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## Urban rehabilitation scenarios: complex evaluations as learning process

Maria Cerreta, Carmelo Maria Torre\*

The paper refers to an experience that has been carried out in a distressed urban periphery of Naples: Scampia. The research has been developed aiming at the development of bottom-up approaches, building an interdisciplinary methodological model, used to draw an alternative scenario to be compared with the institutional one. The main purpose is to create a participative process, that is able to support sustainable strategies by using an evaluative approach as tool to build shared knowledge and consciousness inside the community, and to define a scenario of urban rehabilitation that reflects the needs and the desires of the community itself. At the root of integrated approaches to decision-making processes lies the need to consider and explore concepts of complexity, uncertainty and conflict. Complexity implies the impossibility of fully describing the behavior of a given system by using a single model or a finite set of models. It is associated with the coexistence of modelling methods based on independent logics, thus requiring decoding parameters not belonging to equivalent descriptive dominions (Rosen 1977, 1985, 1991). The concept of complexity implies the possibility of describing the actual behavior of the system from an infinite number of perspectives/viewpoints, which are linked to the modelling relations and dependent on the aim of the study. Consequently, a limited set of mutually irreducible viewpoints may

be selected for purposes of integrated evaluation, conceived as multiple-criteria description. In integrated evaluations, choice is based on the relevance or irrelevance of criteria. This raises the problem of explicitly articulating a "value judgment" (Giampietro 1999). There is an obvious need for an evaluative approach able to handle at the same time non-equivalent descriptions of the same problem, which can reflect other meaningful perspectives and examine possible effects on different scales. Since it is impossible to define *a priori* the features and boundaries of the system subject of evaluation, the greater the number of non-equivalent perspectives whence we can observe the complex system, the more nuanced will be our understanding of the reality it generates. After all, social, political and environmental decision-making is often flawed by "uncertainty, conflicting values, high stakes and urgent decisions". That is why an epistemological structure has been devised, namely 'post-normal science', according to which we may focus on two key aspects: uncertainty and conflict of values (Funtowicz, Ravetz 1991, 1993). Post-normal science is contrasted with 'normal science' (Ravetz 1999) and opens up the debate on collective choices to the wider community, according to a process of democratization of knowledge, where cognitive and socio-cultural elements are entwined (Funtowicz, Ravetz 1994; Ravetz, Sardar 1997). Evaluation is conceived as a 'social learning process' (De Marchi *et al.* 2000; Sandercock 1998), which is dynamical, flexible and adaptive.

Integrated evaluations play a key role as support tool for decision-making, especially in the cases marked by numerous, varied and conflicting dimensions of uncertainty, complexity and values (van der Sluijs 2002). Evaluations thus conceived are marked by:

- cross/multi-disciplinary approach, since they can integrate many different scientific viewpoints;
- participation, as they attempt to increase their knowledge through community involvement;
- transparency, in order to clarify ethical assumptions and the sharing of responsibilities;
- coherence, so as to ensure that results are a true consequence of the principles adopted.

Integrated evaluations must thus be 'complex', i.e. able to apply post-normal science to uncertain systems, improve the quality of the decision-making process and embrace different viewpoints, while ensuring that quality criteria are based on explicitly stated ethical principles, which become an element in the debate. A cyclical evaluation process is thus activated, enabling repeated adjustments of evaluation elements based on continuous feedback, obtained in the various stages and provided by player/stakeholder consultation (Nijkamp *et al.* 1990). Once having adopted this perspective, we can use tools for multi-criteria analysis, such as Problem Structuring Methods (PSMs), a set of methods for organizing data in a decision-making support system, consistent with a communicative notion of planning (Rosenhead 1996; Rosenhead, Mingers 2001). PSMs provide a comprehensive overview of the issues, enabling

stakeholders to clarify their respective positions. They can thus work towards a shared understanding of one or more issues, possibly leading to a partial convergence. PSMs can: enable the mapping of alternative options, which communicate mutually; be accessible and understandable for non-expert players, since the problem is identified through a participatory, bottom-up process; operate iteratively, so that the framing of the problem is open to corrections and/or changes which reflect the progress of dialogue between players; allow targeting of partial or local improvements, instead of a global solution. It is thus possible to account for the complexity of the issues at hand, explore possible solutions, compare discrete alternatives, face uncertainty in terms of possibilities and scenarios rather than probability and forecasting, based on explicit modelling of cause-effect relations. By combining Problem Structuring Methods (PSMs) and Multi-criteria Methods (MCMs) a Multicriteria Decision Support System (MCDSS) can also be developed (Roy 1996; Saaty 1986; Zeleny 1982) based on an integrated approach, which enables study of the complexity of human decisions by building a flexible environment, in which the individual learning process plays a significant role in decision-making.

### The context: the Scampia quarter of Naples

The Scampia quarter comprises a number of public or public and private jointly funded housing projects, built over the last 20-30 years on the northern outskirts of the city of Naples. In particular, "Scampia housing project 167" (from national law 167/62 on public housing) is the largest public and

cooperative housing project built in Naples. It is also known as the "Secondigliano periphery" or "167 of Secondigliano". The place is rife with serious problems, the most obvious being deprivation, urban alienation, social unrest, marginalization, moonlighting and unemployment, violence and drug abuse. The built stock is largely residential, with a high rate of public property dwellings, about 70% of total volume. Moreover, the road network layout is mainly longitudinal, based on long parallel roads, while there are few crossroads and pedestrian crossings. Additional features are the scarcity of morphological linking elements, few and sparse retail outlets, and the almost complete absence of craft and service businesses, as well as sports and recreational facilities. The dearth of public spaces and meeting points effectively dampens the development of normal social relations. The most notorious negative symbol of the quarter is the so-called 'Vele' ('Sails') complex, comprising seven huge apartment blocks that were recently partly demolished. This area has affected public perception of the whole quarter and has contributed to the gradual isolation of the residential blocks, the inappropriate use of the road network and privatization of common areas. Scampia may be dubbed an 'inverted city', since the quarter's outskirts are actually its oldest part, which most closely approximates an urban fabric, while the centre, built in later years, is seriously neglected and dilapidated. The various changes that commenced in the 1980s have had a deep impact on the local community's social status. We may broadly divide the quarter's

inhabitants into three main groups: the first group is especially vulnerable to the stress of adapting to a difficult environment and feels the need for basic services and structures; the second, possessing greater organizational skills, has shielded itself by fencing off the plots around their dwellings, thus creating kinds of private gardens, and requires secondary facilities and services; the third, which has acquired special privileges by illicit means, has illegally occupied and controlled spaces, encroaching on the quarter's life and distorting its development and daily activities.

The City Council has embarked on an ambitious regeneration plan through several instruments, namely the Urban Rehabilitation Program Vele-Scampia (L. 457/78; L. 483/93), the Neighborhood Agreement *A Square for Social Relations* (CER 1998) and a new Zoning Regulation. Operations include the demolition, rehabilitation or reuse of existing buildings, as well as the renovation of the urban park and hitherto unused green areas. In particular, under the Rehabilitation Program, drafted in April 1995, the following projects were launched: renovation of the Vele complex; completion of retailing and craft workshop facilities along the road network; completion of the municipal park, parking areas, organizational measures and service management; creation of areas and facilities for productive activities. Moreover, the draft Neighborhood Agreement includes a project for the rehabilitation of the current Municipal Gardens. The idea is to open the area to public use, by constructing a square and adding several services and outlets. None of the above mentioned decisions and

actions were easily achieved. On the contrary, we feel that the Scampia case is a typical example of decision-making in a post-normal context, which implies a number of requirements: constructing a complex knowledge framework; avoiding 'simplification' of a reality that is often seen from a biased, stereotyped perspective; implementing cognitive analysis methods, in order to build consensus-building scenarios; applying evaluative approaches that take into account bottom-up demands, while building open, transparent proposal platforms involving all stakeholders.

#### **Designing a participation-based urban rehabilitation project**

*Methodology.* Starting from the Rehabilitation Program and the Neighbourhood Agreement drafted by the Naples City Council, we attempted to outline a methodological approach which considered possible alternative scenarios, focused on the issue of regenerating the Vele and creating public spaces in the quarter.

"What kind of square for Scampia?" and "What should the fate of the Vele be?" were the two key questions to which this approach was applied. Through an interactive evaluation process involving both experts and the local community, sufficient data was collected to outline a broad picture of the situation: its main aspects and significant features, as well as the individual values to be taken as a basis for achieving shared collective decisions (Sen 1970). By adopting an integrated, shared evaluative approach, we attempted to highlight the concept of 'square' as held by the inhabitants of the quarter, and their wishes about the future of the Vele. Desires and needs were

thus brought to light and used to shape a different scenario, an alternative vision to the one drafted by the City Council. This new plan conciliated various coexisting values, reflecting not only the physical and economic dimensions but also cultural and social ones.

"Constructing a square" or "Regenerating the Vele" are processes that can take on different roles and meanings. They imply the construction of social processes based on endogenous human, cultural and economic resources, achieved through the empowerment and active involvement of all stakeholders, both resident and non resident, who can contribute both to identifying problems and to suggesting feasible solutions. In this regard, it is important to realize how a dialogic process may be developed to help people communicate, relate with each other and together build a shared scenario; the role of evaluation is to enable the project-plan-ning process to be as objective as possible, enabling the selection of a responsible choice (Voogd 1983). Indeed, in an evaluation process where the players involved contribute to defining choices, the awareness of issues and the ability to handle them stem from adequate knowledge. The various components: knowledge of issues, context analysis, identification of distinctive elements, constraint definition and problem structuring are aimed at in-depth comprehension of the reality we are dealing with. At this stage, we should explicitly state what objectives are being pursued and strive to match them to existing constraints. The next step is building alternative scenarios, based on an iterative process, which takes into account

acquired knowledge and the objectives selected. The process ends with the selection of a final scenario: this will be the solution that harmonizes different requirements, arises from a dialogic/communicative process and, most important of all, contributes to the creation of new shared values (Fusco Girard, Nijkamp 1997).

One of the aims of our research was indeed to build and test a cognitive model for supporting the different stages of evaluation, starting from a survey of the needs and expectations of the quarter's inhabitants and ultimately achieving a new vision for the quarter's future. The method chosen comprises three main steps:

- identify a set of project actions obtained from scenario-building through cognitive processing;
- define scenario-evaluation criteria, where the scenario is considered as a set of project actions;
- implement multicriteria and multigroup analysis to assess alternatives and engage in conflict resolution.

The method adopted is based on a learning process, which we might break down into a number of different but related phases: context analysis; institutional analysis; indepth interviews and focus groups; perception mapping; statistical data analysis. These various analyses have enabled us to plot cognitive maps, build scenarios and carry out multicriteria and multigroup evaluation.

*Knowledge: data analysis and identification of perceptions.* To achieve our aim of charting a process for understanding the reality under consideration, we selected a strategy and instruments which would enable us to describe issues and their possible implications. Our discovery

process focused in particular on institutional analysis (De Marchi *et al.* 2000), which we interpreted as an expansion of Community Impact Evaluation (CIE) (Lichfield 1988). One of the aims of CIE is to define the choice of a scenario by putting together the preferences of the individual groups of stakeholders and assessing how their usefulness changes depending on the effects of the scenarios identified. On the other hand, in its original formulation institutional analysis is used as a key for interpreting the phenomenon under study from the viewpoint of the evolution in time of the positions of direct and indirect players.

By analyzing the social structure of the Scampia quarter from this historical perspective, we were able to identify the endogenous or available human, social and environmental resources, and detect the community's social and economic perceptions. Through the analysis of main players we came to realize that alternative scenarios must target the interests of a whole community, taking into account stakeholder preferences, whether representing specific conditions or broader needs.

Through coevolutionary interpretation of the quarter's history the following classes of players were identified: city government, municipal district, church, university, law enforcement agencies, the gipsy community, associations, the residents of '167', the residents of the Vele, and those of the 'parks'. Scampia's reality emerged as one comprising several groups, with different cultural models and life-styles, linked to highly differentiated social and economic status. The social

and economic setting is made up of *enclaves*, isolated groups which are unable to cross the many and diverse barriers dividing them.

Context and institution analysis were deepened through interaction between operators, researchers and local dwellers. We thus obtained a deeper understanding of the problems, places and behaviors in the quarter. By the same token, the local community could look at things from a different perspective. Thus a 'double loop' was created, by which the initial viewpoint of group members changed through exchange and interaction, going beyond accepted wisdom and building a common, shared memory (Argyris, Schön 1974).

The instrument of the interview enabled us to focus knowledge on some of these issues which were felt to be essential for understanding the conditions for the quarter's livability, considering lifestyles, underpinnings (institutional, human, social, physical, etc.), resources (economic, human, social, cultural, etc.). The interview was administered to a selected sample of 150 individuals and 8 privileged witnesses, providing a cross-section of institutional and community perspectives. In parallel, a cycle of focus group meetings was arranged, involving students from middle schools and evening classes. The aim was to identify the perception of problems and general awareness levels, self-perception and capability of constructing possible solutions. The data collected was used to draw up 'perception maps', plotting the points of reference and expressed wishes arising from experience and daily life. Moreover, by means of statistical data analysis

using both standard and ad hoc indicators, we assessed the level of quarter degradation, also comparing it with other quarters in Naples. Lastly, by plotting some graphical-visual indicators we were able to make a description of the quarter's deprived status. Next, by analyzing replies to the 150 interviews and the information obtained in the focus groups, we identified the demands voiced by the community, using some key headings which had surfaced during the decoding process. The data confirmed the need to classify inhabitants into sub-groups according to their housing conditions and location, since they are bearers of different demands. This must be supported by multivariate statistical analysis aimed at confirming the suitability of breaking down the community into subgroups. The overall picture which emerged from the different types of analysis enabled us to achieve an understanding of the various issues which moved away from entrenched *clichés* and was rather based on the perception and the awareness level of the quarter's inhabitants.

*The cognitive model: building the scenarios.* Our theoretical grounds for generating scenarios were Problem Structuring Methods (PSM) and, in particular, Strategic Options Development and Analysis (SODA) (Eden, Simpson 1989; Eden, Ackermann 1992).

The SODA approach underscores the aspects linked to social and cognitive psychology which are reflected in the management of social processes, and identifies four interacting perspectives: the individual, the nature of the organization, the consultation practice, the role of technology and

technique. By considering the complexity and wealth of elements obtained gained from attention to subjectivity, SODA aims at facilitating and stimulating the learning process. This is accomplished by contextualizing the model, assessing the impact of different components, identifying individual preferences, and communicating choices. Through construction of cognitive maps and their subsequent analysis, this method makes it possible to work on complex problems, plotting a map of the perceptions of a person or a group. By transforming a map of ideas into a coherent picture we can improve our understanding of the situation, identify the real issues that underlie the data, avoid unnecessary duplication of concepts and data, solve conflicts between different options and opinions, while at the same time preserving data integrity and managing its complexity, by identifying a common ground for planning flexible, practicable and acceptable solutions (Cerreta, Torre 2000a, 2000b). Based on interviews to privileged witnesses, we mapped the respective cognitive maps having as their dominant theme 'quarter livability'. The analysis of the actual links between physical space and social relations was complemented by an initial evaluation phase, focused on the relations between quarter livability issues and the residents' perception of possible solutions, and aiming at an integrated regeneration process. Next, using the data from the same interviews we constructed two more sets of cognitive maps, centered, respectively, on, "What square for Scampia?" and "What fate for the Vele?". The subjects interviewed are 'field workers' (Lipsky

1979), who experience the reality on which they are asked to expand, drawing from their first-hand, day-to-day knowledge of the problems affecting the quarter. Cognitive map analysis enabled us to identify the features of the setting as perceived by the local community, and pick out the elements needed for planning an urban regeneration process covering the whole quarter, and having as its starting point the project for a new square and for renovating the Vele housing development. Cognitive maps enable identification of links between known elements, by using the statements of respondents. The strength of the links is an indicator of their importance and of the degree of complexity of problems faced. To plot the maps, we used the Decision Explorer software, which can process a very large volume of inter-related qualitative data, and we identified three classes of concepts:

- key issues, i.e. the fundamental elements for interpreting the theme of our survey;
- intermediate concepts, arranged into sequential chains and leading to gradual deepening of issues;
- actions, which identify conclusive concepts and formulate proposals, identifying the components of the setting.

With regards to the general topic of urban rehabilitation, interviews were interpreted from the perspective of 'quarter livability'. The same approach was followed both on the issue of "Vele renovation" and "The new square". The different maps can be aggregated into a single strategic map, by establishing sequential or connotative links between similar concepts. The final scenario is a set of

mutually compatible proposals, defined in the strategic map according to priority rules. Selection is made through map processing using several analysis tools (domain, central, hieset). Thus, it is possible to establish a hierarchy of actions and analyze the chains of implications leading to priority actions. Comparative assessment of the outcomes of analysis yields a set of priorities, which make up the final scenario and provide the alternatives for evaluation in multicriteria analysis. Following this process, we obtained two lists of priority actions: one for the Vele, and the other for the square, expressing the scenarios perceived by the local community.

*Evaluation: the shared scenario.* In parallel with scenario building, we endeavored to identify and define criteria for final scenario evaluation. These criteria were built starting from the analysis of the quarter's social components, exploiting some interpretative categories useful for making explicit the perception of inhabitants vis à vis the built environment, quality of life, relations with fellow citizens and the institutions. Three main dimensions were considered: physical, social, and institutional space. Five criteria headings were defined, namely: perception of reality, safety, accessibility, lifestyles, participation in community life. Respondents were grouped according to their respective housing areas in the quarter (Vele, '167', Don Guanella, Monterosa and the residential parks). Analysis was completed by multicriteria and multigroup evaluation, which enabled us to compare alternatives to the criteria identified and carry out equity evaluation by comparing alternatives from the point of view of

their impact on each group. Evaluation provides useful indications for drafting a project scenario which takes into account the community's needs and expectations: an idea of 'square' which was drawn up with the participation of the Scampia quarter and a project for renovating the Vele which takes into account both local needs and the overall reality of Naples. Final evaluation was carried out by applying the Novel Approach to Imprecise Assessment and Decision Environments (NAIADE) (Munda 1995). NAIADÉ is a method developed for deal with the inevitable degree of uncertainty or fuzziness in evaluation systems applied to planning. Analysis was two-step: technical assessment, through multicriteria analysis, for comparing alternatives based on different criteria; equity or multigroup assessment: alternatives are weighed according to their impact on the various stakeholder groups. NAIADÉ, by building a fuzzy classification, takes into account the uncertainty involved in the decision-making process. In multicriteria analysis, this is accomplished by identifying the degree of truth of possible relations of indifference or preference and defining a number of membership functions for alternative choices. In equity analysis, on the other hand, we explicitly consider the possibility of forming alliances by assessing the degree of similarity between the positions of the groups and the alternative scenarios drawn up. All analyses are supported by identification of a fuzziness index, whose value varies between 0 (maximum uncertainty) and 1 (maximum certainty). The alternatives to be assessed are the

components of the scenarios plotted through the SODA approach. As regards the Vele, the dominant scenario arising from multicriteria analysis points to the usefulness of planning a variety of functions which could occupy the whole built stock not yet demolished. Turning the Vele into university buildings is one of the preferable options, provided it is well integrated in the local community. To achieve this, a large student body would be useful. This use should be associated with other functions linked to the quarter's life. Furthermore, volunteer organizations and charities, as well as businesses, could be assigned appropriate spaces in the renovated Vele complex. This would foster cultural and economic growth, together with gradual integration. A hierarchy of alternatives is obtained from multicriteria evaluation. High on the list are "cultural center" (B), "community center" (F), "university college" (G) and "shopping center" (A). The solutions closest to the status quo, i.e. those which preserve habitation use, whether through renovation of the Vele or their replacement with a new housing project, are last in the list, together with the option of selling the buildings off to private purchasers. The outcomes of equity analysis are illustrated through a dendrogram of coalitions, which charts the possible establishment of alliances and the degree of conflict. Coalitions express the specific position of each group, reflect its choices and feelings towards the quarter's life and status. Equity analysis highlights an element that plays a key role in the quarter's prospects for social regeneration: coalitions are closed, which means they are formed between social

and institutional actors, but not among groups of residents. Coming to the second node, the square, we may observe that two of the options: "several squares" (B) and a "system square-equipped axis" (F) are non-comparable. A possible solution could be to create a system of squares linked to an equipped axis. The options "market-square" (G) and "squares with different functions" (C) also generate great interest, while a general need emerges for a central square as the 'heart' of the quarter. The outcome of the evaluation process bears witness to the importance of designing a set of public spaces that can play an active role in the context, combining a variety of functions and activities. The square thus becomes the stage for playing out the potential resources of the place, a focus for social, cultural and economic exchange. The coalition dendrogram confirms the winning alliance between the municipal district (circoscrizione) and community groups, reflecting the attempt to harmonize the role of public authorities with informal networks. Another important element was the coalition between the inhabitants of the most dilapidated areas (Vele and Iacp) and those of the residential parks. This commonality reflects shared concerns and their interest in a project targeting social integration. For both the Vele and the 'square' themes, the end result of the evaluation process is a strategic scenario that can be technically compared with the project drafted by the public authorities.

#### Final reflections

This approach to decision-making aims at helping the parties assess the legitimacy, i.e. the 'social

consensus' of the overall process and the choices made. This is accomplished by analyzing and describing the various relevant dynamics (namely the economic, social, environmental and cultural dimensions) and by adopting participatory techniques that foster interaction between expert and lay knowledge. By applying a variety of methods, taken from different fields of learning, we were able to define a framework for more comprehensive analysis and evaluation, to be taken as a new starting point. The methodological route we outlined highlights the fact that planning and design are entwined with evaluation. This approach enables multidimensional assessment of resources, which is necessary to correctly define strategic action lines. This method broadens the evaluation process, which thus becomes cross-disciplinary (taking into account the complexity of its subject matter) and participatory (empowering the local community).

\* This paper is a summary of a line of enquiry carried out in the framework of a Ph.D course in "Evaluation methods for integrated conservation of the architectural, urban and environmental heritage", coordinated by Luigi Fusco Girard. In particular, M. Cerreta wrote the first paragraph and, the third, "Methodological approach", "The cognitive model: building a scenario". C.M. Torre is the author of the paragraphs: "The context: the Scampia quarter in Naples", "Knowledge: data analysis and discovery of perceptions", "Evaluation: a shared scenario". The format of the interview was developed through collaboration with Vincenzo Andriello, Daniela Lepore and Federica Palestino from Università degli Studi di Napoli Federico II; Anna Savarese from the Campania branch of Legambiente (a major Italian Environmentalist Association) and some members of two community groups working in Scampia: Granello di senape and Obiettivo uomo.

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