Expert and experiential knowledge in planning

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The issue of expert and experiential knowledge has received increasing attention in conjunction with the contemporary surge in interest in post-positivist approaches in planning and policy-making. So far, few concrete methods have been put forward on how to evaluate these two types of knowledge in specific policy-making situations and thereby achieve their balanced use. This paper presents two approaches that can be used to derive expert and experiential knowledge. It describes their application to two case studies, one in Sweden and one in Italy, where expert and experiential knowledge were generated and used in urban development plans. It also proposes a method for evaluating and integrating the two types of knowledge.

Keywords: artificial intelligence; expert system; strategic choice; rational and communicative planning

Introduction

Planning can be very broadly defined as 'the application of knowledge to action'.[1] It has traditionally relied on professional or scientific knowledge, sometimes even been called 'processed knowledge'.[2] The superiority of scientific knowledge has been taken for granted in the rational planning model. Belief in the rational approach goes back to the Enlightenment tradition and was one of the major themes in the thinking of seventeenth century philosophers like Descartes, Spinoza and Leibniz. In the twentieth century the development of planning as 'social reform' and 'policy analysis', the Weberian plea for 'objective analysis' and the widespread trust in 'systems engineering' reasserted the role of scientific knowledge. Friedmann[1] identifies two major assumptions underlying this development: (1) the world is objectively knowable through the instruments of positive science and (2) there is an unbroken line of evolution between the physical or natural world and the human or socio-cultural world. Despite the heavy reliance in traditional planning on scientific knowledge, it was not exclusively a technocratic exercise. As Thorgmorton[3] has pointed out, even the techno-rational knowledge is part and parcel of the planning rhetoric. With the recognition that planning was not purely a technocratic process, the role of values[4] and 'personal' or 'experiential' knowledge[1] in planning became widely acknowledged even in the rational planning approach.

Although the rational paradigm still plays a role in planning research and planning practice, an alternative paradigm based on the post-positivist view of knowledge and science has implied that the old conviction about the role of scientific knowledge has become less and less tenable. Lindblom's metaphor of the 'probing society'[5] implies that scientific knowledge provides only a part of the basis for good judgement and sound decision-making. An important factor in the shift in this view of knowledge is the constructivist notion about social problems. The latter states that reality is socially constructed and that there is a multiplicity of causes and effects. In this context the theories by Foucault and Habermas have had a major impact on the need to look at knowledge constructed through discourse. These theories have played an important role in the recent development towards the 'interactive' or 'communicative' approach in planning research which has extended the awareness of the significance of multiple forms of knowledge.[6-8]

The revision of the rational planning model has also played a major part in our understanding and analysis of ecological and other issues incorporating a holistic systems view which links nature to society[9] and explores the instability of dynamic systems and the irreversibility of natural processes.[10] Recently, a new paradigm of complexity has emerged. It stems from a number of scholars in different fields and overcomes the old discipline barriers which still exert influence in the planning domain, for example, in epistemology and sociology,[9,10] in biology,[12,13] in chemistry and physics,[10] in logic and computer science.[14,15] Even in these 'hard' sciences, we observe the abandonment of the views detaching the observer (the object) from the observed (the subject), the disillusionment with the objectivity and value-neutrality of science and technology and the acknowledgement that the logic of our cognition is defined by the logic of our world, in a dialectic relationship.

As a result of this development, strict deterministic spatial models based on high general formulations have

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been gradually replaced, in the planning domain, by exploratory models in which randomness is an essential element in bringing about change. In order to cope with the variety, complexity and dynamics of human settlements and to provide a better understanding of their growth and development, new ideas have appeared involving the science of dynamics based on chaos and functions based on self-organisation.[16,17] At the same time, new advancements in organisational development replace the dominant rational actor model with one emphasising the uniqueness, ambiguity and unpredictability of real world decision processes,[18,19] and the need for adaptive decision and learning strategies interacting with the environment. In these circumstances, decision makers promote their views with the help of experience in interacting in an uncertain but intelligible world; an ability that can be learned and which is crucial for intelligent actions.[20]

With the recognition that planning is an inter-active or communicative process the issue of the interrelationship between expert and experiential knowledge has become crucial. Forester[21] has described inter-active planning as 'organised rituals' where 'deliberating participants' listen to one another, search for new options and learn to find new ways of going on together. Deliberations, searching new options and actions involve both types of knowledge. Communicative planning theory has dual role: that of describing the planning practice and that of recommending normative proposals with regards to organising the 'inclusionary discourse'.[22] However, little attention has been paid to the issue of evaluating and integrating the two types of knowledge. This is an important issue since there is always a danger that one or other of these types of knowledge will be given a dominant position in the planning discourse.

Artificial Intelligence (AI) research has been largely non-social in character, however, there has recently been an increase in interest in approaches aimed at analysing and developing 'intelligent communities'. This includes collections of interacting and co-ordinated knowledge-based processes, and is known as Distributed Artificial Intelligence (DAI).[23] Literature on DAI deals with concepts such as commitment, conflict resolution, negotiation, agreement, which are crucial in inter-active or communicative planning.[24] It is worth noting here that the profound interest in contemporary planning research with linguistic aspects of interaction and communication has been greatly influenced by the 'speech act' philosophers and cognitive scientists.[25,26]

As a result of the post-positivist shift in science, creativity is becoming a field of increasing interest both in planning and AI. Within DAI, Open Information Systems (OIS) adapt and modify their behaviour in the light of 'external' events, as their operation is subject to unanticipated outcomes and open to new information from the outside world. Negotiation plays a fundamental role in OIS semantics too. It is a creative process going beyond

deduction, and is considered a powerful way for increasing the understanding of large-scale OIS-projects.[27] Within case-based approaches, especially in complex real-world situations where complete causal information is not available, routine and creative explanations are both made possible by recourse to the human capacity of remembering old explanations, and adapting them to fit situations never encountered before.[28]

The above mentioned common research areas in AI and communicative planning are one of the reasons inducing us to compare approaches and methods elaborated in the two fields and to explore possible ways of integrating them in order to deal with increasingly complex problems affecting human settlements. It is impossible for this sort of human behavioural research to be objective, or prove anything in a scientific way. That is not to say that it has no value. On the contrary, it is the sort of work which is essential if we are to improve human environment.

The aims of this paper is to present expert and experiential knowledge about specific urban development projects, evaluate the two types of knowledge and propose methods of integrating them. Expert knowledge is derived with the help of AI-method.[29–32] Experiential knowledge has been derived with the help one of the 'problem structuring methods' namely the Strategic Choice (SC) approach as developed by Friend and Hickling[33,34] (see also Rosenhead[35]).

This paper consists of four sections besides this introduction. In the first, epistemological and procedural aspects of AI and SC methods are presented. Then follow two sections presenting the results of two sets of exercises applying AI and SC to urban development projects in Hörby in Sweden and Molefetta in Italy respectively. The case studies are not described in full as our aim is to give the reader a sample of the knowledge generated during the two exercises. The final section of the paper contains an evaluation of the expert and experiential knowledge generated and suggestions for integration in order to achieve a balanced use of the two types of knowledge in planning.

Epistemological and procedural aspects of AI and SC

Derivation of expert knowledge

Artificial Intelligence (AI) is the study of intelligent performance. The focus of the study has been the exploration of how the human brain functions and how people think[36] in order to define analogies suitable for intelligent computer applications. Intelligent Systems can be broadly defined as computer systems which display some intelligent functions related to the associative as well as the procedural memory of the human brain.[37]

One branch of AI is the so-called 'expert system' that involves the acquisition of knowledge from experts and its processing by means of computers. 'Experts' are defined as

'those who have special skills or knowledge in (usually) a fairly narrow and definable area'.[38] They are expected to solve problems which 'ordinary' people cannot cope with. At the same time the expert's way of solving a problem is more sophisticated than that of ordinary people.[38]

Faith in experts and their superior capability to tackle specific issues implies that the expert system (ES), which is only one part of the much larger field of AI, provides a good example of the traditional approach to planning as a technocratic process where 'reason' (read 'scientific knowledge') is assigned a superior position to experiential knowledge. In the face of real-world problems, however, it is sometimes hard to distinguish scientific and technical domain knowledge from experiential knowledge in the expert's opinion. In the planning field, many experts are unable to be precise about the nature of the knowledge they use and put it down to experience, inspiration or intuition.[39]

The acquisition of knowledge from 'experts' is usually considered a bottleneck in building ES. Both epistemological and practical questions arise in the field of AI around this crucial problem.[40] Therefore, we need to present the different qualifications experts possess. On the one hand, an expert has acquired certain types of skills in a specific field over a long period of time. On the other an expert has sufficient and relevant knowledge on a particular object or a field of study.[41]

Three issues deserve special attention when making use of experts to provide knowledge on a particular problem:

1. *The definition of the problem:* How is the problem constructed? Which goals are associated with the problem? Can the problem be presented to the expert in an accessible manner?
2. *Expert's role:* Which questions need to be put to the expert? What is the underlying reasoning in the expert's approach to a problem? How does the expert's learning mechanism function?
3. *Expert's knowledge:* What general knowledge (besides theoretical and technical knowledge) is at the back of the expert's solution to a problem? What is the influence of the expert's previous experience in solving similar problems?[30]

There are also several questions to be answered when trying to decide whether the experts available are suitable for the task in question. These range from the nature of their expertise to their attitude to working together, and their ability to articulate and communicate their knowledge.[42]

The AI approach, as used in the case studies described in this paper, is based on the assumption that the expert makes use of his/her professional competence to deal with the problem on the basis of the background information provided by the client as well as experience from similar problems which the expert has been confronted with previously. However the expert 'does not possess absolute rationality, and cannot therefore acquire thorough informa-

tion on the problem. The expert can, however, achieve satisfactory solutions by inquiring into the characteristics of his/her research area through a gradual process of adaptation and learning'.[30]

The literature in this field lists a number of ways in which knowledge can be elicited. Each of them has advantages and disadvantages with reference to the context and situation at hand as well as to the expert involved. They range from informal interviews or interviews using some specific techniques, presentations by the experts, and verbal protocols, to participant observation sessions and simulated consultations.[42,43] In using the first category of methods, knowledge is collected by posing questions to the expert, in the latter it is possible to observe what the expert actually does, and to grasp the non-formal and tacit sides of expert knowledge[44] as well as the contextual knowledge as it is expressed in operational situations.

Only the first type of AI approach was used in our two exercises. It involved several steps:

1. The identification and choice of experts with relevant knowledge on the specific planning issues dealt with in the case studies. Since the exercises involved the use of two or more experts, a comparison of their professional background was important before assigning them the task of providing knowledge on a specific planning problem (see for example McGraw and Harbison-Briggs,[45] for further discussion about the selection of experts).
2. The presentation of the background material on the planning problems in an accessible manner and letting the experts have enough time to study and reflect on the problems in question.
3. The acquisition of knowledge from the experts in face-to-face meetings or other forms of sequential interactions. The number of interactions depends on the complexity of the problem that is being analysed (see Medsker et al,[46] for a further discussion on this issue).

The interviews with the experts were carried out by a person capable of getting the expert to explain how he/she approached the problem and how appropriate knowledge was used. An unstructured interview might give unsatisfactory results as the expert might unconsciously jump over several stages in his/her mental reasoning. Therefore, it was considered necessary to direct the interviews to some extent in order to ensure that the expert explained all the stages in his/her reasoning. In order to structure the knowledge provided by the experts, it was necessary to start with broad questions before going on to more specific ones.[29]

4. The evaluation of the knowledge provided by the experts. A sequential interaction made it possible to amend the knowledge obtained during the AI exercise. However, knowledge was also evaluated by the client prior to it being put into practical use.

Experiential knowledge through strategic choice approach

The strategic choice approach is one of the six 'problem structuring methods' which belong to 'an alternative paradigm' in decision theory. The characteristics of the alternative paradigm have been described as follows:

- 'Non-optimising; seeks alternative solutions which are acceptable on separate dimensions, without trade-offs.
- Reduced data demands, achieved by greater integration of hard and soft data with social judgements.
- Simplicity and transparency, aimed at clarifying the terms of conflict.
- Conceptualises people as active subjects.
- Facilitates planning from the bottom-up.
- Accepts uncertainty, and aims to keep options open for later resolution.'[35]

The strategic choice approach has been primarily developed to help users in making 'incremental progress towards decisions by focusing their attention on alternative ways of managing uncertainty.'[47] It is both interactive and participatory in its make-up.

The strategic choice approach is interactive in the sense that it allows communication between participants 'through exchanging perceptions and understandings and through drawing on the stock of life experience.'[48] The method rejects the traditional decision methods' norms of 'linearity', 'objectivity' 'certainty' and 'comprehensiveness' and instead prescribes 'cyclicity', 'subjectivity' 'uncertainty' and 'selectivity'.[33] This makes the approach a learning process where a linear sequence of decision stages is replaced by 'a more flexible set of possibilities for movement between one mode of decision-making and another'.[33] It becomes an 'adaptive process of *route finding* with many possible paths among which to choose'.[34] The strategic choice approach is participatory in the sense that it dismisses the conventional decision-theoretic idea of 'seeking reactions to well-formulated proposals, which it is too late to influence in any fundamental way'. Instead it is organised as an interactive process in which 'a high level of creative feedback can be realised'.[33] The emphasis is on 'the gradual accumulation of confidence among participants that they are moving towards decisions which are soundly based'.[34] The strategic choice approach introduces a twin-track model with a technical stream that aims to develop 'confidence in the quality of the results' and a policy stream for enhancing 'commitment to the results'.[34]

In order to promote interactive working the method proposes fairly small working groups. However, representatives of seven categories of people can be involved in the exercise:

- those who are working with the technical tasks involved in shaping, designing, comparing and choosing;
- those who undertake the management of various activities and groupings;

- those who are accountable for the decisions to be taken in a broadly political way;
- those who are directly responsible for guiding the conduct of decision-making process, at a managerial or senior professional level;
- those to whom periodic reference should be made because they have roles in other fields of decision-making which are instrumental in this case;
- those who fill a representative role in relation to specific interests which may be affected by the decisions;
- those who are stakeholders in the sense that they will be directly impacted by the decisions.[33,34]

Therefore the strategic choice approach can be organised as a miniature exercise in communicative planning. Knowledge is generated through interactions between the participants. Since it encourages active engagement on behalf of all the participants, differences in experience and knowledge do not represent any barrier in the communicative process. To put it in the words of Rittel and Webber,[49] the strategic choice exercise appears as 'an argumentative process in the course of which an image of the problem and of the solution emerges gradually among the participants as a product of incessant judgement, subjected to critical argument', or as Healey[50] puts it, as a 'strategic policy discourse... subjected to continual reflexive critique'.

The strategic choice approach has been likened to the use of a 'toolbox' which allows the users considerable discretion to choose the appropriate tools depending on the circumstances. In our empirical studies the following major steps were carried out:

- identifying prerequisites and restrictions which may have a general impact on the planning issue under consideration;
- shaping a decision graph in which decision problems are structured in a set of decision areas, some of which are interconnected through decision links. Within these a choice of problem focus was made;
- deriving decision options which were then compared and for which uncertainty was mapped;
- constructing a commitment package designed as part of an ongoing decision-making process.

As a result of the application of the strategic choice approach to extensive projects in cross-cultural contexts, the tool box has been supplemented by various further concepts, processes, techniques and methods. One such process, *strategic discussions*[34] that bring together people in both policy and technical roles, has played a significant role in our exercises.

In expectation of spill-over effects: Hörby 1997

Background

Hörby is a small rural municipality with a population of about 13 800 inhabitants situated about 50 km. from the

City of Malmö in Sweden which is currently being connected by a bridge to Copenhagen in Denmark. A large part of the working population in Hörby is employed in agriculture or agricultural industries and public services. Formally Hörby was an agricultural trade centre in the region of Skåne, the heartland of Swedish agriculture. The importance of the municipality, however, has declined in the last 20 years as a result of the structural rationalisation of agricultural production in Sweden.

About half of the municipality's population resides in the central urban centre of Hörby, the rest is spread throughout six villages. The municipal government is now hoping that its pleasant rural living conditions will be attractive for new immigrants to the Malmö–Copenhagen region. The municipal planners were assigned the task of preparing a plan which would include between 250 and 500 new housing units in the form of single dwelling houses and apartments in the next five years. The following prerequisites were presented: (1) The apartments were to be located in the central urban centre in order to utilise the existing, ample social and physical infrastructure; (2) Housing could not be located to the north of the urban centre because of the major highway (E22), nor to the south because of the presence of a large number of agricultural industries, market gardens and other activities; (3) The alternative locations were either to the east or west of the urban centre and had to take into consideration the physical infrastructure in the form of roads, district heating power plant and public transportation and social infrastructure in the form of childcare centres, schools and recreational amenities; (4) The plan had to suggest a proper mix between single dwelling houses and apartments bearing in mind various categories of households that were likely to move to Hörby and the differences in infrastructure between the eastern and western parts of the town; and (5) The planners had also to take into consideration the requirements set out in the 1991 Structure Plan for Hörby which outlined the national and local public interests with regard to historical and nature preservation.

This information, together with a copy of the Structure Plan and recent statistics about demographic, economic and social indicators were given to the two experts as well as to 18 politicians, local government officials and other community representatives who participated in the strategic choice exercise.

Expert knowledge on Hörby plan for housing development

Professional background. As mentioned above, two experts were asked to state their opinion on the future housing development in Hörby. Both of them are professors in urban geography at the University of Lund which is situated in a municipality adjacent to Hörby. Expert A's research deals with urban development with particular emphasis on energy, natural resource preservation and transportation from the point of view of households. His teaching includes courses in urban planning. He had no previous first hand knowledge about Hörby except that he acted as an adviser to a student who wrote a paper on Hörby for his Bachelor's degree. Expert B's research deals with regional planning and gender perspective in spatial analysis. In particular, she has looked at how women planners work and how they differ from male planners. Expert B described Hörby's Structural Plan as a 'conventional, male product'. Even Expert A emphasised the traditional nature of the plan which lacks any reference to processes underlying urban development.

Approach. Expert A started his analysis of the housing development plan by looking at the issue of resource conservation and restrictions with regard to public interests. He made use of various maps to discuss more specific restrictions. According to Expert A the development of new housing districts should start by examining the existing social networks in existing housing areas and establishing a dialogue with people with regard to energy and environmental questions, an alternative sewage system, waste disposal management and other issues related to Agenda 21. He considered that the issue of the location of the new houses should focus on uncertainty with regard to values. What type of society does the municipality want to create? What kind of identity do people want to have? What is their conception of the 'good life'? Another important question that Expert A emphasised as a starting point in his analysis was the need to analyse the migration to the municipality in previous decades, and thus the changing relationship between urban and rural areas and the transformation in agriculture.

Expert B was less keen on examining the housing development in Hörby from very tangible issues such as resource conservation and public interests. She emphasised the need for an alternative, a feminist, perspective for looking at the development problems. Such an approach is both iterative and dialogical. It requires the preparation of alternative scenarios. However, the preparation of these scenarios should follow a participatory mode which involves as many stakeholders as possible. The scenarios should be the starting point for developing the housing plans. Expert B emphasised the following issues in the scenarios: relationship between 'life-world' and 'system-world', emotive values for one's home district and alternative values attached to commuting.

Experts' opinions. Expert A was more doubtful about the location of housing to the west of the urban centre, but

avoided presenting a 'final' judgement about the two alternatives. Without going into details, his proposals can be summarised as follows:

Structural spatial issues:

- natural geographic conditions and historical perspectives,
- put the housing development projects in the long-term development of the two locations,
- follow the public debate and listen to new ideas,
- apply a step-by-step approach in the development of the housing district.

Local Government goals:

- an outline of the desirable local community,
- empirical studies at household level,
- dialogue between people and planners,
- study of changing urban-rural relationships.

Location and the composition of housing:

- both eastern and western locations were suitable. However, there was some uncertainty concerning topological and other physical factors with respect to the western location,
- a mixture of single-dwelling houses and apartments in order to develop public meeting places and a lively environment,
- residential environment should ensure dialogue and enhance civic activities,
- technical infrastructure should be built as flexible as possible in order to make use of new technological innovations with particular emphasis on environmental aspects.

Expert B emphasised flexibility and the need for an alternative perspective to conventional planning ideas. She stressed the need to pay attention to gender differences when looking at issues like the relationship between housing and transportation, safety considerations in the location of public meeting places, housing and social care facilities. In short, she propagated for a kind of 'gender-based' rationality in planning.

She proposed three alternatives with regards to the location, mix of different housing types and the construction of physical and social infrastructure. However, in her opinion the following four premises were crucial:

- the need for a broad discourse among politicians, local government officials and other stakeholders,
- planning should be carried out in a 'project form' in order to allow maximum input of new methods and ideas,
- improve the knowledge base so that even women and children have the possibility to influence various decisions,
- relate the three alternative housing plans to the overall scenarios in order to ensure that the former are 'consistent' with the broader issues that Hörby faces.

Experiential knowledge on housing development in Hörby

Eighteen people representing local government, political parties and other community interests participated in the Strategic Choice exercise. They were divided into two groups and each phase of the exercise was preceded by a brief introduction.

Each group came with various suggestions about the prerequisites for expecting that there would be spill-over effects from the new urban growth in the Copenhagen–Malmö region. These premises referred to six domains namely agriculture, communications, education, housing, energy and recreation. Major examples of these premises are:

- Hörby develops a centre for ecological meat production,
- improvement in road and railway connections especially to the north and south of the municipality,
- Hörby establishes a training centre for catering staff,
- new company for the production of inexpensive wooden houses,
- Establishment of solar energy centre in the municipality,
- Ringsjö area in the municipality develops into a large holiday camp.

As part of the first phase of the exercise, the two groups also discussed possible limitations on expecting spillover effects from Copenhagen–Malmö urban expansion. These were classified into four areas: local-central relationship, environment, agriculture and economy. Some examples of these limitations are:

- central government grants for urban development become less foreseeable as the political uncertainty increases,
- Hörby is passed over by central government with regards to the location of new public functions,
- new environmental legislation places further limitation on the use of private cars and thereby reduce the propensity to commute,
- increased agricultural competition from Danish producers with the inauguration of the new transportation connections between Denmark and Sweden,
- decline in the national economic growth and subsequent migration of the unemployed to the metropolitan areas and university towns.

Following the discussion on the premises and limitations on urban growth in Hörby, the two groups discussed various alternatives with regard to the size and location of housing. Both groups presented a set of options that were considered to represent a full range of the choices available. On the basis of these options, the groups prepared a decision graph. The two groups discussed the decision graph and the assumptions underlying the options and came out in favour of the western location of a housing district. This should be built in several phases in order to ensure the

maximum use of the existing social and technical infra-structure. The following assumptions were presented:

- a new day-care centre and expansion of the present primary and secondary school,
- a new sewage treatment plant,
- a circular bus line to the Central Business District (CBD) as well as Malmö,
- relocation of the power transmission line,
- relocation of the poultry farm,
- a new recreation centre with tennis courts, football grounds, swimming pool and other activities.

The use of graphical presentation of the decision graph was conceived as quite exciting by the participants. The graph covered a large number of policy areas.

The participants were then asked to assess the type, strength and importance of uncertainty with regard to various decisions related to building the housing district to the west of the urban centre. The following examples illustrate the type of uncertainty mapping carried out by the two groups:

With regard to the planned volume housing, the partici-pants mentioned two major areas of uncertainty: (1) competition from neighbouring municipalities and their plans for housing in order to attract some of the potential residents in the Copenhagen-Malmö region; and (2) the future central government housing grants and subsidies. Both these uncertainties pertain to the working environ-ment and were rated as medium-to-high. The participants suggested the need to look at the programme for housing and infrastructure in the neighbouring municipalities in order to explore the possible impact on immigration to Hörby. As for the central government housing policy, the groups proposed an examination of the current changes in the national housing policy and the long-term trend with regard to the central government support for housing in small municipalities.

The two groups discussed uncertainties with regards to other areas in a similar manner. For example, the relocation of the power transmission line was characterised as uncer-tainty about related decisions. This uncertainty was rated as high and as requiring a review of the municipality's energy programme. It also required contacts with the power company responsible for carrying out the project.

Finally, the two groups prepared two commitment packages including a list of immediate actions and future actions. Regarding the first category of decisions, the groups suggested possible sites for the first phase of housing and the alternative costs of producing the dwell-ings. This necessitated carrying out a site survey, initiating a discussion with building companies and arranging discus-sions with people living in the neighbouring housing areas. In the case of the category of future actions, the group's suggested strategies regarding 'marketing' in the Copenha-

gen–Malmö region. If the response from the building companies was positive and if the municipality could prepare a reasonable proposal for the development of infrastructure, then it should present a strategy for market-ing the municipality.

In similar fashion, the two groups presented action schemes containing a set of concrete proposals (including the establishment of working groups) for other municipal activities. In order to reduce an overload of information, the commitment package was selective and included only major decisions for immediate and future actions.

Regeneration of the historical centre and harbour district: Molfetta 1996

Background

Molfetta is an Adriatic coastal town lying on a stretch of land 4 km long and 12 km wide, about 25 km north of Bari, the capital of Apulia region in Italy. The Municipality has a population of about 67 000.

Molfetta's economy is strictly linked to maritime activ-ities, in particular to the fishing port, one of the most important on the Adriatic coast. Its original medieval nucleus is limited to a promontory near the port and has a population of only about 600. The population has progressively declined from the 6000 inhabitants in the 1960s. The historic centre assumes a marginal role, espe-cially with respect to the nearby Central Business District (CBD). The building stock is extremely dilapidated and exhibits the effects of negligence and mismanagement. The adjacent seventeenth century 'catacomb' district, lying on the northern seafront, includes the fish market, the most important in the Apulia region, and the shipyard, only partly in production and gradually loosing economic competitiveness and jobs. The building stock and the social conditions are also poor in this area, even if it is densely inhabited.

Attempts to promote public rehabilitation programs in the past were limited to the medieval district. The results were modest, as far as housing is concerned only one block was restored and re-occupied by low-income families. The problems affecting these districts are really too complex to be solved by merely intermittent public interventions.

Molfetta's current economic crisis arises mainly from the decline in the maritime activities and as a consequence of the increasing shift of interests and resources towards the tertiary sector, in particular financial and other services. Molfetta is also facing a social crisis as a result of rapid urbanisation and increasing unemployment in the traditional sectors. This is giving rise to a number of side effects such as the further deterioration of the ancient part of the town, the increasing lack of public amenities and services and the emergence of new areas of poverty and criminality.

Today the public debate focuses on the issue of future survival and the resources Molfetta can draw from its past history and its maritime position. The Molfetta Municipal Government has tried to meet this challenge by promoting greater community awareness of the town's future in the new Master Plan, the Port Development Plan, and the Local Plan for the ancient part of the town. The municipality has been ruled since 1994 by a 'rainbow' progressive coalition that is headed by a young mayor belonging to a green-catholic-grassroots movement. The coalition received strong electoral support in the 1998 elections for the continuation of its planning efforts concerning environmental, social, cultural, and moral issues.

The exercises concerning knowledge acquisition from experts and problem structuring were developed with the support of the municipal government, which considered them as important steps in community involvement in the planning process. This provided a unique opportunity to implement a number of field studies related to these issues, involving university scholars and representatives of the local community.

Expert knowledge on the port development in Molfetta

Professional background. In the case of Molfetta nine experts were asked to express their ideas about the economic perspectives concerning the development of the fishing port bearing in mind the Development Plan and the regional investment programme, and the possible impact of the development measures on the historical urban district. From the nine expert accounts, two are selected for presentation below. The two experts in question are an engineer, a specialist in urban rehabilitation and port development (expert A) and the director of the fishing market (expert B). The reason for selecting their presentations is their experience regarding the key issues related to the above mentioned questions and the completeness and depth of their answers.

Expert A has, for a long time, been one of the most prominent technicians in the town. He participated in the elaboration of the rehabilitation plans for the medieval centre and the Catacomb district and the Port Development Plan. He has also collaborated as a university assistant in the course on Town Planning Techniques at the Polytechnic of Bari. Expert B was the director of the wholesale division of the Molfetta fishing market. He is a professor of economics and law and vice-president of the National Association of Wholesale Fishing Markets. He played an active role in the public debate on the development plans adopted by the municipal government.

Approach. The two experts followed the following approaches:

Expert A prepared a long review of major problems affecting the town and some general conditions needed to solve them. He stressed the centrality of human issues in urban planning and design, a factor which seems to have been lost in many neighbourhoods in recent years, resulting in increasingly unsocial and intolerable living conditions. In order to resolve such problems, flexible and adaptive strategies needed to be pursued in the short and medium term. These strategies should pay special attention to ecological problems created by urban traffic, to the diffusion of innovation, the rehabilitation of existing building stock through micro-interventions as well as the location of cultural functions and the valorisation of environmental resources in the development of tourism and agriculture.

He assigned crucial importance to knowledge about the current urban development trends. He stated that 'the lack of monitoring of current transformations implies that phenomena can at best be guessed and never appraised in quantitative and qualitative terms. Only if we acquire the culture of prognostication and evaluation, we can hypothesise Molfetta's future and solve current problems.'

Expert B gave his answers in a synthetic and schematic way, focusing directly on the core questions without making any appraisal of general premises. According to him 'certainties prevailed over doubts'.

Experts' opinions. According to expert A, the development of the port was necessary in order to differentiate and improve functions so as to increase maritime transportation of goods produced in industries in Molfetta as well as its hinterland. In his view the recovery of the historical function of the town was strictly linked to the development of its port. The main development aspects concerning the improvement of the port can be summarised as follows:

- medium and long term development of fishing and shipyard activities,
- improvement of the relationships with the adjacent towns which use Molfetta's port,
- reducing the dependence of Molfetta's economy on a single maritime activity, namely, fishing which is vulnerable to international events (eg the war in the Balkans) by diversifying the port's functions to include trade, tourism, and recreation.

Expert A expressed fear about the impact of the port on the economic development of the entire urban system because of the possible lack or ineffective implementation of the parallel development of agriculture, industries, arts and crafts as proposed in the new plans.

As for the physical assets of the historical district, expert A pointed out that the maritime district is physically separated from the town due to the lack of infrastructure, especially a road linking the port to the outer highway network. As a result, the two districts have developed distinct profiles, following different 'planning philosophies'

and lacking a comprehensive strategy that involved the entire urban system. Therefore, the decline experienced by the districts adjacent to the port was partly due to the loss of the port functions and partly to the poor facilities for freight traffic to and from the port.

On the basis of the above appraisal, expert A proposed the following planning initiatives:

- promoting integration and interaction between historical districts and the port by reserving, for example, floor space for tertiary functions,
- establishing an ad hoc public-private consortium for constructing the tourist port with the explicit task of environmental improvement in the adjacent districts and for the creation of physical and functional connections between the existing port and the urban settlement,
- designing a cultural and environmental programme linking maritime activities not only to the historical districts of Molfetta but also to the surrounding areas which are rich in archaeological, cultural and environmental assets. This would benefit the economy and environment of the entire region.

Expert B saw an indissoluble linkage between the Molfetta Development Plan and the Port Development Plan. Economic growth appeared to him to be strictly dependent on the fishing sector and related activities, transportation, arts and craft industry, shipyards and tourism. These branches were connected to the history of the local community, 'deeply rooted by its location by the sea. They have provided opportunities for regeneration, modernisation and development'. The building industry that has gained increasing power and resources in the post war decades has to reorient towards urban rehabilitation.

Expert B expressed major concern for the future of the fishing and shipyard sectors because of what he called the structural character of the current crisis. According to him, the crisis in the fishing industry was not only because of local circumstances but also national and European ones. His opinion was that the local fishing industry should receive support from EU structural funds for its future development. In case of the shipyard industry he recognised the need to preserve the traditional knowledge and experience but also to be open-minded towards future technologies and computer advancements.

As for the historical centre his answers were as follow:

- to regenerate the historical town implied not only to retrieve its valuable architecture and urban heritage but also to define a future link between these functions and the maritime development including fishing and tourism,
- to give maximum priority to the solution of the commercial traffic problem which is currently having a devastating impact on historical buildings, by transferring all kinds of freight traffic to the new part of the port.

Experiential knowledge on port development in Molfetta

Two strategic choice sessions were organised involving 23 people selected from among representatives of local government, economic sectors (fishery, trade, building and industry), the cultural field and environmental movements. They were divided into two working groups for the two sessions.

The aims and methods of the strategic choice method and the working of the sessions as well as current economic, social and spatial trends in urban development were initially presented to the participants. They were also provided with the contents of the Port Development Plan's and the Master Plan's proposals particularly those concerning the historical centre and the seafront.

In order to generate fairly clear ideas about interventions, restrictions and commitments, the participants were asked to be fairly specific in their proposals so that they could be included in the Plans which were currently being elaborated by the municipal government. These would be implemented once regional funding for expanding the port facilities were available. The proposed interventions concentrated on key sectors of the traditional Molfetta economy (fishing and maritime activities) and on the sectors characterised by high potential for development in connection with the expansion of the port. The latter included tourism, trade and handicraft activities as well as the physical and functional rehabilitation involving parts of the town connected to the port, namely the seafront, and the medieval and Catacomb districts.

More specifically, the following decision areas emerged from the alternation of individual reflection and joint group discussion:

- building infrastructure in order to enhance the potential of the fishing port and to connect it to the industry area and national road system,
- erecting infrastructure to promote tourism (in particular a tourist port adjacent to the medieval town) and related facilities (hotels, restaurants, sport and recreational centres),
- improving and monitoring environmental quality with particular reference to the maritime and historical districts,
- increasing knowledge about the sea by constructing a maritime museum and a maritime park,
- carrying out rehabilitation and re-use for housing and commercial property in the historical centre by means of a more effective use of municipal and regional funds,
- reconstructing the shipyard industry and promoting related production activities,
- developing the fishing industry and related services,
- guaranteeing coastal protection in order to improve recreation amenities,
- promoting trade and cultural exchanges with other Adriatic regions,

- investing in the housing sector, in particular in the historical districts adjacent to the coast,
- providing the urban centre and the sea front with traffic facilities (cycling paths, parking areas) in order to improve the environmental quality.

Different degrees of importance were given to each investment and complementary and conflicting relationships between decision areas were identified: several complementarities were highlighted between coast protection and usage, housing improvement in historical districts, organisation of pedestrian and cycling amenities, investments for enhancing tourism and protecting cultural heritage. The main conflicts coincided with the development of industrial and commercial activities and at the same time promoting historical districts' rehabilitation and preserving areas for recreation.

Discussions about the above interventions were further elaborated with respect to economic, political, behavioural, structural and technological constraints. The most relevant constraints included: the interests of private individuals contrasting with those of the community; the weakening of ties between institutions and citizens, the absence of professional skills, the inadequacy of public regulations; the inability to make long-term investments, the limitations of public funds, disinterest and lack of determination on the part of the Local Government, the lack of public spirit and respect for public property and the dearth of respect among people for the environment. It is worth observing that, in general, structural and behavioural restrictions clearly prevailed over technological and economic ones.

The participants were then asked to suggest possible actions by which obstacles to each decision area could be removed and to define whether the proposed actions converged or diverged. Points of convergence clearly dominated over divergence. Numerous specific suggestions were put forward about tourism, historical districts' rehabilitation, fishing and related trade development. They focused on promotional and educational initiatives and co-ordination measures that needed to be implemented.

The next step involved the search for the definition of degree and type of uncertainty associated with each decision area with reference to the external environment, values, and related decision areas. The decision areas concerning environmental monitoring and protection and the promotion of exchanges with other Adriatic regions were associated with high levels of uncertainty due to external environment factors. Other areas with a high degree of uncertainty concerned values and were associated with those decision areas where large numbers of suggestions had been put forward, namely the rehabilitation of the historical centre, coast protection and the development of the shipyards and fishing industry.

Finally, the groups prepared four 'provisional commitment packages'. These contained all the proposed decisions and ideas about what should and could be done to regenerate the coastal area and develop related production activities. The proposals were articulated in the form of short- and long-term actions. A number of subjects were identified which were then ranked according to their likelihood of being implemented. In general, the participants found it difficult to single out long-term commitments and tended to focus their attention on actions to be put in practice immediately.

Thanks to the mutual learning process developed by the groups through discussions and exchanges of ideas during the various stages of the working sessions, the commitment packages contained rather detailed and clear measures to be carried out by regional and local governments. They included measures for environmental resource management, the promotion of stricter controls for property development, the establishment of a coastal and maritime research and monitoring centre, and the production of geomorphologic and hydrogeologic maps to improve and communicate information. For the historical district, the proposals included incentives for private intervention and public-private partnerships in urban renewal, trade, and arts and crafts. The municipal ownership of a large proportion of the buildings in the medieval centre was considered to represent an obstacle to the rehabilitation process, or at least as an important reason for delays. Therefore the sale of these properties to private developers was strongly advocated. Considerable commitment was expected from experts for the creation of new professional skills and in the setting up of environmental control agencies and design laboratories for the preservation of historical buildings.

Evaluation and integration of expert and experiential knowledge

In the two case studies described previously, the aim of the expert and communicative exercises was to make use of the knowledge generated in the preparation or further improvement of the development plans. There are several differences between the cases with the regard to the choice of experts and the participants in the communicative exercises, in addition to the more general differences in the contextual backgrounds of the two local communities.

However, the issue considered here is not the similarities and differences between the cases, but the integration of expert and communicative knowledge in a policy process in order to achieve a balanced use of the two types of knowledge. In order to facilitate such an integration, five variables are used to evaluate the knowledge:

Realism: Does the knowledge express real life, facts, etc. in a true way? Does it omit anything that is objectionable or painful? Does it idealise issues?

Relevance: Is the knowledge related to what is being discussed? Does it supply facts concerning the issues at hand? Is the knowledge pertinent?

Table 1 Comparative evaluation of knowledge

	Hörby		Molfetta	
	Expert	*Communicative*	*Expert*	*Communicative*
Realism	Suggests approaches to study issues rather than provide facts about real conditions	Relates to specific projects but omits controversial issues	Suggests solutions for specific town problems but without considering relevant cultural and organizational obstacles hampering their implementation	Relates to knowledge about real life but is often short-term oriented
Relevance	Pertinent knowledge about how one should approach issues. It does not address the question "what facts"?	Specific about projects, financial sources and local community invovement. Avoids controversial issues	Adopts rigorous approach with a large amount of background knowledge. It neglects conflicts and inconsistencies pertinent to the facts	In its attempts to converge towards common views, it reduces action space for divergencies
Commitment	Reflects experts' concern for environment and gender issues. Emphasises democratic discourse in preparing development plans.	Relatively high degree of undertaking. Implementation flexibility owing to uncertainties about the working environment	Directly related to the experts' values, i.e. the crucial importance of human and ecological issues or of functional and economic aspects	It reveals notable involvement in local problems, but proposals focus mainly on municipal and regional governments' action
Level of Concretion	Emphasis on methodological approaches. Complete lack of brick and mortar issues	Quite explicit about development projects	Consistency of proposals prevails over concrete suggestions. Lack of adequate quantitative information is stressed	Measures to be implemented in the short run are detailed and clear and refer to specific responsibilities
Use of knowledge	Increased appreciation of new methods for planning and the need to pay attention to gender and environmental aspects	Inclusion of proposals and other development suggestions from the commitment package into the development plan	Inclusion of long term perspectives and opportunities in various plans	Useful formulation of creative proposals, but lack of wider implications of interventions

Commitment: Per definition, experts do not have the same obligation as do the participants from the various community interests to pay attention to the knowledge-action link. The community participants bind themselves either explicitly or implicitly to what they state during the communicative exercises. This dimension is, nevertheless, relevant because it shows the level of engagement in the issues under consideration.

Level of concretion: This variable adds further perspectives to the first variable, namely realism. It includes such issues as; what is the level of abstraction in the knowledge? How substantive is the knowledge? To what extent can it be operationalised?

Use of knowledge: How do those responsible for preparing the development plan react to the two types of knowledge? How do they go about using them? Does their own professional status affect their reception of the two types of knowledge?

Table 1 evaluates the two categories of knowledge produced in Hörby and Molfetta respectively according to the five variables. Expert and communicative exercises carried out simultaneously may be of utmost importance in improving the preparation of long-term development plans. However, carrying out these exercises in themselves is not enough. It is necessary to categorise the knowledge generated in a fashion similar to that in the above table. In this way, planners and decision-makers obtain a fairly good idea about how to balance the two categories of knowledge in some central aspects of the planning process. These include strategic and decision-making considerations, broad and specific issues related to intertemporal decisions and the requirements for dialogue in preparing the plans.

At the start of this paper we mentioned the need for a balanced use of professional and experiential knowledge as a result of increasing uncertainty and decreasing faith in expert knowledge. Here we put forward one proposal for how to evaluate and integrate these two types of knowledge. We are sure that other schemes have been developed for the same purpose. We suggest that a comparative examination of these schemes could provide useful feedback for improving methods to achieve a balanced use of professional and experiential knowledge. A broader aim is to initiate a discussion about whether we need to think more coherently about this epistemological issue, and if we do, how we should go about it. Further reasons for integrating and comparing the two kinds of knowledge are the spread of intelligent systems that are able to represent collective knowledge, support interaction and communication in planning[51, 52] and new modelling tools for problem framing and consensus building.[53] Sensitive input of expert and other informed opinion can be crucial in the search for effective ways in decision-making in the face of the current convergence between an increasing

appreciation of the complexity of the issues and a growing emphasis on collaborative methods of working.[34]

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