

SOCIAL INDICATORS, QUALITY OF LIFE AND ECONOMIC THEORY

A suggestion for establishing a theoretical basis for social indicators and quality of life research

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1. The position of the "Social Indicators Movement"

"Social indicators movement", "Quality of life research", "Basic needs analysis" are terms used to designate a new approach which is gaining ground in the discussion of social development problems¹. These terms are evidently not fully equivalent nor is their exact meaning unequivocally defined: they may mean different things when used by various protagonists of the new approach. There is however an element which is common to all thinking on these lines: and that is the conviction that the state and progress of societies and economies cannot be adequately expressed in terms of familiar national accounting variables. It implies that it is necessary to look for different indicators in order to express conditions in which various populations find themselves, for comparing those conditions through space and time and for devising policies for their improvement.

The strength of that argument was sufficient to influence practical activity. Perhaps the earliest need for some sort of social indicators has arisen in the cost benefit analysis as it became obvious that projects (in particular those sponsored by public authorities) cannot be analysed solely in monetary terms without taking into consideration their consequences for the population at large². The social indicators movement has also succeeded to influence the collection of statistical data. Many United Nations agencies and a number of

national governments collect and publish more and more data, which may be used in constructing social indicators³. The application of social indicators in national planning was also proposed, but so far it has not advanced much. A somewhat wider application they have found in regional and town planning. This is because ecological considerations have lately acquired more weight in the formulation of plans and policies. Ecology is seen as an element of the quality of life and attention given to it reflects a way of thinking closely akin to that of the social indicators movement.

It may seem therefore that the new "movement" has registered a few successes and has had quite an influence on the way of thinking of the general public. But so far it had no success at all in putting its own house in order, i.e. in providing an unequivocal and consistent body of knowledge. Even the terminology it uses remains very confusing. This is at least in part due to the hybrid origin of the "movement". It has been started by economists intending to go somewhat beyond the traditional methods of economic analysis, but then sociologists joined in, bringing their own approach and after that came ecology enthusiasts with very heterogenous backgrounds. The overall result was that the social indicators movement has become a conglomerate of eccentric out-crops from various disciplines.

It has moreover split down the middle into two distinct streams adopting different principles for the oconstruction of their indicators : one basing them on objective facts (observable conditions) and the other on subjective judgements (perceived conditions).

That state of methodological and even terminological confusion still persists to the detriment all concerned. There seems to be no clarity as to what are the required characteristics of social indicators which would distinguish them from plain statistics. No general agreement exists so far as to the rules for eselecting indicators, for ordering them into coherent systems, for weighting them in respect of each other and for aggregating them (if that operation is at all deemed desirable and feasible).

Most important of all is however a need for a clear formulation of the purpose which social indicators are supposed to serve. That means that social indicators should be *oriented* towards some definite task. The solution of methodological problems of constructing a system of social indicators depends on the task they are supposed to fulfil. If they have no such orientation, they remain

an unmanageable mass of statistics. Evidently a number of alternative orientations of social indicators are possible in principle. Each orientation would lead to a different system of indicators.

Social indicators are essentially a measuring device. They acquire significance when they become analytical tools of a recognised discipline concerned with some aspect of social conditions. Consequently the orientation of indicators requires not only the designation of the task they are supposed to perform, but also their integration into one of the disciplines within the field of social science. In that discipline social indicators will find a theoretical basis. And that would be crucial for the solution of their methodological problems and for the construction of relevant social indicators systems.

A proposal to that effect is the subject of the present paper.

It is suggested that economics should be the discipline into which social indicators should be implanted. It is explained below how social indicators can become analytical tools of economic theory. It is also possible to argue that a reciprocal benefit is possible : that some of the problems which economic theory has so far failed to solve, could be effectively tackled by means of new tools i.e. of social indicators.

2. The position of economics

It is now necessary to find out what place social indicators could take within the body of economic theory.

Within the general malaise affecting contemporary economics it is possible to find a certain significant deficiency which may be of interest for our purpose.

This deficiency consists in the fact that economics does not know any longer what it is the variable which is supposed to be maximised for the national economy as a whole. That means that it has lost its focus and consequently a reference point for analysis.

Adam Smith was certain that wealth of the nation is what economic activity is after. And wealth he understood as the “necessities and luxuries of life”, i.e. a flow of goods and services which the population could enjoy.

A great change came about with the marginal utility school of the 1870s. It was assumed that it not goods and services but their utility which people are after. Utility was however a subjective evaluation. As it was non-measurable, non-additive and non-comparable between persons, there was no bridge between individual utilities and collective utility. At first it was assumed that there is no need for such a thing as collective utility : that maxima utility positions of individuals is all that is required. That proposition has become evidently untenable once action of public authorities became more and more important. Maximisation of something like social or collective utility has become necessary. It is in order to fulfil that task that welfare economics were developed. As generally admitted now it failed in that task. Individual utilities could not be summed up in order to obtain social utility⁴. and other concepts of collective utility proved unwieldy. Consequently economics had to do without any quantitative concept which would represent the ultimate end of economic activity i.e. the population's well-being.

The Keynesian macro approach which dominated economic thinking in the last forty years had no place for utility at all. Employment and income were the two variables that mattered. What employment was used for and how income was distributed, was left to the market and was not considered a problem concerning those responsible for national policies.

In national accounting which was developed under the impact of Keynes' theoretical thinking, the various subdivisions of the Gross National Product all expressed in monetary terms, were taken to be the final outcomes of economic activity and were assumed to express the well-being of populations. That practice implied the assumption that markets are perfect : a belief in the benevolence of the "invisible hand" of the market mechanism. The difference between the perfect competition equilibrium (which was supposed to maximise utility) and the actual conditions were forgotten, and the maximisation of the variables established by the market came to be seen as equivalent to maximisation of utility.

And so it went on, until it was realised that something very essential was lacking in that kind of economic thinking. That realisation has come out primarily from the discussion of growth and development which by its very nature had to be oriented towards improvements in the conditions of life in developing countries. It

was soon realised that this aim was not identical with the growth of GNP.

In terms of economic theory the problem was seen and convincingly stated by Joan Robinson in her address to the American Economic Association on the "second crisis in economic theory"⁵. In her view the first crisis consisted in the inability of economic theory to explain the problem of unemployment. It was resolved by Keynes. The second crisis has arisen from the fact that theory cannot answer the question what employment should be for. This is exactly what was stated above : in today's economic theory we have no adequate way of assessing the final outcome of economic activity i.e. of its impact on the conditions in which people live.

This is a very awkward situation. To assess the conditions of a population, to determine what has been its progress over a period of time, to compare it with other populations, to formulate policies and plans for its improvement, we have no applicable quantitative instruments apart from notoriously inadequate national accounting variables.

A similar difficulty arises at micro level. What is called cost benefit analysis or project analysis, suffers badly from a lack of an unequivocal point of reference in the well-being of the population.

What seems to be needed is a construct (a variable or a function) the maximisation of which would determine the optimal position of a national economy. Such a function would provide a focus to economic analysis by answering such questions as "what development is for" and would be relevant for assessing past performance and for drafting policies for the future. It would also be a step forward in the methodology of economics as it would imply the introduction of new analytical tools which would make equilibrium analysis more relevant.

In the set-up of economic theory such a function would occupy the place which has been de facto vacated by utility and very imperfectly filled by GNP.

That function ought to possess characteristics the lack of which has made the utility function inapplicable in practice : its numerical values must be derived from empirical observation and they must be comparable as between persons and populations and also in space

and time. On the other hand it must possess some of the features of utility. As it is supposed to reflect the well-being of the population, it cannot be conceived without a preference element being present in it.

Such a function will have to be clearly distinct from any national accounting variable. Its acceptance would put an end to the illegitimate assumption that market determined variables adequately represent conditions in which people live.

That function will have to be given some name. It is proposed to call it "Quality of Life Function" (QLF). That term would reflect the assumption that the improvement in the quality of life of the population constitutes the ultimate aim of economic activity. It is also proposed that the variables of that function are expressed in terms of social indicators. It is in this way that the place for social indicators can be found within economic theory. They will become instruments for measuring welfare or the quality of life of the population⁶.

3. The place of Social Indicators in Economic Theory

Not all existing varieties of social indicators can be oriented towards the measurement of the quality of life and be integrated into economic theory. To fulfil those conditions they must belong to the "objective" class of indicators. Within that class they should be covered by the following definition : a social indicator is a quantitative expression for a category of objective observable facts which is assumed to reflect the conditions of life of a person or of a population⁷. It must be added that indicators conceived in that way must not be used singly, but in sets established for that purpose, as only then they can adequately represent the conditions in which people live.

It is possible to select such a set of indicators which would cover all the essential components of human welfare. Indicators included in that set would provide a numerical expression for the welfare of the population in question⁸.

Once such a system of social indicators is adopted, it becomes possible to distinguish between the flow of goods and services produced (expressed in monetary terms as GNP) and the flow of welfare which is generated by that national product but expressed in terms

of social indicators.

It is essential to realise that the size of these two flows are never proportional to each other. As they differ in various places and as they change through time, the same size of national product flow or the same increment of it would generate different sizes of flows or of increments of welfare. This is because some elements of the flow of product do not generate welfare at all (are "welfare-barren" e.g. armaments) and some others are wasted at various stages of the production and consumption process. Welfare generation may also be frustrated by mal-distribution⁹ or diminished by negative side effects of increased production.

That way of thinking leads to a new way of looking at the process of economic activity. It is seen to consist of two consecutive stages : the first is the production stage which begins with inputs of primary factors and through various stages leads to the output of final products. The second stage is welfare generation which begins with the product available for consumption and ends with the welfare position of the population.

It is that second stage which has been hardly explored. And yet what happens in that stage is of crucial importance. It is that stage that provides the answer to the question "what development is for". In fact most of what is called "social problems" arise out of the functioning of that stage. That could be expected : the stage is concerned with the use which is made of available resources. Their misuse gives rise to "social problems".

The welfare generation stage could not be even conceived if we did not have social indicators as analytical instruments. This is because the process of welfare generation is revealed when welfare expressed in social indicators (which is the final outcome of that stage) is confronted with the national product (which constitutes the initial means of that stage). That confrontation opens the possibility for an important field of inquiry and namely the study of interdependence between national accounting variables (such as GNP) and people's welfare. And that kind of study could give us an insight into the problem of how welfare-effective is the economic activity. When the outcome of the welfare generation stage cannot be measured the whole problem disappears from sight.

4. *The Quality of Life Function (QLF)*

4.1. *The definition of the QLF*

It has been stated above that the welfare generation stage of economic activity results in a flow of welfare to the population which may be also called its quality of life.

It has been proposed that the quality of life is conceived as a function. The independent variables of that function will be the social indicators, representing various components of the quality of life.

Quality of life to which those indicators would refer can be seen as falling into two parts ; "Basic needs" and "Environment". The components of "Basic needs" could be : nutrition, clothing, dwelling, health, education, leisure and security. "Environment" could be divided into : physical environment and social environment, and that into working conditions, community conditions, communication and information, recreation etc. The subdivision of the two parts of the quality of life into components may be done in various ways, but it is obvious that components just quoted as examples constitute essential elements in any concept of the quality of life.

The quality of life function will have social indicators representing all these components as its independent variables. The value of the function will represent the quality of life of a population. As collective welfare called here quality of life is generally assumed to be the aim of economic activity, the Quality of Life Function (QLF) may well be accepted as the maximand which would assume the role which has been originally assigned to social utility function, but which social utility was never able to perform.

4.2. *The characteristics of the QLF*

The differences between the classical utility or preference function and the QLF are significant.

First the number of QLF variables is relatively small. When the classical preference function contains as variables all commodities the population deals with, the QLF is limited to the set of indicators chosen.

This may seem an exaggerated simplification as the indicators are bound to be relatively few in number (probably in the range of 20—40) and certainly cannot fully cover manifold human needs. But it must be remembered that quality of life measurement, though it may be applied to individuals, is meant primarily as an expression of conditions referring to whole populations. For these purposes the amount of information contained in such a number of selected social indicators seems quite adequate. Indeed these indicators would easily convey more information about existing or prospective conditions than national variables commonly used for that purpose. When it comes to establishing objectives for a quality of life policy or targets for a development plan, we would see that our set of selected social indicators gives wider and more detailed coverage of social problems than that commonly found in plans and/or policy statements.

Secondly the numerical values of QLF variables which refer to the whole population can be determined from empirical observation, and namely from regularly collected statistical data.

This is an important merit of the function. The classical preference function with all its apparent elegance will not give us any relevant information about real conditions of society as we cannot hope to obtain information about the multitude of goods that are supposed to constitute the variables of such a function.

Quality of Life Function may be conceived for individuals (micro QLFs) and for populations (macro QLFs). But we shall not discuss individual function here. We shall concentrate on macro QLFs which refer to collectives. It is there that the traditional society utility and social welfare function proved inadequate and have to be replaced.

4.3. The construction and determination of the QLF

The first step in the construction of a QLF is the selection of its components and indicators. The selected set represents the concept of basic needs and environmental conditions peculiar to the population. It will be different for populations with various cultural backgrounds and at various levels of development. When this first step in construction of the function is made, the nature of the population's aspirations is given a tangible and clearly understandable expression. It may be challenged and alternative systems of indica-

tors could be proposed. But when acceptable systems of indicators are established for various populations it would be most interesting to compare them to see the differences in the perception of the quality of life (basic needs and environment) derived from various cultures. To realise what are the common elements between them and where divergencies are found, would seem to be of great interest.

When a system of indicators is accepted it is possible to determine the numerical values of indicators for a given population and period of time. These will express the actual quality of life of that population. This quality of life could be compared through time for that population and also with the quality of life of another population which would use the same system of indicators.

The next step which would complete the QLF is to bring the preference element into the function.

Value judgements (preferences) influence the function in more than one way. First they play a role in the very process of selecting indicators which are to serve as variables in the function. That selection reflects the cultural background of the population for which the function is devised and political ideas as to what is considered essential for the society. It is guided by implicit value judgements for which it is impossible (or at least very difficult) to find any numerical expression. Evidently they do not have any explicit expression in the function.

A Quality of Life Function must however contain also explicit valuations. They are shown by the numerical values of the parameters of the function. They constitute weights for all the function's independent variables and so they determine the relative impact of each variable (expressed in a social indicator) on the value of the function i.e. on the quality of life as a whole.

The determination of parameters makes the function complete, because numerical values have been by then determined for all its elements : parameters, independent variables and the dependent variable. The value of the dependent variable (the value of the function) can be then interpreted as a Quality of Life Index.

When the preference element is being introduced into a QLF an important question arises : *whose* system of preferences is to be adopted for that purpose ?

As the QLF refers to the welfare of a population, the preferences contained in it must be the preferences of those who are concerned with that population's welfare. They will therefore reflect political ideologies or social doctrines of various political and social bodies, the most important of whom would be authority actually in power. That means that there may be a number of alternative shapes of QLF's in which the parameters will be the embodiments of various political convictions (e.g. : socialist, liberal, conservative etc.).

It is obvious that in practice political programmes are not formulated in terms of numerical values of parameters of Quality of Life Functions. But it is in the task of social science to provide a frame within which political objections could be, if not actually formulated, then at least analysed.

4.4. *Forms of the QLF's*

The Quality of Life Function may take different forms. For the purpose of theoretical reasoning it may be conceived as being similar to the familiar preference function. In that case it can be written in the general form :

$$Q = f(x_1, x_2, x_3, x_4, \dots)$$

where : Q is the Quality of Life Index

$x_1, x_2, x_3, x_4, \dots$ are numerical values of social indicators referring to selected components of the quality of life.

A difference with the traditional preference function may be noted. In the traditional function the dependent variable expresses utility (non measurable) and the independent variables quantities of various goods, the number of which is very great. In the QLF the dependent variable is expressed in terms of a Quality of Life Index and the independent variables in terms of social indicators (their respective physical units). The number of variables is limited (say 20 to 40) and all of them are measurable and observable.

For the purpose of empirical investigations which would lead to the computation of the numerical value of the function it is more practical to convey the function as a linear one. Such a function can be written :

$$Q = a_1x_1 + a_2x_2 + a_3x_3 + a_4x_4 + \dots$$

where $a_1, a_2, a_3, a_4, \dots$ are parameters expressing respective weights assigned (as expression of preference) to particular variables (indicators).

This is evidently a form which the objective function takes in linear programmes. The QLF may perform that role i.e. to be maximised subject to constraints conceived in the usual way.

4.5. *The revelation of existing QLF's*

Even if politicians do not express their political platforms in terms of Quality of Life Function, the QLF concept can be used by researchers to reveal the true contents of political programmes.

This would be in fact an alternative way of determining the QLF. Instead of trying to express political convictions in terms of numerical values of QLF parameters, we assume the QLF as existing and try to find out what are the values of parameters in actual reality. This is a perfectly legitimate procedure, because political decisions are concerned with aims expressed by the QLF variables and must imply valuations of these aims in respect of each other. Those valuations constitute relative numerical values of the QLF parameters. When a government devises and implements its policies it *ipso facto* makes valuations i.e. applies its preferences to various policy objectives¹⁰. It determines their relative importance by allocating resources which make their achievement possible.

It is by observing and analysing the policy schemes declared, proposed or pursued that we may obtain the numerical values of the QLF's parameters. The valuations are implicit in the schemes and can be revealed by appropriated analysis. The system of valuation obtained will reflect objective, observable facts. That would mean that QLF's do actually exist in various times and places. They only need to be revealed and interpreted.

It does not matter that governments or political parties do not reveal their own valuations (numerical values of parameters) implied in their policy programmes and that they proceed by simply establishing targets for their policy not knowing the parameters of their own QLF¹¹.

It is however possible in principle that governments and political parties may make their valuations explicit by determining the numerical values of the QLF parameters. The concept of the Quality of Life Function provides a scheme within which governments' preferences could be expressed.

5. Applications of the Quality of Life Functions

Once the QLF is established as an analytical instrument it could be put to various uses.

The first is the assessment of present and past well-being of the population i.e. of its quality of life.

Numerical values of social indicators selected as variables of the QLF can serve that purpose. They can be derived from empirical observation and computed for various periods and to serve for through time comparisons, or computed for various areas and serve for comparisons in space. However, interesting such comparisons may be, it is necessary to realise that all they can determine are differences or ratios between particular indicators and not the over-all differences or ratios between qualities of life of the populations compared.

This is the consequence of the fact that only some elements of the QLF's were taken into account (the variables) and not the complete function. It is only when parameters (derived from some systems of preferences) are assigned to all variables, that the function becomes complete. When this is done, the quality of life can be expressed as a single number (the numerical value of the function). The comparisons through time and space become more meaningful as it is possible to calculate differences and ratios between the numbers representing over-all Qualities of Life of the populations compared.

But even more important than the assessment of the situation would be the application of the QLF in policies and planning. It may serve as an objective function for a programme of action. Then its parameters will be derived from the preferences of the decision makers and the numerical values of the variables will be established so as to maximise the overall value of the function, subject to constraints.

It is in that application that the Quality of Life Function acquires its greatest significance. Its maximisation becomes the criterion for the evaluation of economic achievement and provides a reference point for all economic activity.

It is also possible to compare alternative policies in terms of their respective QLF's. Or to check implementation of policies and plans against their declared purposes. Discrepancies discovered could be traced to defective information, change in exogenous factors or shifts in preferences. All that could be of great interest and practical significance.

6. *Conclusions*

The suggestion which has been put forward in the present paper has been derived from two observations about the position in social science.

The first refers to the present state of confusion in the social indicators movement. The confusion seems to be caused by the fact that social indicators have been developed as measuring devices but it is not quite clear what exactly they are supposed to measure. As they are, they do not constitute a full fledged discipline within the field of social science. They can acquire significance when they are adopted by such a discipline and used as analytical tools in investigations conducted within that discipline. If they are not "adopted", not only their usefulness remains very limited, but no point of reference exists for solving various methodological problems in their construction and operation. Hence methodological confusion.

The second observation refers to the "malaise" in economics, which seems lately to have difficulty in trying to answer the question "what economic activity is for?" The obvious answer that is should try to increase human welfare is frustrated by the inability to measure that welfare (or the quality of life).

An obvious conclusion comes to mind. Social indicators (strictly speaking some class of them) should be adopted by economic theory as tools for measuring human welfare and in policies aiming at its enhancement.

It was shown above that this can be done by means of a Quality

of Life Functions expressed in social indicators. The QLF could replace, for practical purposes, the cumbersome utility of preference function, of which little use is made in economics anyway.

What was presented here is no more than an outline of a suggestion. The subject requires further elaboration and much work is still needed to make clear all the consequences of this approach and its applicability to theory and policy.

NOTES

¹The social indicators movement has been started by two United Nations reports : *Report on International Definition and Measurement of Standards and Levels of Living*, U.N. New York, 1954 (54. IV.5) and *International Definition and Measurement of Levels of Living, An Interim Guide*, U.N. New York, 1961, (61.IV.7). But it is only since middle sixties that the movement has spread and writings on the subject proliferated. See a bibliography (bilingual German/English) : H. Simonis & V.E. Simonis : *Quality of Life : Methods of measurement*, Kieler Schrifttumkunden zu Wirtschaft und Gesellschaft, Nr. 21, Kiel 1976.

The basic needs approach dates only since mid-seventies. See a report of the Director General of the ILO : *Employment, Growth and Basic Needs : A one-world problem*, ILO, Geneva 1976. See also J. Drewnowski : "Basic needs and social indicators", *Labour and Society*, July 1979 on the relation between social indicators and basic needs.

²This was formulated as a need for an "enumeration" of benefits which cannot be expressed in monetary forms. Cf. A. R. Prest and R. Turvey : "Cost-Benefit Analysis : A Survey" in *Surveys of Economic Theory*, Vol. III, pp. 155-207, Macmillan, London, 1966. It must be admitted however that later the use of social indicators in cost-benefit analysis has not gained ground and in recent cost-benefit writings social indicators have not played a prominent role.

³As examples of recent notable publications oriented towards social indicators could be mentioned :

OECD Social Indicator Development Programme : *List of Social Concerns*, Paris, 1973.

U.N. Statistical Office : *Towards a System of Social and Demographic Statistics*, Studies in methods, Series F., No. 18 (No. E, 74,

XVII.8), New York 1975.

U.N. Economic and Social Council : *Social and Demographic Statistics : Draft Guidelines on Social Indicators*, Report of the Secretary General, 1 March 1976 (E/CN.3/488).

UNESCO : *The Use of Socio-Economic Indicators in Development Planning*, Paris 1976.

⁴ As proved by P.A. Samuelson : "Social Indifference Curves", *Quarterly Journal of Economics*, vo.. LXX, No. 1 (1956), p. 15.

⁵ Joan Robinson : "The Second Crisis in Economic Theory", *American Economic Review*, No. 2, May 1972, pp. 1—10. Although a few years have passed since that address was delivered, economic science does not seem to have advanced much towards the solution of that crisis.

⁶ "Welfare" and "Quality of Life" are used here as exact equivalents. It might be argued therefore that we could be satisfied with the term "welfare" and do without the term "quality of life". It seems however that introducing "quality of life" avoids terminological confusion. Welfare has been given too many meanings already. As this is a new interpretation of the welfare concept and it is suggested that it should be measured in terms of social indicators, it seems proper to give it a name which has originated in the social indicators movement and not to use a terminology peculiar to welfare economics.

It may be noted that just as "welfare" the "quality of life" has also been given various meanings, different from the one proposed here. But this is immaterial for the argument in hand.

⁷ To give an example : the selected category of observable facts is the daily calorie intake in the food consumed. The number of calories per head per day is capable of numerical expression and so it can serve as a measure for "nutrition", which is a component of the population's conditions of life.

It is important to realise that indicators should record facts expressing directly the conditions of life and never intermediate factors which eventually might generate such conditions. In the nutrition example : the indicator should be the calorie intake and not the volume of agricultural production or the expenditure of food.

⁸ The definition of social indicators adopted here restricts considerably the scope of the concept. It leaves out not only the whole class of "indicators of perceived welfare", but also many of the objective indicators proposed in various writings on the subject. This seems however unavoidable.

The approach adopted here conforms to the concept of social indicators developed in the book by the present author : *On measuring and planning the quality of life*, The Hague-Paris 1974. The reader is referred to that book for further details about the characteristics of social indicators and the problems of their construction.

⁹Unequal distribution of needs satisfaction is reflected in properly constructed social indicators. It is not possible to discuss here how this is done. But see J. Drewnowski, op. cit., pp. 24, 41, 59.

¹⁰The question as to what extent the preferences of the policy maker in respect of a population reflect the preferences of individual members of that population is not considered here. It is assumed that authorities' preferences are influenced by individuals through some political channels and we leave it at that. It is quite certain that the values of parameters of the QLF for a population are not derived by any sort of averaging procedure from individual preference functions. This is not only because of the difficulty of collecting that information. The fundamental reason why that cannot be done, is that the variables of an individual and a collective function are not the same even when they go under the same names. (E.G. for an individual increasing the variable environment means moving to a better neighbourhood, for the authority it means slum clearance and establishing national parks).

¹¹That simply means that they do not reason in categories proposed here, which is obvious. But that does not effect the validity of the approach just as the Paretian preference function is not invalidated by the fact that a housewife making purchases in the market does not know her own indifference map.