
ARTICLES

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ENVIRONMENTAL MANAGEMENT
OF SOCIAL DILEMMAS

Abstract: Social dilemmas are contradictions between the interests of individuals and the collective interests as expressed in plans and policy proposals. It is argued in this paper that if these social dilemmas are denied in environmental planning then this may have detrimental consequences in the long run for urban ecology and society. Planning proposals can only be appropriately implemented if behavioural aspects of various actors are fully taken into account. Trade-offs are essential in planning to arrive at compromise solutions. The concept of 'sustainability', however, does not allow compromises. In this paper a plea is given to shift the attention in urban environmental planning from the 'sustainability' concept to the 'quality' concept.

Key words: environmental policy, social issues, urban development.

1. INTRODUCTION

Urban areas are the foci for many environmental problems such as air and water pollution, resource depletion and the production of waste. Cities have also a central role to play in finding solutions to global environmental problems. It is in cities where people can develop solutions such as alternatives to cost-effective waste recycling, environmentally-friendly technologies, resource intensive modes of transport and business opportunities associated with environmental concerns (cf. also VOOGD, 1994a).

Urban areas only function by the grace of urban planning. The complexity of urban life is too great to leave processes entirely to market forces. Urban planning is necessary to realize and maintain an urban environment based on collective interests. This collective interest may conflict with individual interests. This is called a social dilemma and will be discussed in more detail in section two.

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Evidently, there is an increasing concern that urban areas should become more environmentally sustainable (e. g. BREHENY, 1992). Practice teaches us that it is rather difficult to implement the sustainability concept in 'down to earth' urban planning. This will be discussed in more detail in section three of this essay, which includes a plea to shift the attention in urban environmental planning from the 'sustainability' concept to the 'quality' concept.

Quality is a complex notion to deal with too. It is shown in section four that an important distinction can be made between the concept of 'quality of life' and 'environmental quality'. In theory it is relatively easy to define 'quality' in terms of criteria that have to be met. Implementing these criteria in actual policy implies that statutory environmental standards have to be designed and enforced. However, this may interfere with the flexibility that is often necessary to attain acceptable compromises between the various urban interests involved (e. g. see VOOGD, 1994b).

This essay will be finished by some concluding remarks in section five.

2. PLANNING CONTROL OF SOCIAL DILEMMAS

The ability to strike a balance between economic efficiency and environmental quality is the art and science of urban planning. Planning is concerned with establishing and working towards long-term objectives, ensuring continued growth with progressive improvement. The planner therefore often serves as an arbiter of conflicting pressures and demands upon land and other resources. To be successful as an arbiter, all parties concerned must be willing to compromise. This has been discussed in more detail in another paper (VOOGD, 1994b). Environmental interests also have to play the mediation and negotiation game to influence daily urban decision-making processes in their direction (cf. also de ROO, 1993).

However, planning proposals can only be appropriately implemented if behavioural aspects of various actors are fully taken into account. In urban environmental planning especially a contradiction may be witnessed between the interests of individuals and the collective interests as are expressed in plans and planning proposals. If these contradictions, which are **social dilemmas**, are denied then this may have detrimental consequences in the long run for urban ecology and society.

Such undesirable situations can be illustrated by the well-known **prisoner's dilemma** (e. g. LINDLEY, 1971). This dilemma teaches us that individuals may act very rationally from their own perspective in pursuit of their own interests,

but from a collective perspective this behaviour may be irrational. This is illustrated by means of table 1.

Table 1. Hypothetical illustrative payoff matrix for two different interests and two different policy options

Specification	Interest B	
	option 1	option 2
Interest A		
option 1	A = 7 B = 7	A = 3 B = 9
option 2	A = 9 B = 3	A = 3 B = 3

Suppose we have two policy options 1 and 2 (e. g. improving public transport or improving road infrastructure) and two different interest groups A and B. The appreciation of each interest with respect to each option is given in table 1, for which holds that a higher number is a better appreciation. The **collective rational solution** to this problem is option 1, for which the total appreciation is higher (viz. $7 + 7$) than for option 2 (i. e. $3 + 3$). However, from an individual perspective of interest A option 2 is much to be preferred if B pursues option 1 ($A = 9, B = 3$). Interest B favours also option 2 if interest A chooses option 1. In other words: the **individual rational solution** to this problem is option 1.

Evidently, if urban developments are only based on individual rational solutions, further environmental degradation seems unavoidable. There are too many examples of behavioural activities (e. g. going by car instead of public transport, reducing production costs, using waste increasing products) that are usually highly preferred from an individual perspective, which may undoubtedly imply further environmental degradation.

What brings people in 'social dilemma' situations to act in the collective interest? The most prominent explanation is that it only seems as if they act against their own interest, while in an indirect way they benefit by doing so. Three different situations are usually distinguished in literature:

- a) situations in which persons interact repeatedly with the same other(s) (e. g. TAYLOR, 1976; KREPS et al., 1982);
- b) situations in which people's behaviour in the interaction becomes known to other potential partners (e. g. WILSON, 1989) and
- c) situations in which people may expect (social) sanctions following their behaviour (e. g. FOX and GUYER, 1978).

Evidently, by pursuing collective rational solutions of environmental problems according to situations (a) and (b), the introduction of some effective 'social control' is presupposed. The third situation, on the other hand, is strongly related to planning measures and planning control.

It should be recognised that successfully addressing social dilemmas on environmental issues by planning measures requires environmental considerations to pervade all decision-making which affects the city and its environment. A plethora of initiatives over recent years has begun to address the environmental consequences of cities but they have focused on individual 'elements' such as pollution, waste, recycling, transport and land use planning responses. Approaches have tended to be piecemeal and uncoordinated. However, the complexity of the natural environment and of urban and economic systems requires an integrated approach to policy-making and decision-taking involving all the actors and agents who determine the environmental effect of cities and urban areas.

3. SUSTAINABILITY OR QUALITY AS ENVIRONMENTAL PLANNING PARADIGM?

The origins of the sustainability concept can be traced back to the conservation movement in the 19th century (e. g. JARRETT, 1966). In economics it is used in relation to the maximum sustainable yield as for common property resources such as ocean fisheries. The public concern for sustainability became fashionable after the dramatic forecasts of resource depletion and environmental degradation by FORRESTER (1971) and MEADOWS et al. (1972). This has been confirmed in 1987 by the World Commission on Environment and Development, the well-known Brundtland Commission (cf. PEARCE et al., 1989, 1990). Sustainable development has been defined by the Brundtland Commission as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

The Brundtland Commission's definition of 'sustainable development' has received much attention in literature (cf., among others, the following books: DALY and COBB, 1989; JOHNSTON, 1991; ARCHIBUGI and NIJKAMP, 1992; BREHENY, 1992; de GROOT, 1992; LYKKE, 1992; BLOWERS, 1993). Its relative vagueness has implied that many different disciplines have used this description to legitimate their own objectives and actions. Consequently, much controversy surrounds the meaning of the term and its application.

The problem with sustainability as a 'leading concept' from an urban planning point of view can be best illustrated by pointing at a historic reference: the definition of the Brundtland Commission bears a striking resemblance to what a Dutch town planner de Casseres¹ described as early as 1929 (in Dutch) as the target of urban and regional planning (cf. VOOGD, 1993, p. 18). However, envi-

¹ de CASSERES, (1929, p. 14). He is also the inventor of the Dutch term *planologie* as an equivalent for 'planning sciences'.

ronmental problems as we see them today were hardly or not recognised in the 1920s. This implies that 'the own needs of future generations' can also be seen in terms of 'coal heating', 'automobiles', 'asphalt roads' and many more environmentally unfriendly objects or activities. Sustainability, if interpreted from a 'needs' perspective, does not necessarily guarantee the prevention of environmental degradation.

Another difficulty from a planning viewpoint with the concept of sustainability is that it stimulates conservative behaviour. An orthodox ecological interpretation of sustainability will lead to, what is known as, the 'precautionary principle'. According to this principle it should be assumed that, unless proved otherwise, an activity might damage the environment and should not be accepted. Although in essence this principle can be seen as very thoughtful, by applying it rigidly it may hamper developments needed for social, economic and even environmental reasons. For example, it may well happen that a polluting activity had better be approved to avoid a much stronger environmental degradation elsewhere. But 'elsewhere' is usually seen as less important than 'here and now' (e. g. VLEK and KEREN, 1992).

The concept of sustainability does not allow compromises. 'Future generations own needs', although rather vague and uncertain, are more important than today's needs. This allows no trade-off between what could be seen as important and unimportant needs. For example, according to the concept of sustainability the Dutch population in the 19th century would not have been allowed to use their highland peat for heating and other purposes. The 19th century knowledge base only included information about how wood and coal (both not largely available in the Netherlands) and peat could be used for heating and cooking, etc. Therefore their conclusion would have been that 'my generation' would also be in great need of this peat. Luckily for my grand-grand parents they were not aware of the Brundtland Report and continued to use all the available peat and consequently restructured the peat areas by giving them a new infrastructure and improved accessibility. Besides it gave an economic base to a poor region and it helped the Dutch population and the entire Dutch economy to enter the 20th century reasonably well. It certainly did not disable the next generations, who benefited from the land restoration (better agricultural soil, better infrastructure) and we even have a 'peat museum' on the last remaining peat!

This example is given to demonstrate that the concept of sustainability lacks the ability to make trade-offs. Both spatial trade-offs ('here or there') and temporal trade-offs ('now or then or never') are essential for arriving at planning solutions in which a multiplicity of different interests are involved. The sustainability concept, although admirable and pursuable as an objective, lacks sufficient flexibility for application directly at a local planning level.

Perhaps a better yardstick, which is more suitable for including trade-offs, is the quality concept. In particular, the notion of environmental quality has be-

come an important issue all over Europe to be guarded and protected. To do so, systematic evaluation should be an important task in any public planning process (e. g. BOULDING, 1991; COKER and RICHARDS, 1992; DAVIDSON, 1992; de GROOT, 1992; JOHANSSON, 1987; ORTOLANO, 1984. A major objective of urban environmental planning is the preservation, the planned conservation, of cultural and ecological values. In public debates, these values are often expressed as costs, beauty, efficiency and alike. The word 'quality' is often used as a verbal yardstick to determine the appropriateness of projects or plans for the built and natural environment. As with sustainability, quality is also a very broad concept. It is clearly a multidimensional concept, which implies that the weighing of dimensions may play a role in detecting the degree of quality. This implies that trade-offs are part of the concept, which is an important conclusion from a planning point of view. In the next section therefore some more attention will be paid to the quality concept.

4. QUALITY OF LIFE OR ENVIRONMENTAL QUALITY?

The Latin root meaning of *qualitas* is clearly non-normative. This denotation is still used, for instance in the notion 'qualitative research', meaning that the research focuses more on what something is than on its distribution. However, over the years the term 'quality' also took on a normative denotation: 'quality' as a synonym for a 'degree of excellence', or even a 'highly awarded property' of something. As such, 'quality' is something that is aimed at, not just a description of how something happens to be. Well-known uses of the term 'quality' are quality of life and environmental quality.

Quality of life, particularly as it is related to man's habitat, is a major issue of our times. A fundamental aspiration of many policy-makers and scientists, is to realize an improvement in the quality of life without any negative spillovers for the rest of our ecosystem. This aspiration has resulted in a vast amount of studies and publications in various disciplines. Many of these studies can be classified as assessment studies, emphasizing the conceptualisation and measurement of one or more dimensions of quality of life (e. g. WALKER and ROSSER, 1988). Examples are the assessment of quality of life and subjective well-being (STRACK et al., 1991), health (BOULDING, 1991), public economics (WINGO and EVANS, 1977), elderly (GEORGE and BEARON, 1980), organisations (LAWLER et al., 1980), technological developments (STOEBER and SCHUMACHER, 1973), information technology (KLAP, 1986), territorial and urban characteristics (KNOX, 1975) and – last but not least – ecological concern (BRADEN and KOLSTAD, 1991).

What does emerge from literature is that many quite different approaches to these topics are being used, whether consciously and explicitly, or not. However, the above mentioned references suggest very clearly the multidimensional nature of the notion 'quality of life'. This multidimensional nature cannot be precisely defined, because usually many different attributes and data sources are used to describe and measure quality standards. Nevertheless, from the literature several dominant dimensions can be qualitatively isolated.

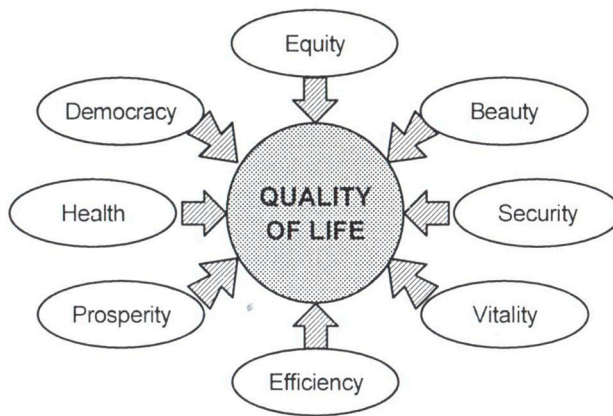


Fig. 1. Dimensions of quality of a life

At least eight different 'quality of life' dimensions can be deduced, which are visualized in figure 1.

The first dimension is a **equity**. The appreciation of 'quality of life' is a personal experience based on, among others, an implicit comparison with other individuals. A fair distribution of 'costs' and 'benefits' among segments of society, or equity, is generally considered as a positive contribution to the quality of life.

Another dimension of quality of life concerns **beauty**. This obvious but fuzzy notion can be best described as a characteristic of objects or situations that delight the senses and/or exalt the mind. Evidently, beauty alone is not enough. Another fundamental issue is **security**. Individuals want comfort and confidence in the safety of their actions and surroundings. Quality of life also depends on the capacity to survive, in other words to live, grow or develop. This can probably be best denoted by the term **vitality**. Everybody will be familiar with the burden and resulting annoyance of bureaucracy. In addition, **efficiency** should be mentioned. Efficiency, viz. acting or producing effectively with a minimum of effort or waste, is often seen as an important dimension of quality of life. The amount of available 'capital' is also a dimension of quality of life. This can be described by the term **prosperity**. In our modern society this is usually trans-

lated in terms of 'financial success', but in earlier societies a man could also tremendously improve his quality of life by having, for instance, many women or sheep (or both!).

The indisputably most important dimension of quality of life is **health**. By health is meant both physical as well as mental well-being. However, it must be acknowledged that there are situations in which a mental distortion is not necessarily perceived by the individual concerned as a loss of quality of life. I leave it to the reader to fill in these cases. Finally, **democracy** should be mentioned here as a dimension of 'quality of life'. This should be interpreted as the degree to which people can change their environment, exercised either directly or through elected representatives.

Environmental quality is strongly related to quality of life (e. g. CRAIK and ZUBE, 1976; BRADEN and KOLSTAD, 1991). Both terms have a lot in common, although they are often used in different settings and by different disciplines. For instance, regional scientists, as many other human beings, are often inclined to consider towns as 'attractive' if they have good facilities and clean, decent and safe neighbourhoods, in which people can live and work in harmony. In more professional and general terms, this implies that 'attractive' locations have a broad based 'place-amenity'. This 'place-amenity' is of course strongly related to environmental quality (cf. also RISPOLI, 1993). The experiences in places with a high quality should be such that human well-being is valued as positive, not only at an individual level but in particular at a group or social level (social well-being). In other words, environmental quality as seen along these lines of thought, may be interpreted as a notion in which human behaviour and human perception of quality of life are very important (e. g. FRICK, 1986; GRIFFIN, 1986).

A comparison of the dimensions of quality of life with the dimensions used in literature regarding 'environmental quality' illuminates some differences, which are not solely terminological (cf. figure 2).

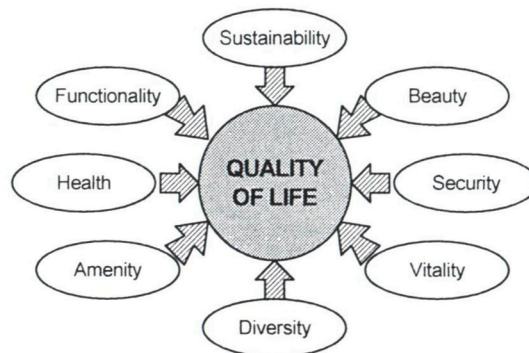


Fig. 2. Dimensions of environmental quality

An important component of environmental quality is no doubt sustainability. However, **sustainability** is only one of the dimensions that determine environmental quality. Studies of environmental quality often refer also to the dimension of **beauty**, not only with regard to the natural setting but also a city's built form and character. As with quality of life, **security**, **health**, and **vitality** are dimensions that are often specified (sometimes under different names, such as risk and pollution). It is aimed at environments conducive to high standards of safety and a flourishing ecological condition. Environmental change should enrich the opportunities for all living species to multiply.

Diversity is another important dimension of environmental quality. This concerns both the degree of ecological variation and the variation of the built environment. Obviously, 'green' ecologists and environmentalists stress the view in the first part of the preceding sentence, whereas 'grey' and urban ecologists usually include the second part too. Environments should be comfortable and enjoyable. This dimension is usually denoted in literature by the term **amenity**. The dimension functionality refers to how environments are used. This dimension is particularly relevant from an urban and physical planning point of view. In these circles it is usually interpreted in economic terms, i. e. an efficient land use at the lowest possible public cost for any given level of benefit.

By comparing figure 1 with figure 2 we may draw some preliminary conclusions. The dimensions of 'quality of life' as used in publications on this subject, correspond in their underlying meaning to a large degree with the dimensions of 'environmental quality' found in the literature. However, the dimensions 'equity', 'efficiency' and 'democracy' are (so far) not explicitly used, but they can include, to some extent, attributes of the dimension 'functionality' as is the case with 'prosperity'.

Glancing quickly at figures 1 and 2 we may argue that 'quality of life' reflects an anthropocentric paradigm. This paradigm is based on the concept of environmental control focused on the interests of individuals. On the other hand, the dimensions of 'environmental quality' suggest an ecocentric paradigm departing from higher 'group' or 'system' interests. At least two different 'ecocentric' angles of incidence must be distinguished, which can be labelled as the nature ecocentric view and the human ecocentric view. The nature ecocentric view suggests that from the outset nature should be seen independently of humankind. Humans have no priority over nature, and therefore, whenever possible, people should live in interplay with nature, with no, or minimal, disturbance of natural cycles and equilibria. The human ecocentric view stresses human interrelationships and place dependencies. Ecology, location and local participation are in focus, the concept of urban ecology takes precedence in this view over environmental quality.

5. SOME CONCLUDING REMARKS

Pollution is no respecter of boundaries. To be effective, planning processes and also planning standards need to be more flexible and better conditioned to respond to ever-changing social, economic and political circumstances. To eliminate contradictions and anomalies in a policy, a more closely integrated approach between local authority departments and their constituent professional staff is called for. Evidently, this implies that a high degree of co-ordination and co-operation is required at all levels of local, regional and national government and between all agencies active in society.

Because any change in the use of land is potentially a source of disruption and most land use activities have resource and pollution connotations, it is the task of every planner at all scales to supervise the rearrangement of these activities so that any disharmony they cause is reduced to a minimum. In reviewing the relationship persisting between different operations on land planning should not be only attuned to the preferences of public opinion (individual rationality) but must especially know which contribution planning proposals make to the collective improvement of general quality indicators (collective rationality).

Collective rationality is linked to systematic evaluation and trade-offs. It is illustrated in this paper that the concept of sustainability lacks the ability to deal with trade-offs. However, spatial trade-offs and temporal trade-offs are essential for arriving at planning solutions in a situation where many conflicting goals and objectives exist. It is illustrated that the sustainability concept, although admirable and pursuable as an objective, lacks sufficient flexibility to apply directly on a local planning level. It is argued that quality concepts, like quality of life and environmental quality, are more suitable to include trade-offs, due to their explicit multidimensional nature.

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