
Published paper

Berrett, B. and Hopkinson, P.G. (1991) *Designing with Users.* Institute of Transport Studies, University of Leeds. Working Paper 328

Working Paper 328

January 1991

DESIGNING WITH USERS

B. Berrett and P.G. Hopkinson

DESIGNING WITH USERS

B. Berrett, DIP ARCH, RIBA, DIP TP MRTPI,
Department of Civil Engineering

P.G. Hopkinson, BTech, PhD,
Institute for Transport Studies

UNIVERSITY OF LEEDS

Paper presented at
University Transport Studies Group Conference
Nottingham, January 1991

1. Introduction

1.1 The past 2-3 years has seen a resurgence of interest in the creation of pedestrian priority places. This interest has largely been stimulated by the advent of "traffic calming". There are two important differences however, compared to previous phases of interest in "pedestrian issues". Firstly, the emphasis is shifting beyond the town centre to residential and district centres. Secondly the interest is stimulated as much by `green issues' as by `pedestrian issues', meaning that people's interests are much broader than merely improving conditions for pedestrians.

This new concern has led to fresh attention being focused on the design of pedestrian places and design processes. This attention is not only relevant to pedestrian places. All around us are transport systems, facilities and structures which at some point have been "designed". All too often these extensively researched projects still create dissatisfaction amongst the people who use them. The reasons for this dissatisfaction are numerous and need to be understood in order to provide better work and design in the future.

In this paper we discuss how we might set about designing such places in order to produce satisfaction to these people who have to use them. We argue that the appropriate method should be a user-centred design. We define what this means and compare it with more conventional perspectives/approaches to design. For simplicity we have shown in Figure 1 the essence of the user-centred approach to design.

1.2 The term `design' is used to mean the exercise of a process to bring together all the requirements of the space and an endeavour to satisfy these requirements. Design as here used deals with the issues of function, cost, timing and effectiveness in use. The intangible functions of safety, comfort, attractiveness, visual appearance, respect for location are included, not just the usual interpretation of "Design" by non-designers, who think of it solely as the aesthetic aspects. Design is interpreted to mean an understanding of a continuing process - not just the first design of the

project. But most importantly, here, design means design in terms of satisfaction of the user, not just satisfaction of the designer! The term `user' refers to those people who will have to live, work, shop, visit, walk around, drive through or look at the final project.

Figure 1
Why the user is important

Figure 2
Examples of Information Presentation

1.3 Design skills for pedestrian projects in the past have relied heavily upon architectural preferences, and the values of the individual designer and engineer. In transport planning `quantity based traffic management or other criteria' have been widely researched and offered as inputs to the design process. This tendency has developed without any clear understanding or investigation of whether the criteria or information provided are in fact of any use to the people who have to design a project. There have been limited studies of design processes in other design domains. The conclusions from the studies indicate that designers rarely have time to refer to published studies or documents when trying to solve a problem. Even at a detailed level designers prefer to use only a small and random selection of publications. Secondly that designers prefer certain forms of information which can be presented to designers. The information on the left is in a form which we refer to as `design guidance'. The information on the right is in a form which comes from an `evaluative tradition' (see Figure 2).

The term "Evaluation" is very much a current buzz word originating from the PPBS corporate management systems of the 70's. Now seized upon by policy planners and academics (ie those not responsible actually to build things against time-budget and politicians!). Its attraction to this group of professionals lies in its tidiness and completeness of its systems. However an evaluative approach spends a great deal of time on the shaping of standards and the means of their measurement, with little concern for their appropriateness, application and relevance.

There is an additional fundamental problem however - there has to be something first to measure! It takes time to implement a proposal and having been implemented it has to be evaluated and the evaluation then conveyed in relevant terms to the designers. Unfortunately, this cycle is so slow that much evaluation information is likely to be out of date or inappropriate by the time it is available for use (see Figure 3).

The present dominant position of evaluation-based approaches is due in part to the engineering background of many transport professionals and the special emphasis on quantitative forms of analysis and techniques which accompany this tradition. What a designer really needs is responsive and interactive process advice (see Figure 4). Evaluations by very nature are at present quantitative rather than qualitative, analytical rather than creative and standard-oriented rather than responsive to varying circumstances. To make clear the distinction between user-oriented design and evaluation led approaches we have characterised the two approaches in Figure 5.

1.4 Typically the views and attitudes of the user are collected through standardised survey techniques and seek to derive an understanding of the needs and priorities of different groups. Or more usually, because these attitudes are not easily analysed and quantified by current quantitative approaches they are deemed too difficult or more usually too "subjective" and therefore ignored.

This faith in such carefully conducted research rests upon two key suppositions. Firstly, that it is possible to formulate the options to be presented to actual users for their choice, and that their needs and aspirations can be captured through standardised or semi-structured questions and answers. Secondly, that the designer, planner, or architect actually understands or finds useful the quantitative data from such studies. We have already commented on what form of information designers generally find useful. In the remainder of the paper we examine how people's needs and aspirations might be better incorporated into a design process. First however, we must consider some possible objections to a user-centred design process.

Figure 3
A typical pedestrian priority project - a process approach

TIME	
	THERE IS A SITUATION
	It worsens
	A "problem" is perceived
	Resolution to "do something"
	What?
	Define problem
	Whose problem?
	Where?
	When?
	Who deals with "it"?
	Agree "problem" is defined
	"Solutions"
	Consequences of "solutions"
	Timing
	Politics
	Money
	Agree on a "Solution"
	Agree to act
	When?
	Action takes place
	Implementation
	Disruption
	Completion
	New situation created
	Reaction
	Problems
	Satisfaction/Disappointment
	Modification
	Management
	Maintenance
	"Erosion"
	THERE IS A SITUATION

Figure 4
Responsive design

a.

b.

c.

d.

Figure 5
Characteristics of evaluation led and user-centred design process

Engineering/evaluation	User-centred
Policy oriented	Practical design
Concerned with what happened	Concerned with continuing processes, plans, next steps
Time lags between design and user-reaction	Continual up-date of user reaction. Responsive
Concerned with quantitative measures, thresholds (and `purity' of methodology, sample and analysis)	Concerned with design guidelines, often visual or experimental or experiential material. Appropriate to location, user group, culture
	Primary interest in meaningful and usable information
Communication by words/numbers often survey based - ignore gender, class, educational differences	Communication often visual/tactile - often imagine model-based - concerned with differences in abilities and capacity
Spurious accuracy	
Emphasis on thought/mental phenomena, "rationality"	Emphasis on feelings/intuition, common sense
Data collection analysis and interpretation as separate stages	"Ownership" "Turf" Design seen as simple continuing process (Issue-Design-Implementation -Issue)
Professional as Doctor	Professional as facilitator
Maintains professional-client expertise differential	Removes stance of professional expertise
We know best	"Can we help?"
Conflict seen as problematic	Conflict seen as inevitable and healthy
Combative stance	Negotiative stance

1.5 The change in emphasis from an evaluation-led approach to a user-centred approach to planning and design will understandably raise many voices of concern or objection, not least from those who have developed careers and professional expertise in the former. The greater involvement of users in decision-making and design processes are typically opposed for a number of reasons. Below we discuss some of the more frequently heard criticisms and complaints.

(1)"It delays the project"

A frequently heard objection to user-involvement is that it delays the project. Generally this means that consultation is time-consuming and raises possible objections to proposals which could otherwise be administered quickly. There are three counter arguments to this. Firstly, that when people are not consulted or involved, or, are consulted in inappropriate ways, for proposals which affect their interest, then there already exists mechanisms in the planning system which can lead to delays whilst those objections are heard and negotiated.

Secondly, that involving the people actually affected by a project or proposal does not automatically mean that decisions are delayed. Indeed, there is evidence to support the view that decisions are processed more quickly when people are actively involved at all stages.

Thirdly, that if people are not involved, then it is likely that the final project will lead to dissatisfaction, and a lack of commitment to the final project.

(2)"People can't agree amongst themselves so what's the point?"

Closely related to the perceived increased delay issue is the view that the more people that are involved in a planning or design decision the less likely it is that an agreement will be reached. This leads to the tendency to keep the user at arm's length from the intricacies of the design and planning process or to involve people late, after certain key decisions have been taken. That people hold different views, have different interests and do not agree are facts of life. This does not mean that agreement cannot be negotiated or mediated. Mediation involves compromise and compensation. However, planners, designers and architects receive little or no training in such skills and hence to have efficient participation requires new skills on the part of the professional designers and planners.

(3)"Its impracticable to involve users at a detailed level"

By their nature transport projects and proposals tend to affect large numbers of people and therefore to consult large samples of people, standardised, easily quantifiable market research techniques are used. As we have noted this tends to produce information that is seldom of use to the designers, and seldom captures the real attitudes or aspirations of those directly affected. Moreover, the more superficial the views and attitudes captured, the less likely that the person will understand or feel in any way responsible for the final

project.

It is a common fallacy that involving users in design requires all affected persons to be involved at all stages. Not everyone wants to be involved. Some may be content, initially, to have their views represented by another party. Clearly as the project size increases the number of people who we might want to involve grows accordingly. This is partly the reason, why participatory design has tended to operate at a certain project scale, often an individual building, a site of a few acres or a single street.

There are examples however where user-centred design has taken place at a much larger scale. We refer to these at the end of our paper.

(4)"It preserves the status quo"

A view commonly expressed by designers is that involvement of the public in design is that peoples' aspirations are limited to the familiar. Moreover because there are differences of opinion that what emerges from the involvement of users, for the sake of agreement and expediency, is the lowest common denominator and consequently lacks "quality". Whilst it is undoubtedly true that people's initial thoughts tend towards the familiar and the known, that part of the purpose of participatory design is to enable people to become "naive designers", to release their imaginations, creativity and aspirations. The traditional methods of consultation, either by normal market research methods, public meetings, or sessions `round the table' between professionals and users seldom creates the atmosphere in which people can express their real needs and wishes. In order to overcome people's hesitancies and repressions requires new skills on the part of the professional. These new skills require an ability rapidly to form a working relationship with people with a wide range of abilities and capacities, in fact skill in "technical facilitation".

Moreover, a considerable problem to be overcome is to develop ways by which a project proposal or the views and aspirations of users can be visualised.

Figure 6
Problems caused by differing perceptions

(5) "Where will it end?"

A view often held by those intent on control and prescription is that involving users in decision-making will only create pressure for further involvement and change. This is true. Indeed, part of the purpose of user-centre design is to empower the user to pass over control and responsibility for the environment to those who live and work in that environment.

Indeed, this has been a driving force of the community architecture movement. It does not mean however that local groups, resident action forums etc, suddenly have control over elements of a local authority budget. Rather, institutional arrangements are necessary to ensure that the changing needs and views of people over time (and hence further changes to the environment) are able to find expression and be acted upon to avoid the initial project failing to keep up with changing circumstances.

(6)"People are apathetic, they don't want to be and won't be involved"

The view of the tired professional, the cynical resident or the sceptical funding body. Time and again a poorly attended public meeting, a low response to a questionnaire is blamed on public apathy. This loss of confidence in participation is more likely however to be a result of inappropriate methods, organisational ignorance, or badly planned or executed participatory approaches.

In the past attempts at participatory planning have often been set-up and tested with a series of conditions attached to them - a series of `ifs' and `buts'. Nothing kills public confidence and commitment to participation more than hesitancy. Most people lead busy lives or have a range of preoccupations that require attention. To draw people out into a `participatory' design process requires more than a promise which cannot be kept. The good will and willingness of people to take part in discussions can only last so long before optimism turns to cynicism and hope turns to pessimism. An attempt to conduct a small-scale participatory transport planning exercise in a nearby town by the Institute for Transport Studies experienced this problem. Not only could we not promise to act upon the preferred actions of the local population, but many people had experienced similar exercises in the past that had come to nothing.

2. What is User Centred Design?

2.1 Given the previous discussion about the `value' of user-participation in design, what might such an approach look like.

The clearest local examples of user centred design come from `community architecture'. The best known example of these is the `Planning for Real' process (Gibson, 1979).

`Planning for Real' is a resource pack developed as part of a larger `Education for Neighbourhood Change' programme at the University of Nottingham School of Education. `Planning for Real' allows different groups in a community, youth groups, schools, residents, action groups and members of the local planning department to construct a `model' (3-D not computational!) of their neighbourhood.

Despite its crudeness the model is a repository of local knowledge and experience. The model allows people to take a birds' eye view of their local area at a glance.

The model serves to encourage people look at the area in a new way and exchange information in an informal and relaxed atmosphere.

People do not just look at the model however. As part of the resource pack there are a number of `option' cards - zebra crossings, new facilities and so on. Each person can take as many options as they want and put them wherever they want on the model. This allows people the opportunity to express their wishes and needs simply by placing a piece of cardboard on the model. This is important as it avoids the need for people to write down or express their views verbally; requirements which tend to be inhibiting to particular sections of the community. Voicing an opinion to everyone else tends to take on a sense of commitment in the ears of other people which then makes it all the more difficult to retract at a later stage.

Ad hoc working parties then begin to work on problems which can continue over a number of sessions. The working parties' brief is to establish priorities and negotiate with other groups when there seems to be a clash of interests. The evidence suggests that these clashes and conflicts are readily negotiable within the group and that people come up with responsible solutions to the conflict.

The process has been widely used in many small-scale community development exercises over the past 10 years. The approach, however, is not limited to `small project'. A recent example of the method in use occurred in Leeds. Here the newly appointed Urban Development Corporation produced a `master-plan' for a 250 acre site in a `green' site in Inner City Leeds. The proposal included new transport infrastructure, retail development, housing, dinosaur park and business park. Local views were canvassed via `public' meetings and door-to-door market research. Residents action groups in the area were horrified by the proposals and enlisted the `Planning for Real' process to produce a new plan for the area. The old UDC plan has floundered. A new plan, containing many features derived from the `Planning for Real' process has been produced by the UDC.

2.2 `Planning for Real' represents but one approach to user centred design using 3-D models. The merit of the 3-D model is that it allows the user to visualise an area, a building or a project at a glance. Such models however can have drawbacks. For some classes of user they may lack realism or accuracy. Indeed, an often heard criticism about public consultation concerns the `artists impression' of an area before and after a project has been implemented.

Local people who live in an area often find such `impressions' miss out important detail and information and thereby cannot be taken to be a realistic assessment of the project. Such a problem was encountered in a recent major urban re-design

project in the USA. No amount of models, artists impressions or photomontage could convince a set of local residents and politicians about the possible merit of a project.

Purely by chance the author (?) came across a graphic designer who had developed a `visualisation' tool which enabled the designer to acquire and import photographic images, plans, sketches, maps, archive materials and other forms of visual material to a computer system and be modified and `modelled' on a screen by the designer or a lay-person.

The system operates by digitising images which can be segmented, divided up into components, taken out of the scene, copied or colour rendered. New features such as buildings, vegetation or structures can be superimposed on the initial scene. Copies of the finished image can be reproduced, colour copies or else sent to a large screen capable of being viewed by an audience. The local residents and politicians were invited to `participate' in the urban redesign project and develop their own inputs to the design. Within a week a decision to go ahead with the project had been made. A research proposal to develop and extend a visualisation tool for use in participatory design has recently been developed by the authors along with colleagues at the Institute for Transport Studies.

2.3 Beyond the modelling/visualisation approaches to participation there are many interesting applications and approaches developed, often in the USA, New Zealand and Australia. The important point about these developments is that they are different from each other evolving in their own cultures and contexts and to meet the particular issue in hand. In San Francisco, for example a participation exercise was undertaken as part of the redevelopment of the Mission Bay area of the city. Various plans and proposals for this area had been produced over the past 20 years, always ending in dispute and acrimony between different parties and vested interests. A team of consultants, specialising in participatory process, was called in and asked to produce a new plan for the area. The consultant sent out to involve all the vested interest groups in the City in the formulation of the plan. An important feature of the process was the re-reading of all the past plans and policies to establish what had caused problems and what had not worked. A centre was established on the site where workshops were held working on the needs and preferences of different groups. The centre was open for 7 days a week, to allow all interest groups to attend at any stage in the plan formulation. All groups/individuals were kept informed of developments via a Newsletter. The participation exercise lasted 3 years. The important point however, is that a final plan was produced, with agreement of all parties.

2.4 A similar exercise, although over a much shorter time period, has recently been carried out as part of the redevelopment of downtown Greenville in North Carolina. This area was not a derelict run-down area but a mall area, constructed 10 years previously that had failed to fulfil the needs or wishes of the City residents and had accordingly become sterile and lifeless. A team of design consultants specialising in participatory design were called in to orchestrate an innovative participatory design process. To quote the words of the local mayor of Greenville "the process has taken about six months and the results have been nothing short of astonishing. It is particularly exciting because each of us feel deeply involved in the process". Presumably, not the comments of a man stopped in the street and asked if he has a

few moments to spare to be asked some simple questions.

There are numerous other examples of participatory approaches to design which have produced similar reactions and results. The purpose of this paper is not to catalogue them or list their feature, rather to say that they exist. The important question is why such approaches are not more prevalent in the UK. One of the major reasons is the lack of professionals or consultants with skills or experience in this area, or the British tendency to mistrust the non-verifiable or the subjectivist.

3. Conclusions

In conclusion this paper has outlined what is meant by user-centred design. The evidence from examples using such approaches are that people become more involved in and committed to projects, and more satisfied with the final design.

In order for such an approach to become accepted and more widely used however, requires a number of factors. Firstly, it requires the support and backing of those organisations with major responsibility for the management and redesign of environment. This is usually the local authority. It is encouraging to note that through the `STEP AHEAD' initiative, headed by Transport 2000 that a number of local authorities are beginning to show interest in the process of design of pedestrian places and the greater involvement of users in that process.

Secondly, it requires that professionals are trained in participatory skills. We have discussed the concept of design guidance in this paper to refer to usable and meaningful information. Professional designers and planners also need guidance on how to involve people in design, to be sensitive to the needs, attitudes and aspirations of different users. This requires that the professional attitudes and stance of expertise, control and prescription are dropped and a new language of communication, listening and negotiation is created. In this sense a user-centred approach to design may be analogous to that of the counselling profession. The professionals could add to their expertise in technical, and compuational matters a greater understanding of users, their attitudes and feelings. The concept of "technical facilitation" ("facilitation" that is developed from `counselling' and personel management skills).

It may be argued that a `counselling' approach is not realistic, and that it is middle-class or trendy. This we do not accept. The origins of counselling lie in acute human crises, and it is practised by those who have first hand knowledge of the real pressure of modern life.

"A counselling approach is not `authoritarian' and thus might not be regarded as practical, but how could it not be practical when such an approach identifies the hierarchical, bureaucratic and depersonalised attitudes of many of those in power as being a major cause of stress and conflict?" 1.

The evaluation approach has an important role to play, our purpose is to show it is not the only approach. Our research programme is directed to developing the user centred approach. We are sure both approaches will change in the process.

SOURCES

Figure 1 From Alexander, C., et al, THE OREGON EXPERIMENT, Oxford NY, 1975

Figure 2 Powell, J., Is architectural design a trivial pursuit? Design Studies, Vol.8, No.4, 1987

Figure 3 Berrett, B., Hopkinson, P., Research Paper, Leeds University, 1990

Figure 4a From Lynch, K., GOOD CITY FORM, M.I.T., 1981

Figure 4b From Alcock, A. et al, RESPONSIVE ENVIRONMENTS,
4c The Architectural Press, London, 1985
4d

Figure 5 Berrett, B., Hopkinson, P., Research Paper, Leeds University, 1990

Figure 6 See Figure 4b above

P11[1] Gibson, T., PLANNING FOR REAL, Penguin Special, 1979

P14[1] FROM Berrett, B., PLANNERS AND COUNSELLING, The Scope for Counselling or Interpersonal Skills in the Planning Process. Polytechnic of North London, 1981.

PGH/erb (Jan91) DESIGN