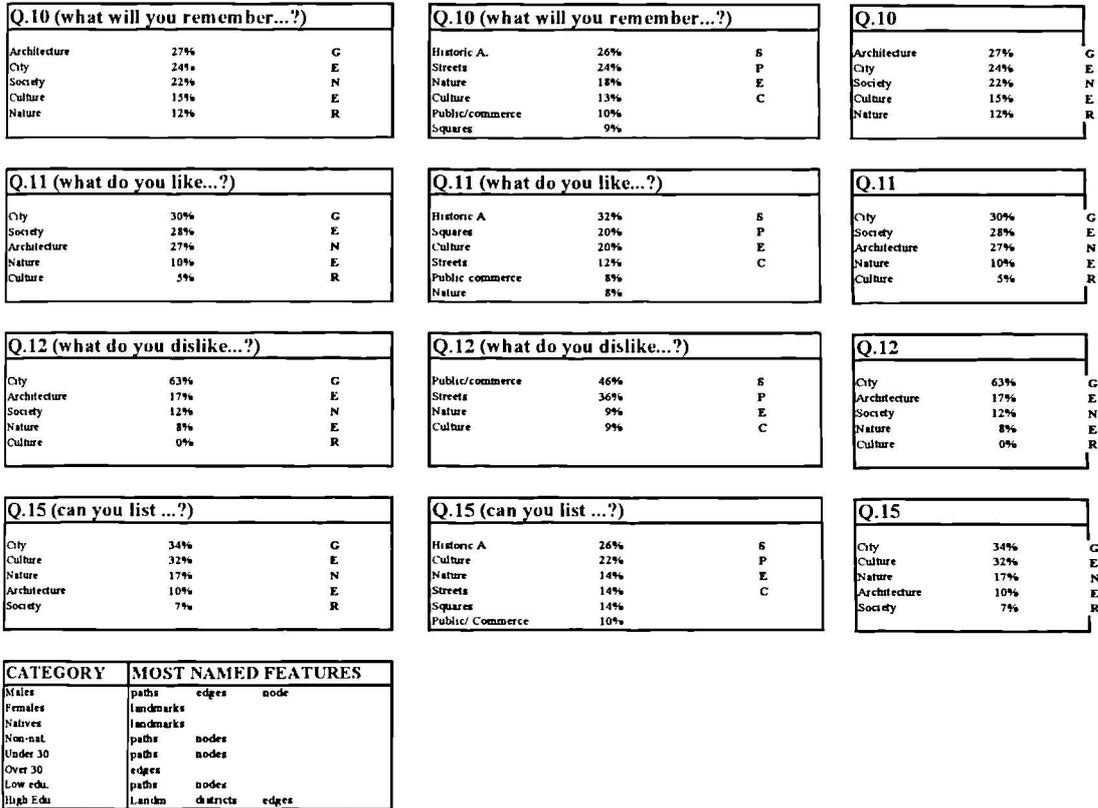


Figure 6-3. Open-ended questions, a general overview of the answers from the 61 questionnaires.

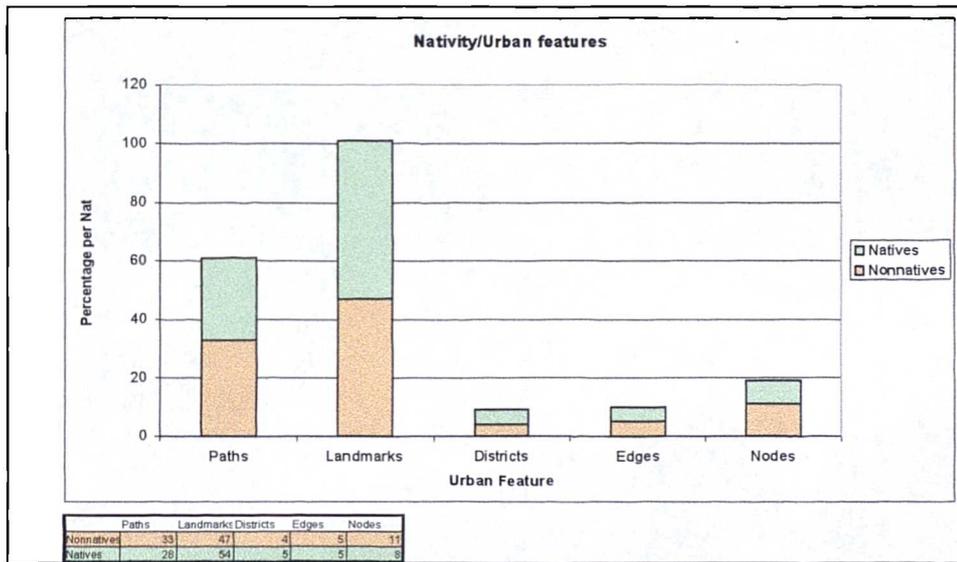


Figure 6-4 Content analysis of the open-ended questions. Main distinction between general/specific results.

Legend for Quest. 10, 11, 12, 15		
General	<i>Society</i>	Social Interactions Atmosphere Sport Maintenance
	<i>City</i>	City areas Development Transport/Traffic Shopping
	<i>Architecture</i>	Historic Modern 60s General
	<i>Culture</i>	Museums Libraries
	<i>Nature</i>	Environment Parks
Specific	<i>Historic</i>	Glasgow University Cathedral Necropolis St. Andrew's City Chambers Tron/Glasgow Cross People's Palace School of Art
	<i>Squares</i>	George Sq. St. Enoch Square
	<i>Streets</i>	Buchanan Red Road Victoria Street Argyle Street Byres Road Sauchiehall Street
	<i>Culture</i>	GOMA Burrell Collection Kelvingrove Art Gallery and Museum Armadillo Royal Concert Hall Mitchell Library
	<i>Pubbl/Commerce</i>	Princes Square Buchanan Galleries Italian Centre St. Enoch Centre
<i>Nature</i>	Glasgow Cross Clyde Queen's Park Botanic Garden Kelvingrove Park	

Figure 6-5. One of the possible interpolations between personal data, open-ended questions and maps. Here paths, nodes, edges, landmarks and districts are related to the length of stay of respondents in Glasgow.

The second degree of information that could be drawn from the questionnaire providing information on the perception of the city was graphic. The maps produced - actual maps with a good perception of relationships, scale, order and orientation, simple lists of names of places in sequential order, personal representations of places with no spatial order but personal meanings and sequence, as figure 6.6 shows - were a confirmation of Bell's definition of cognitive maps.

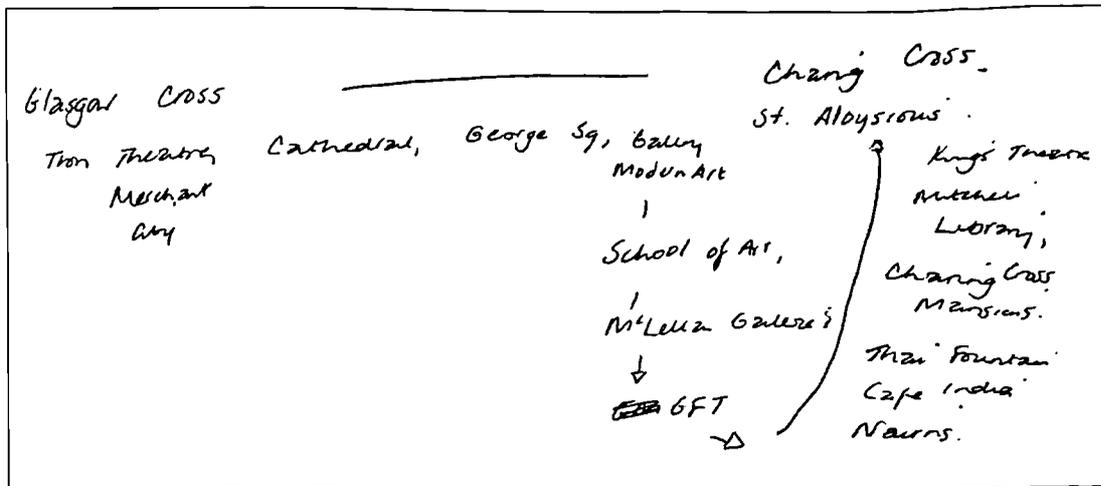


Figure 6-6. Map drawn by a shop-keeper, female, aged 30-60. Maps were often drawn as a sequence of places; elements in the map are ordered according to the sequential order in which they are encountered when walking from one point to the other.

The cognitive maps show all the characteristics highlighted by Bell; they are: *sketchy, incomplete, distorted, simplified and idiosyncratic personal representation of the environment we experience* (Bell, 1996: 79). The maps also confirmed Ramadier and Moser's suggestion that spatial representations depend on propositional ones (1998). It was interesting to notice that in many cases, respondents' use of certain parts of the city, or their profession was clearly reflected in the maps they drew, as figure 6.7 shows.

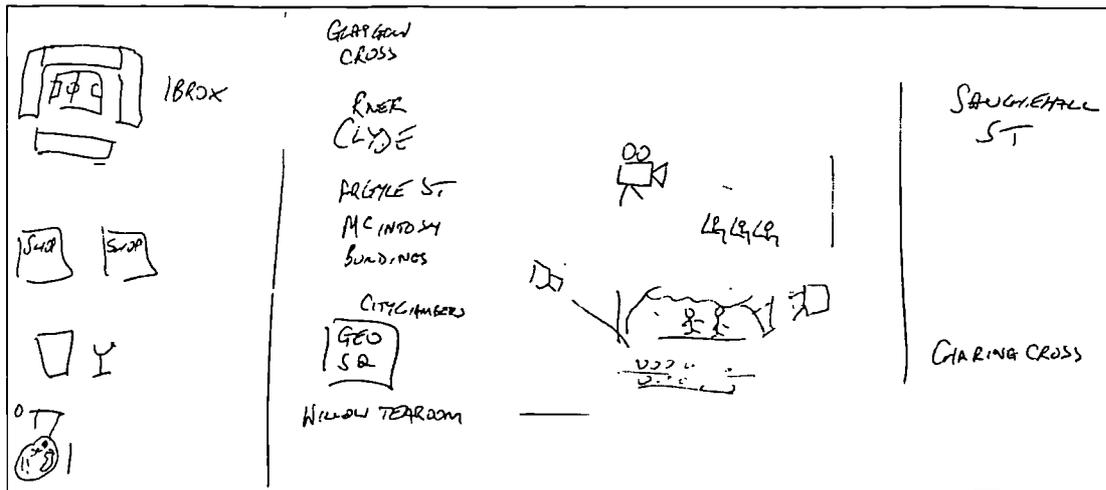


Figure 6-7. Map drawn by a male, aged 18-30, student temporarily unemployed. It shows the relevant features he encounters when moving from Charing Cross to Glasgow Cross. Apart from the distortions (Ibrox Stadium is not near Glasgow Cross), the other features are curiously named and represented, in correct sequential order, according to the activities that they host. Argyle St. is associated to shops, City Chambers is in George

Square, and it's associated with bars, the Willow Tea Room with food, Sauchiehall St with a cinema and Charing Cross with a space for representations (possibly the Kings' Theatre).

An overall representation of such maps was organised per age groups and length of stay in the city, in the belief that evaluative maps of the city can be used for its analysis and improvement (Nasar: 1998; Kitchin: 1994). Figure 6.8 shows an example, comparing the maps drawn by native and non-native respondents.

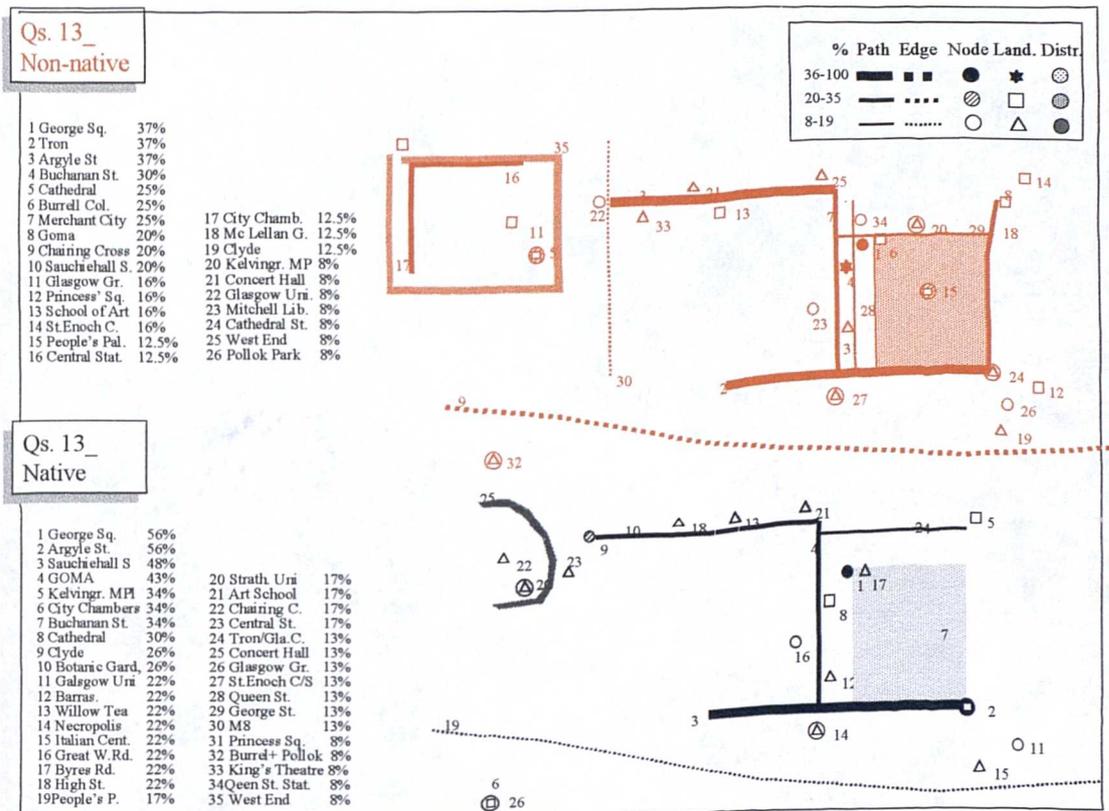


Figure 6-8. The maps represent the image of Glasgow that native and non-natives have. Non-natives seem to use as referent more paths than native do, and cultural or commercial landmarks are more important for them than for non-natives. For natives instead, more traditional features, such as the Barras market, have strong significance.

Conclusions

In general the study confirmed the necessity to continue the research of people's perception of the city, and also the feasibility of this task. Moreover, the fact that the majority of those interviewed manifested interest in the aim of the questionnaire and in the project, showing perplexity but also willingness to be further involved,

suggested that research in the field of city perception could be an ideal starting point for participatory design¹⁸⁹. Respondents, in fact, were highly concerned about the following issues, and expressed their desire to take part to actions related to them:

- The state of maintenance of the city (the state of repair of streets, squares and building);
- The process of development of its areas (gap sites, relationship of new buildings with the historic context);
- The shared dislike of the '60s architecture, and the desire for housing typologies more respondent to people's needs.

Respondents' attention focused both on positive and negative sides of the named factors; this showed their awareness of problems even within a context that is generally judged as working well.

The results of the survey indicated one category of spaces of particular concern to people and of interest to Glasgow 1999¹⁹⁰: public spaces, streets and squares; it was therefore decided - at this stage of the research - to focus further attention on the analysis of this category of spaces.

Regarding public spaces and squares, the issues of major concern proved to be related to their state of maintenance (i.e. paving of streets and squares, seating facilities and other accessories, surrounding buildings, disturbing or dangerous activities and behaviours). Also factors such as the presence of natural elements, the coherence and compatibility between the different features of the urban pattern (natural/ built, old/ new) and activities were frequently mentioned. Regarding these issues, the analytical method used in the survey could register three aspects: *identity* (the salient elements mentioned), *location* (where they are) and *likability* (the qualities that respondents

¹⁸⁹ Most of them agreed leaving contact addresses for further stages; this was interpreted as a good omen for a larger community involvement in the matters concerning the city.

¹⁹⁰ One main project of Glasgow 1999 was the so-called " Millennium Spaces", that is public spaces designed with the participation of local communities; for this reason, Glasgow 1999 has always supported and encouraged a focus of the research directed to the study of people's perception and evaluation of public areas.

associated to them)¹⁹¹. It was felt that this information was not informative and detailed enough to be used as people's input in design.

It was therefore considered necessary to add specifications to identity, location and likability of the urban spaces mentioned. This suggested to the researcher, the research supervisor and Glasgow 1999 to carry out further analytical studies at different geographical scales, with a focus on targets and aims of specific community groups. It seemed particularly interesting to focus this investigation on public spaces and housing estates, specifically those with experienced housing associations and schools.

6.1.2 Visual literacy and the built environment in schools: two workshops

The two experiences described in this section were mainly linked to the commitment that the research had to Glasgow 1999 UK City of Architecture and Design and its Educational Department. Nevertheless, both workshops offered a chance to experiment with some of the theories studied in the literature review and with the principles then adopted in the MMS.

The first workshop - carried out in Crookston Secondary School - was conducted at a time when the idea of a MMS for environmental analysis was not yet developed. Therefore, it mainly focused on practical rather than evaluative activities; its purpose was to experiment with the principles of visual literacy investigated by the research.

The second workshop - carried out in Carmunock Primary School - was still centred on practical activities and visual literacy, but developed in parallel with the definition of the MMS. The fact that it extended over a rather long period of time allowed to link some of the stages that would have then more clearly been included in the MMS.

In both experiments the researcher has been supported by Glasgow 1999, Department of Education, as well as by the teacher of the classes.

¹⁹¹ Classification adopted by Nasar (1998: 37).

As a conclusion of the two experiences, Glasgow 1999 charged the researcher to summarise the workshops on a CD-ROM including the visual vocabulary developed, the exercises, information on visual literacy and visual interactive resources, to be used by teachers at other occasions. The CD-ROM is supplemented by a user guidebook. A draft version of the CD-ROM is included in Appendix 2, together with the user manual; Glasgow 1999 is expecting to distribute it to Scottish Schools during summer 2000 after text and images have been edited to make them more user-friendly.

Crookston's cathedral: objects of the experience

The workshop involved - over a period of five weeks - three classes in building a visual vocabulary, as well as a visual syntax, to then start a dialogue on - and making use of - the visual world. The three classes were involved in activities of visual stimulation, of discovering and using design elements and principles, and then of applying them in a design project.

The idea was to provide students with the critical tools to evaluate what they see in the built environment by themselves, so that - developing this experience - it will be up to them to recognise good and refuse bad quality, whilst understanding what contributes to create it. This should be a first step in the direction of preparing them for the implementation of improvements where bad quality has been recognised.

Conditions under which the experience developed

Crookston Castle School - in the south side of Glasgow - serves a working class community. Art teacher Fiona McLeod and the arts department in the school have a background of innovative and enterprising projects and the teacher included the study of the built environment within her design units; the working settings were therefore supportive and ideal for the workshops.

Approach adopted and activities carried out

Five main activities were carried out¹⁹²:

- Visualising the school. This first activity consisted in exploring the built environment within and surrounding the school, to get familiar with shapes and images that, although readily available to students, were scarcely known.
- A slide show of shapes and images from unfamiliar environments was aimed at showing how the same space they explored around them could change and respond to different requirements according to shifts in environmental conditions, culture etc.
- Among the examples of architecture shown, some were perceived as an immediate, simple but spectacular approach to construction. They were therefore used to explore the various elements and parts of buildings, through their analysis in a parallel comparison to the human body, as Figure 6.9 shows.

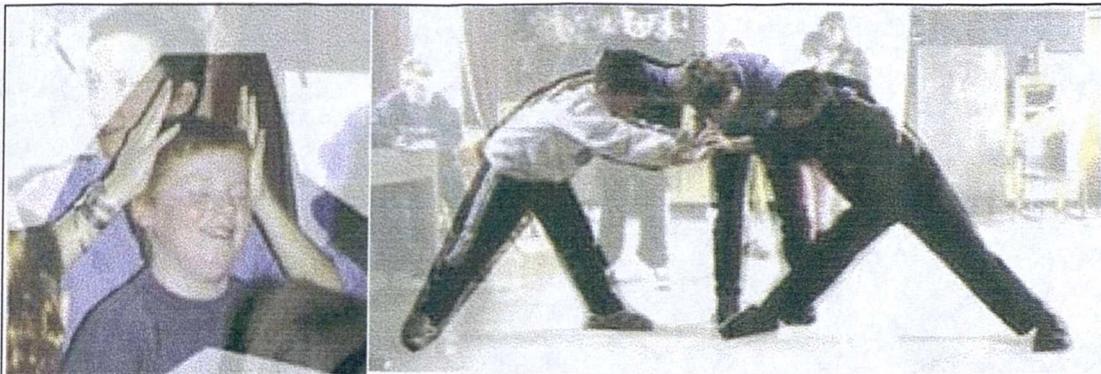


Figure 6-9. Pupils experimenting with forces.

This gradual approach, from the familiar environment to larger horizons of architecture, to architecture in relation to the human body, demonstrated to pupils how visuals can be interpreted as meaningful by the observer.

- At this point, an introduction on colours, shapes, light, texture etc was carried out, to provide pupils with a vocabulary made of visual elements and principles, and to give them the tools to express their own personality and ideas using such

¹⁹² A detailed description of the workshop is included in Appendix 2 and “3d” (Glasgow 1999, 1998).

elements and principles, that is to use visuals to communicate. The intention was to show them that architecture could be intended as a form of expression and communication, rather than just a ready made product to which people adapt.

- The way to make students experience architecture as a form of communication was developed through the final activity: engaging them in building their own architecture. The building selected was Gaudi's Sagrada Familia. By using the visual elements and principles, students were required to express themselves through the use of light, shapes, colours and textures, in the design of a cathedral for Crookston, as shown in figure 6-10.



Figure 6-10 Texture, shapes, lighting effects were used to build the cathedral.

Outcomes, recommendations and conclusions

Although the workshop was of limited time-scale, students demonstrated to be capable of using, meeting after meeting, new skills and a new sensibility in relating to the built environment, and their interaction with space and forms gradually improved and matured.

This project was carried out during the literature review of the present research, and reinforced the idea that a sequential process of analysis was needed. From here the second experience focused more on defining and developing the links between phases, concentrating on the continuity of the whole programme.

What was learnt from this workshop was that in order to involve pupils in a discussion it is first of all necessary to define the aims of the discussion and also to provide tools to carry it out, so that balanced and constructive interactions become possible. Also, stimulating pupils' curiosity, confronting them with continuous challenges (none of them had at the beginning much confidence regarding the outcomes of the design project), showing them a number of impressive examples they could relate to, also helped in creating a robust setting for the experience.

This experiment showed that architecture could be an interesting subject for children, and that architectural residencies should be more encouraged; this would contribute to create a stronger awareness of environmental issues. Curiosity and enthusiasm, when cultivated in young people can have strong influence on their future development of interests and skills.

This workshop focused mainly on the relationships between architecture and nature. It demonstrated to be successful and allowed an immediate feedback from pupils; different themes can be tackled, as long as pupils understand their meanings and goals.

The continuous interaction between students and researcher allowed the latter to adjust each of the five activities to pupils' requirements and skills. This has led to the development of a short interactive course on visual literacy, thinking and learning through the use of images, which was used as a starting point for the second experience in a primary school.

Carmunock's (visual) thinkers: objects of the experience

The workshop involved - over a two months period - one class from a Primary School; visual vocabulary and skills were used to carry out rather complex tasks requiring to explore the students' school and other familiar environments as well as completely unfamiliar environmental settings.

This experiment was meant to test the first draft of the interactive course on visual elements and principles developed after the workshop in Crookston, improving it according to pupils' reactions and teachers' recommendations. It was then aimed to study how the awareness of students of the built environment would change as

consequence of its use. Then, such skills were used to experiment with some of the methods described in chapter 4, before finalising the development of the MMS procedure for the use of community groups described in chapter 5.

Conditions under which the experience developed

Carmunock School - in the outskirts of Glasgow - is a school with two hundred pupils who come from the main from comfortable backgrounds with many professional parents including architects and designers; the settings were extremely different from the first case. The teacher of the primary 6/7 class - Sharon Hunter - is studying for an M.Phil. in Architecture, Design and Education and is responsible for the development of Art and Design within the school. For these helpful conditions Carmunock was chosen to pilot the CD-ROM commissioned by Glasgow 1999 for the use of schools.

Approach adopted and activities carried out

In this series of workshops, six activities were carried out.

- As in Crookston, a slide show of architectural shapes and images was aimed at opening the students to a variety of experiences, and at stimulating their curiosity for architecture as a form of expression.
- The second step consisted in testing with students and teacher the computer presentation on elements and principles of visual literacy, as Figure 6.11 shows. The aim was to provide students with a visual repertory of images and elements that would allow them to treat visuals as sources of information, and also to provide them with the tools to understand such information and communicate through it.



Figure 6-11. Computer-based exercises; pupils found them inspiring and challenging.

- Once pupils became familiar with a basic visual vocabulary and repertory, the next step consisted in exploring the role of images as alternative ways of learning. Students were required to describe, with the almost exclusive use of images, different environmental settings and circumstances. Images were found to be powerful carriers of information, but it was also clear that their efficacy depended from their combination and sequence, as well as from the use of other means of expression. This experiment confirmed the principles of visual literacy described in chapter 1, according to which purposes, objectives, tools, resources, points of view must be established when using images as a vehicle of communication. Moreover, it demonstrated how the use of several joint activities - i.e. images and gestures - could improve the results of communication and learning.
- The previous exercises were used to encourage pupils to look at images with an attentive eye, in order to capture from them more information than they would normally. The next step consisted in deriving more complex information from a particular type of images: urban settings. A Multiple Sorting Task exercise was conducted to find out which criteria pupils used to "read" public spaces, as Figure 6-12 shows.



Figure 6-12. MST and map sketching revealed similar criteria of evaluation, confirming the researcher's expectations.

The content analysis of the results was then tested in the class to make sure that there was no misunderstanding and that pupils' ideas were correctly interpreted.

- The MST was followed by an exercise where students, grouped in teams, were required to describe some of the spaces used for the MST using the criteria derived from the content analysis, as shown in Figure 6-13.



Figure 6-13. The criteria identified through the MST were then shared and discussed: feedback and learning were mutually reinforcing each other.

- The next step consisted in asking pupils to draw maps of the open spaces surrounding their home and school environment, to find out if in doing so, they would use criteria similar to those identified in the content analysis, and up to what extent they would be influenced by them. The use of similar criteria was confirmed in the majority of the cases. Such correspondence was interpreted as the capacity of the MST to derive pertinent and complex information from a manageable number and type of answers; in comparison, a map sketching

exercise or open-ended questions would have been more difficult to carry out and more time consuming to analyse.

Recommendations and lessons

Since this experience involved a considerable amount of theory, it was felt important to maintain a balance between practical and more theoretical activities, as students' reaction and response to the exercises demonstrated.

The results of this series of workshops were included in the CD-ROM "One word, millions of worlds" - still in a provisional form - designed with the idea of respecting such a balance. In the CD-ROM, a sequence of 12 workshops seeks to stimulate students' interest for architecture and the built environment through an active approach to both of them. Environment and architecture are treated as interrelated and as interacting with students. Each workshop contains aims, objectives and a wide range of resources, both visual and verbal, in the form of images, definitions, web sites etc.

In conclusion, although the exercises in schools were partly disconnected from the main target of the research, they demonstrated to be of great help to the subsequent steps of the research, allowing the researcher to experiment with the use of images and to test ways of registering responses to the built environment.

6.2 The Cranhill action research¹⁹³

During fall 1999 a series of workshops was carried out to test the applicability and efficacy of the multi-method strategy (MMS) defined in chapter 5. Apart from verifying the order chosen for the sequence of analysis phases and the methodologies adopted, the test also provided information on the level of interest and commitment that it could arouse in the participants involved, on risks and common mistakes, and on the results it could achieve. This section of the chapter therefore presents the groups involved, describes the goals of the project, the phases followed and the

¹⁹³ *Research designed to yield practical results that are immediately applicable to a specific situation or problem.* (ERIC).

results achieved. It also discusses the efficacy and extensibility of the proposed method.

6.2.1 Participants, roles and location of the action research

Chapter 5 described the role of community groups and professionals carrying out environmental evaluations on the base of the proposed MMS. These would mainly be thematically focused groups studying issues of concern regarding specific urban issues and searching together for solutions, enriching each other's view, so that not only the design process, but also those involved in it could take advantage from this process of learning. The action research started in October 1999 and concluded in January 2000. The working team consisted of a community based housing association in the East End of Glasgow as user-group, Fourth Year students from the University of Strathclyde, Department of Architecture and Building Science, their tutors and the researcher as designers.

The co-operation between housing associations and the University is a well practised activity in Glasgow since over twenty years (Romice, 1997).

6.2.2 The settings

The new Housing Association operates in Cranhill, a large neighbourhood located in the East End of Glasgow, as Figure 6-14 shows. A population of around 4500 people is distributed over an area of 45 hectares, of which 32 are of housing, and 12 of brown-field sites. At first sight, the area appears divided into three main zones: two residential on the East and the West sides of the neighbourhood, separated by a central green space, Cranhill Park, as Figure 6-15 shows.

Students and their tutors selected this area for a one-year project. The outcome, expected by summer 2000, will include strategies for the redevelopment of the whole area, carried out in co-operation with the local groups of residents, as well as detailed housing schemes to be distributed in Cranhill according to the strategy developed.

The tutors invited the researcher to organise the project of interaction between students and community groups for the site analysis stage and the development of the design brief.

The area: Cranhill, Glasgow East End



Figure 6-14 Cranhill in Glasgow. The point on the left is the city-centre, whereas the one on the right Cranhill area and part of the East-End.

Students approached the area before meeting the community groups and the housing association; the first impression, shared by students and tutors, was that:

Cranhill has a lot of potential and could be a nice area. There are vast green spaces, which are rarely used, and the noise level from M8 is high. The boundaries within the area are rather strong, and this seems to contribute to divide its population into groups. A lot of houses are in bad conditions, many of them have been abandoned and should be demolished... Vandalism among youngsters and drug-related problems seem to be diffused. There is a lack of amenities for youngsters and elderly; the latter find it difficult to gather and spend time together. The main park seems a wasted space, people don't use it for fear.

Mattias Hammargren, student.

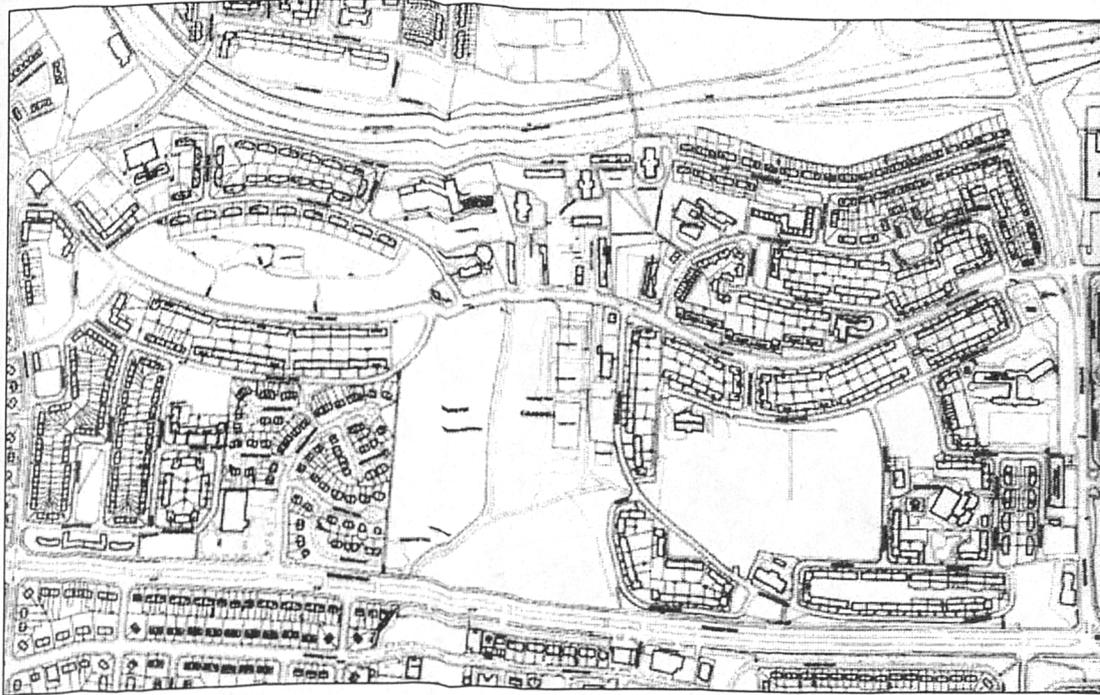


Figure 6-15 Map of Cranhill. The West-side and the East-side seem to be disconnected, and the central open space, Cranhill Park, adds to this fragmentation. The North is a strong edge delimited by the motorway M8.

In the residential areas, the housing typology changes widely: from inter war tenements, to 3-4 floor-high concrete slabs tenements, to maisonettes, both built in the '50s, to three tower-blocks of the '60s recently refurbished, as images 6-16, 17, 18 show.

The meetings with the community groups confirmed students' perceptions, reinforcing them, locating problems, explaining causes, and suggesting interventions. However, due to the complexity of the issues discovered, it seemed ideal to approach them on the bases of a framework.



Figure 6-16 Images of Cranhill



Figure 6-17 Bellrock Street is crossing Cranhill from West to East; it is one of the problem areas, because of the car traffic, of the many unprotected areas. It is moreover one of the most deprived areas in Glasgow.



Figure 6-18. Housing Typologies in Cranhill: maisonettes and high-rises.

6.2.3 Development of the action research

It has been demonstrated that people's evaluative image of the city is hierarchical (Nasar, 1998)¹⁹⁴, and that the process of environmental experience takes place in sequential phases all interacting with each other in time. This action research is structured on the spatial and the cognitive hierarchy described above; in general, it consisted of two main phases. The first involved, in a rather intense commitment, a small group of representatives of users (the community; in particular, eight adults, 15 teenagers, 9 children and 14 elderly people) and of designers (15 students). This "issue specific phase" had the task of identifying the major issues of concern - in terms of actions to take - regarding the study area. The second "context specific phase" used such criteria, parameters and priorities to capture the view of larger portions of the community. The whole process was carried out during a period of three months with an average of 2 to 3 meetings per month; the meetings took place at the Cranhill Community Centres and the Department of Architecture and Building Science of the University of Strathclyde. The entire sequence of activities is described step by step.

The first meeting: defining roles, goals and settings

Chapter 5 described the activities of the MMS, with the related outcomes and feedback. The project in Cranhill has adopted the same sequence, although starting with a given neighbourhood and design team. The flow-chart of figure 6-19 describes the analysis methods adopted for each of those activities.

¹⁹⁴ Chapter 3 presented a content analysis of research on environmental experience, organised in temporal and spatial terms and inclusive of the cultural, personal and physical factors that affect it. Chapter 4 identified temporal and spatial framework for the study of environmental experience and chapter 5 identified the analytic tools for its study.

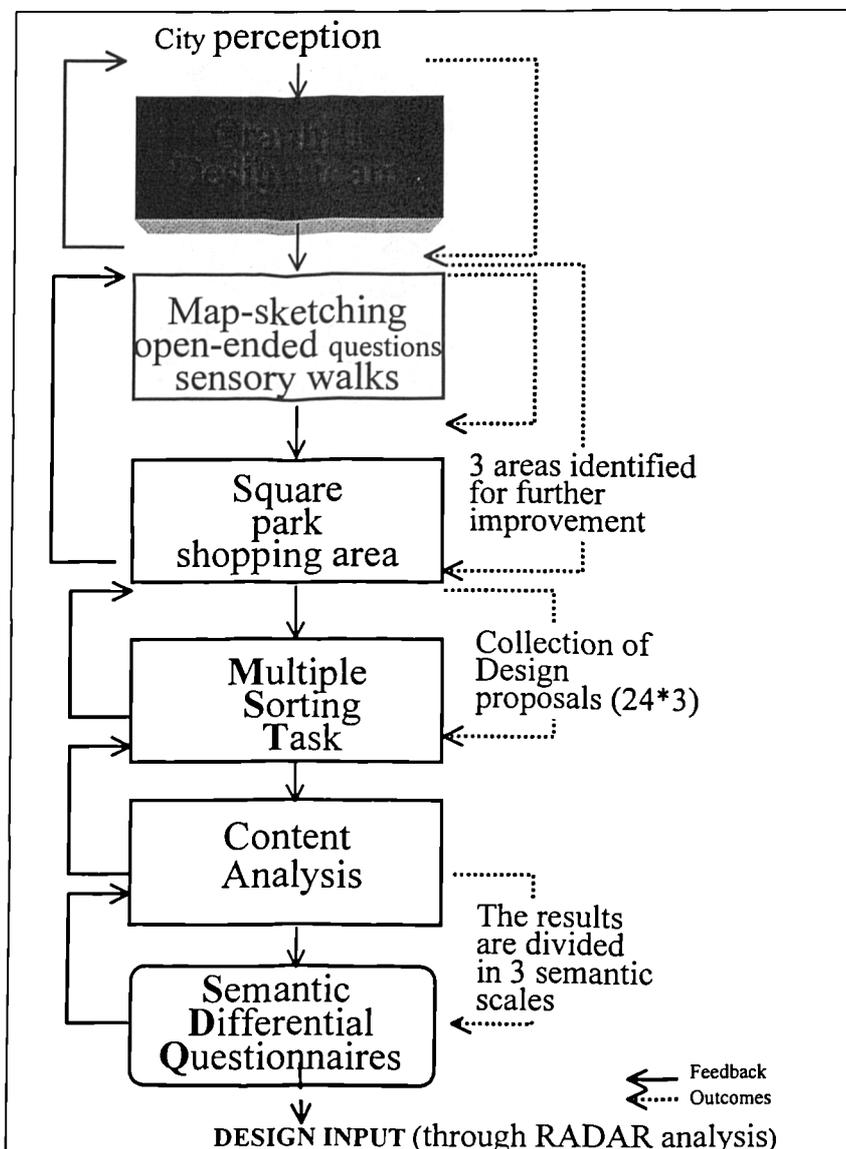
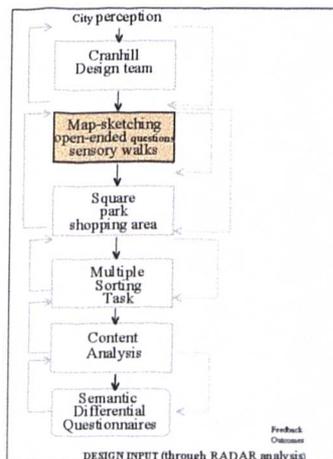


Figure 6-19. The steps that the team in Cranhill has followed.

The first meeting was aimed at describing the goals of the housing design project at University, and the roles the researcher, the different representative groups of the community, the students and the tutors would have in the project.

As part of their design project, for the analysis of the area and the development of their design brief they would have used the MMS developed by the researcher. The community groups would be involved in each step as residents of the area and therefore as clients of the simulated design project. The role of the tutors was to facilitate and encourage the discussions between students and community groups.

Afterwards, the task was to identify the view of the community groups on the Cranhill area and regarding urban renewal actions needed.



To respond to this goal, the students and various community groups carried out a map sketching exercise at different times for logistic and organisational problems, as Figure 6-20 shows¹⁹⁵. The exercise was developed in two phases. In the first one the design team encouraged members of the community groups to draw maps of Cranhill indicating the main sub-areas, activities, landmarks, confines, barriers, vistas etc. and to also to describe them verbally¹⁹⁶. In the second phase,

students presented 1: 2000 and 1:2500 models of the area to residents, and asked them to identify the same features they had highlighted in their maps and verbal accounts on the models (see Figure 6-21)¹⁹⁷.

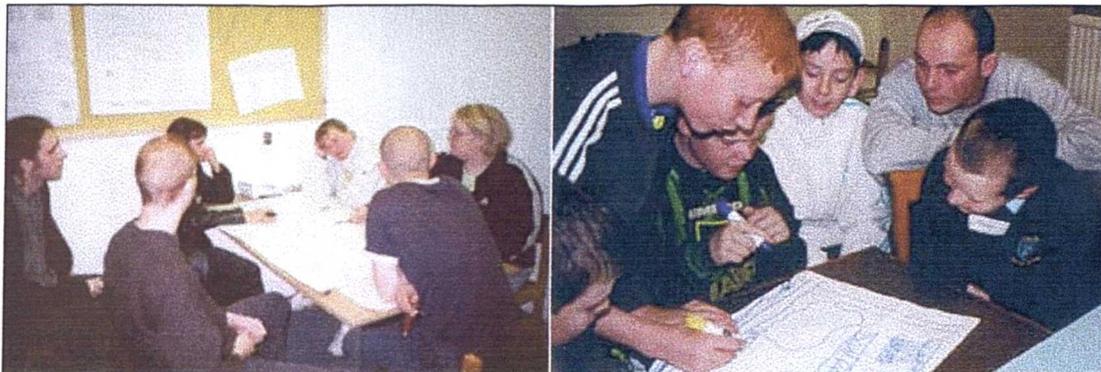


Figure 6-20 Community groups involved in map-sketching exercises.

¹⁹⁵ Students met the youngsters and adults group during the first meeting, whereas for the elderly and the mothers others arrangements had to be taken for reasons of security and child-care.

¹⁹⁶ Students' roles were different; some of them were prompting residents in the analysis of the area, others were helping them in drawing the maps and others were recording, taking both pictures and notes.

¹⁹⁷ Interestingly, students were divided in three groups, and each of them chosen a different way to represent the identified features on the model. The degree of residents' understanding of such representation varied widely.



Figure 6-21 Community groups and students discussing on models of the area. Students were divided in three groups; each of them interpreted the model of the area using different techniques of representation.

Target areas in the neighbourhood requiring renewal and the provision of services were identified. What resulted from the community groups in the neighbourhood was, in particular, the need for improvements to the main public park, the development of a shopping area and a public square in a suitable location.

As a follow up, students carried out sensory walks in the area to capture their own impressions, and then to compare them with the residents' maps. Interestingly enough, the maps drawn by the community groups (elderly, youngsters, adults) and by the students coincided in the assessment of the problems of the area, but students also envisaged and commented about potential strengths of the areas, as shown in Figure 6-22. This can be interpreted at the light of the studies on how education and training can affect how people perceive and interpret space, as shown in chapter 4.

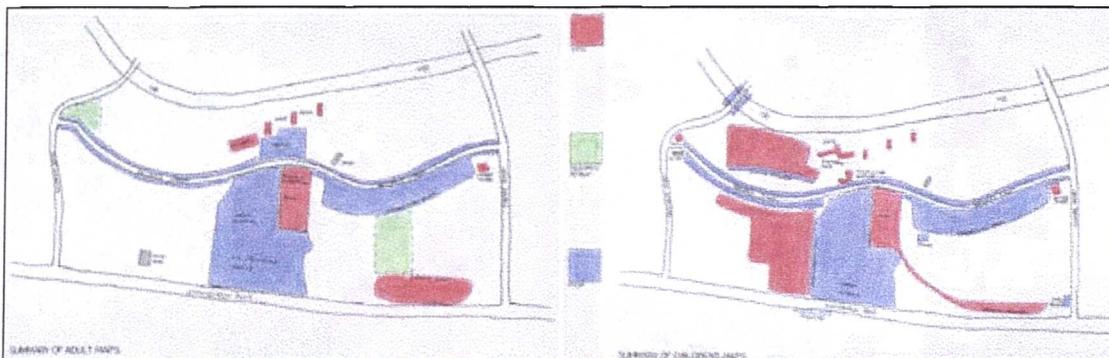
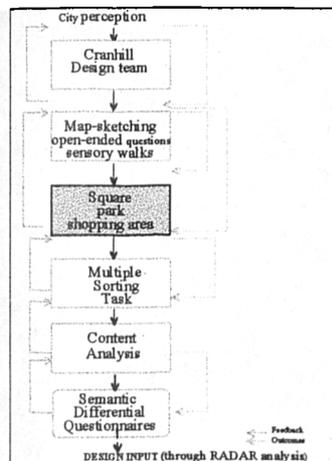


Figure 6-22. The results of residents' maps, and of the sensory walks carried out by students. In blue, dangerous and run-down areas, in red the quiet and liveable areas; in green the areas where intervention is more required.

Three action areas were identified as needed or needing improvement: the park, a



public square and a shopping area. The next task was to structure their design brief, i.e. to find the characteristics, attributes and activities of each selected areas considered as important and meaningful to the community groups and the designers¹⁹⁸. At this point, students went back to the University, and for a week they were required to look for examples of similar spaces both in Glasgow and cities abroad which showed design solutions to similar problem to those identified in Cranhill. Students carried out this task

in three groups, each for one of the target areas; each design solution proposed had to be related to a neighbourhood; the solutions were then checked by the tutors and researchers and reduced in number to 24 for each space. Then, each selected image representing a design solution was printed on 20x20 cm boards, with similar views (generally a bird-view representation, all in high-resolution colours). The three sets of 24 images each were then mounted on carton boards of the same size, as shown in Figure 6-23.

¹⁹⁸ During the map-sketching, the open ended questions and free dialogue phase, the role of designers (students) was to record a sort of “wish-list” from the community groups for each space, in terms of what each of those spaces should provide, contain, support, not have etc... Then, students were required to re-interpret this wish-list under the light of their own experience.

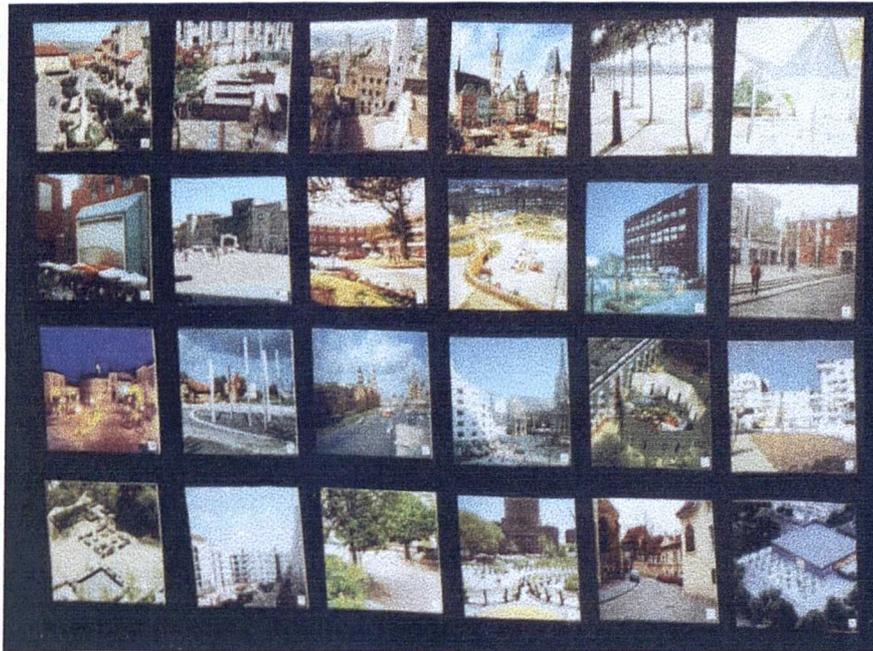
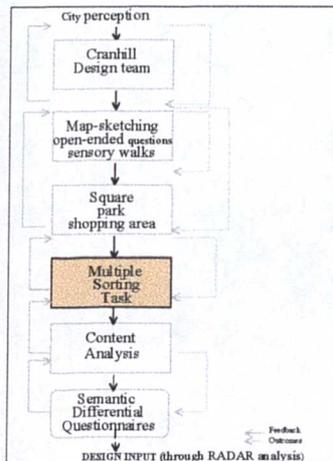


Figure 6-23. MST; a board containing the selection of 24 images for each space. In this example, the selection of images refers to public spaces.

The second meeting: Multiple Sorting Task



During the next meeting, the design team went back to the community groups ready to carry out Multiple Sorting Task exercises. At the beginning of the meeting, the community groups were introduced to the purpose of the exercise. The community was then asked to study the images¹⁹⁹ and group them - without limitations either regarding the number of groups or the number of images contained in each group - according to characteristics they found in the images and considered significant.

Furthermore, respondents were required to label each group under a title describing the characteristic of selection.

¹⁹⁹ Of each photo, respondents were asked to observe both the image and the space, as suggested by Scott and Canter (Scott and Canter, 1997), to avoid that some relevant aspects, linked to recalled emotions, were not included.

On the same evening, the MST took place in two separate rooms for the adult and the youngsters' groups. Respondents were divided in smaller groups and asked to sit around a table where one of the boards was placed, so that the 24 images, although small, were visible to each of them. Since students were informed in advance about the MST process, they also had the task, with the researcher and tutors, to help respondents in writing responses, and to make sure that they fulfilled the requirements of the MST²⁰⁰, without though giving any suggestion on criteria for the sorting.

As a large room was available, the groups of respondents' were not disturbing each other, and enough time was left to everyone to finish the sorting. No pressure was imposed, so that respondents felt free to add any sorting they found relevant. Each group sorted each of the three panels separately.

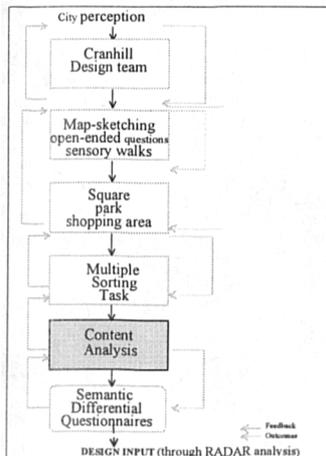
Respondents were also asked to identify, within each sorting, the most and the least preferred space, and to explain reasons for the preference. This provided a list of adjectives that, connected with the labels of each sorting and the answers from the previous open-ended questions, included a comprehensive list of descriptive and evaluative criteria as identified by the respondents; figure 6-24 shows moments of the MST.



Figure 6-24. Phases of the MST: introducing residents to the goals of the exercise, the room divided in groups, two ladies at work.

²⁰⁰ To avoid any influence by the design team, this supportive help was maintained as neutral as possible: students' role consisted mainly in clarifying the images, while it was not suggesting criteria for the sorting.

The content analysis: first subdivision



The content analysis conducted on the basis of the results obtained from the MST carried out by the three community groups produced several sets of subdivisions. A main one, includes a major classification of, respectively, squares, parks and shopping provisions into 4 or 5 sub-parts, as shown in Figure 6-25.

Public Squares	Parks	Shopping
Structure of Open Space	Design of the park	Structure of Open Space
Building Surrounding	Water and Greenery	Circulation, orientation, accessibility
Street scaping (sitting facilities, lighting, greenery, ornamentation...)	Street scaping (sitting facilities, lighting, greenery, ornamentation...)	
Activities	Activities	Activities
Atmosphere, look, overall evaluation	Atmosphere, look, overall evaluation	Atmosphere, look, overall evaluation

Figure 6-25. Results from the first content analysis.

Factors (second subdivision)

A second and more detailed analysis identified 9 parameters recurring in each sorting. They have been found to be rather consistent in each of the 4/5 major subdivisions of the 3 spaces, apart from minor differences, as reported in Figure 6-26.

1- Organisation in X
2- Components of X
Maintenance of X
Safety perceived in X
Accessibility of X and to X
Overall impression on x
Relationships internal to X
Relationships of X with...
9- Variety in X

Figure 6-26. The "first subdivisions" describe each of the three spaces through 9 parameters.

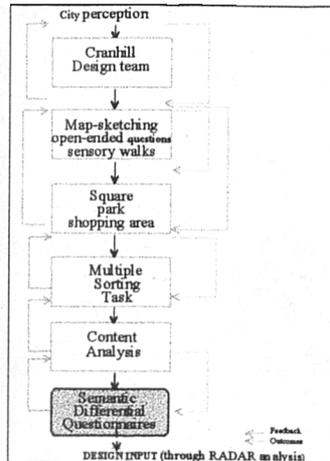
Figure 6-27 shows the complete list of parameters for one of the three main spaces: the square.

SQUARE	
1st subdivision.	Parameters (2nd subdivision).
Structure of Open Space	Overall look of the space
	Scale of the space
	How are the parts connected together?
	Variety of spaces
	Organisation of spaces
	Features available in the space.
	Upkeep and maintenance
	Safety and accessibility
Building Surrounding	Utility
	How the building surrounding look like?
	How do the building surrounding the square look together?
	How do the building surrounding the square relate with it?
	Variety of buildings around the square
	How are the buildings surrounding organised?
	The style of the building surrounding
	Upkeep and maintenance
	Safety and accessibility
	Utility
Street scaping (sitting facilities, lighting, greenery, ornamentation...)	Look
	Proportions
	Distribution
	Variety
	Organisation among objects and areas
	Types of street scaping
	Upkeep and maintenance
	Safety and accessibility
	Utility
	Activities	What idea you get from the activities that take place in..?
How do the activities coexist together?	
Do these activities respect the spaces and buildings around?	
Variety	
How are the activities organised?	
Are the different activities recognisable?	
Upkeep and maintenance	
Safety and accessibility	
Atmosphere, look, overall evaluation	Utility

Figure 6-27. Overall set of parameters for the evaluation of a square.

From the responses obtained, a list of descriptive adjectives was also collected (respondents were required to identify, within each sorting, also the least and the most preferred image), each of them linked to a label (title group). Therefore, from such listing, the semantic scales were derived to describe, through polarities, the 9 recurring parameters.

Semantic Scales



The polarities are based on the adjectives that community groups wrote down when selecting and evaluating the best/worst image in each sorting; where the complete polar set was not provided, the design team identified and added the missing adjectives which were considered appropriate²⁰¹. The total of 4(first subdivisions)*9(parameters) - in the case of the shopping facilities - and 5(first subdivisions)*9(parameters) - in the case of the park and the square - polarities represent a

complete list of the evaluative and descriptive parameters that groups use to evaluate those spaces. The whole team felt that the results reflected their contribution.

Hershberger, (in Nasar, 1988) identified 10 Primary and Secondary Semantic Scales (and the parallel alternative scales), to describe how observers evaluate buildings and the meanings these have for them. They are grouped within 10 major categories, as figure 6-28 shows.

²⁰¹ During this process, the design team was assisted by other doctoral researchers and the tutors of the Housing Course.

Factor	Primary Scales	Alternative scales
1. General evaluative	Good-bad	Pleasing-annoying
2. Utility evaluative	Useful-useless	Friendly-hostile
3. Aesthetic evaluative	Unique-common	Interesting-boring
4. Activity	Active-passive	Complex-simple
5. Space	Cozy-roomy	Private-public
6. Potency	Rugged-delicate	Rough-smooth
7. Tidiness	Clean-dirty	Tidy-messy
8. Organisation	Ordered-chaotic	Formal-casual
9. Temperature	Warm-cool	Hot-cool
10. Lighting	Light-dark	Bright-dull
	Secondary scales	Alternative secondary scales
	Old-new	Traditional-contemporary
	Expensive-inexpensive	Frugal-generous
	Large-small	Huge-tiny
	Exciting-calming	Beautiful-ugly
	Clear-ambiguous	Unified-diversified
	Colorful-coloreless	Vibrant-subdued
	Safe-dangerous	Protected-exposed
	Quiet-noisy	Distracting-facilitating
	Stuffy-drafty	Musty-fresh
	Rigid-flexible	Permanent-temporary

Figure 6-28 Semantic scales to measure the meaning of designed environments: Hershberger-Class Base Set (Nasar, 1988: 199).

When comparing semantic scales that evolved at Cranhill with Hershberger's semantic scales, it becomes evident that most of the poles identified by Hershberger, and included within the Primary scales (or alternative-primary scales) or Secondary scales (or alternative- secondary scales), have also been identified in the Cranhill MST, although grouped within different categories²⁰².

Those not having correspondence with Hershberger's Primary and Secondary scales, have been compared with his 30-polar scale (ibid.: 203), developed for an experiment on architects' understanding and prediction of clients' and users' environmental perceptions. The 30-polar scale shown in Figure 6-29 is called "Alternative scale".

²⁰² Hershberger's scales refer to buildings. In Cranhill's case though, the focus is on open spaces; therefore adjectives present often a different specification, although the substance of the major categories identified does not vary much.

Hershberger's Alternative scale		
	Scoring	
Beautiful		Ugly
Interesting		Boring
Good		Bad
Cheerful		Gloomy
Frofun		Superficial
Welcoming		Forbidding
Comfortable		Uncomfortable
Delightful		Dreadful
Loose		Tight
Pleasing		Annoying
Complex		Simple
Active		Passive
Strong		Weak
Unique		Common
Exciting		Calming
Ornate		Plain
Specialised		Generalised
Bold		Timid
Rational		Intuitive
Clear		Ambiguous
Controlled		Accidental
Permanent		Temporary
Ordered		Cahotic
Continuous		Broken
Considered		Arbitrary
Straightforward		Contradictory
Confined		Spacious
Closed		Open
Rugged		Delicate
Revolutionary		Reactionary

Figure 6-29 Hershberher's 30-polar scale (Nasar 1988:202).

In Figure 6-30, is reported an example of the comparison between our results and those collected by Hershberger; in this case, the group “squares” is under analysis.

CRANHILL SEMANTIC SCALES

Semantic scale:	1	2	3	4	5		Similarities	
Original						Normal	With Hershberger	
Open						Oppressing		
Ordered						Caotic		
Interesting						Boring		
Engaging						Inhibiting		Friendly Hostile
Soft shape						Strict shape		Vibrant Subdued
Run down						Clean		Clean Dirty
Safe						Dangerous		
Usable						Unusable		Welcoming Forbidding
Beautiful						Ugly		Good Bad
Simple						Complex		
Respectful						Dominating	Friendly Hostile	
Interesting						Dull	Boring	
Controlled						Casual	Ordered Caotic	
Traditional						Contemporary		
Clean						Dirty		
Enclosing						Oppressing	Protected Exposing	
Welcoming						Forbidding	Cozy Roomy	
Unusual						Ordinary	Unique Common	
Friendly						Distant		
Uniform						Disperse		
Engaging						Inhibiting	Friendly Hostile	
Controlled						Accidental	Formal Casual	
Artificial						Natural	Musty Fresh	
Cared						Messy	Tidy	
Bright	visible				screen	Dark		
Friendly						Hostile		
Pleasing						Annoying		
Clear						Ambiguous		
Comfortable						Uncomfortable		
Specialised						Mixed	Clear	
Considered						Casual	Formal	
Straightfoward						Contradictory		
Ordered						Caotic	Ordered Caotic	
Controllable						Promiscuous	Accidental	
Useful						Useless		
Attractive						Boring	Interesting Boring	
Cheerful						Gloomy		
Creative						Dull	Active Passive	
Welcoming						Repulsive	Forbidding	
Natural						Artificial		
Relaxing						Stressing	Calming Exciting	
Safe						Dangerous		
Free						Claustrophobic	Huge Tiny	
Pleasing						Annoying		
Engaging						Inhibiting	Friendly Hostile	

Scale coinciding with Hershberger's Primary Set of Scales (Hershberger, 1988)
 Scale coinciding with Hershberger's Secondary Set of Scales (Hershberger, 1988)
 Scale not coinciding with Hershberger's Sets, but presenting affinities.
 Scale coinciding with Hershberger's 30-poles scale (Hershberger in Nasar, 1988)

Figure 6-30. A comparison between Hershberger semantic scales and Cranhills semantic scales.

The level of correspondence is described in the legend at the bottom of the table. In particular, total coincidence with the primary, secondary and alternative scales have

been observed as well as similarities, when similar adjectives were labelled under different names.

The semantic scales obtained through MST, open ended questions and map sketching in Cranhill contain results similar to Hershberger's 10 factors, but more related to open public spaces than to buildings. This was a positive result, demonstrating that the MST as a method is capable of recording evaluations not only respondent-specific but also context-specific.

As for Hesselgren (1987), the factors obtained at Cranhill were descriptive, connected to the emotional loading connected to the sensation, and evaluative. Among the descriptive, those related to the internal organisation among the parts of the space, its relationship with the surrounding buildings or activities, the activities taking place within the space, and the main features available (lighting, seating facilities). Lighting was a category often mentioned, and the concern was mainly related to its distribution, disposition and security. Among the adjectives reflecting emotional loading were those regarding security and maintenance, which were always mentioned, or those describing the variety and richness of the space. Often, in fact, people referred to it in terms of "rich/poor" or rich/shabby, which implies an emotional reaction to physical and structural characteristics. Among the evaluative adjectives were those describing the appearance of the space, how engaging it was to the observer (mainly adjectives such as interesting/monotonous, entertaining/ boring, beautiful/ugly...).

As mentioned before, the advantage of semantic differential methods is that, like a questionnaire, they are easy for respondents and rather fast to fill in, and for the researcher to evaluate. Moreover, they provide immediate ideas on the respondents' view of the space evaluated, and such evaluation can easily be translated into a graphic format allowing researchers to draw immediate conclusions and/ or comparisons.

Their limits derive from the adjective list selection, which the researcher can easily influence. The idea of using the parameters and characteristics of the user groups from the three previous stages (map sketching, open-ended questions and multiple sorting

task), is meant to reduce such a risk. A minor influence will always be present due to the content analysis procedure conducted on the results of the multiple sorting²⁰³.

Once the semantic list was completed, the “contextual” phase started. It was meant to identify and study responses from the larger community, regarding the perception and evaluation of neighbourhood spaces -in this specific case, the public square, the shopping area and the park. Therefore, on the basis of the three key areas identified in the map sketching exercise, and of the semantic scales, the students went around the neighbourhood asking randomly selected people to fill in the semantic differential questionnaire (SDQ).

The semantic differential questionnaires (SDQ) for the "contextual phase"

There were three SDQ, one for the public square, one for the shopping centre and one for the public park. Initially students were asking randomly selected respondent to fill in each of the three questionnaires, but this revealed soon to be rather inefficient, tiring for respondent who often refused to prolong their involvement for the whole time required. The fact that respondents were stopped in open unsheltered spaces didn't help.

Since several of the students were involved, and the survey was conducted in the three target areas, it was decided that each person interviewed would be required to fill in only the questionnaire regarding the space he was stopped in²⁰⁴.

²² Every time the stage of linking together the inputs to create the polar lists for the SD was reached, the community groups were contacted and their feed back on the content analysis was requested. The purpose of this step was to verify that respondents recognised their answers with the content analysis' categories (that their major concerns had been included and properly interpreted, and that the language used by the researcher to group similar answers was in accordance with the respondents' habits). Such process demonstrated to be well accepted by respondents, who in turn learnt new terms and their related meanings; the evaluative process worked as an educational phase as well; in this case participants were learning directly, not through a one-way method, but through doing things.

²⁰⁴ Apart from responding to purely practical issues, this procedure also responds to Canter's opinion that field-studies guarantee better answers than photographic simulation (Canter, 1997), allowing respondents to consider experiences linked to the space rather than just drawing information from the image and having to derive evaluations from it.

As suggested by Nasar (1998), the polar adjectives in the semantic questionnaire were randomly listed altering positives and negatives, to avoid biases in responses. The answers were provided in a 1-5 scale, 1 being the lowest and 5 the highest score. When summing up the results, the values where the poles were reverted have been converted with their complementary from 1 to 5 (if the score was 1, it became a 5, if 2 a 4, if 3 a 3); Figure 6-31 shows how polar adjectives were randomly alternated to avoid bias in responses.

Semantic scales	1	2	3	4	5	
Original						Normal
Oppressing						Free
Ordered						Cahotic
Interesting						Boring
Inhibiting						Engaging
Soft shape						Strict shape
Clean						Run down
Safe						Dangerous
Usable						Unusable

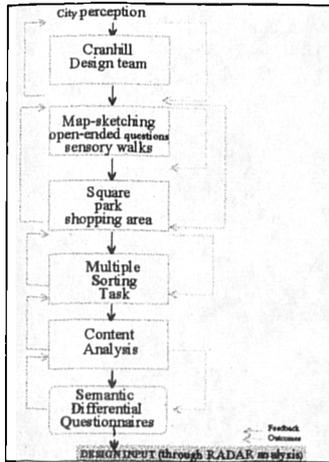
Figure 6-31. Semantic scales. The polar adjectives are randomly disposed mixing positive and negative poles to avoid biases in respondents. The adjectives highlighted in grey indicate a polar scale introduced by the researcher because it was not possible from the questionnaires obtained to identify representative adjectives; whoever is involved in this phase must be aware of the responsibility of introducing new poles, and is encouraged to test them with respondents.

The questionnaires had, then, to be analysed to provide results that could help students (designers) in their design process.

Hesslegren's graphical visualisation of the Emotional Loading Profile technique (1987) revealed to be useful in doing so; the information used as a base for such operation are included in Figure 6-32.

	SECOND SUBDIVISIONS (overall look, relation to surroundings, connection of parts, variety of space)										
PARK 1	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9		
DESIGN OF THE PARK	2.50	3.33	2.17	2.83	2.50	2.67	2.50	2.50	3.667		
WATER GREENERY	2.50	2.67	2.83	2.50	2.33	2.83	2.50	3.17	2.833		
STREET SCAPING	3.33	3.00	2.83	2.67	2.67	2.83	2.67	3.00	2.833		
ACTIVITIES	2.83	3.33	2.83	3.17	3.17	2.83	2.50	3.33	3.333		
ATMOSPHERE	3.00	2.83	3.00	3.00	2.67	X	X	X	X		
MEAN	2.79	3.08	2.67	2.79	2.67	2.79	2.54	3.00	3.167		
	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.142	3.14	
AREA PARTIAL TRIANGLES	2.53	2.42	2.19	2.19	2.19	2.09	2.24	2.79	0	18.63	
MAX AREA										73.47	
CASE STUDY AREA/ MAX AREA										0.25	
	1.84	1.82	1.69	1.69	1.69	1.67	1.77	1.91	3.167	0.00	17.24
											Perimeter
											1.08
											Area / Perimeter
											0.93
											Perimeter/Area

Figure 6-32 Results of the SDQ of Cranhill Park. In the top left column are indicated the five major subdivisions of the space park (design, water/greenery, streetscape, activities, atmosphere). The other columns represent the average score that each factor (second subdivision) scored from the total of the SDQs.



After having summarised all the answers of the compiled SDQ, differentiating them into first and second subdivisions, an average of each column was drawn as a sum of each mean value of the second-sub-divisions (this corresponds to the average score of the overall space).

These mean values (of each second-sub-division and of the overall image) were then translated into graphic format. In doing so, the Radar graph was chosen because it is capable

of presenting, at the same time, a comparison between an ideal model of performance of the object studied and the actual registered performance. In the Cranhill case, the representation of the performance of a space could be done at two levels. On the first and specific level the independent²⁰⁵ variables were the second sub-divisions, while the dependent variables were the first-level subdivisions (main categories into which each space was subdivided: i.e. for the space “park”, these were: overall design, water and greenery, streetscape, activities, atmosphere). On the second general level the performance of the whole space as dependent on the first-level-subdivisions is represented.

In the graphic format, the partial/general overall performance is represented in the inner polygon, the ideal performance of the space by the outer complete polygon, and the independent variables by the radii. At this point, an overall image of the evaluation of the spaces was drawn; both partial and total evaluations of each space could be studied, as shown in Figure 6-33.

²⁰⁵ In this case, dependent variables are considered to be those characteristics that are affected by the independent variables.

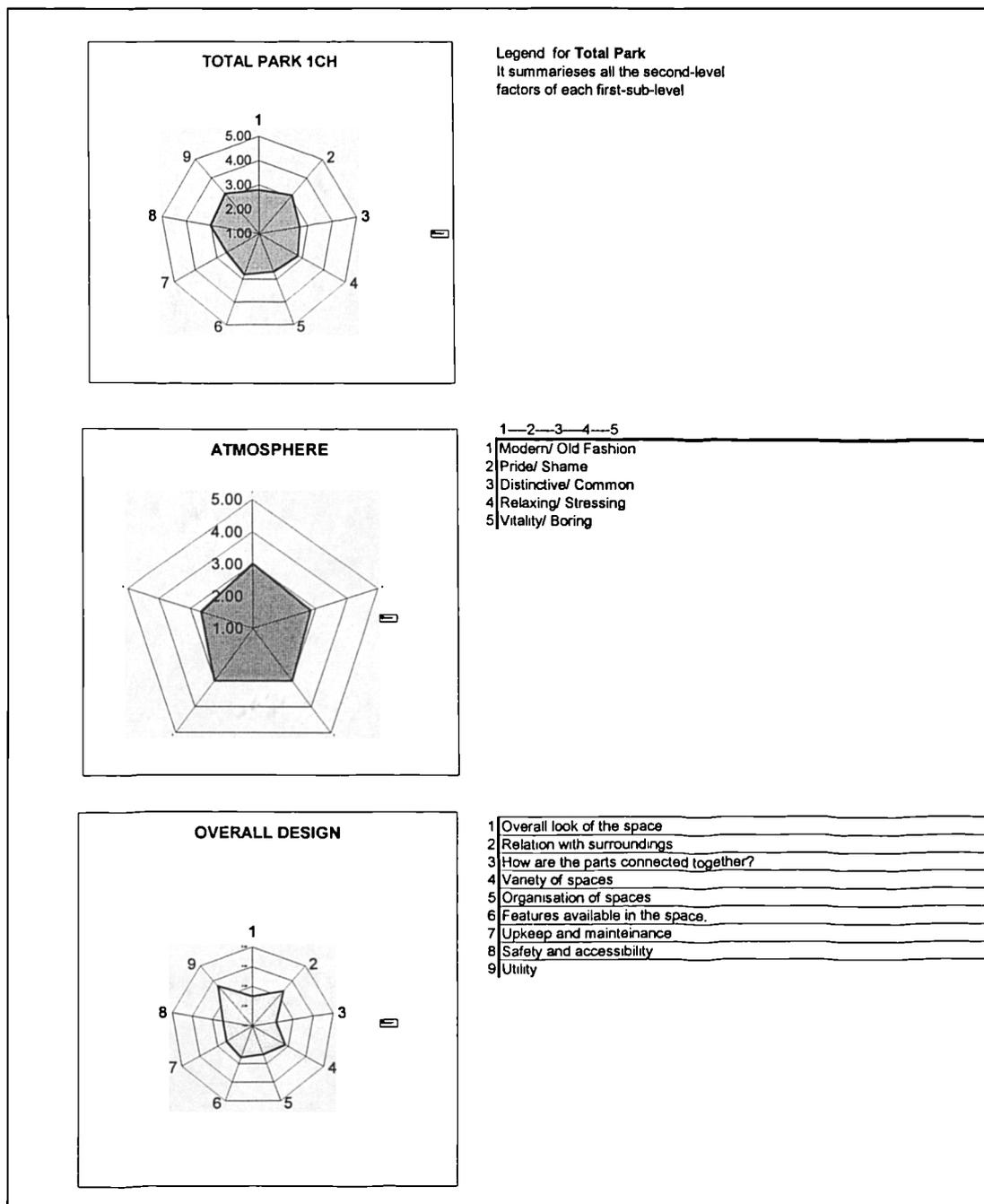


Figure 6-33. Example of a partial and the general overall performance of the space “park”. The legend for the radii of each polygon (the independent variables) is also reported.

At this point, the performance of the space is completely represented, both in detail and as an overall. The “goodness” of performance of the space can be calculated with the formula described in chapter 5. In the Cranhill case this has not been done because it is a procedure meaningful once the project has been concluded, rather than at the initial stages of the design process.

6.2.4 Consideration on the techniques and recommendations

Carrying out the Cranhill action research in parallel to the evolution of the method was helpful for two major reasons. On the one side, it provided immediate feedback to the structure of the method itself, suggesting changes, improvements and adaptations. On the other it was helpful because the circumstances and settings of the experiment were very much like those theorised, community groups working with professional designers on strategies for the renovation of their urban area. This allowed to tackle the problems of data collection, selection of observers, the study of environmental conditions, and the overall assessment of the area with reduced levels of simulation. As this was the first time that the technique was employed, several mistakes were made, for instance the order in which map-sketching and sensory walks were conducted²⁰⁶ and the way to carry out the SDQs. All these difficulties, however, were encountered, faced and resolved thanks to the enthusiasm of the students and the community groups and to the support of the project tutors. The MST and the final semantic list were well accepted and recognised by the team, producing the desired response.

As mentioned in chapter 5, the samples used in the data collection are rather small in number; this procedure does not pretend to be more than an indication of how a set of activities could be carried out, and seeks to provide suggestions rather than definitive answers. Nevertheless, it was felt that the procedure, being tailored to participatory design, is flexible and subject to adaptations and changes case by case; the whole team responded well to the process.

6.3 Recommendations

The first survey conducted to identify how people perceive Glasgow has been useful in addressing further research to specific areas or urban features in the city, but as

²⁰⁶ One of the tutors for example noticed that there should perhaps have been a control group of students who would carry out the sensory walks without having had the benefit of the exercise with the tenants, to avoid any risk of being influenced from the community groups' answers.

described it is not a compulsory phase of the MMS. Nevertheless this experience has helped the researcher to become familiar in dealing with people involved in map-sketching exercises, as well as in open-ended questions; this proved to be extremely useful both in schools, where pupils were required to draw maps and discuss on spatial issues, and in Cranhill. Especially in this case, the experiences made in encouraging respondents of several backgrounds helped overcoming the embarrassment that community groups demonstrated to have in the first instance. Moreover, during the map survey of Glasgow, the variety of typologies of maps drawn has been useful to translate into maps the verbal experiences and descriptions that Cranhill community groups provided.

In conclusion, although the first city-wide map-sketching exercise is not compulsory, it should be considered as a good preparatory process that on the one side can select directions to explore, and on the other can also help to familiarise with lay-people involved with spatial representations, by dealing with them individually. This can be extremely useful before getting involved in similar types of activities with larger community groups, where relationships gather together several interlocutors at the same time, and the issue of managing differing information becomes more difficult.

Although the two experiences conducted in schools were mainly linked to the commitment that the research had with Glasgow 1999 UK City of Architecture and Design, they revealed to be a useful starting point for the development and training of new approaches to visual literacy, with a particular focus on the built environment.

The activities carried out in Crookston Secondary School were mainly practical²⁰⁷ and intended to experiment with the identified principles of visual literacy.

The second experience in Carmunock instead, although still centred on practical activities and visual literacy, was carried out during the development of the multi-method strategy of environmental analysis. It therefore revealed itself to be an interesting challenge to test some of the main ideas identified during the literature review, and to also try to link some of the stages that would have then more clearly been included in the proposed method.

²⁰⁷ The residency took place in early Spring 1998, and the present research started in Fall 1997.

Regarding Cranhill action research, community groups, students, tutors and researcher enjoyed the challenge of applying this method as an alternative way of working together. In this case, the co-operation was limited to the evaluation of public spaces within the locality, to identify the areas of greatest concern to the tenants group and to prepare a brief for the types of spaces and facilities desired, inclusive of type of improvement and design directions.

The process though can be extended to each step of the design process, and therefore deal with housing typologies and more detailed issues. The method provides an indication of the process to follow, but the actual actions to take are interchangeable, and can deal with issues of facilities planning up to the issue of contextual compatibility²⁰⁸, according to the characteristics of the area studied and of the priorities of the action group involved.

The field explored by this research is very open, and susceptible to adjustments and modifications.

Several applications of the analytical method could be done; among them, for example, the possibility of creating a database gathering together similar projects carried out by different community groups in the city, in different areas and with different goals. Figure 6-34 shows an example of a possible interface of such a database. This would constitute, once completed, a collection of experiences and best-practices that groups could share among themselves expanding their contacts, communication skills, expertise and, of course, visual literacy.

²⁰⁸ Groat dedicated a large part of her research to the concept of contextual compatibility, mainly as a consequence of the results of the studies on differences of perception and building evaluation among groups of observers. Although many consider contextual compatibility a matter of taste, in fact, Groat (in Canter, 1988) identified relevant reasons for its study.

The first is due to its high potential impact in the public realm. The second is related to the fact that, as demonstrated, particular aspects of the built environment lead to a wide range of interpretations. Third, the demonstrated consensual patterns of preference among people suggest that the study on contextual compatibility can become a good predictor of preferences and uses. Among the supporter of this thesis, Kaplan (1979) suggested that environmental preferences are more consensual than may be expected. Fourth, the connection between physical characteristics of buildings has been demonstrated to be among the main factors influencing

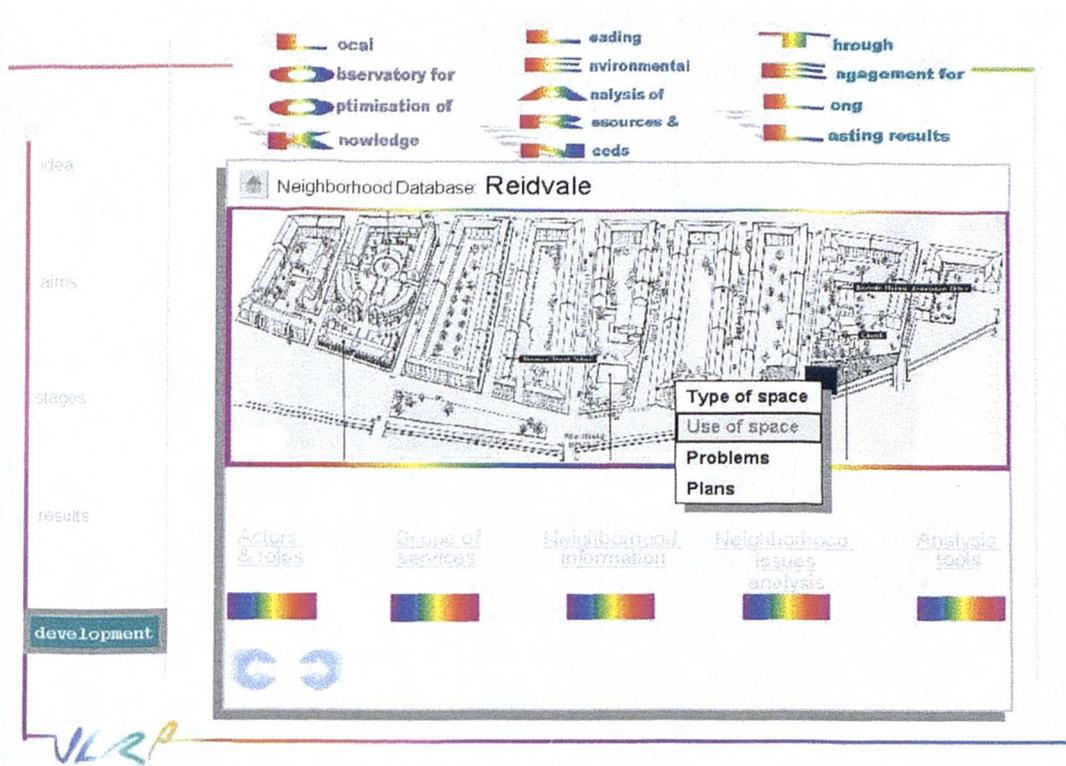


Figure 6-34. A possible interface or the database of community projects carried out using the multi-method strategy.

perception; it derives that whenever the city and its parts are not perceived as continuous they can generate distress and dissatisfaction.

CONCLUSIONS AND RECOMMENDATIONS

This research has raised several issues dealing with the concepts of visual literacy and the idea of involving communities in design. The main questions that the study tried to answer was whether participatory design is a recommendable and feasible practice capable of providing desirable results in design, how it can be developed so that such results are reproducible and extensible to the design of the urban environment, and how enhancing the levels of visual literacy of those involve could help in doing so.

Visual literacy, and in general the use of visual images in the interaction with the built environment, can improve the way one understands, makes sense of and responds to it. Visual literacy has therefore been studied as a way to approach the built environment and to derive meanings from it, in order to play a role in its shaping.

Regarding the issue of whether participation is a recommendable practice - the study has demonstrated, through the analysis of past experiences, their modalities, achievements and limitations, that community involvement can make an important contribution to the achievement of satisfaction among users, but also to instil in them a sense of social cohesion. Moreover, the study has shown what a difficult practice participatory design is; the main reason for this is that people are different and bring to the process different skills, requirements and ideas. The study tried to explore how such a multifaceted diversity should not be seen as a limitation, but should be recognised as advantage and used to develop more comprehensive and therefore more effective responses to people's requirements.

Studying the effects of participation, the research has shown that it is important to consider community involvement not just as a technical matter, but also - and mainly - as a social issue. Participation can make - on a longer term - communities feel responsible for their own environment because they contribute to its development; as a consequence communities play a more responsible role in the city.

The research has also tried to identify the main difficulties that are linked to the practice of participation. The main issue seems to be the fact that it is necessary to

create a base of common understanding in order to achieve debate between interlocutors. This is undoubtedly a difficult task, specifically when groups of people with different background and with different experiences are involved in the process. Building such a "dialogic platform" became then the first task of the thesis; the question was how to make participation significant and useful, for both designers and users.

To work as a team, it is necessary that each member contributes with experiences, ideas, and skills, no matter how different they are from one another. The nature of such ideas and experiences becomes a fundamental issue, as much as organising them within common frameworks and making all of them shareable among team members. When dealing with design participation in urban communities, ideas, experiences and skills are related to the built environment; therefore, the research has focused on how these ideas are developed within physical settings.

If people's perceptions are "bets" on what is more probable to be true, then the role that experiences, personality, education play in the interpretation of the environment is considerable. If this is true, then there is the risk that people with a limited number of constructs would also have a limited understanding of the built environment, and therefore a limited possibility of interacting with it. In this case, the variety of understandings would be static and tight to their "habitus" with no perspective of development; differences would be confined and therefore exasperated.

To prevent this risk, the thesis has developed a way of using such differences as input to participation where knowledge and development are generated as the result of the recognition of such diversity. In this sense, knowledge generated by the participatory process can be seen as a mosaic to which each participant contributes under the rules of a general framework.

The research then explored ways of capturing information on the value of experience regarding the built environment. Due to the large diffusion of visuals as a form of communication, the research examined their value for collecting information and organising it according to goals. As thinking, in fact, takes place through images as much as through notions and verbal communication, people's capacity for drawing

information from perceiving the built environment was seen as a means to expand experiences and information.

The research demonstrated that, to communicate through visuals effectively and powerfully, it is essential to share a level of understanding of visual elements and principles, and to enhance them. Through a review of current research, the study has shown that a limited number of elements and principles allows an abundance of information to be drawn from images; the next step consisted in finding ways to communicate that information by again using images together with verbal communication. The idea of using visuals to elicit and share information encouraged further research in the field of human behaviour and the environment.

An important question to be answered was to what extent the visual aspects of the environment are significant to people and play a role in their interaction with it. The notion was that, if the visual aspects of the environment were important to people, their perception of the physical space could be used to learn more about them and bring forward their contribution to design. Once it was shown that such role of people's perception is significant, research moved to identify a range of factors that affect people's perception, understanding of, affection for and response to the built environment. The factors examined, and distinguished mainly as personal, societal and physical, were found to be of use to identify differences among people and therefore start building on them the variety of arguments needed in participatory design.

The possibility of studying the effects of such factors in a way that respects each participant's characteristics is the pre-requisite of participatory design.

An extremely rich variety of approaches to study people's experience of the built environment is available in the field of environmental research. Studying them, together with the phases through which environmental experience takes place, it seemed that they were all focusing on particular issues of such environmental experience, and therefore lacking a more holistic view; in short they failed to see the whole process as a continuum.

An interesting critique of environmental research, put forward by Gifford, opened up the research to its further development. According to Gifford there is currently a vast

amount of work done on environmental experience. In order to identify generally valid principles, however, this work focuses on people's emotion but almost forgets places themselves. As shown, in participatory design both individualities and contexts must be considered, hence the idea of trying to consider the two issues at the same time.

A critical review of methods to study fragments of environmental experience led to the idea of combining them in a sequence where each method would be linked to the others, dependent on contextual conditions and capable of registering different degrees of personal, societal, and physical factors.

The study explored map-sketching, open-ended questions, methods sensitive to personal constructs and capable of recognising the mutual dependence of affecting factors, and finally methods to carry out larger-scale evaluations. Limitations and advantages of all methods were studied to build them up into a system that could reduce the limitations and maximise the advantages. In particular, it seemed that combining methods according to a temporal and spatial sequence allowed capturing a more complete set of information, as if environmental experience was sifted several times through ever finer filters, each of them capable of retaining what the previous one did not.

The combination of individual methods in a multi-method strategy (MMS) allows the analysis of the urban environment at different level of detail. The application of the MMS shown in the Cranhill case was tested with regards to issues of reliability, extensibility and discriminability. It is clear that MMS does not propose itself as a precise tool to discover how people see spaces; instead, on the belief that there is a level of constancy in evaluation and preferences for the physical space, it should be considered as a suggestive tool for design. In particular, if carried out on the base of the literature reviewed, and taking in account the experience learned during the case studies, it can identify shared values and differences in space evaluation, and can develop dialogue on such values and differences.

Assuming that in participatory design different people collaborate, information contributed by each individual can be shared so that differences are recognised, understood and integrated. Furthermore, the communication of information takes

place through images and helps reducing or overcoming the differences among participants. It is during these moments of dialogue that more personal factors play a major role, and that effective learning can take place.

In conclusion, the proposed MMS combines research and participation, in order to consider the conceptual contribution of users next to that of architects in attributing meanings to space and buildings.

By working on place and identity processes, people can in fact be motivated to improve their lived environment. The study wants to offer designers cognitive resources that can inform the design process and make it increasingly context-sensitive, as well as to assure continuous realistic feedback to each phase of the design process. Such feedback - which causes continuous adjustments - is likely to improve the design product and therefore the satisfaction of future users. In addition, people's engagement can contribute to the development of their distinctiveness, self-esteem and self-efficacy, reinforcing their role as citizens.

The proposed combination of analytical methods enables to capture the view that client-groups hold of parts of the urban environment; it must be considered as a suggestive tool for the evaluation of urban areas, a tool yet lacking statistical strength. The methodology offered, though, can be adapted to cases where larger- and smaller-scale evaluations can be carried out; the interactive and sequential process is what counts.

The case studies that were conducted demonstrated how the desired high level of personal interaction can be difficult to manage, but can also be a strength, because of the richness of contributions it can offer. The key point of the research is, therefore, to recognise and appreciate differences among the people involved in a participatory process, even if this means at occasions to "agree to disagree" in the assessment of the built environment.

Furthermore, the Cranhill case study has demonstrated that people's participation in the design process does not substitute clients for designers; instead, it stimulates clients to become more aware of their needs and opportunities and so to brief the designer more thoroughly.

Therefore, this approach should also work as an antidote to the paternalist professional, by aiming to educate the professional as much as the client.

In the short term, the MMS should provide a more responsive approach to define strategies to overcome conflicts within the community.

In the medium term, it can increase the sense of belonging to a community and reduce the sense of alienation, by improving the perceived image of "insiders" and "outsiders" (and physical conditions where redevelopment took place) of the target area.

In the long term, if further developed and regularly applied by communities as a "tool" to practise involvement in design, it should help build their organisational capacity and improve the quality of their urban areas.

In conclusion, for further development and application of the MMS in the participatory approach, several main issues should be considered.

First of all, MMS has only been tested in the briefing stages of design. It is essential that it is applied throughout the whole design process, including the development of final and detailed solutions, in order to test its applicability, learn from the feedback received from the participating groups and use this information to improve the strategy. It is also essential that MMS is applied in the process of dealing with other issues of concern to design; this expansion of the remit is likely to necessitate also an expansion of the strategy itself, by including other methods of assessment and evaluation.

Secondly, MMS has been proved valuable when working with community-based housing associations and with groups of students and pupils. It is essential to test to what degree MMS could be applied for different tasks and with other groups of people. This experience might reveal that other forms of participation besides MMS might be more beneficial for different tasks. An essential instrument for this differentiation between approaches and strategies would be the development of an effective feedback system to be employed at each stage of the participatory process.

The third issue regards the role of the "process leader", that is the person/s that will guide and direct the MMS throughout all its phases. Since it is up to this person to

direct each action, it is necessary that this figure has sufficient knowledge of the theory on which MMS is based, i.e. the analytical methods adopted. It is essential also that such a leader has experience in working with communities and can engage them in constructive discussions and co-operation. In order to do so, it is essential to develop a training tool that will allow the project leader to understand the nature of the working stages of MMS and guide the groups effectively.

The fourth issue regards the fact that the MMS requires a considerable commitment from both clients and designers; in addition, such commitment, together with the training of a project leader, will have financial repercussions. For groups similar to those involved in the cases presented – university students, pupils and community groups – the financial issue could be easily tackled through governmental sources, whereas for private groups this would need to be faced with other means.

The level of personal commitment and the socio-economic responsibility demanded by the MMS could appear as deterrents to its use; if one considers, however, the benefits that could derive from its application, then it people might become more readily prepared to adopt strategy. In this case, it would be opportune to identify potential groups/categories of users of the MMS and finally develop for each of them a specifically tailored version of MMS, but further research in this direction is needed.

One of the possible variations of the strategy proposed, the one enhancing the application of MMS as an educational tool, has been explored in this thesis, expanding the links between participatory processes and education. The workshops in schools proved to be an excellent opportunity to enhance the visual literacy of pupils; further investigation is needed to develop specific training packages of different degrees of complexity for different target groups, for instance secondary school children and first year students of architecture. It is widely recognised that learning through the use of visual images is a natural and useful practice to enhance the overall learning capacities; nevertheless, this is an approach scarcely adopted by the educational system, still mainly based on a rational approach. The approach proposed in this thesis could be embodied in the existing educational system and curriculum. If applied in schools this educational tool could help improve the

approach to and the quality of learning; if applied in the first years of the academic architectural education, it could involve students in the principles of human psychology and participation, preparing them for more user- and context-aware brief formulation and design. This would also respond to the EEC directives for the preparation and training of academic courses in Architecture, edited years ago and still currently applied. Within these directives, eleven requirements are specified; among them, the need to instruct students on the relationships between people and the built environment regarding scales of human needs; the need to educate students on the role of the architect in the society and provide them with methods of investigation so that design briefs can take into account social factors.

The CD-ROM and user manual included in the appendices are one such example of a training programme for teachers and pupils developed for the enhancement of visual literacy in schools. This programme is only in draft form and requires final development. Further research is, therefore, needed to expand the teaching programme in order to allow it to respond to other user groups, to different tasks, with different levels of complexity of information provided, through different phases. It is fundamental that such tools would include systems of evaluation; this would allow the continuous fine tuning of the process on the base of changing circumstances and requirements, reinforcing its flexibility and so adding value to its applicability.

APPENDIXES TO CHAPTER 6

Appendix 1. Survey: "How people see Glasgow"

Questionnaire

Cognitive maps

 Natives/ non-natives

 Comparison

 Under 30/ over 30

 Comparison

Personal data

Legend for the maps and questions

Questions 10, Results

Questions 11, Results

Questions 12, Results

Questions 15, Results

Interpolation between Lynch's elements and personal characteristics

(For more detailed information on the data collection and analysis of this survey, refer to Paragraph 6.1.1 and in particular to footnotes 187-188).

Questionnaire

This questionnaire is part of the **Architecture-Festival** organised by *Glasgow 1999* and the *Strathclyde University*.

Its aim is to discover *what people think of the city and their area*, in order to share opinions and information among the groups involved.

Completing the questionnaire will take no more than 20-25 minutes.

Interviewer: Ombretta Romice, researcher for the title of PhD.

1. **Sex of the interviewed:** Male; Female
2. **Age:** Under 18; 18 - 30; 30 - 60; over 60
3. **Occupation (previous if retired):**

4. **What academic qualification do you have?**
 Primary School; High School; University/College None.
5. **In which area of the city do you live?**
 West; North; East; South.; Centre.
Can you name it? _____
6. **How long have you been living in Glasgow?**
 Less than 1 year; 1 - 5; 5 - 10; more than 10.
7. **How do you normally travel?**
 By public transport; By car; On foot; Others.
8. **In which part of the city do you work?**
 In your neighbourhood; Within the city; Outside the city.
9. **Where do you spend most of your free time?**
 In your neighbourhood; In the City Centre; Outside the city.

THINK OF GLASGOW IN TERMS OF ARCHITECTURE, STREETS....

10. Pretend you are moving away from Glasgow. What will you carry in your mind?

11. What do you like about Glasgow?

12. What do you dislike about Glasgow?

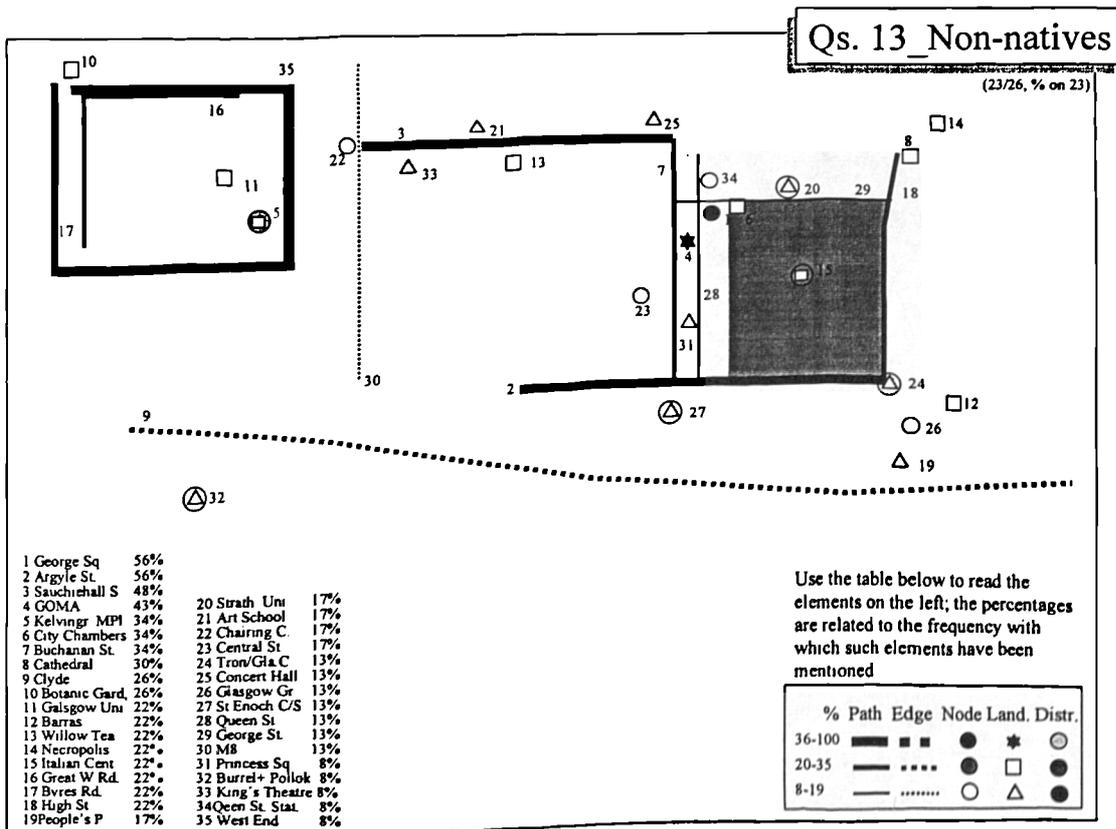
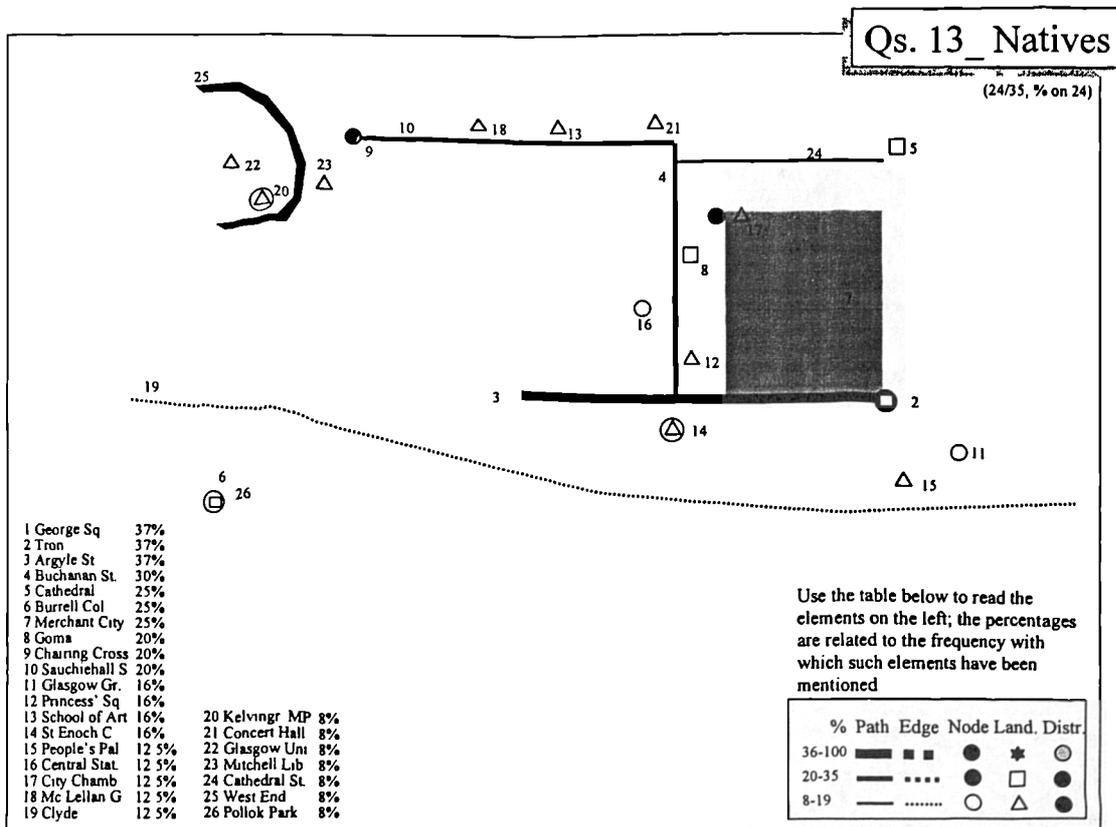
13. A friend of yours is coming to Glasgow. Could you sketch the most relevant things you would visit and how they are connected?

Draw the map on the back →

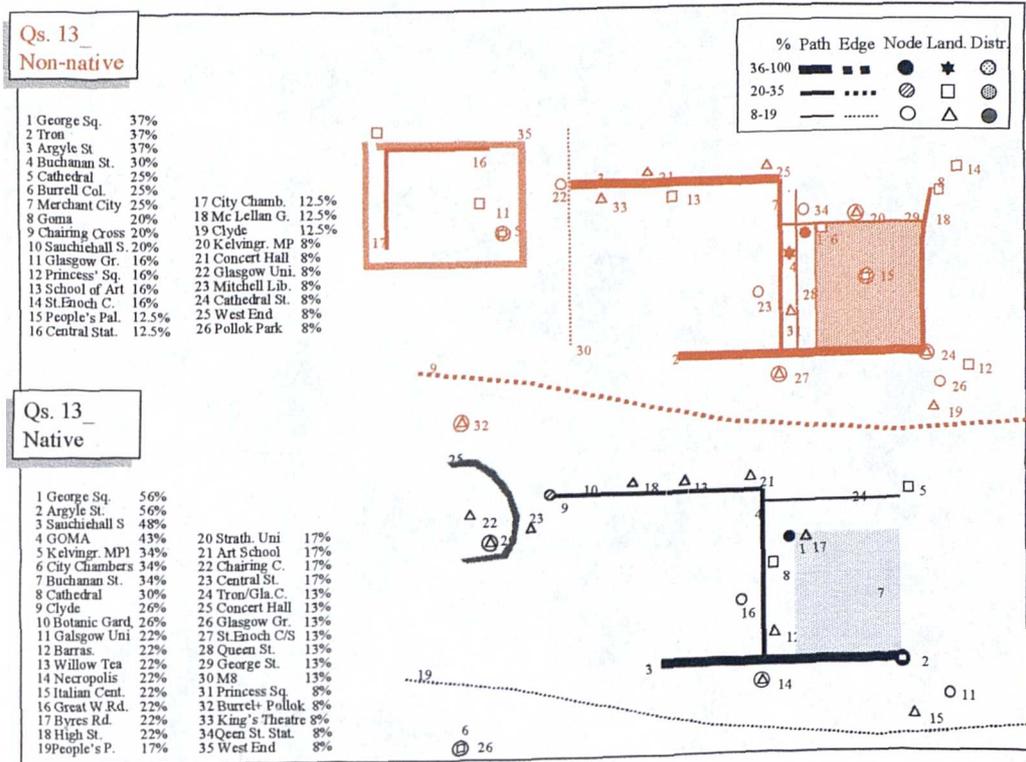
15. List distinctive parts of your area which you feel have special characteristics worthy of being pointed out to a person who wants to become more familiar with the city.

16. Can you draw the route you would walk from Glasgow Cross to Charing Cross with the most relevant things you would see? Draw the map on the back→

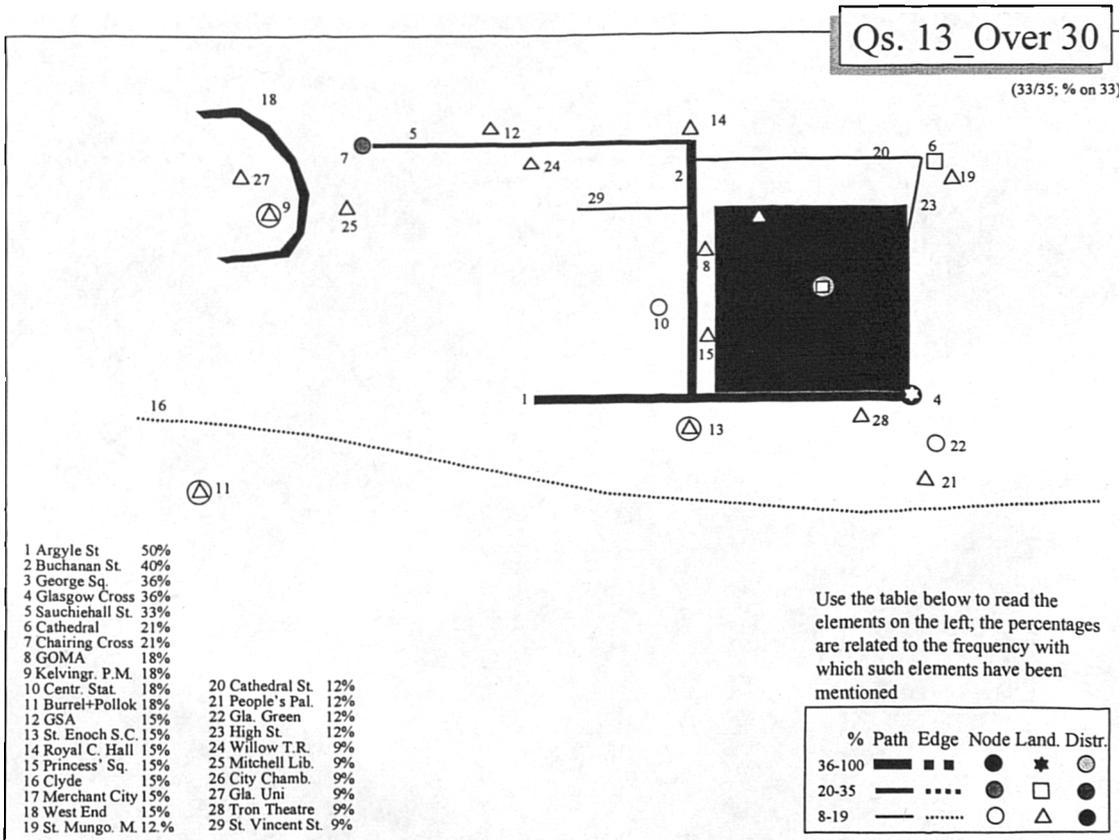
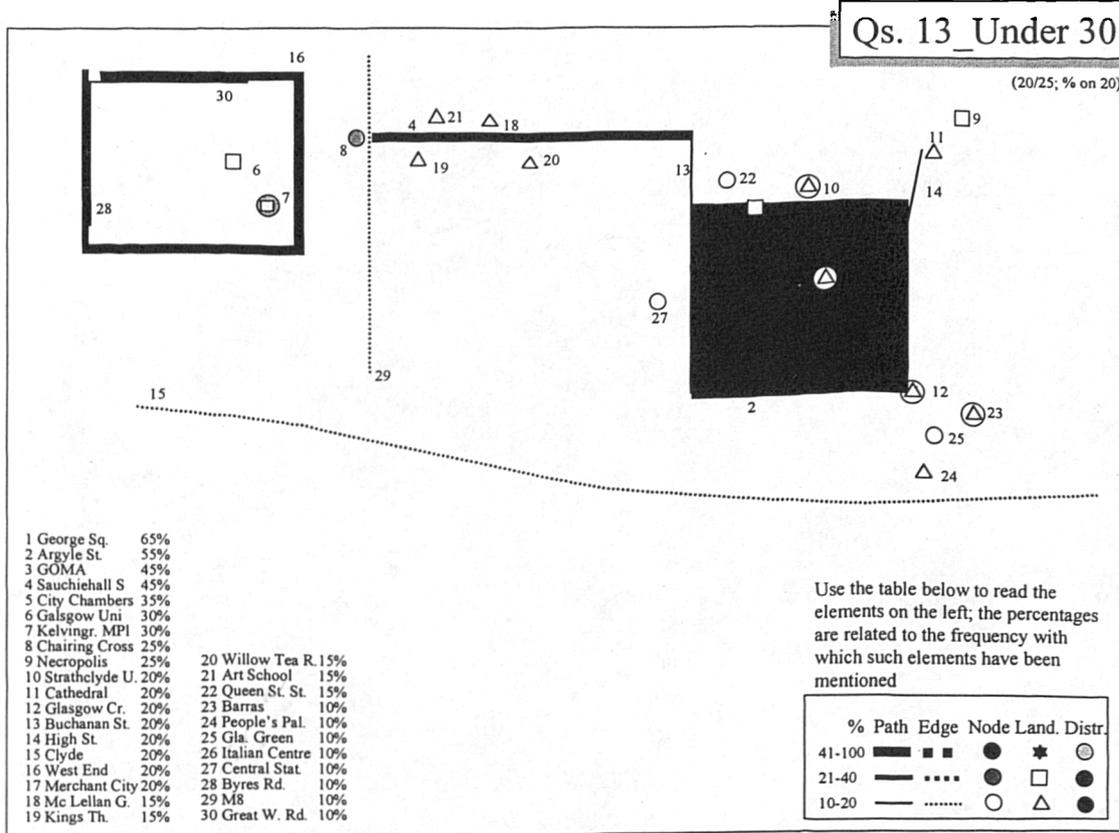
Cognitive maps. Natives/ non-natives



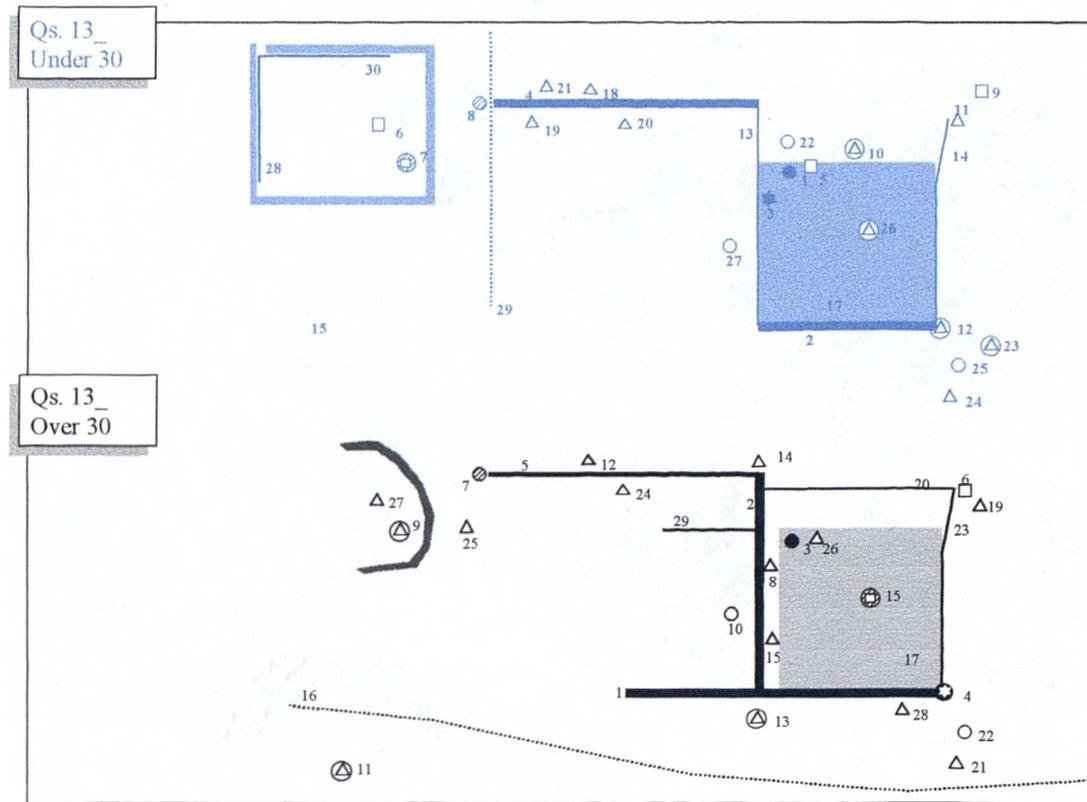
Cognitive maps. Natives/ non-natives, comparison



Under 30/over 30



Under 30/over 30, comparison

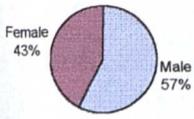


Personal Data

Personal Data

Q.1

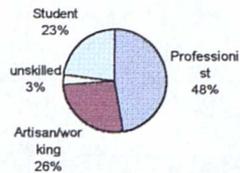
Males-Females



Male Female

Q.3

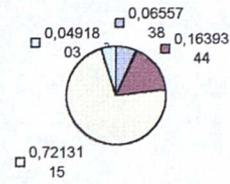
Profession



Professionalist Artisan/working unskilled Student

Q.4

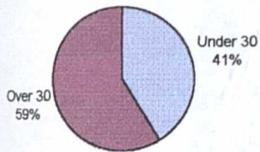
education



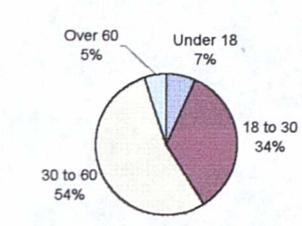
1 2 3 4

Q.2

Age

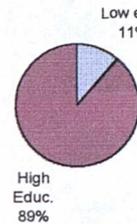


Under 30 Over 30



Under 18 18 to 30 30 to 60 Over 60

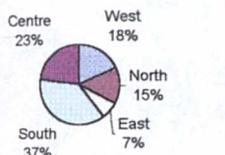
High and Low Education



Low edu. High Educ.

Q.5

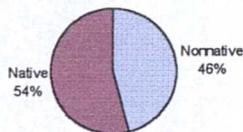
Provenience



West North East South Centre

Q.6

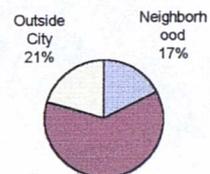
Native/Nonnative



Nonnative Native

Q.8

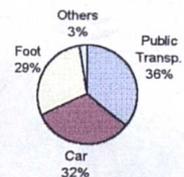
Working Areas



Neighborhood City Outside City

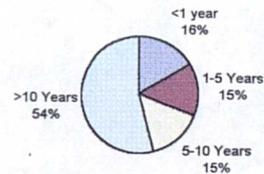
Q.7

Transportation



Public Transp. Car Foot Others

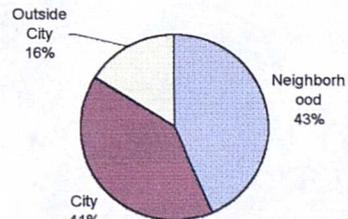
Permanance



<1 year 1-5 Years 5-10 Years >10 Years

Q.9

Use of city areas



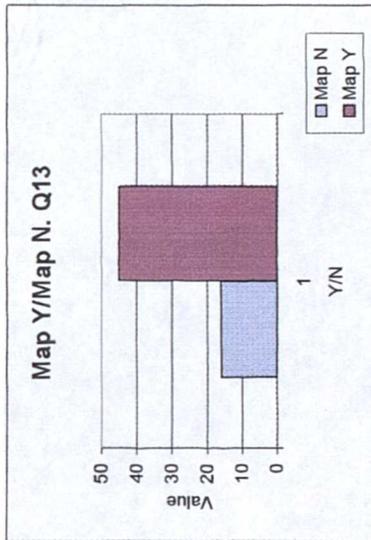
Neighborhood City Outside City

Legend, map-sketching. Agreement to answer and frequency of elements named

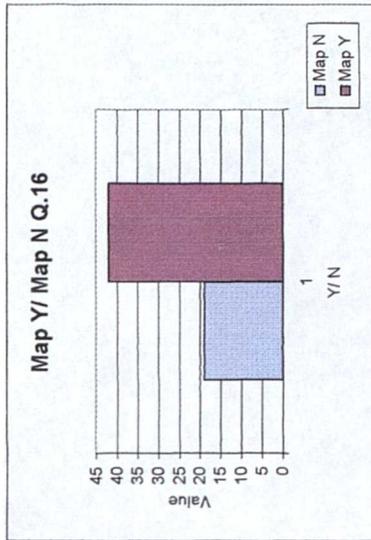
Legend for Quest. 10, 11, 12, 15		
General	Society	Social Interactions Atmosphere Sport Maintenance City areas Development Transport/Traffic Shopping
	Architecture	Historic Modern 60s General Museums Libraries
	Culture	Environment Parks
	Nature	Glasgow University Cathedral Necropolis St. Andrew's City Chambers Tron/Glasgow Cross People's Palace School of Art
	Historic	George Sq. St. Enoch Square
	Squares	Buchanan Red Road Victoria Street Argyle Street Byres Road Sauchiehall Street
	Streets	GOMA Burrell Collection Kelvingrove Art Gallery and Museum Armadillo Royal Concert Hall Mitchell Library
	Culture	Princess' Square Buchanan Galleries Italian Centre St. Enoch Centre
	Publi/Commerce	Glasgow Cross Clyde
	Nature	Queen's Park Botanic Garden Kelvingrove Park

Questions 13 & 16; agreement to answer and draw maps

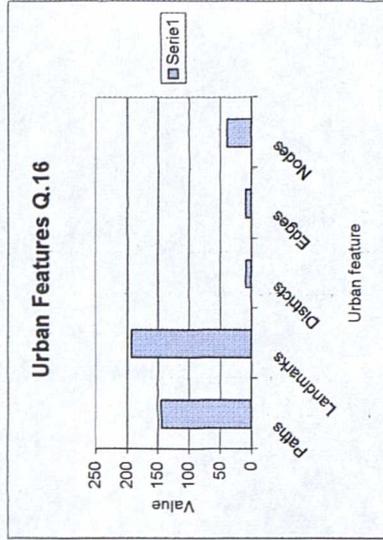
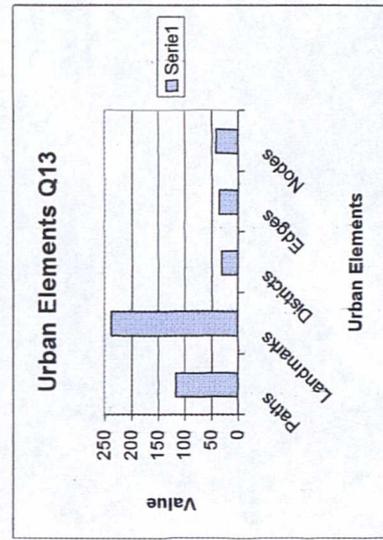
(What would you show ?)



(From Glasgow Cross to Chaining Cross)

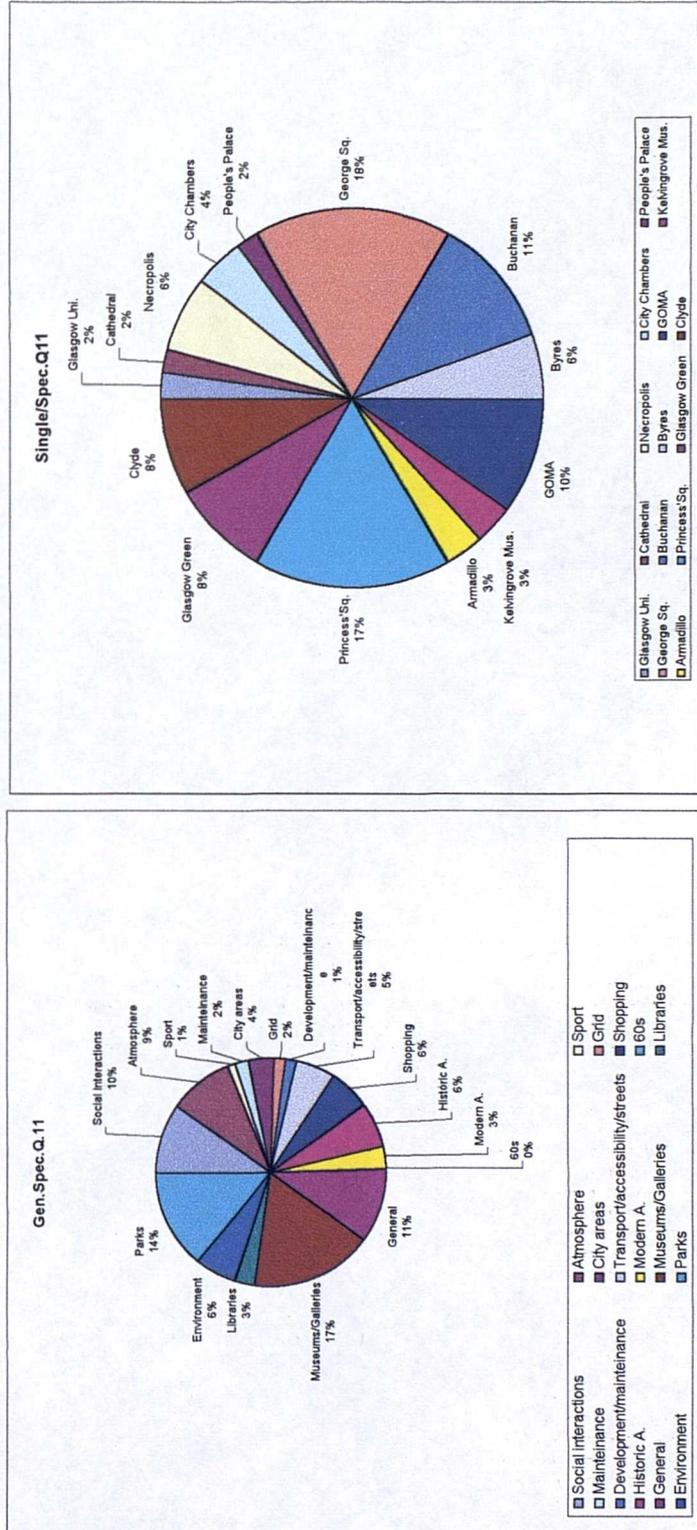
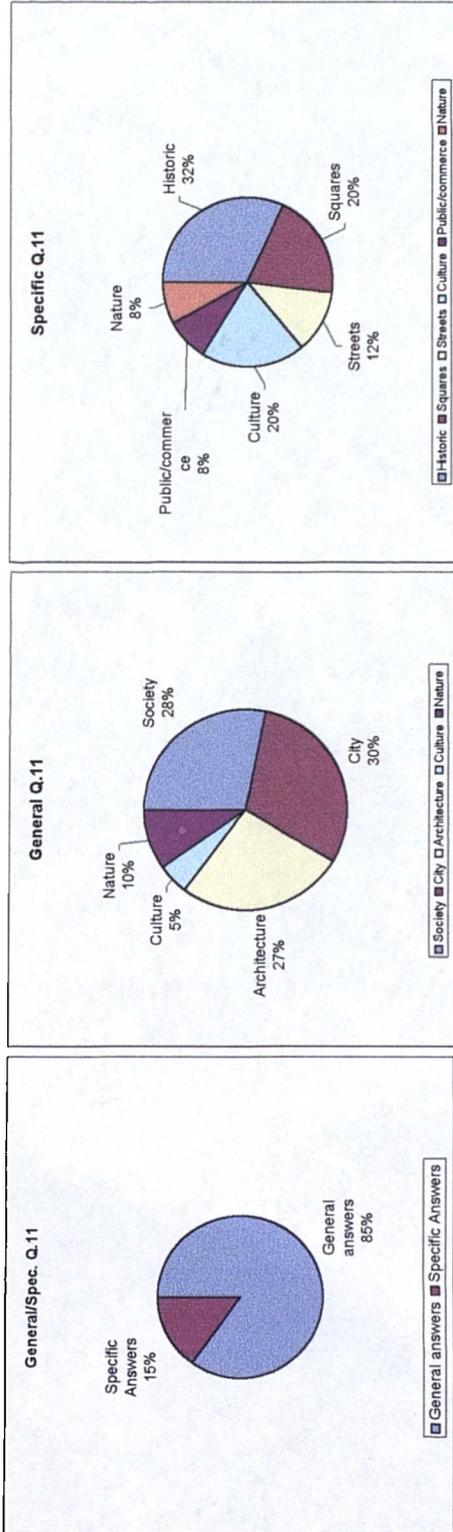


People tended to refuse drawing maps not for questions of time but for their "incapacity to draw".



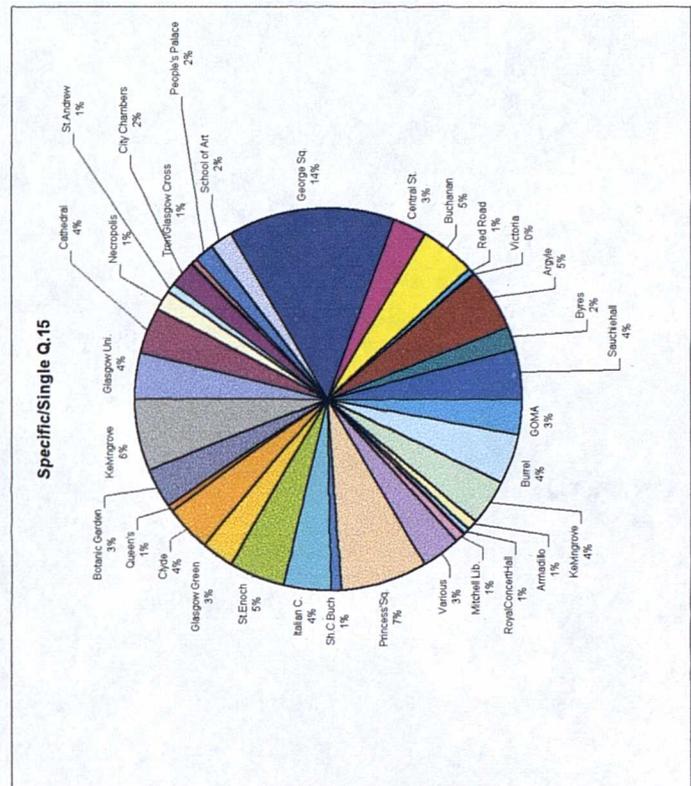
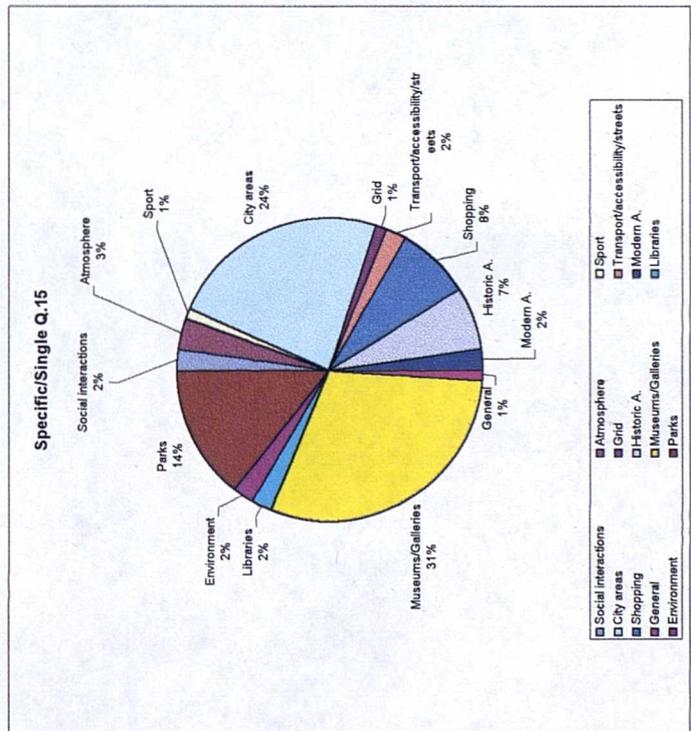
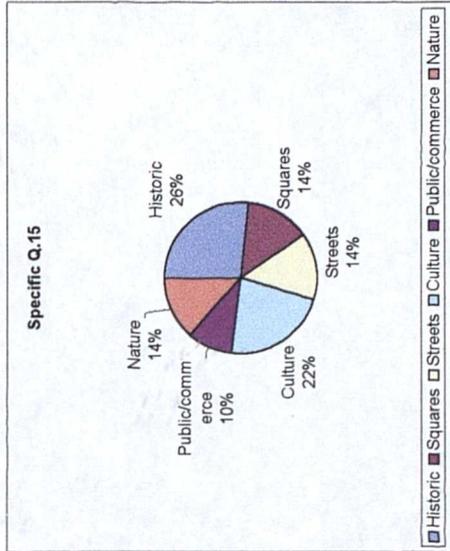
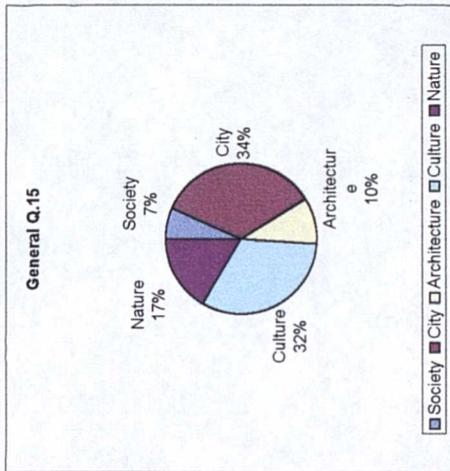
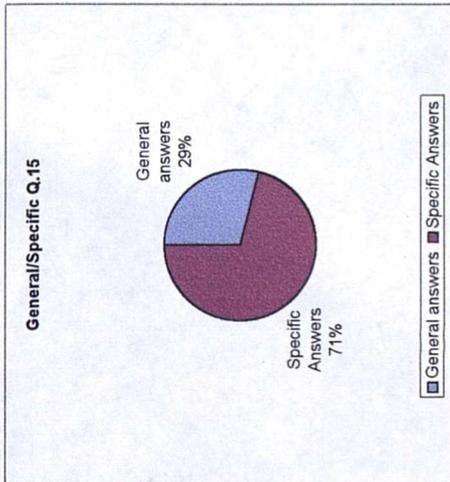
Question 11

Question 11 (What do you like in Glasgow?)



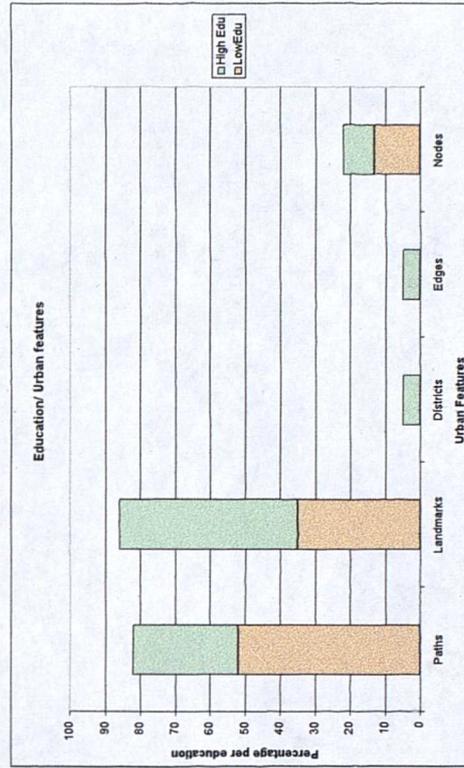
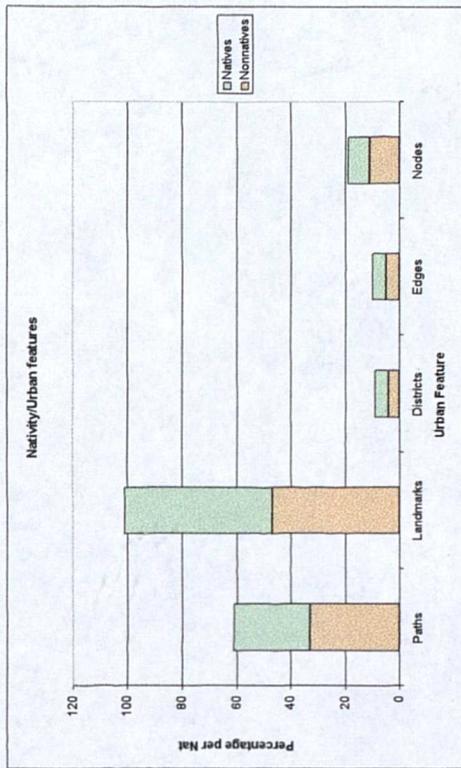
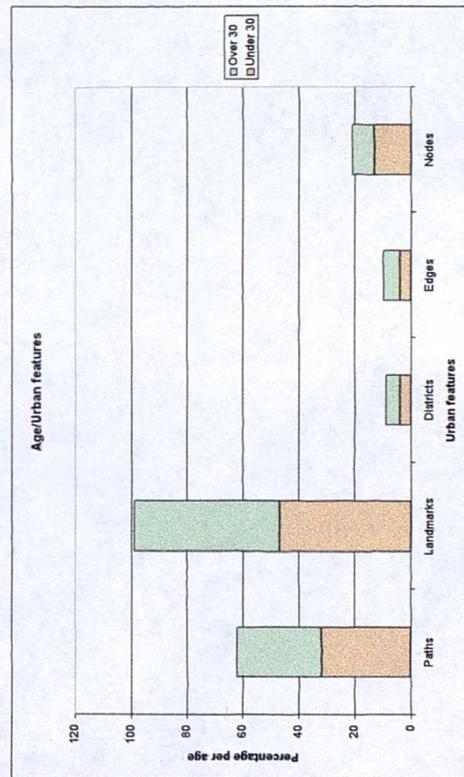
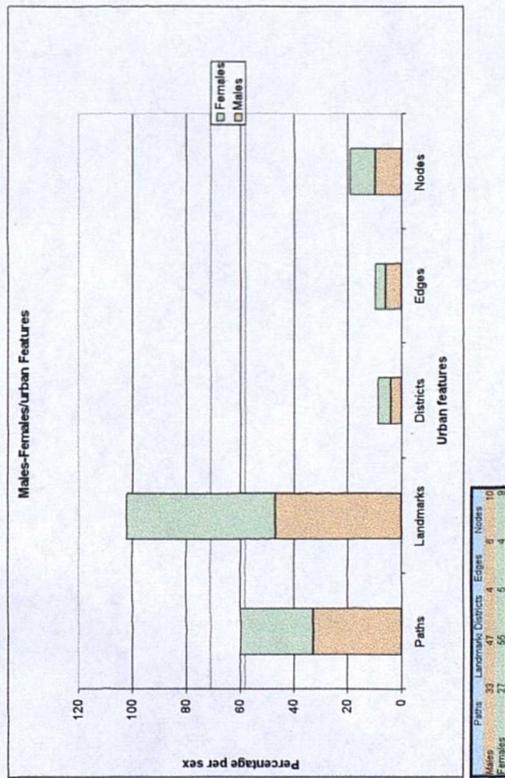
Question 15

Question 15 (List distinctive parts...)

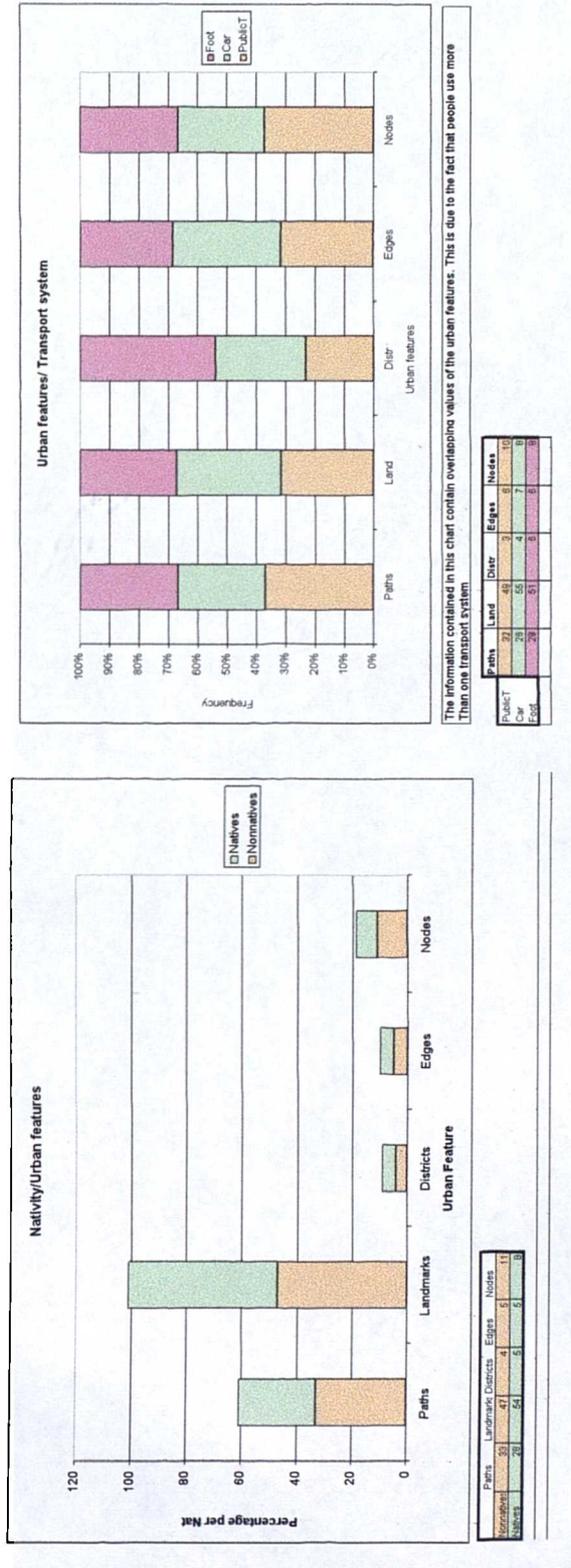


Lynch's elements and personal characteristics

Frequency of appearance of the 5 Urban Features per interviewees' characteristic



Lynch's elements and personal characteristics



Appendix 2. One World, Millions of Worlds.

User Manual

CD-ROM (see CD-ROM annexes)

Architecture

One word, millions of worlds.

A 12 workshops tour into architecture for schools

ATENTION
REALITY
CRITICISM
HABITAT
INSPIRATION
TRAINING
ENGAGEMENT
CHALLENGE
TEAMWORK
URBANISM for youngsters
REPRESENT yourself
EVOOLUTION

By Ombretta Romice



VLR

“ARCHITECTURE. One word millions of worlds in a guide-pack”.

ARCHITECTURE. One word millions of worlds in a pack-guide.

1 About the programme.

The intent of “*ARCHITECTURE. One word millions of worlds in a “guide-pack”*” is to stimulate students’ interest for architecture and the environment through a very active approach.

Architecture and environment are treated as inter-related. Through the whole pack students will learn how to treat them as interactive issues, for a more aware and user’s needs responsive involvement in environmental matters; *ARCHITECTURE. One word millions of worlds*, in regards to the external world, poses itself as a training phase to students’ youth and the base for their adult age.

The pack-structure is interactive: on one side, the user’s manual develops step by step the environmental education programme throughout 12 phases, called “sections” and “workshops”. On the other, is the computer support, with a vast amount of visual material and a complete selection of documented cases.

I recommend these two tools, manual and CD, to be used together; the manual provides technical instructions for the use of the CD.

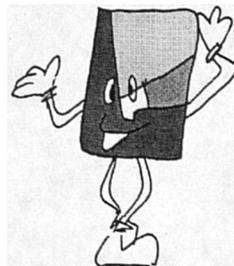
About the manual: in the left columns is the main text, in the right a further explanation of key concepts within the main text. These “links” are red.

Responsiveness: this project is part of a wider programme for improving users’ participation in the design process.

Link: this is the explanation of the text in the left column.

Lighthouse: the UK centre of architecture.

< This is the symbol of the Lighthouse.



1.1 A particular approach.

“*ARCHITECTURE. One word millions of worlds in a “guide-pack”* is based on the Visual Literacy Project, a three years research conducted to identify the relationships between people and their environment, in terms of how they see it, how they understand it, how they react to it and finally how get involved in it. *ARCHITECTURE. One word millions of worlds* follows a particular approach to the visual world, which is in the same time practical and theoretical, because from a good balance of practicality and theory can derive the best capacity of looking at things, understand them, criticise and finally improve them.

Various studies have demonstrated the relevance of developing visual skills in children, as a means to improve their whole thinking process. Visual thinking has been demonstrated to be capable of improving our capacity of relating to the external world. Howard Gardner, through his theory of the “*seven types of intelligenc*”e, supports the development of the visual-spatial intelligence within the curriculum, as a support to the most traditional forms of intelligence, the verbal and mathematical.

1.2 One word, millions of worlds

Architecture is used as a particular bridge to the external world that surrounds us. It is a subject that can lead to millions of directions. In this project we suggest some, although it is clear that the user can decide to explore many more by him/herself.

“*ARCHITECTURE. One word millions of worlds in a “guide-pack”* wishes to suggest a development, a critical approach to what’s outside us but is strictly related to us. It focuses on the evaluation of the environment, and in particular suggests exercising on the immediate school environment, because of its easy availability, and because you can test it immediately.

You can choose any other environment and “study” it using the methods we suggest; it all depends on where you want to leave a sign of yourself by improving a courtyard, a park, a wall...WHATEVER!

Visual Literacy Project: research for the degree of Ph.D. carried out by Ombretta Romice, Strathclyde University and Glasgow 1999.

Studies: for further info see bibliography of the Visual Literacy Research Project.

Howard Gardner: psychologist and professor of education at Harvard University. He’s the author of *Frames of Mind*.

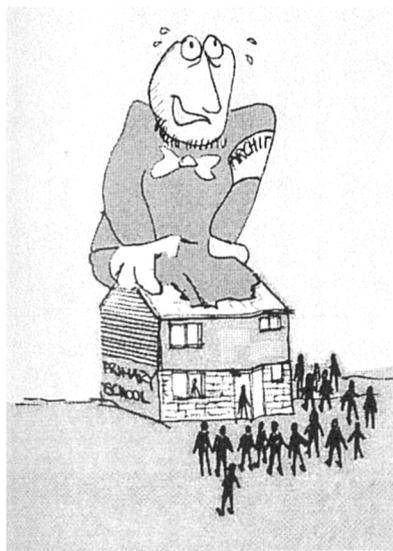
Evaluation: to judge how much something is worth.

Methods: techniques for evaluation are explained and used throughout the whole pack.

“ARCHITECTURE. One word millions of worlds in a guide-pack”.

1.3 Fitting architecture into schools isn't that difficult.

The project is meant to involve the different disciplines that are part of the curriculum, by facing science-related problems, environmental, physical issues and relate them to architecture.



It wishes to do so by engaging students into enjoyable exercises, requiring physical challenges as well as concentration and observation, exploring maths, physics, physiology under a different and unusual light.

Exercises: a series of exercises can be carried out within classes with students. For each of them, materials and time required are indicated.

1.4 Phasing

“ARCHITECTURE. One word millions of worlds in a “guide-pack” is structured within four main sections: ARCH-IT-ECT-URE. Each of them develops a mayor subject within a “workshop”, as follows.

ARCH (4 workshops) is about the importance of looking at things in a “particular way”; it is based on visual literacy’s principles of thinking through images, as a purposeful approach to reality, to discover things, understand and criticise them in order to improve them.

Attention
Reality
Criticism
Habitat

IT (2 workshops). It normally stands for Information Technology; in this manual, it stands for Inspiration and Training, and provides a variety of visual uncommon stimuli, to exercise students in looking “deep” at things to discover what is really underneath them.

Inspiration
Training

ECT (3 workshops). It normally stands for Education, Culture and Technology; it is about engaging students in communicating visual signals to each other using traditional as well as computer facilities.

Engagement
Challenge
Teamwork

“ARCHITECTURE. One word millions of worlds in a guide-pack”.

URE (3 workshops); this phase takes inspiration from the suffix “-URE”, which means act, process, results. This stage is aimed at developing action plans with student’s involvement in the community, through detailed analysis of the qualities of their environments.

Urbanism
Representatives
Evolution

1.5 Symbols used within the next pages.



It indicates that a *definition* is provided.



It indicates a link to a Web Site, which you can explore directly if your computer is connected to the Internet.



It suggests you to click a link in the computer. The link is always quoted in this user manual as a red underlined word or an image.

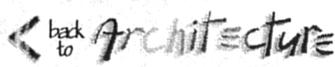
About the CD.

As soon as you launch it, a black screen will come out; wait until all the images appeared, then click with your mouse on the aeroplane. You have entered the *ARCHITECTURE. One word millions of worlds programme*. You will enter the presentation screen, with information about the Manual and CD. Have a look at all the icons.



(For example, if you click  read more! you will know more about the whole Visual Literacy Research Programme, of which “*ARCHITECTURE. One word millions of worlds*” is just a part.

From here, clicking on  you will be introduced to the series of 12 workshops. Once you entered the list page of the 12 workshop, by clicking on each of them you will start them. Go through each of them, follow the exercises and look at the images contained.

Once you have finished a workshop, to go back to the page list, click at the top right of the screen 



#	Workshop	Workshop
Section 1	Attention	Workshop 1
	Reality	Workshop 2
	Context	Workshop 3
Section 2	Habitat	Workshop 4
	Inspiration	Workshop 5
	Talents	Workshop 6
Section 3	ENGAGEMENT	Workshop 7
	Challenge	Workshop 8
	Teamwork	Workshop 9
Section 4	Urbanism	Workshop 10
	REPRESENT	Workshop 11
	Evolution	Workshop 12

“ARCHITECTURE. One word millions of worlds in a guide-pack”.

If you are browsing (going through) a workshop (each of them consists in various screens) and you want to go back to the previous page or to the beginning of it, click 

When you are running the CD, move the mouse on the screen; whenever the pointer (an arrow) becomes a small hand, it means that you are on a link; click it and you will enter a new page. Here follows a “map” of the CD, look at it before you start using it, so you will have an idea of its structure and how to move within its 4 sections and 12 Workshops.

Section 1

Attention

Reality

Criticism

Habitat

Section 2

Inspiration

Training

Section 3

Engagement

Challenge

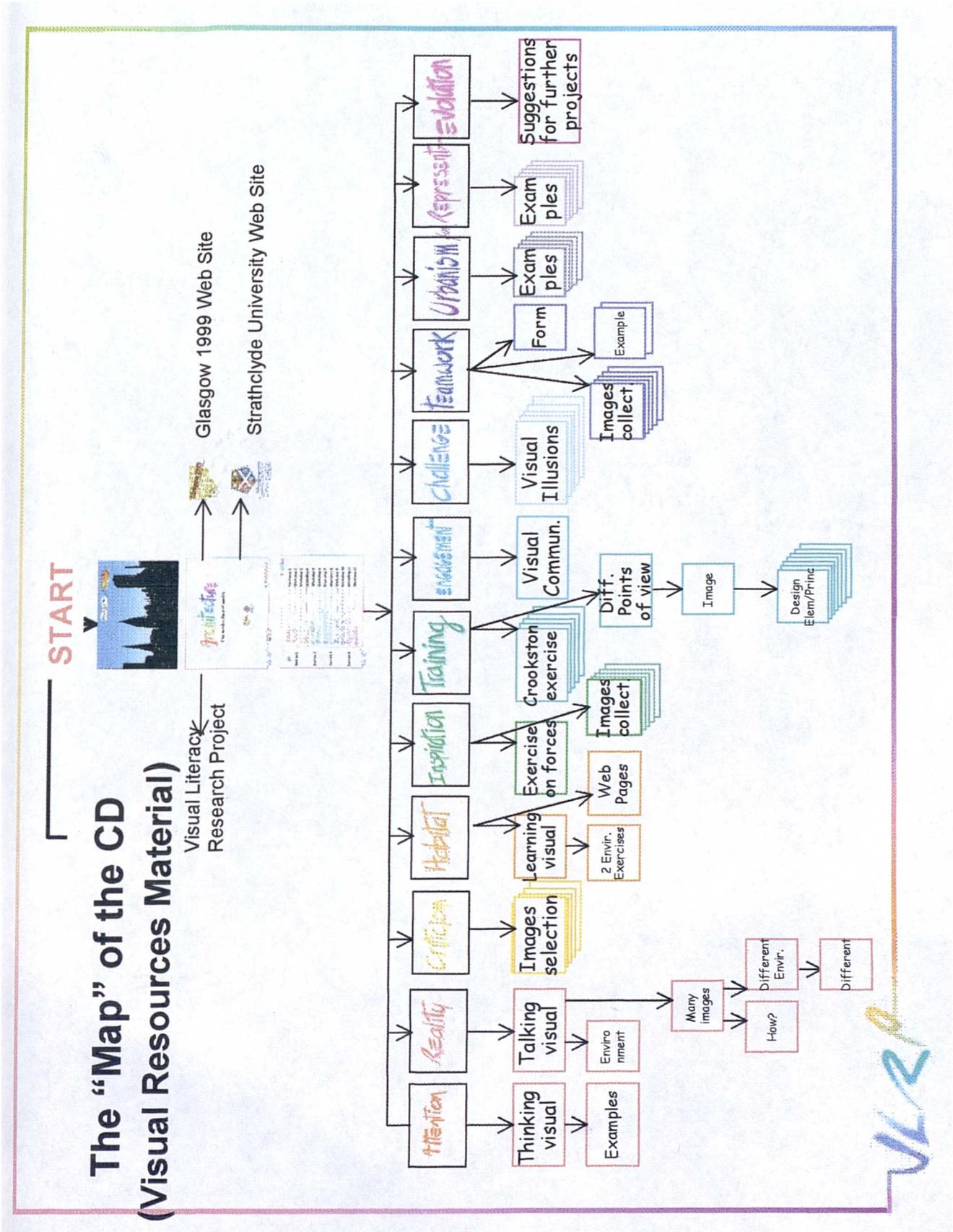
Teamwork

Section 4

Urbanism

Representatives

Evolution.



Workshop 1. **ATTENTION.**

*To look is one thing,
to see what you look at is another,
to understand what you see is a
third,
to learn from what you understand
is still something else;
to act on what you learn is all that
matters*

Taoist saying.

The capacity of looking at things is the essence of architects. They look at anything which surrounds them because whatever will use in their job, will either influence things around or be influenced by

Taoism. Religion and philosophy based on Lao-Tse's teaching (6th Cent. B.C.) of conducting simple life in harmony with the course of natural events.

them.

Architecture is, on one side, something we can't "get rid of"; it is wrapping us from the moment we get up, throughout the whole day. Architecture and, more in general the Townscape, is always with us, with its characteristics it can affect our moods, our routes, our activities. Would you rather walk through a narrow dark unsafe tunnel or underneath a glass bridge with lights and other attractive features?

Architects though do not just look at things they do it with a purpose, to understand how they work, what they represent, what they mean to people, if they are properly used or not. And they gather all these information in mind, figuring something, which they can remember and act upon.

Vocabulary.



Visual Literacy = It is a term introduced in the late '60s due to the large diffusion of new ways to communicate, such as the television and magazines of comics and photography.

The interests attracted by visual literacy were related to education, society, communication, and youth; it became of particular interest the effect that visuals had on young people's education, when substituting or at least used together with the more traditional teaching tools.

Townscape "One building is architecture, but two buildings is townscape. For as soon as two buildings are juxtaposed, the art of townscape is released". G. Cullen. (Image from: Cullen, 1971)



It was found that children's learning and communicative capacities were improved when it was supported by visual images.

*Thinking can be taught and improved.
Visual thinking and
mental imagery are processes people
can use for better thinking.*

Hortin, 1983.

This finding was associated to the fact that man used the body sign language for communication much before sounds, writing and even drawing.

Visual literacy can simply be defined as a discipline related to the whole visual world, concerning the process of seeing, understanding and making visual images. It involves all our senses, not only sight but also smell, touch... See exercise on "sensory walks".

The development of visual literacy in people requires them a critical, participate and active role as well as the understanding and sharing meanings of predictable universality. Once developed visual literacy can guarantee autonomy in gathering meanings from visual things facilitating our relation to any context. ...*A visually literate person can recognise and interpret visual actions, objects and symbols, natural or man-made, that he encountered in the environment. Through the creative use of these skills we are able to communicate with others (>>).*

Definition. This definition derives from a wider collection of studies on VL. For more details, see bibliography.
Sensory walks. Section 4 Workshop 12



Visual thinking. It is the ability to transform thoughts, ideas, and information into all types of pictures, graphics, or other images that help communicate what we associate to them. It involves seeing the external world, represent it in images and exercising mental imagery.



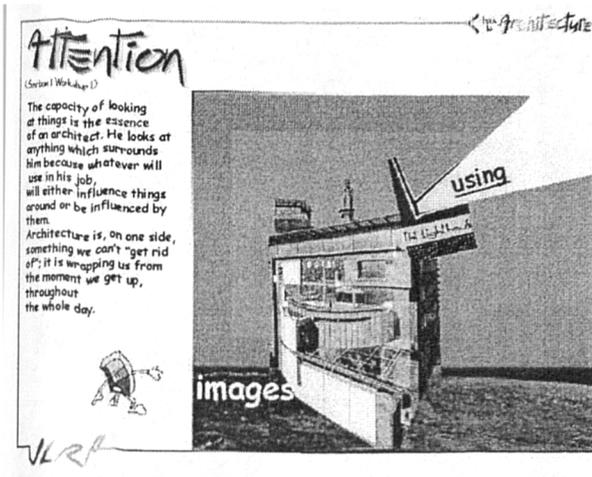
Mental imagery. Is the ability to create images in the mind to understand, remember and enjoy experiences. (>>)

>>. Fransecky & Debes' original definition (1972: 7).

>>. Hortin, 1984.

Resources in the CD.

As you click on Attention, Workshop 1, this page will come out.



Screen 1

Discuss on what is a lighthouse, and on the fact that Glasgow 1999 used the Lighthouse as symbol of the UK Centre of Architecture (image next to the word creating), on why it was chosen and what is it meant to call to mind.

This is a good example of using a graphic symbol to recall concepts. It is a way to communicate ideas using images rather than words.

Describe as well that the small character (bottom left) is our "translation" of the Lighthouse: it is our representation of an idea.

The image bottom right is the project of the Lighthouse. For more details and info, go to the Glasgow 1999 Web site.

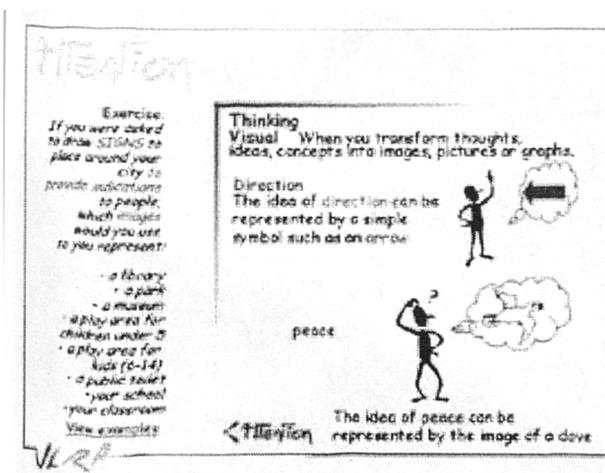
Symbol. Something standing for something else; who invents it decides that the symbol will always mean something (Lang, 1988).



In screen 1 click the word "understanding". The screen 2 will appear.

Let all the information come out; it will take about one minute.

Understanding. All the red underlined words are links in the CD; this means that if you click them you will be taken to another page.



Screen 2

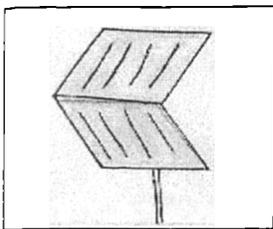
Stimulate students to think of ideas and describe them using drawings, symbols as in the examples provided.

Exercise.

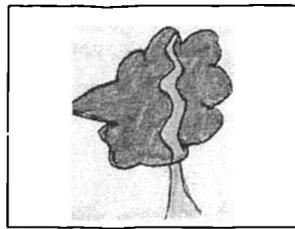
In screen 2, on the left side, an exercise is suggested. Ask your students to invent road signals for the listed activities (a library, a park, a museum, a play area for children under 5, a play area for kids (6-14), a public toilet, your school, your classroom).

Give them a standard size for each of the signals, and keep them for further stages. This is an example realised by Fiona, P7.

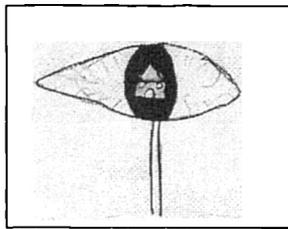
Further stages. These symbols can be used to realise students' maps of their neighbourhoods and of their city, as explained in Section4.



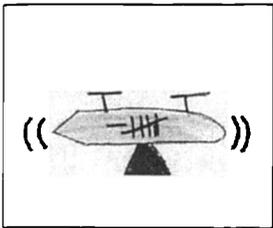
Library



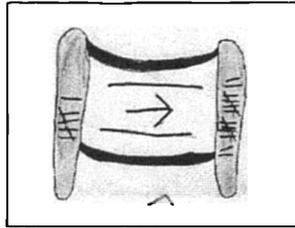
Park



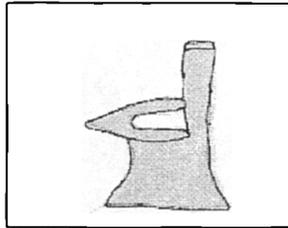
Museum of Architecture



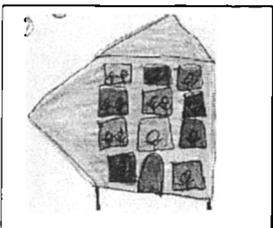
Play area <5



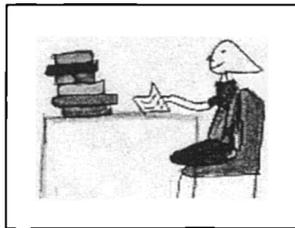
Play area 6-14



Toilet



School

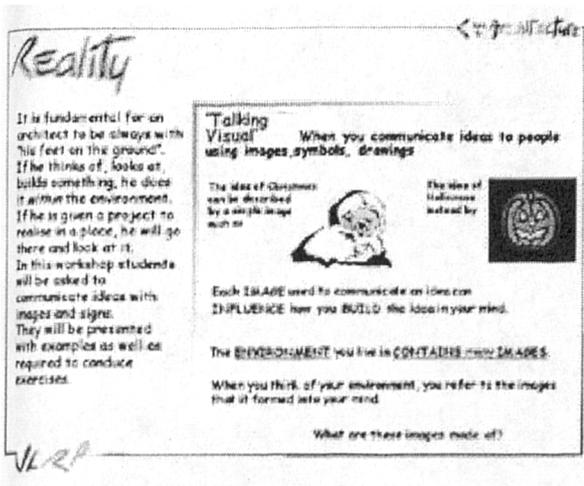


Class



By clicking the arrow bottom left of *Screen 2*, you go back to *Screen 1*. Click creating, and you will enter **Workshop 2**.

Workshop 2. REALITY.

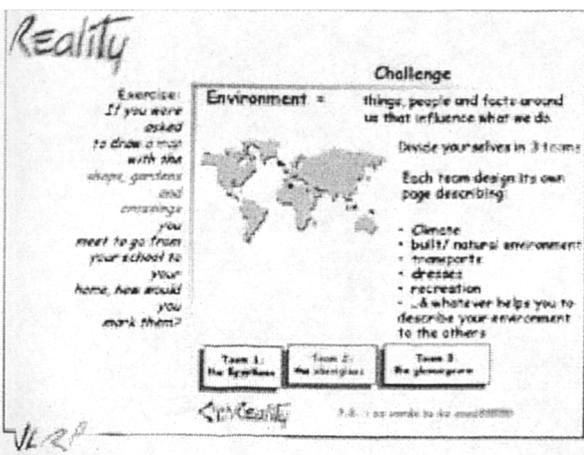


Screen 3. "Talking visual".

It is fundamental for architects to be always with "their feet on the ground". If they think of, look at, build something, they do it within the environment. If they are given a project to realise in a place, he will go there and look at it. In this workshop students will be asked to communicate ideas with images and signs. They will be presented with examples as well as required to conduct exercises.



In screen 3 click on environment; you will be provided with a definition of the term and introduced to screen 4.



Screen 4.

Wait for the "exercises" until the end of this workshop. (Just look at the definition).

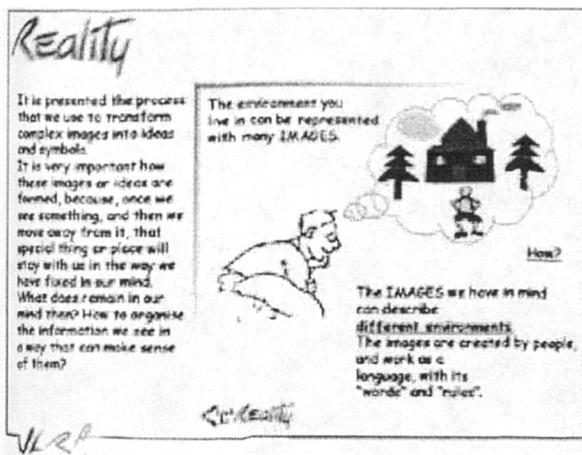


Environment. Things, people and fact around us that influence what we do. In our case, since we want to study the relationships between man and the environment, we will use Rapoport's definition of environment as not random or casual, but patterned relationships between things and things, things and people and people and people (1980).

Go back to screen 3 and click contains many images.

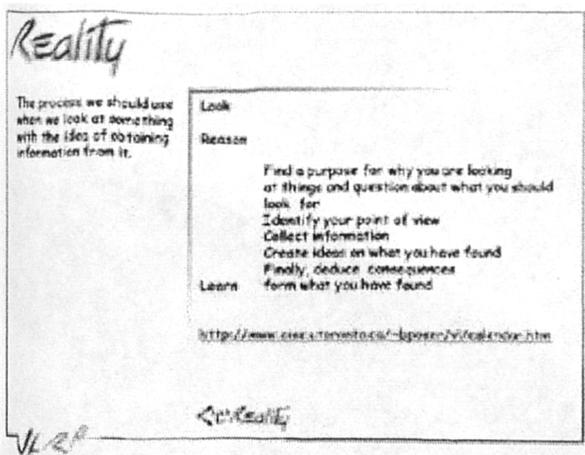
You are now in screen 5. It is presented the process that we use to transform complex images into ideas and symbols.

It is very important how these images or ideas are formed, because, once we see something, and then we move away from it, that special thing or place will stay with us in the way we have fixed in our mind. What does remain in our mind then? How to organise the information we see in a way that can make sense?



Screen 5.

Learning to think. If you press How?? you will reach *screen 6*, where it is



presented the process we should use when we look at something with the idea of obtaining information from it *Screen 6*. "Is there a special way to look at things?"

Process. The sequence is suggested by the Ontario Institute for Studies in Education of the University of Toronto. For more info



see web site. <http://www.oise.utoronto.ca/~bposer/vl/calendar.htm>

With this phases in mind, go back to screen 3, and explore the next 2 screens (7 and 8) using the links different environments and different. Discuss on the concept context, as sum of indications that describe the environment, including climate, land characteristics, uses and people, culture...



Introduce students to the concept of “project”, that is a group of actions necessary to realise planned goals using a minimum amount of resources available.

Resource. What we need to do something; i.e.: to build a house, we need ideas, money, an architect, the materials, the building permission...)

Go back to *screen 4*. Follow the indications of the challenge.

Exercise.

1. Divide your students in 3 groups, and assign to each group an area around the world. Ask to organise a presentation of the country as if they were clients presenting to an architect the characteristics of their area, where he/she is required to build 10 houses.
2. Each group is required, within 2 hours, to provide a complete presentation of the area using mainly graphic images; the group presenting is the client, the other 2 are the architects; make sure each architects-team will obtain all the necessary information to make a real project of the 10 houses within the area.
3. At the end of the 3 presentations, each architect-team will chose one of the 2 areas which weren't assigned to them, and realise the project with all the information available.
4. Make sure the design process that each architect team is using follows the steps of screen 6.

Design process. When architects are asked to design something, they must:
Collect information, decide goals (what type of building, who for, where about, for how many people..), collect resources, make an action plan that combines all the above information gathered.

Workshop 3. **CRITICISM.**

Criticism. Evaluate and discuss on something.



Every human being is able to looking critically at the world in a dialogical encounter with others. Given an active, participatory role in education, a student should perceive his or her reality and be able to deal with that reality with confidence and dignity.

Hortin, 1984: 176.

This workshop focuses on the importance of **involving students in environmental issues.**



What does participation **mean**?

Participation is ...*as face-to-face interaction of individuals who share a number of values important to all; it is a purpose for them for being together and take decisions together.* (Sanoff, 1990: i).

In very general terms, participation is the fundament of societies who want freedom for all citizens; it is a matter of *control over decisions by the participants.*

Henry Sanoff.. He is one of the biggest experts of participation and how to involve communities (children to adults) in projects about the environment. Find more on this incredible man in his home page



<http://www4.ncsu.edu/unity/users/s/sanoff/www/henry.html>

We value space because of its power to organise, promote pleasant relationships between people of different ages, create a handsome environment, provide changes, promote choices and activity, and its potential for sparking all kinds of social, effective, and cognitive learning. All this contributes to a sense of well being and security in children. We also think that the space has to be a sort of aquarium, which mirrors the ideas, values, attitudes, and cultures of the people who live in it.

Loris Malaguzzi (1984).

Students must be involved directly and in **management** levels when concerning the visual world and more specifically the environment.

In the following sessions students will be engaged in **producing vast amounts of visual material** aimed at

becoming more familiar to their surroundings; in doing this it is fundamental to know what are **students’ interests**. The content of the exercises will therefore consist of the knowledge, skills, facts, and attitudes of the students.

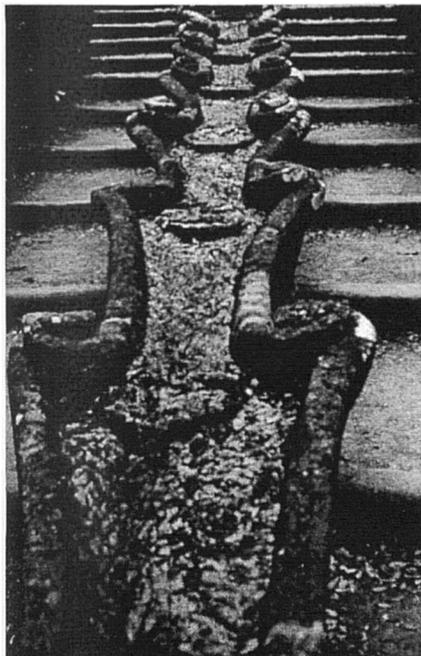
The **students will be encouraged to become organisers** of the information they gather and assemble. They will be stimulated to see, represent graphically in their minds the material that they planned to present, and visualise or generate visual images.

Introducing architecture in schools can have a wide repercussion on students’ development and in the same time on their parents’ attitude to the environment.

At the same time, they should be given *an active role within their environment*. The approach of this 12-workshop is at the same time *to architecture and to the environment*. Students will be involved both in design projects and in evaluation exercises.

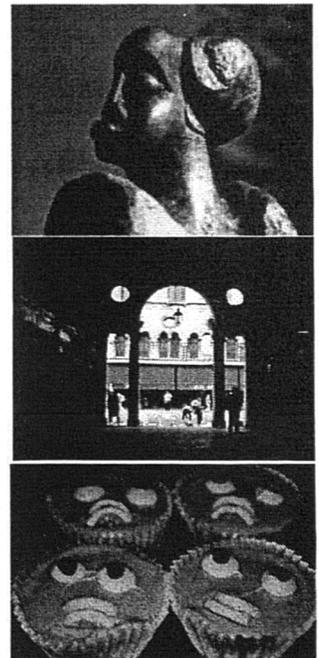
How can students’ role be active when concerning the environment?

Exercise.



Let’s start getting opinions out of them on “things”, which can be objects of design, buildings, streets...

Select examples from your classroom, your neighbourhood and your city (Glasgow 1999’s design products are a great source). Exhibit each of them in one area of the classroom. Ask your students to go through all of them with the **form that follows**, and to fill it.



Organizers.. See Screen 6

What do you think of it?	Really ugly	Ugly	Ok	Beautiful	Really beautiful	What does it remind you of?	What makes you feel like that?	Who thinks different from you?
Object 1								
Object 2								
Object 3								
Object 4								

Table. Photocopy this table for each of your students and ask them to fill it.

It is meant to push them to **think and find reasons to justify their opinions.** Try to select images or objects they are familiar to and others that are very unusual to them.

When you get the results back, **compare their preference for what's new and what's instead familiar to them.**

Conserve these results. There will be other exercise that consider student's relationship with familiarity and novelty in their environment.

Exercise suggestion from: Anna Slafer & Kevin Cahill (1995) "Why design?" Activities and projects from the National Building Museum.

Workshop 4. HABITAT.

Go back to *screen 1*.

Click on "learning visual" and you will enter **Workshop 4**.



Habitat
(Section 1 Workshop 4)

View a Web Page

How to get information from images, to distinguish among similar visual signs and compare them?

What idea do you get from these 3 black & white pictures if you look at the small ones first, and then the big one?

Exercise:
Look at these pairs of pictures, describe and compare the information you get from them.

A

B

C

Screen 7.

In this workshop we wish to induce students to get information from images, to distinguish among similar visual signs and compare them.

Wait until all the images and text will compare in this screen.



You will find the definition of learning visual: "learn things from looking at pictures, images and the MEDIA". Ask to students some examples of information they got from signs rather than from text. Discuss on them on weather sometimes images can be more direct than words (i.e. road signals.).

Exercise 1.

Look at the image in the centre of the screen (that with the duck). Ask your students:

Does the duck like computers?

Does it hate computers?

Why? Invent a story where the duck ends up destroying its computer...

MEDIA. "One picture is worth a thousand words". At the origin of visual literacy is television, photography. It soon became clear that combining visual with manipulatory experience was a way to enhance the capacity of learning for children in schools. All projects based on the concept of visual literacy involve vast use of various visual tools as well as practical activities (Debes, 1978).

Exercise 2.

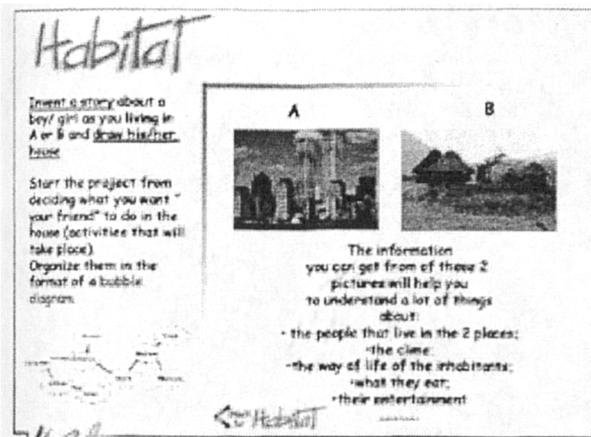
Ask your students to take a look at the 3 pairs of images (arrows, houses, WC symbols) at the bottom of the screen and compare the information they can get out of them.

Exercise 3.

In screen 7, click the right arrow; you will reach screen 8.



The right arrow.

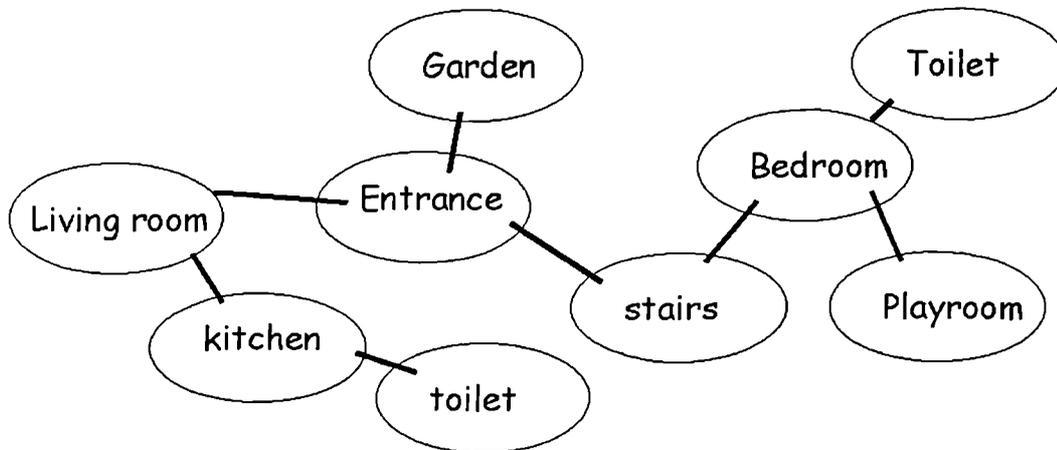


Ask your students to invent a story about a boy/ girl as themselves, living in A or B and ask them to draw his/her house.

Start the project from deciding the activities to be carried out in the house, and ask your students to organize them, in the format of a bubble diagram; it is—at this stage- not fundamental what type of activities the students select, as long as those they chose are well related among themselves and take care of what is outside the house (heavy traffic roads or wild animals etc). From here, ask your students to draw the plans of the house, then the external views and the surroundings. Make sure they understand they have to build a house in one of the two environments, so ask them to take care of the surroundings (high-rise buildings or desert), of the type of land and the people that live around.



The bubble diagram is a scheme that organises activities: name each activity that will be conducted in the house, enclose it in a circle and link the various circles according to your own choice. (A link means that 2 rooms or areas are connected through a door or a corridor.)



Habitat, users and activities.

It is now time to introduce students to a more precise definition of these three concepts.



Habitat: in the vocabulary, it is defined as the place where a specific type of people, animals or plants is normally found.

The word habitat refers to where things live. The habitat of certain birds, for example, may be a meadow or forest. A human habitat is more than the house people live in. It includes living places such as villages, towns and cities.

Users. Users are those who live, or use in any way either an habitat, or an object; they are those who any type of design activity must take in consideration when it creates for them.

Activities. What users do within their habitat or with an object.

Exercise.

The following activity consists in presenting students with three different contexts: the natural, the animal and the human world.

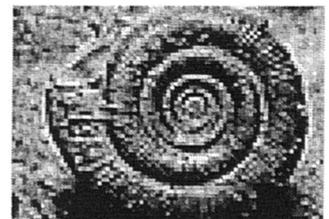
It can be conducted using the science resources available to the class; a basic number of images should be made available to students in form of slides. Here follows just a suggestion of the type of images that could be presented:

- ' A cavern, a woodchuck hole and a catacomb (or any other type of underground human construction).
- ' A pick in the desert, a termites building and a high-rise (skyscraper).

City, Towns, Villages A city is bigger than a town, and a town is bigger than a village.

C T v

(>>) A fossil shell, a blue-bird nest and finally an image of a human village development (ex. China).



- A fossil shell, a blue-bird nest and finally an image of a human village development (ex. China). (>>)

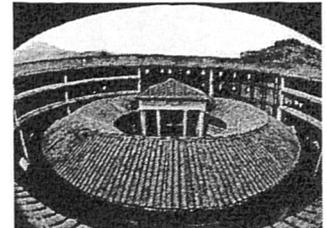
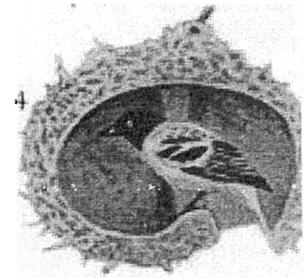
Phase 1:

Compare the 3 different "worlds":

- ⇒ The human world and its "cities, towns and villages";
- ⇒ the natural world and its landscapes;
- ⇒ The animal world and its "constructions".

Showing the comparable images suggested above, discuss on how each of the following problems are faced in each of the 3 different environments:

- ⇒ shelter provision and repair;
- ⇒ orientation;
- ⇒ viability systems;
- ⇒ engineering works to cope with difficult environments;
- ⇒ Protection needs.



Another extremely good source of information and images is the Internet; for each of the above category you can find some web-sites providing "young people friendly" information which could allow very interesting "virtual" tours.

The **advantages** of the Internet are various and enormous. Here is a very short list:

- Anybody can access anyone else's computer (if he/she wishes to make it public).
- Anyone can send almost instantaneous messages to anyone else in the Internet, and include pictures, sounds and even computer programs.
- Anyone, including huge corporations and small children, can create their own site on the Internet where they can provide information about anything to an audience of over 20 million people around the world.

It is now largely used in schools to increase students' stimulation through a large amount of information, including sounds, texts, movies and graphics.

Internet. The Internet is made up of a lot of computers linked together over phone lines.. The "Inter" refers to the fact that it is an international connection, and the "net" is short for network (a connection of two or more computers that share their resources). Virtual. Something that looks real but is not.

The Internet consists of the World Wide Web and the Email. The WWW, usually called "the web" is made up of *web sites*.

Sites consist of web pages, which are in turn made up of text, images, video, sound, animation; in short, nearly any form of communication. Web pages are just ordinary computer files with a few "labels" added to tell the computer details about display and links.

This definition derives from these sites:

<http://edu-ss10.educ.queensu.ca/~hudsonp/internet.html>

<http://www.educ.sfu.ca/tutorial/subs/internet.html>

A very good engine is *Altavista*. Once you connect to the Internet, type in the Location box:

<http://www.altavista.net/>

You have entered one of the most powerful libraries of the world. It is enough now to type in the request box the subject you are interested into. If you are looking for *caverns*, for example, type *cavern*, and the click the button search.

You will be provided with many pages of addresses on the subject "caverns"; browse (go) through them and chose for those whose description sounds interesting for your class.

For example, a very good description of caverns (geology, history, science etc), extremely rich in visual resources, can be found in the site:

http://www.asia.microsoft.com/education/curric/MSB_Earth/Caverns.htm

Once you have found a site you like or find interesting, you can "save" its location; when you have it on your computer, the Favourites/Bookmarks menu allows us to keep track of our favourite addresses, and get to them again easily.

To do so, go to Adding a Favourites/Bookmarks, pull down the Favourites/Bookmarks menu and choose Add Favourite/Bookmark. You can catalogue your sites per argument, per student or per class (etc) by creating a container (folder) for each of them. It will be like having, within your computer, "unpublished" organised books.

Labels. See Glasgow 1999's site and the page annex to understand each part of a Web Page.



<http://www.glasgow1999.co.uk/>

Engine. Within the WWW context, an engine is "researcher" which will find what you ask for.

Add.... It depends on if you are using a Mac or a PC.

Workshop 5. **INSPIRATION.**

It is fundamental, when working on visual literacy, to present students with a **good variety of visual stimuli**; it is necessary therefore to prepare their approach to such variety, to avoid confusion and an overload of information. It has been demonstrated that architects, planners and “common” people see things in a different way; in particular, architects are said to look at things in a “**perceptual**” way, which means that they analyse them on the base of their physical characteristic. Other people instead do it in an “**associative**” way, that is they tend to associate ideas to what they see, without spending too much time in looking at them. This can be **dangerous**, reducing the attention spent at observing things, and then affecting what we think of things.

Architecture is for its nature one of the principal source of novelty, information, surprise and occasionally **shock**, because of its **large scale** and because being everywhere it is **unavoidable**.

The purpose of these workshops is to introduce students to the physical environment, and more specifically to architecture, in a way that they can **make sense of it, can understand its parts and form appropriate ideas** of it.

For this, we must know before what is students’ approach to architecture; we must understand what they seen in it and why. Some suggestions on this derive from two “sciences”, described as follows.



The study of people’s relationships with the environment is called environmental psychology, another mayor concern to this research is called environmental aesthetics, that is understanding how the environment affects us to improve it through design.

Youngsters must be involved entirely in the design process; education must be integrated into real life. Students must be considered with their needs,

Overload. Lang describes the physical environment as *a nested set of spaces; to get to know which we build a map of them* (Lang, 1974:87). He warns that generally environments are multimodal, that is they provide observers with redundant information (for all the senses); how can students perceive a balanced amount of information, discriminating and finally organize them?

Environmental psychology. Bell (1996) defines it as the study of the relationships between behaviour and experience and the built and natural environments. E. Aesthetics. *understanding environmental influences on affect and translating that understanding into environmental design judged favourable for the public.* (Nasar, 1988: xxi)

expectations and opinions. To avoid what Paolo Portoghesi identifies as one major problem in our cities:

The city is shaped on an adult human scale. Nothing is made for the child, but for when he will be an adult. The child's presence in our cities is passive.

Portoghesi (1997).

Here follows a **list of factors** that generally explain preferences for spaces.

Keep them in mind to compare your students' answers in the following exercise; suggest them some of these if they didn't consider them.

- **Richness, variety and choice** of places are often one of the fundamental criteria we use, when experiencing them, to state preferences, as long as the observer can handle the amount of information.
- It seems that we also perceive the environment on the base of the **sameness** and **differences** in it; these are evaluated on the base of certain numbers and dimensions that help us to quantify and qualify contrasting stimuli, that as a consequence allow us to form our preferences.
- Another theory states that **order** is the environmental quality that determines our preference. Our need for order would derive from the fundamental strategy for survival, the attempt of having control on the external environment. In general, we can derive an interesting rule: we prefer environments where “unity in stronger than particularity, but not too much!” (Smith, 1988).
- Our **experiences** and **culture** can influence how much we like an object, a space, a building.
- A strong influence is played by **mystery** as well. For example, we tend to prefer objects, places, buildings that don't reveal themselves completely at first sight.

‘ I believe that ...education, therefore, is a process of living and not a preparation for future living...the school must represent life –life as real and vital to the child as that which carries on in the home, in the neighbourhood, or on the playground.’

John Dewey, My Pedagogic Creed, Article II, “What the School Is”, 1897. In “Transformations. Process and Theory, a Curriculum Guide Development”. Doreen Nelson, U.S.A. 1984.

This is a very simplified list; other factors are important through such as our needs at the moment we observe things, the symbols we relate to them and many more.

But these are some of particular relevance for our next analysis.

Exercise.

Engage students in thinking of one part (a street, a building) of their neighbourhood, or their city, that they particularly like.

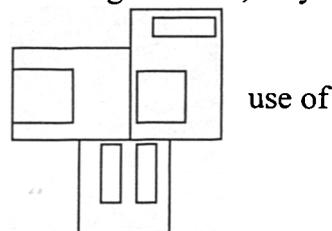
In the previous exercise they were asked to do the same on the base of what the object reminded them; now, we will go a bit further. **We want to discover how students formulate preferences for spaces.**

Ask to choose **one object or one view** from the window of the class which they like/ dislike, and to list the characteristics of it. Compare them with the list above.

Ask to think of each object / view on the base of the above criteria:

- Richness, variety, choice
- Sameness & differences;
- Order;
- Experience, culture;
- Mystery.

Ask to represent their object/ view using these principles; i.e. if the object is an image of the “Habitat”, a housing complex, when drawing its order, they could identify the geometrical shapes in it, or in the case of richness they could point out the materials, the geometric perimeter of the whole complex, and so on until all the 5 characteristics have been described and designed. This exercise is very free, it is meant to push students to deep into images and objects, and discover each part of them.



use of



Montreal’s Habitat. By Moshe Safdie (1967). Example of industrialised, modern housing. Still well used today, was meant to be model for affordable housing.

Looking for analogies between architecture and the human body.

In the CD is available a collection of images of “interesting” architecture from all over the world. The teacher should go through it before presenting to the students.

The first slide presents 4 images of very simple forms, natural or of common use, which can be related to architectural forms, for their shape, their function or the way they work.

These are just interpretations; through the whole collection curious examples will require a similar work to students.

In the collection, examples of the work of three very interesting architects/ engineers: Gaudi, Calatrava, Christo and Jeanne Claude and Piano, plus various examples or buildings whose function, shape or impacts within the surroundings are worth discussion.

About some of them, you can find information in the Glasgow 1999’s Web Site.

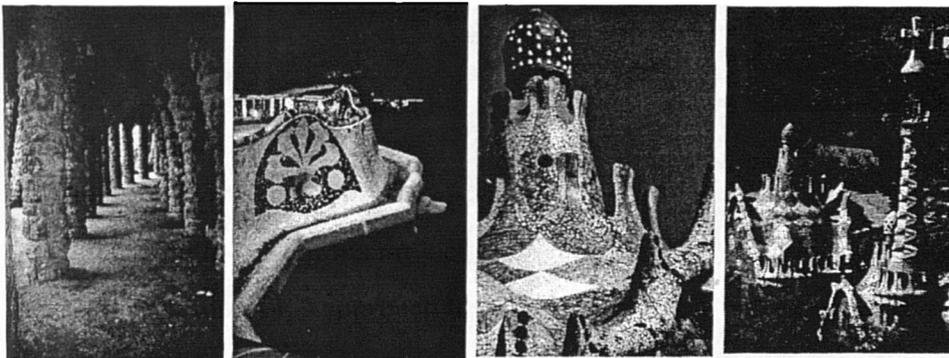
<http://www.glasgow1999.co.uk/ARCHITECTURE/WRIGHT/index.html>).

On Gaudi.

<http://www.scit.wlv.ac.uk/~f9581133/gaudi/index.html>

<http://www.gaudi.tm/>

<http://www.red2000.com/spain/barcelon/gaudi.html>



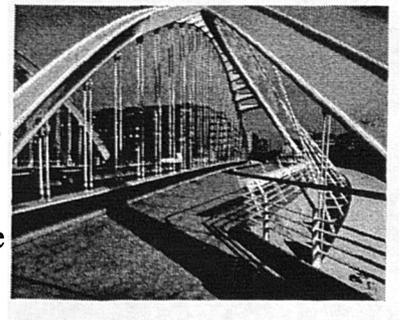
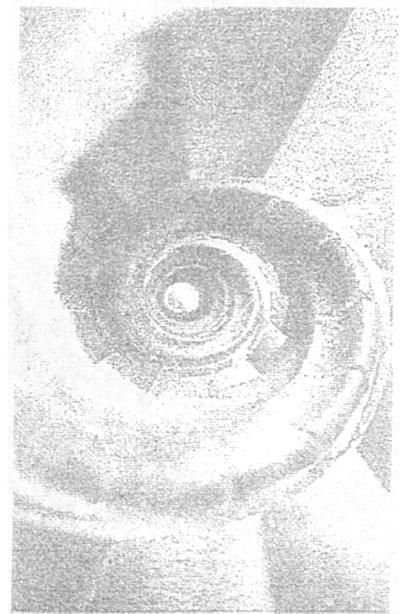
On Santiago Calatrava.

<http://www.vt.edu:10021/J/jkane/calatrava/index.htm>

(Fantastic collection of his projects and details, including bridges, buildings, and information of his approach to design). The site is very easy to browse, the information provided clear and simple (different levels of detail) and the image quality very high.

CD. Click Inspiration in the Workshop list; a screen with a collection of images will appear. Follow the instructions.

Gaudi, Calatrava, Christo & Jeanne Claude. For more information consult the bibliography, the annexes and the web sites suggested.

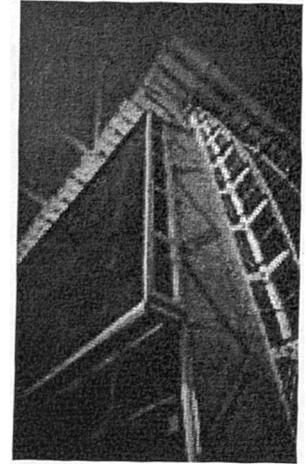


On Nicholas Grimshaw

<http://frieda.art.uiuc.edu/artgd467/hersam/grimshaw/txt/l-ws1.html>

<http://frieda.art.uiuc.edu/artgd467/hersam/grimshaw/txt/l-bp1.html>

The images in the CD contain different examples of buildings that, if looked with attention, can suggest analogies with our body. Follows a list of comparison between body-building. Try with your students to discover such similarities, discuss with them and confront yourselves (Arnston, 1997).



Building Parts	Body Parts
membrane	Skin
Mechanical system	Muscular system
Heating cooling	Circulation system
Ventilation	Respiratory system
Structural system	Skeleton
Sewage system	Waste elimination
Styles	Styles, culture, preferences
Foundation	Feet.

Exercise.

The next step is meant to describe students the main forces in architecture (compression , tension, flexion); it is an enjoyable exercise since it requires the participation of some of them as “material” to be compressed, tensed or flexed. Their participation is normally very high; it is necessary a brief introduction on the nature of these main forces.



Compression. A stress on the material that pushes it together. A column is compressed.

Tension. A stress on the material that pulls it apart.

Gravity. The earth attracts objects towards it; the7 feel heavy due to the gravity.

Truss. Supports assembled together that form a rigid element.

Support. It holds something up.



Students are required to reproduce some simple figures, such as a column, an arch, a truss. Gather them in-groups and ask to keep the position for a few seconds until they feel some parts of their bodies under pressure. This is the indicator of the type of stress the real structure has; provide them with the annexes with the schemes of the right position and a correspondent example of those structures in architecture. Ask them to colour the most



stressed parts of their body. Together, by drawing on the blackboard, discuss on the most characteristic points of breaks of arches, vaults, trusses, according to their form and the type of weights on them.



Ask then your students to select either one of the buildings of the collection in the CD, either one in their surroundings, to identify its structural elements, and to draw it. Explore the building structures and the materials used in the cultures, which are part of the curriculum studies, such as the Egyptian, the Greek, the Roman, and the Gothic.



Students can build a structure by themselves using sugar cubes, straws, glue, tape; make always sure they work in scale.

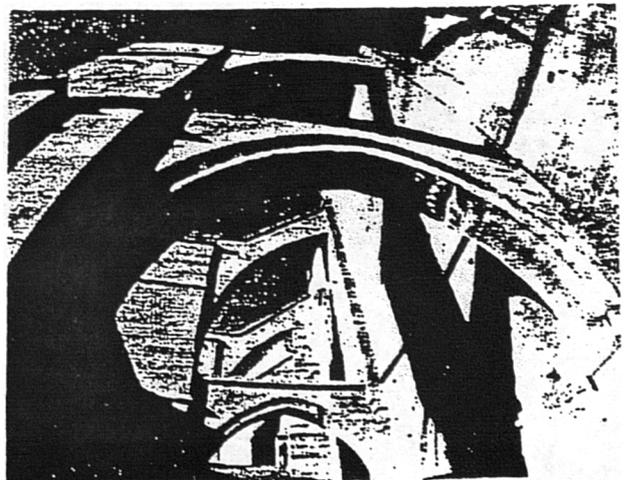
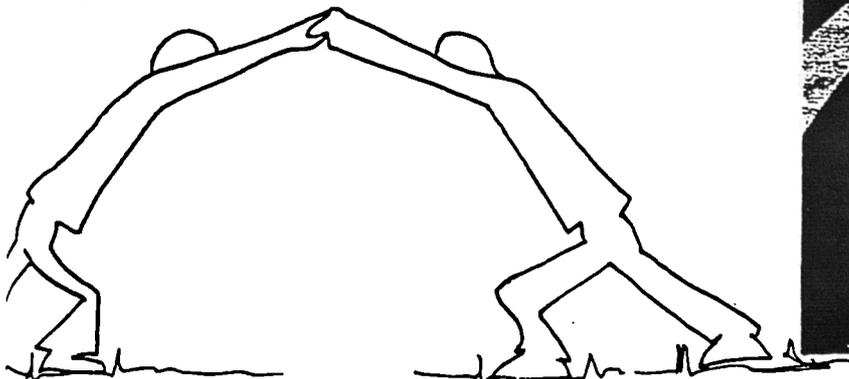
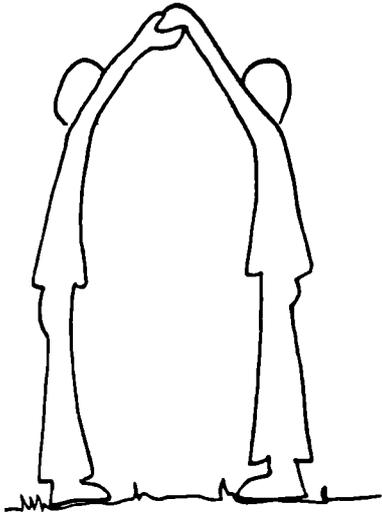
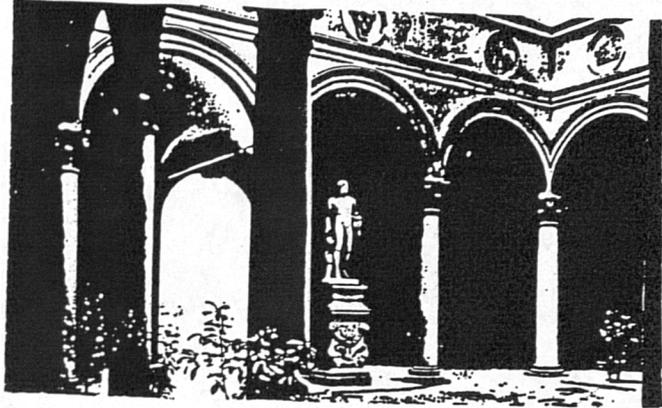
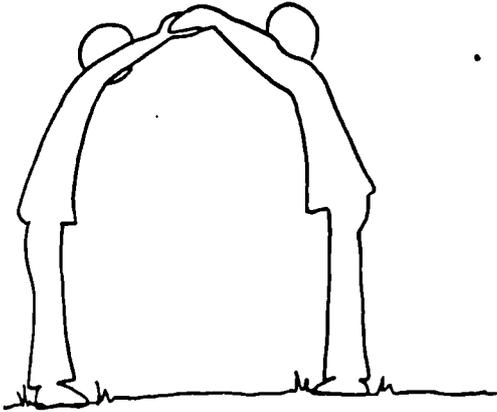
View more images of a similar exercise conducted in a S1: in the

Work in scale. Respect the dimensions and proportions of objects. Introduce them to the rule, and present object at different scales, familiar to them, so they can make comparisons.

CD, first page of Workshop 5, clicking [View examples of the exercise on forces.](#)

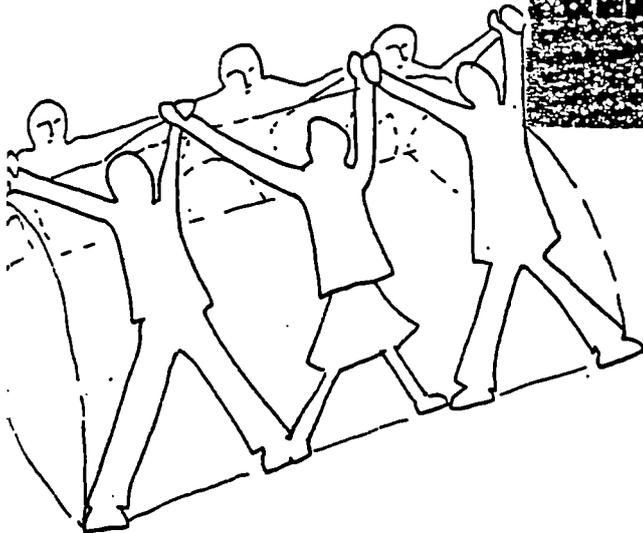
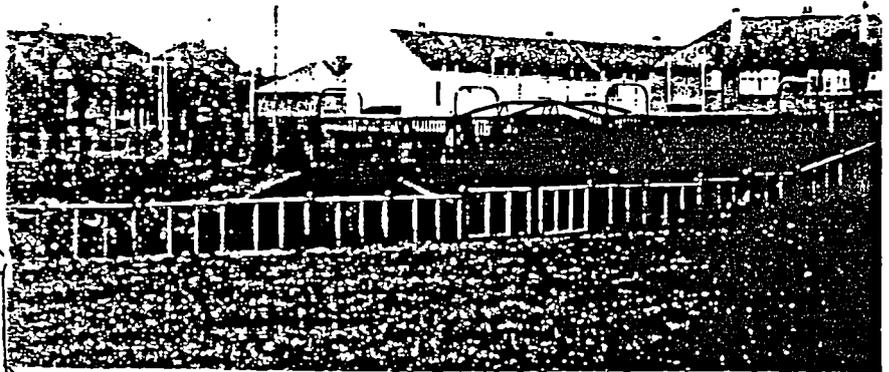
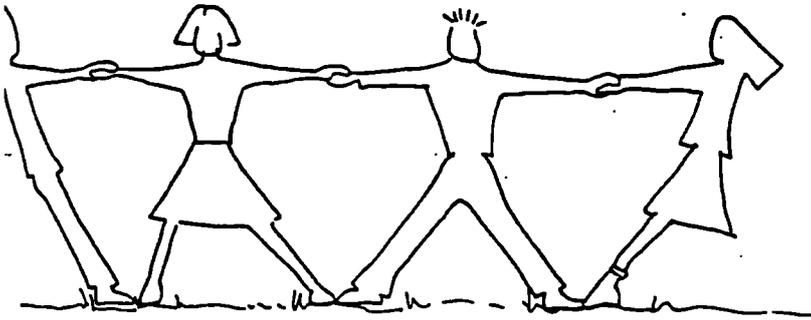
Name of the students: 1.....
2.....

Object: Assume the position described in the drawing, and keep it for few seconds. Than colour the parts of your body that feel more stressed.



Name of the students: 1.....
2.....
3.....
4.....
5.....
6.....

Object: Assume the position described in the drawing, and keep it for few seconds. Than colour the parts of your body that feel more pulled (blue) and compressed (red)



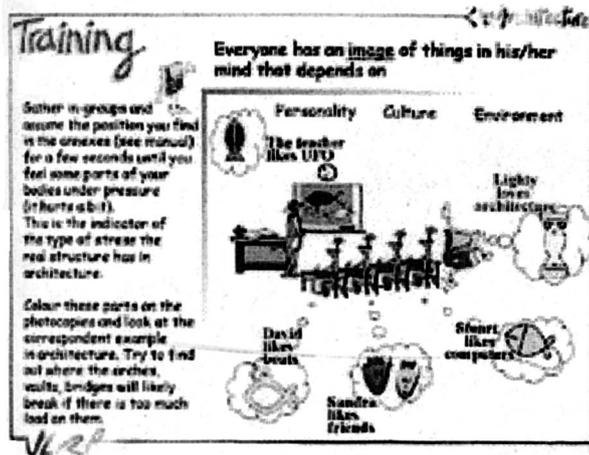
Workshop 6. TRAINING.

It has been described before that perception of objects and spaces depends on various factors.



Start the Workshop 6 by clicking letter T in the Workshops list page.

You will reach this screen.



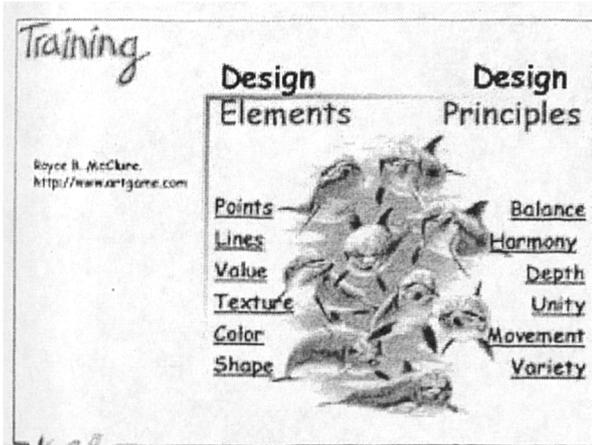
Wait until all the screen will appear; let your students look at it carefully and ask what they have understood from it. Explain them that when we look at things, we think of them, we always do it being “affected” by our culture, background. So, if for example we are “computer-alcoholic” we will think of other things always with the computer in our mind. If a group of people each with different interests, background look at one thing, it is likely that we will all see it in different ways. Discuss about it with the students, ask for examples, and challenge them to form groups (i.e. girls/ boys) and to explore something; ask them to compare the results, look for differences. Explain your students that, although these differences are always present, there are some **characteristics** of the objects we observe **that are perceived in the same way by everyone.**

This workshop will introduce the key concepts of design, the design elements and principles.

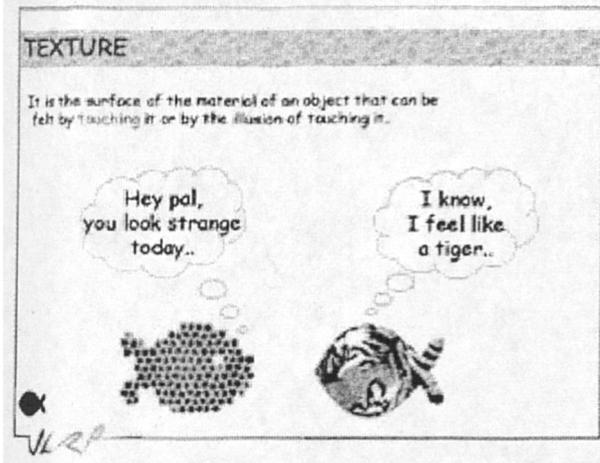
Visual Key-concepts: Elements & Principles. They are normally identified as the visual vocabulary. They provide a common language when dealing with images and prepare us for visual communication.

You can view this on the CD through a series of slides describing what is normally called the “visual language”.

Go to Design elements and principles. You will enter this page:



This is a list of all the concepts that will be described; in the CD you will find a page for each of them. To enter Texture for example, click on the word; you will enter the page:



Again, give time to all the information to appear, let your students read the text and the images. Ask for examples of textures they know or they see around the classroom.

Then shift the attention to architecture. Ask them to

choose a building among those they have seen in workshop 5, go back to it and look for the various materials and their surfaces, that is the texture of the building. Push students to understand why specific materials are used for specific parts of the building, if it is for structural, functional or simply aesthetic reasons.

For example, let's choose **Grimshaw's British Pavilion**, created for the 1992 Expo in Seville, you will notice that the external walls are realised in glass; over them constantly runs a veil of water. Being one of the hottest city in Europe, climate became the theme for Grimshaw's design for Seville.

People in Seville have lived happily for hundreds of years without air

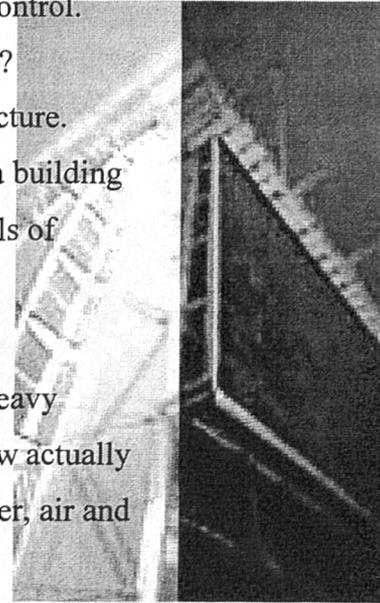
conditioning or indeed any form of technological aids to climate control.

Why should an Expo not respect these values and learn from them?

Grimshaw considered this question during the creation of this structure.

Through the consideration of energy and conservation developed a building with tremendous lighting impact from within as a result of the walls of windows.

In the field of construction, this primarily entails the Lightweight , manufactured materials were used, which are the opposite of the heavy masonry commonly used in hot countries to control heat. Grimshaw actually built is a structure, which harnessed the site's free resources of water, air and sun.



Do the same for all the elements and principles of design.

Exercise.

This exercise is longer than the previous ones; it will involve students in an actual design project through different phases.

It is aimed at making them familiar to the concepts introduced in the previous CD session.

You will challenge them to actually build a building from its foundations to its walls, experimenting with the concepts they have learnt so far, including texture, shapes, colours, forces.

Chose a building from the collection presented in the CD.

We present here a project carried out by three S1 classes in Crookston over a period of 3 hours each.

Exercise. To view a complete case study, go to the First page of the workshop Teamwork and click on

[View the "Crookston Cathedral" project.](#)
(S1)

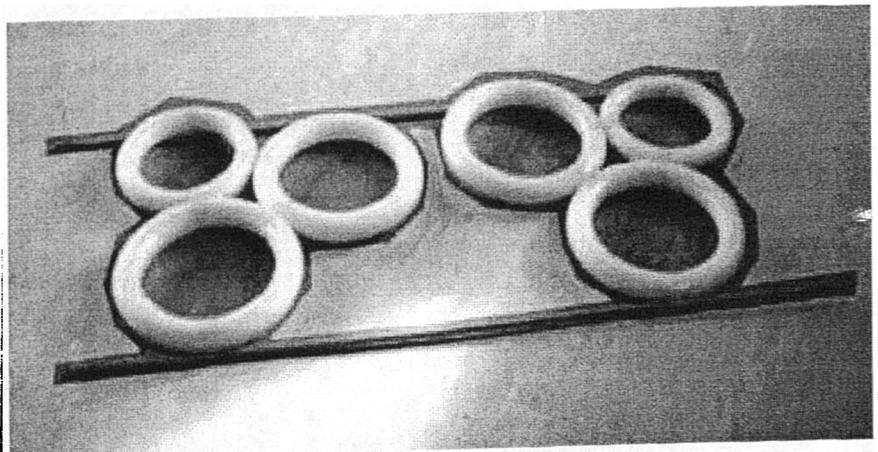
The Crookston's cathedral.

▪ Phase 1.

Gaudi's Sagrada familia is an interesting choice, as allows to explain something more about *structures* (see images on how arches were studied by Gaudi' in the sites suggested), about the *structural system* (skeleton), and *walls* (skin).

We started the "construction" using 6 *polystyrene rings*, *wire* and *cloth-pegs*.

This allowed me to explain how the shape of an arc works according to the entity and position of weights.



At the end of the session we decided for next time to find a way to make the structure rigid so to have the chance to turn it upside-down as the real cathedral. >>

▪ **Phase 2.**

This meeting concentrated on the project of a “skin” for our cathedral.

I have shown them again some slides from the previous times, in particular those referred to the different types of walls and external surfaces.

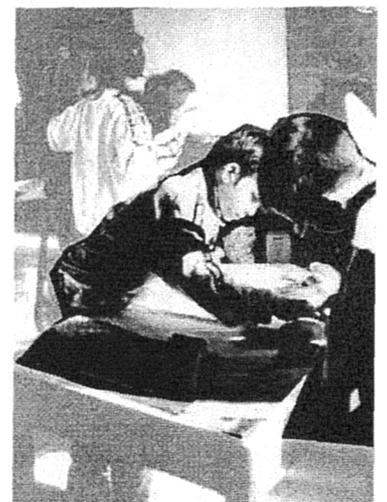
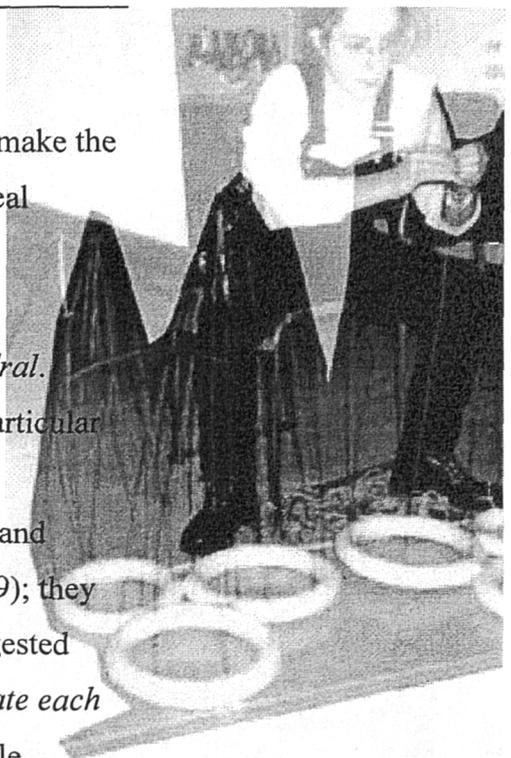
At the end I asked them to look at some panels I had about *colours* and *impressions* (a large variety of them was provided by Glasgow 1999); they were asked to pick some of those colours (one or more) which suggested them particularly strong and pleasant emotions. *They had to associate each colour and emotion to a shape and to a texture*, and design the whole composition within a tile that should become the key point of the skin for the cathedral. They would then draw the same pattern on strips of paper, on which their “shapes” would have become the windows.

The aim of this phase is to build a structure made of iron wire (skeleton-arches) and paper (skin-walls), so to have at the end a 3-D shape that can be looked from the bottom. The idea was to enlighten it within a dark room, so children can look at it perceiving space, lights and colours and how shapes affect them. *Students exploring textures* >>

▪ **Phase 3.**

The last meeting was aimed to summarise the themes treated in the previous ones within the construction of the “cathedral”.

The design features of the previous phase become the “skin” of our cathedral. Each student was given 2 strips of paper, one white rather thick on which he drew the pattern, and a yellow one thicker than the first one on which he/she had to copy just the shapes (copying from the window) of the white one. The students had then to cut away those shapes, glue the 2 strips together and punch them on the top.



All the completed strips were then fixed on the metallic structure of the “cathedral” realised the previous time.



Looking at the structure from underneath gave pupils the chance to



appreciate and perceive a built space constituted by the rays of light created by their shapes (shape → colour → window).

Final evaluation.

Every single student put great effort in completing the final structure. This suggests that architecture can be an interesting subject for children as well; similar projects could be carried out with other buildings, either from the CD image collection or from other sources (why not directly the school neighbourhood?).

The essential approach should anyway be based on stimulating students' curiosity, proposing them challenges (no one at the beginning did believe we could end up with “the cathedral”: this helps them getting self-secure), showing them a good amount of impressive examples they can relate to.

Workshop 7. **ENGAGEMENT.**

This workshop does not include specific exercises with students. It is time thought to think back to what had been discussed so far.

Students have experienced the key concepts of design, the approach to unconventional realities, the struggle to think deep into new visual stimuli. It is now time to **make use of the skills they have developed**; in session 4 in fact will start the real approach to the built environment, aimed at acting on it.

Before “entering the environment” with students though, a few tips to enhance their capacity of verbal and visual communication as a whole should be provided. Students should be able to **discuss** their ideas with words and images together; in session 4 in fact they will be required to defend their design choice in groups.

Visual literacy is about communication as well; actually, the first manifestation of visual literacy is the capacity to read body language signs or gestures (Debes, 1978).

Anthropologists have suggested that man used the body sign language for communication much before sounds, writing and even drawing.

Many studies have been carried out on the observation of chimpanzees; they demonstrated that chimpanzees use body language to communicate with each other in their natural state. When chimpanzees are culturally exposed to systems of signs language conventions, they can internalise such signs and use them creatively. From this, researchers suggest that visual literacy, from an evolutionary standpoint, may have preceded man.

In particular, studies on the development of young rhesus monkeys (*Macaca mulatta*) (Segerstale 1997) reveals how –virtually- all primate species have an inherent sociality. In this species, the interaction among members of the families are an essential part of the daily life; in particular, they develop a complex number of communication ways to facilitate such interaction. Although none of these non-human species has developed a humankind language, they can communicate a broad amount of information using all their senses. It has been demonstrated than

Macaca mulatta. Facial expressions of young macaca mulatta: surprise, curiosity, fear, anger. Segerstrale (1997: 135).



many human channels of communications derive or are at least largely homologous to facial communicative repertoires of monkeys or apes (Segerstrale).

We will focus now on exercising students’ visual communication capacities, by stimulating their reactions to environmental scenarios because visual communication (perception, interpretation and critique or, as presented in the previous workshops, “looking visuals –thinking visual –talking visual”) can help or enhance the verbal expressions of unsatisfactory (environmental) conditions as well addressing suggestions and preferences.

Exercise.

Present students with the images they have used in workshops 3 & 5. Ask each student to select only one image (either from those they have filled the form of page 15 (ugly/ beautiful) or those in the CD. Keeping their image secret to the other, ask your students, one by one, to describe what they think of their image without using words to the others.



The others will have to find out the student’s real opinion. This exercise should stimulate **confidence** and **mimic capacities**, useful in the following workshops.

These are students of a P6-P7 experiencing a similar exercise.

Workshop 8. CHALLENGE.

Let's think back to the phases we have been through so far within the previous 7 workshops.

Visual thinking: the ability to transform thoughts, ideas, and information into all types of pictures, graphics, or other images that help communicate the associated information.

V. thinking. See workshop 1.

Visual communication: when pictures, graphics, and other images are used to express ideas and to teach people.

V Communication. See workshops 2-3.

Visual learning. The process of learning from pictures and media. Visual learning includes the construction of knowledge by the learner as a result of seeing the visual image.

V Learning. See workshops 4-6.

Through the exercises suggested, students have been stimulated to use **images as communication channels**; they have **extracted information from** visuals interpreting what existed already, and they have **included information within images** to communicate their ideas to others.

V Stimulation. See workshops 5-7.

They have moreover been exposed to a large variety of visual stimulation through the images-collection in the CD; the variety of such examples is by no means of common experience. All the examples are unique, interesting, curious, masterpieces, critical. They are meant to stimulate debate, interpretations, and discussion.

Why all this interest on **visual perception**? Is a perception something that happens automatically? Or is it something that requires thinking and mental effort? If we look on the dictionary, **to perceive** means *to become aware of something through the senses*, while a **perception** is *the process by which an organism collects and interprets information from the external world through the sensory receptors*.

The importance of perceptions. Definitions from The Collins English Dictionary.

When we perceive something then, we 1) **get information from the outside** and 2) **then do something with them**.

It is important to make sure that both these phases take place in a way that makes the best out of what is available (information and analysis of those information).

There is big risk thought: perceptions happen so fast that we risk not to have enough time to do things correctly...Gregory (1998), a neurologist, an educator and researcher on perceptions, calls perceptions “built hypothesis”.

Hypothesis. It is something we consider true, on which we base other ideas.

For him, perceiving things is like **“betting”** on the probability that they are as we see them, our behavior is conditioned by the constant anticipation of **what will probably happen**, rather than by the reaction to what really happens.

Betting on things...Is it the same for everyone? Think on those people who bet on a horse race. If they spend all their day at the stadium, they will be **experts** in horse racing, they will know perfectly which are the best horses, and they will have many more chances to win than the boy that for the first time in his life bets on a horse, and that does not know anything about horses!

The boy does not have any knowledge on horse racing therefore he will likely lose a lot of money.

If you think of perceptions in this way, you understand that there is a **big risk when we try to bet on what is around us before we actually look at it with attention!** Our bets derive from our background, our experiences, and the ideas we connect to other things. The wider these are, the less we need to actually look at things to see them. But such experiences, background, ideas must be developed and trained.

Betting on what we see means **that vision cannot be ‘absolutely perfect & infallible’**; from here, the necessity of making the best out of the information derived from the external objects.

There is actually a big difference between **looking** at things and **seeing** them.

Through this programme, students have been pushed to **see rather than just look**, because they have been through a series of steps which has

exercised their attention, curiosity, questioning with a purpose. They are **active observers** rather than **passive observers**.

Exercise.

Here follow curious exercises for the students; they are visual illusions, to demonstrate **that what looks something can be something else.**



Show your students the following images from the CD, for 5 seconds each, and ask what they represent.

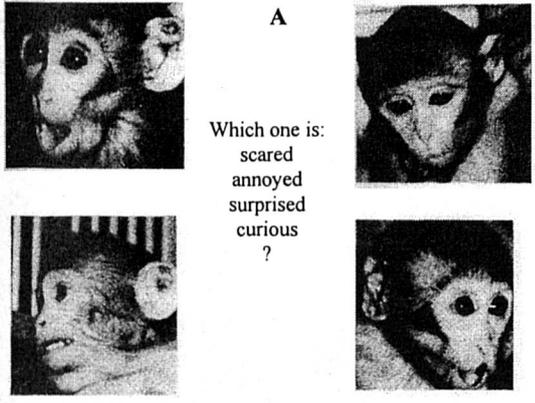
Then, give each student the annex page, which contains the 6 exercises.

Ask your them to observe each image, and answer the questions. Compare together their first answers (after the 5 seconds exposition), to those given in the filled forms.

Visual Illusions.
Images from Breckon,
C.J., Jones, L.J.,
Moorhouse, C.E. (1986)
Visual Messages. An
introduction to
graphics. David &
Charles Pbl., UK.

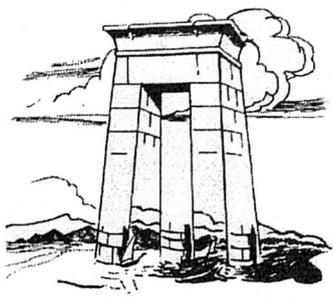
Your name & age _____

A



Which one is:
scared
annoyed
surprised
curious
?

B



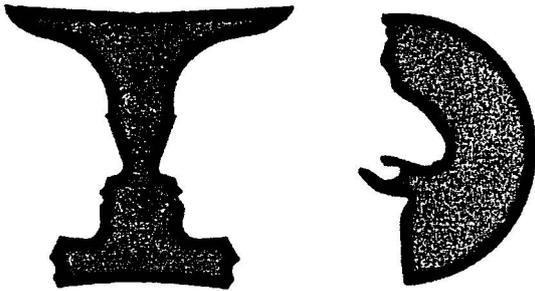
How many different things can you see in this picture?

C



How many different things can you see in this picture?

D



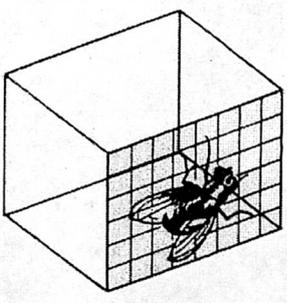
How many different things can you see in this picture?

E



How many different things can you see in this picture?

F



Where is the fly?

Workshop 9. **TEAM WORK.**

We are now getting prepared for the step into the “real world”. The whole series of workshops shall enable students to do something concrete about their environment, either fining out its problems to improve them, or to discover its strengths and enhance them.

In this workshops they are required to test “on stage” all the observational and communicative skills they have learned before.

Exercise.

Divide your students in teams of three persons each.

In section 9 of the CD, is available a set of 23 coloured images of squares, streets and other public spaces.



Assign one to each team, print it and give it to them.

V. thinking. See workshop 1.

Assign one picture. This is the image assigned to a group of three students in a P6. It is a street in the small medieval village of Carcassone, South of France.

Each team represents a **travel agency**, preparing a public presentation to the rest of the class (potential clients) about the place they have been assigned.

Give each team a copy of the annex table.

Item to buy (n)

Imagine you're in the place...

	Does it look SECURE?	Does it give you PRIVACY?	How many things could YOU DO?	Would you be PROUD of it?	What's INTERESTING?
	Y N	Y N		Y N	
Why?					

5 senses	<i>Smell</i>	<i>Touch</i>	<i>Hear</i>	<i>Taste</i>	<i>Sight</i>
Can you use them here?					
Where?					

Forms	<i>F. like other things</i>	<i>Rhyme in shapes, windows</i>	<i>Order in the image?</i>	<i>Differences</i>	<i>Sameness</i>
Can you see them here?					
Where?					

Symbols	<i>Impression place in total</i>	<i>Dominant geometric shape</i>	<i>Does it remind you another place/thing?</i>	<i>Is this place familiar?</i>
Can you see them here?				
Where?				

Place evaluation table. You find it at the end of this section. To be filled and user as an organiser for the group presentation. (Give one to each group)

They are required to prepare their speech using as canvas the table in the annex, which includes a description of the space in terms of:

- Activities and variety of things that can be done in it;
- Sense of security and protection it instils;
- How engaging is the place to a visitor (the senses that it can stimulate; i.e. if it is a small square with café-bars, the smell of coffee, of patisserie can

Below. Robert, Scott and Zoe, P6 and & P7, in the evaluative phase discussing of the properties of their public space.



- attract visitor to use it);
- Its visual attractiveness (variety of forms, buildings, the presence of order or difference within its materials, buildings...);
- What does the place remind to the observer (in terms of past experiences, something from his/her home town..).

This phase requires a good teamwork: each member is required to contribute with ideas in the evaluative phase as well as in the organisation of the whole presentations. Once students have completed the preparation of the brief, they have to present it to the other groups. They can organise the presentation with roles; although each should be encouraged to have the same space and time as the others. It is recommendable that students interact during the presentation, and that the rest of the class intervene with questions and ideas. The winning team is the one that “sells” more tickets for the place they advertised.

Below. Robert, Scott and Zoe, P6 and & P7, during the “advertising phase”. Very good interaction between the three students. A real team-work.



Left. David, Peter and Nicola, P6 and & P7. David, P7 describe the architecture of Buchanan St, Glasgow, and attempts a curious critic of its pedestrian facilities. A very good analysis.



Imagine you're in the place...

--

Item to buy. (n)

Does it look SECURE?	Does it give you PRIVACY?	How many things could YOU DO?	Would you be PROUD of it?	What's INTERESTING?
Y N	Y N		Y N	

Why?

Smell	Touch	Hear	Taste	Sight

5 senses
Can you use them here?
Where?

F. like other things	Rhyme in shapes, windows	Order in the image?	Differences	Sameness

Forms
Can you see them here?
Where?

Impression place in total	Dominant geometric shape	Does it remind you another place/thing?	Is this place familiar?

Symbols
Can you see them here?
Where?

Workshop 10. **URBANISM for youngsters.**

From this workshop on, the attention will shift to **students’ known environment**. They should now be able to look at what is familiar with a different eye than before. They have been provided with the analytical and critical vocabulary and tools to see more than they were used to.

For children’s development, especially in the age when their level of affectibility is still very high and open to every influx (5-12 years), the **home/ neighbourhood and school environment are extremely important**. During this age they work for them as a real “teaching tool” and can be extraordinarily important for their development.

Since children have limited mobility, the immediate surroundings are especially critical to the way they see themselves, yet many urban neighbourhood lack opportunities or safe, imaginative exploration. ()*

(*). Enabling children to Map out a more equitable society, by Dr. Sharon E. Sutton, FAIA College of Architecture and Urban Planning The University of Washington.

These 2 environments are perceived, at a very early stage, as **a net of human relationships, which only at a later stage will be translated into spatial terms**. The space is perceived as the “stage” in which such relationships take place following hierarchical rules.

The “home environment”.

For children around the age of 5-6 years, the *home environment* is perceived as a net of familiar inter-relationships and exchanges; this is their first “social experience”. The interactions that take place with their parents follow rules and patterns that children will soon start relating to the physical structure of the house. The indoor spaces of the house will then be “classified” and organised in the child’s mind. Children will learn the concept of privacy in relation to the parents’ room, that of common space when referred to the living room and so on. At that age they will also learn how to use those spaces and their relative amount of freedom, distinguishing among the activities and the uses of the space open to their free use. They

Privacy: the right to be left alone, free from intrusion or interruption, and the right to exercise control over one's belongings.

will learn to welcome guests into the common areas, to show them the “representational spaces”, while they will be more restricted in the use of the private spaces. Similarly will happen for the outdoor spaces just around the dwelling, but just at a second stage.

This process of “possession” of space constitutes part of the child’s first experiences of life, which introduces him into the world.

G. Rand (Broadbent, 1980) describes, per children’s age period (5 to 12 years old), the meanings and effects that some familiar environment have for them. Here follows a scheme to summarise the findings.

AGE	ENVIRONMENT	MEANINGS attributed to the environment or its parts.	EFFECTS on the child
5-7	house, social symbols, fences, doors, landscaping	No unity, just collage of objects and events. Anarchy of actions and relations.	Physical objects have effects only when allow participation to ritual activities of the family.
8-9		The child recognises distinctions: parents/ children/ society within the house.	The child acquires awareness of the social order of the house and the surrounding neighbourhood.
10-12		The child understands the socio-spatial order of the house and the structural organisation of the family. They make sense of the house forms, understanding the role of each part.	Child’s attempt to use the space according to the social structure perceived. They have recognised a grid of conventions (dos-don’ts and how) and can adapt themselves to many different situations.

Representational spaces: they are the “front” spaces, those we use to tell others who we are, what is our position in the society, through the furniture, the decoration etc.

Social order. The familiar relationships between parents/ children/guests ecc. and their roles and rules.

Exercise.

Ask your students to draw their dream house, including the plans of the various floors, the façade and the rear front. Make sure that, before the real project, they work out a bubble-diagram (see workshop n.4).

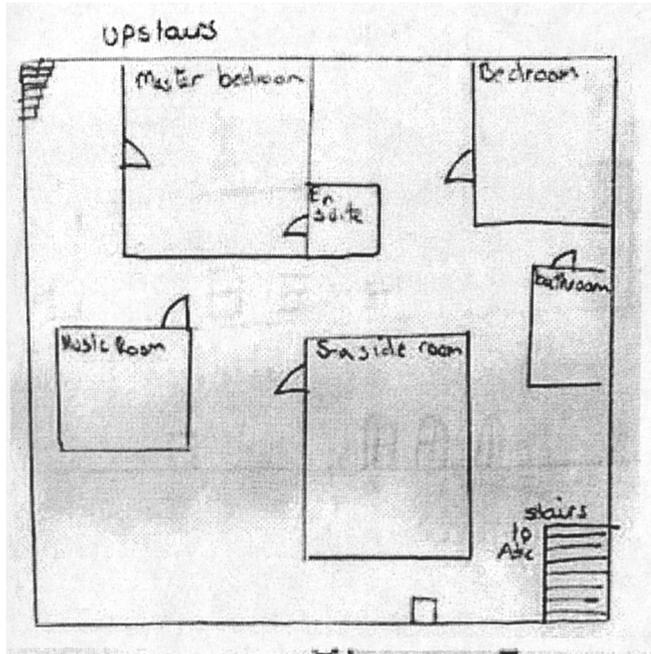
Each room in the floor plan should be named, the stairs to connect the various levels drawn, as well as the windows and doors.

The house garden and other areas can be represented as well.

How to analyse the drawings.

Plans. Analyse them on the base of:

- Functional relationship between rooms and different activities (i.e. a toilet should be close to the bedroom);
- Circulation spaces should allow a good mobility between different areas



without forcing intrusive overlapping.
(Circulation spaces include corridors, empty space within rooms, outside space etc.)

Scott, P6 & Gordon P7

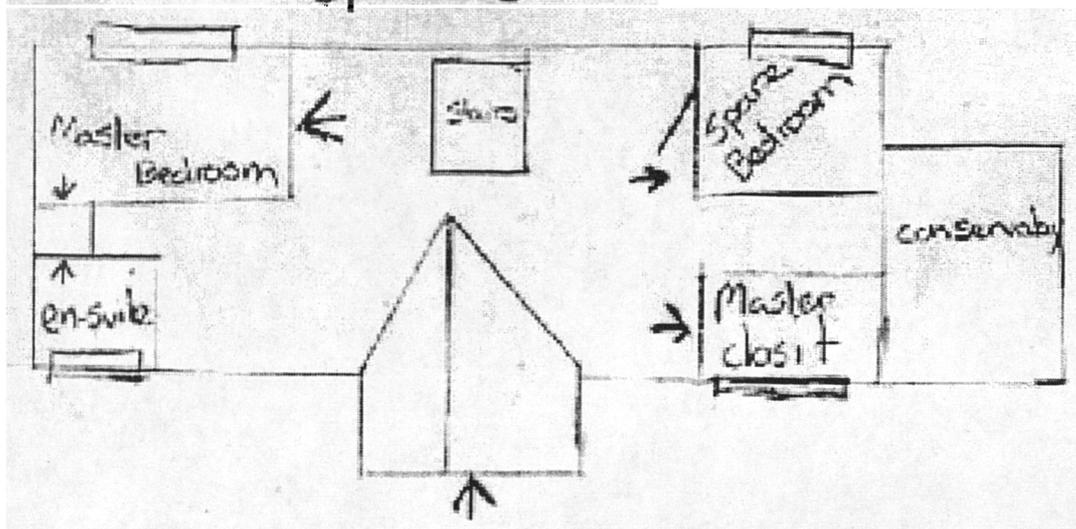
The organization is quite regular, although each room is floating in the space.

To improve this perception, make sure they understand that the bubble room is just a schema, a representation, but it does not correspond to the reality. Instead, talk to them about walls as boundaries of different rooms, of user-space.

Exercise.

Give each student a page, containing 1:100 (1 centimetre equals 1 meter) models of home furniture in plan and the relative user-space.

Ask them to redraw their house furnishing it with such drawing (they have to cut them). User Space = in a house, it is the space necessary to do something (includes the furniture and the space to use it).

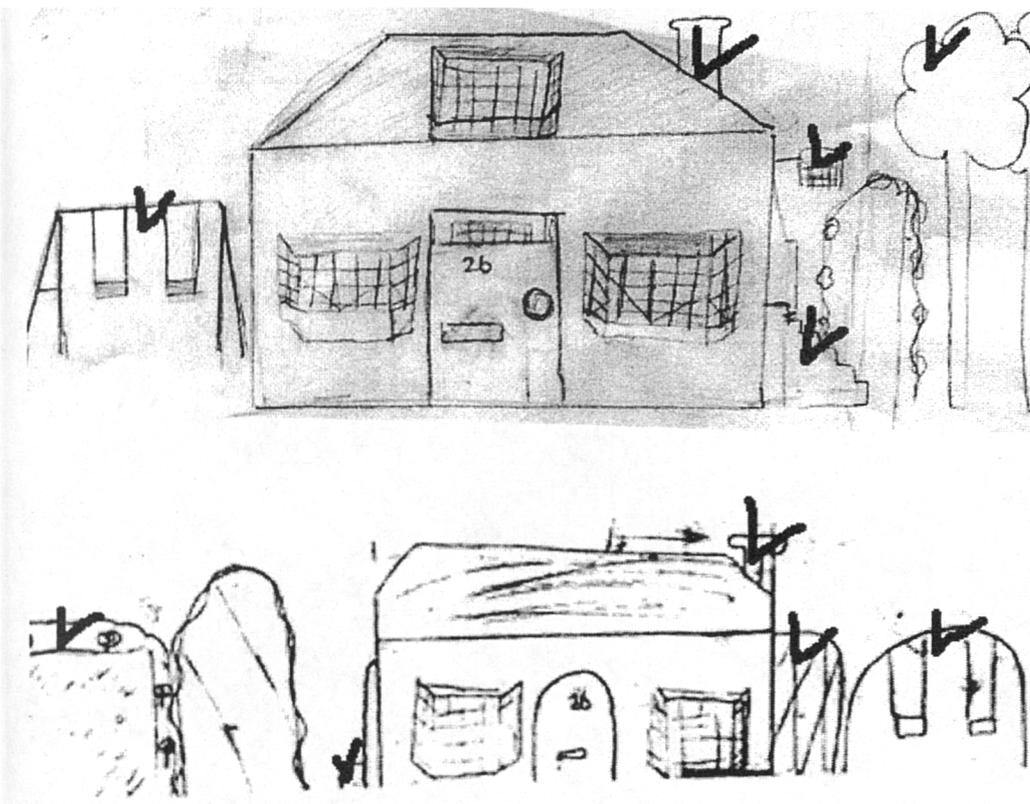


- Decide other criteria with the students.

Front and rear façade.

Through this exercise students will demonstrate their understanding of a 3 dimensional object as a whole. It has been tested in fact that often children, when presented with two different views of the same object, have difficulty in understanding that the different elements of each part are connected and in relation to each other.

This exercise requires thinking of the house as a whole object, where windows, rooms’ layout, chimney and any other appendix are linked together.



Anna, P6 The front and rear representation of her ideal house. In red, the mistakes in turning the object. The main difficulty is due to the of position of elements; although frequently they change shape and dimension as well.

Exercise.

A good exercise to avoid these mistakes could consist in presenting students with 3D objects of increasing complexity, and ask them to move around them representing each side of them on a whole sheet of paper, and then cutting it out and finally join the two extremities. The final object should be a copy of the original 3D one.

The “school environment”.

It is the first real experience of extended public life children have; within it, they will experience again social exchanges and interrelationships, but their number will increase and will lose that familiarity proper of the home environment. Therefore they will have to get used to new spaces and uses.

This environment is the physical context of another important life period of the child, his first “public life”.

The home and the school environment are 2 very important moments in the child’s life, because they can still have a “children-like dimensions”.

With rapid increases in urban population, children are fast becoming important users of the urban environment. Thus, to large numbers of children, the urban environment is increasingly becoming the place to live, the place to grow up, and the place to learn. However, in the face of urbanisation, cities are becoming less accessible to children, less equipped to cater to their needs and to foster appropriate development. (*)

Visit this very interesting web site:
<http://www.uwm.edu:80/dent/cerda/street.htm>

(*).CHILDREN'S ENVIRONMENTS RESEARCH AND DESIGN GROUP
School of Architecture and Urban Planning
University of Wisconsin-Milwaukee
“Urban Children and the Physical Environment: Street and Homeless Children and their Use of the Urban Environment”

Therefore they –especially the school environment- should contain spaces designed *by children for children* which could work as a “bridge” between them and the rest of the world/ city. Such spaces should help the child figuring in his mind the structure of the “adults’ city” –on a smaller and more manageable scale. By starting interacting with the city, its meanings and its forms at this age they should, once grown up, be ready for a civil participation in the social life.

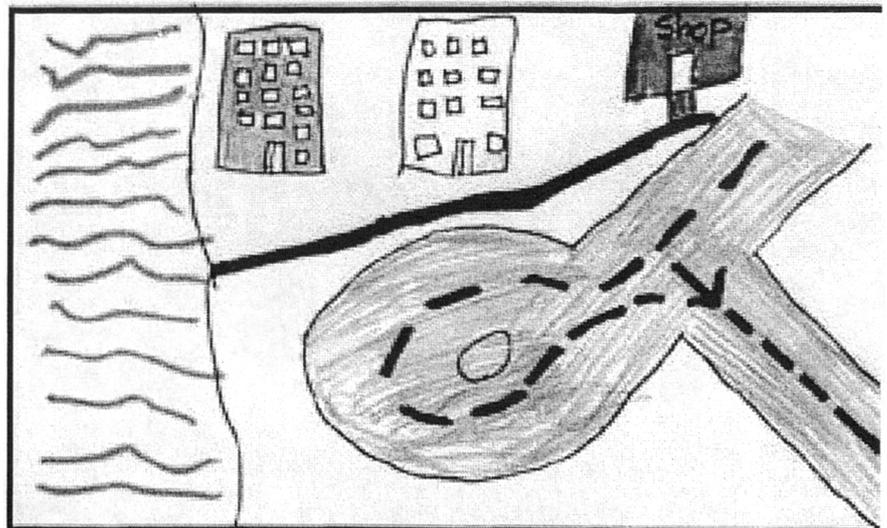
Exercise.

Ask your students to fill the form annex, where they are required to describe (graphically and verbally) a “significant” street around their house (because beautiful or ugly).

The questions are meant to gather information about the reason why the street has been chosen, what are its relevant characteristics, how and when is it used, and finally how does it look like to the student.

Once you have collected all the answers, organise the results to

Below, Rob (P7) was particularly critic to this streets, and he managed to represent the negative aspects very well: boring high-rise buildings, a dangerous street which is a barrier for children, and the river as the only source of distraction and nature of the area. His answers provide further interesting information.



discover what are students' preferences. Concentrate on: the type of space (natural/ urban), if they prefer independence and freedom in their activities (freedom of expression) or more protected environments, if comfort is considered as a significant parameter (look, in their answers, for words like cosy, nice, cool etc.).

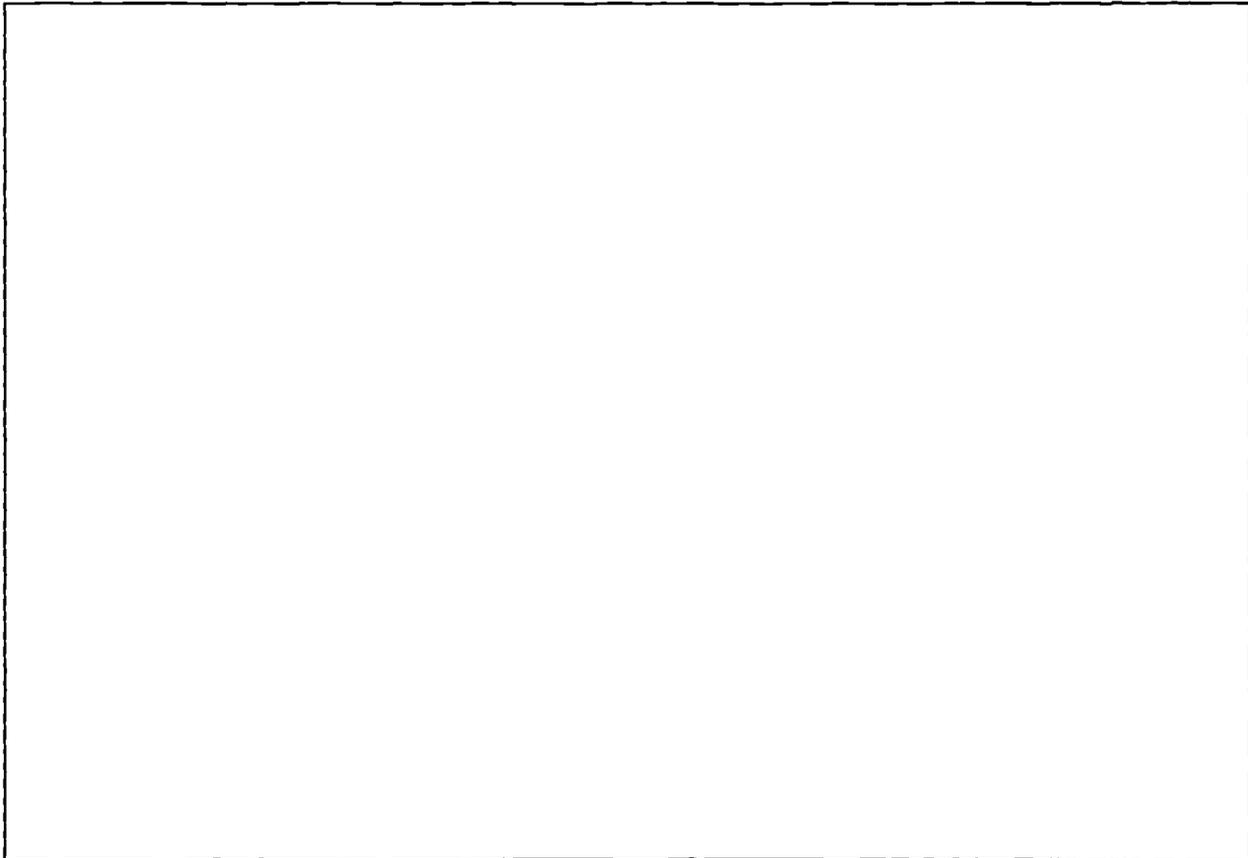
From previous research it was demonstrated that similar surveys could address the design to more user-friendly conditions; for instance, spaces combining freedom and cultural landscape are the favourite of children. The design of immediate home/ neighbourhood and school environment (those children can experience with a reasonable level of freedom) should take in consideration these suggestions.

With your students you could contribute this type of information to planning activities taking place in your area.

Preferences You can get these information from the 4 groups of 15 questions.

Name & Age _____

Please, draw your favourite street close to your house. (It can be a map of the route, or the views of the street as you see it walking or whatever you think is useful to describe it).



Questionnaire. (Answer on the back of this paper...remember to number your questions!!!!).

1. Why do you like this street?
2. What are the differences between this street and other you like less/ more?

3. Are there a lot of trees there?
4. Is it crowded?
5. Is it funny or gloomy?
6. Is there a lot of, or lack of, room for you to walk, run, and play?
7. Is it noisy or quiet?
8. Is it dark or illuminated?

9. How often do you use this street?
10. At what time do you usually go there?
11. Can you go there by yourselves?
12. What do you do in this street?

13. Walking along this street, what do you see? (Shops, parks, houses...)
14. Can you see many buildings from the street? Do you like them?
15. Are these buildings tall or low or of different heights? Coloured? Interesting?

Workshop 11. REPRESENT YOURSELVES.

We have stated the importance of involving youngsters in the design of the environment, or –if not so directly- in providing indications of how they would like to see and use it. How to make the work of single classes useful to planners, designers, architects and landscape architects?

How can your class’s effort be used by another group of youngsters that live in another area, go to another school and use other spaces?

It can be done! And it is easy as to follow a few very simple steps.

Environment. We will, in this workshop, conduce a number of related exercises that refer to 1 type of spaces in the city: squares, streets and public spaces. But you can repeat with any other object, such as housing, bridges, play areas, museums, schools, and rooms. Anything!



K

In the CD, go to section 3 workshop 9 and print all the 23 images of spaces.

- **Print** them full size on a white sheet of paper and make sure the letter on each of them is well visible.

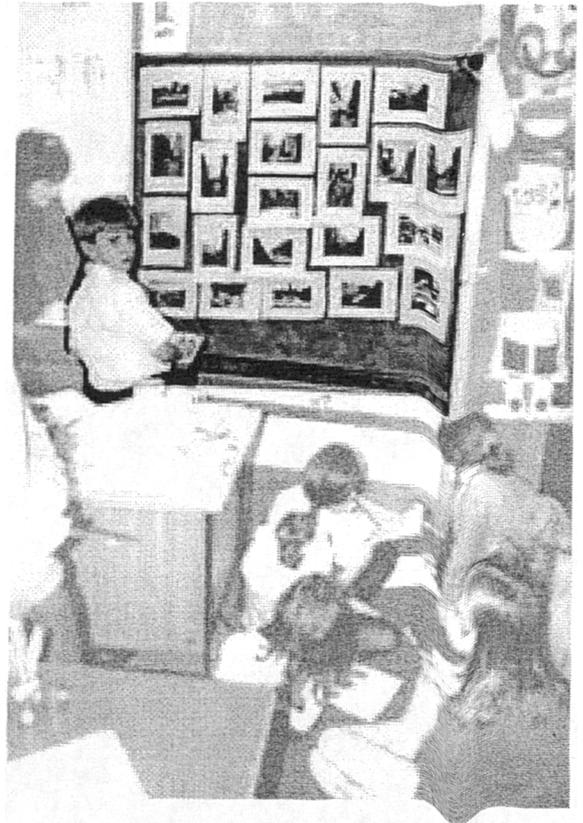
- **Place** all the images on a wall in your class, at a height allowing

to each of them to be equally visible in detail; moreover, assure some free space around, so that students can circulate and get close to the images without disturbing each other. (>>).

Ask your students to **group** pictures according to criteria that they are free to choose and that they find in some of the images; each group can contain as many images as wanted, and each image can be included in as many groups as wanted.

Ask the students to **name** each group. For example, one group can be called “street greenery”, another “illumination”, or “walking space” etc.

Ask them to identify, in each group, the best and the worst picture, on the base of the characteristic of the group (i.e. best greenery, worst greenery).





This phase should take around one hour, and is the first step of an exercise called Multiple Sorting Tasks, normally used in studies on people’s preferences for and

Multiple Sorting Task. To learn more about it, consult Groat, 1979, 1982, Canter, 1988, Hubbard 1994, 1996.

understanding for places. It consists in asking respondents to group a set of elements (an average of 20-30) on the base of similarities among them.

Collect the answers; they should be presented in this form:



Catogonie I want to live in Anna

<u>Plants</u>	<u>texture</u>	<u>amusement</u>
Q ✓	L	F ✓
N	D	Q
O ✓	Q	S
H	F ✓	U
I like these pictures because of there colour. I dont like N because I dont like people.	I like the bright colours against the grey statue I dislike D because theres no colour.	I like how this garden is set out I dont like U because the buildings are to plain and its dull.
<u>Scale</u>	<u>Paths</u>	<u>Variety</u>
R	V	F
L ✓	I	Q
O	Z	H
Z	C	D
E	F	R
D	B	E
H	Q	
I like L because it stands out. I dislike P because there no amusement.	I like E because all the colours look smooth I dont like I because its too dull.	I dislike D because its dull
		I like Fs variety because its got amusement

In the second phase, you will have to organise all the answers of your students. This stage is called content analysis.

First of all, group each category they have invented (on a class of 18 students, there could be an average of 180!) per theme. You can so reduce the initial number of a good amount (30 for example), by putting together all the categories that can be defined with the same name (vegetation, trees, bushes...).

Content analysis. It consists in summarising arguments of concern with different criteria than those chosen by the respondents (Groat 1982), reducing the initial number to a more manageable one.

Here is an example of content analysis carried out from the answers of a P6 and P7’s work. All the categories have been identified by the students; their answers have just been “put together” according to their name.

BUILDINGS	PHYSICAL PROPERTIES	STREET FURNITURE	ACTIVITIES	QUALITY OF LIVING
Buildings	vegetation	Str. Furn.	Amusement/sport	Housing
Buil. Scale	Streets	Statues/ Monuments	Shops/Ing	Traffic
Buil. Texture	Human Scale	Road Signs	Vandalism-Public Image	Views.
Buil. Heigh	Open Space	Seattng sp.	Quietness	
Buil. Material	Balance	trees.	Entertain./cafes	Colours
Balance	Variety of spaces		People	Human scale
	Harmony	Space occupation		Congestion
High-tech		Symmetry	Meeting friends	Parkinh
Design	Variety	Novelty	Cleaniness	Dist. Private/ public.
Crowd (of buildings)	Mainteinance	Diversity	Lively	
Shape	Simplicity	Freedom/ choice	Boring	
Pattern of windows.	Pattern	Type of seats	Brigh	
Pleasantness	Boringness		Amount of	
Building mix	Layout		Excitement	
Contextual infill	Action		Scenery	
Balance	Number of cars		Desolation	
Scale	Busy			
Colouours	Cousy			
Mainteinance	Symmetry			
Open space around	Lights			
Reflection	Freedom			
Heat	Wasteland			
	Quietness			

The advantage of the Multiple Sorting Task exercise is that respondents can express their opinions on things without even having to talk with the interviewer, which would risk to influence the answers, or will ask questions using words that maybe the respondents don’t know. The results are, with the Multiple Sorting Tasks, the **real ideas of people**; the simplicity of this technique makes it good to be used with children, adult people, elderly, anyone on any subject!

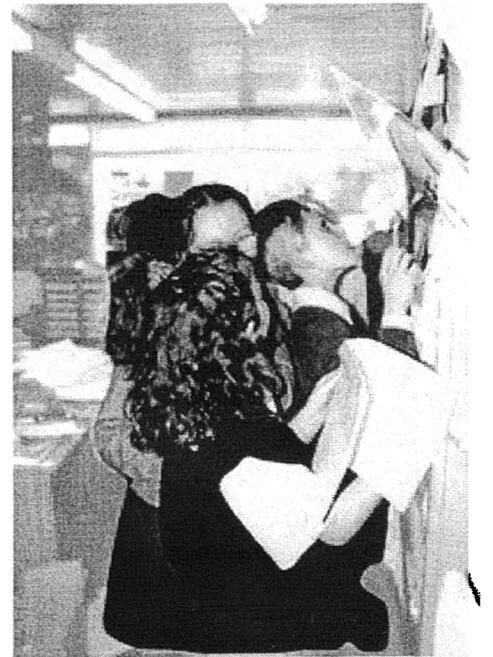
The **final step** of the Multiple Sorting Task exercise consists in scoring, for each category identified in the content analysis, the “preference” for each image (public space, house, school or any other category that has been selected as object of the exercise).

Buildings									
Student	Buildings	Positive	Negative	Building Scale	Pos.	Neg.	Build. Texture	Pos.	Neg.
Anna				RLOZEPH	L	P	DFLQ	Q	L
Catriona									
David F.									
David S.				BJLSRMONPUI	J, I				
Fiona	ISJQERDUCPMTUKNGBZOA	L	A						
Gordon				HSVLIB	S	I			
Jennifer									
Kenya	HJNPT	I	N						
Kimberly									
Kirsty									
Lynne									
Mark S.	ABDFHJPS	J	D						
Maggie				DJLR	RJ				
Nicola				EKMNRSTV					
Peter									
Scott				ABHLSV	L	B	CEJNQUV	Q	C
Siobhan	ABCDEFGHIJKLMNPRSV	L	A						
Zoe									

This is just a small example of how the work could be conducted. Next to each student’s name, write the images he/she included in each category (i.e.: Kenya, in the category buildings, included images HJNPT. Among these, she identified I as a good example and N as a bad example. While she didn’t group any image under the name of “building scale”, therefore those cells will be empty).



Do the same for each category of the content analysis and for each student. Then sum up all the letters in the boxes **Positive** and **Negative**; you will obtain a scale of preference of each image scored on the base of what is important for your students.



You can ask for a copy of a whole exercise developed.

Workshop 12. **EVOLVEMENT.**

At this stage the class should be prepared to develop a project involving the surroundings of the school.

There is a great variety of examples to look at to get inspiration; start anyway from an analysis of the whole surroundings, to identify the “target areas”, that is those that for a reason or another need some “youngsters” touch.

Once the area has been identified (be the class, the school public areas, external walls, parks or abandoned spaces), collect information about it: who uses it, at what time, what is missing, what’s available but is not used....all is useful for your project.

Goodey’s(1977) invented the “**sensory walks**” to get “acquainted with the familiar and to re-examine the world through senses and emotions” (Sanoff 1991:117). The technique used in sensory walks –which you can try with your class once you have identified the area for your project- consist in opening the ‘observers’ (your students) to what the environment offers, by disabling one sense a time, so imposing a stronger and more conscious use of the others. There are various methods to conduct this exercise. A simple and effective one consists in providing the ‘observers’ with a map of the area and asking them to take various routes and discuss immediate impressions of the place. Then to look for a place, sit down and absorb smells, sounds, and other sensations, then walking back to the starting point, finding a place to discuss impressions with a resident of that area, and then –once returned- recording the salient features encountered in the route. The way to record impressions is graphical and based on the assessment of opposites occurring in the townscape.

Then make good use of the answers of Workshop n. 11, especially if now you are working on a similar type of space. In case you are not, you can always carry it on again; for this purpose, collect before good and bad



See
Glasgow
1999’s web
site:

<http://www.glasgow1999.co.uk>
ON/MILL

index
Image from
Glasgow
1999’s
collection of
projects in
schools.

(The
Millennium
Database).

examples of similar spaces around the world from magazines and other sources.

Organise your project following the thinking steps we have mentioned in Workshop 2.

You will have at this point a good background of ideas and suggestions.

Make use of it!

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