



Introduction

The current work is the result, a very restricted one, of my thinking over the last thirty years. My interest in the problem of generative mechanisms is something I owe to the teaching of Raymond Boudon who, at the end of the sixties, impressed me very much with the novelty of the solutions he had suggested to the problem of explaining social phenomena. A large part of my empirical work on stratification and social mobility was carried out in this tradition (Cherkaoui 1979, 1982, 1988, 1992, 1995). The more theoretical and historical aspects of this work offered here to the reader share a similar ambition. One of the questions that I pose is that of understanding how the classical sociologists and we ourselves construct explanatory schemas that aim to integrate the macrosociological and the microsociological levels and how to construct a research strategy based around the principles of methodological individualism for understanding macro phenomena. The transitions between these levels operate through the means of a construction and modelling of generative mechanisms. These mechanisms are not defined as simple intermediate variables between micro and macro levels such as are used in multivariate analysis. They are conceptualised instead as a coherent group of hypotheses about actors and the contexts in which they act. These are elementary social processes ideally ones deduced from a theory and able under certain conditions to generate macrophenomena that the sociologist strives to explain. These are the invisible codes that create visible phenomena which were, we should recall, considered anathema by Auguste Comte. Amongst the classic examples are the "invisible hand" of Adam Smith, or more generally those that gave

rise to what Max Weber termed the *Paradoxie der Folgen*, the “paradox of consequences”, on which I have just completed a systematic study. The examples that can be drawn from recent sociological literature are so numerous that there is an embarrassment of choice. It is sufficient perhaps to recall the Homans–Simon model, or the Schelling segregation model.

Clearly such a perspective is not a recent innovation, and nor does it begin with the founding fathers of sociology such as Tocqueville, Durkheim, Weber, Marx, Simmel or Tarde. This god-like ambition to generate complex orders from social atoms and the structure of their interactions goes back a very long way and can be found notably in the work of Thomas Hobbes who asked how it was possible to create social order from axiomatics which relate to self-interest, rationality and equality. The Hobbesian model of contract, for instance, enables the creation of a “common we” that is irreducible to any of the contractees, and as a result each person has the impression of being only one member of a collective body that is greater than him. Under certain conditions, then, supra-individual reality can be deduced from individual behaviour.

The author of *Leviathan* is not however the original source. In Thucydide’s works there are explanations of macrological phenomena based on micrological models. It has even been noted that the historian of the Peloponnesian war employed a version of the prisoner’s dilemma.

After the second Peloponnesian invasion, the Athenians whose lands had been pillaged expressed their discontent and their bitterness towards Pericles. He explained the advantages for the citizens of defending everybody’s interests rather those of the individual:

I am of opinion that national greatness is more for the advantage of private citizens, than any individual well-being coupled with public humiliation. A man may be personally ever so well off, and yet if his country be ruined he must be ruined with it; whereas a flourishing commonwealth always affords chances of salvation to unfortunate individuals. Since then a state can support the misfortunes of private citizens, while they cannot support hers, it is surely the duty of every one to be forward in her defence, and not like you to be so confounded with your domestic afflictions as to give up all thoughts of the common safety, and to blame me for having counselled war and yourselves for having voted it.

This passage from Book II, 2, 42, expresses clearly the differences that will be found later in Chapter III of Book II of *The Social Contract* between the Will of All and the General Will; one is concerned with the common interest, the other with private interest which is only the sum of individual interests and to which the common interest is not reduced. Runciman and Sen (1965) see in Rousseau's writings an application of the prisoner's dilemma model. Better still, in Chapter VII of Book I, Rousseau appears to define what is meant by "free-riding":

In fact, each individual, as a man, may have a particular will contrary or dissimilar to the general will which he has as a citizen. His particular interest may speak to him quite differently from the common interest: his absolute and naturally independent existence may make him look upon what he owes to the common cause as a gratuitous contribution, the loss of which will do less harm to others than the payment of it is burdensome to himself; and, regarding the moral person which constitutes the State as a persona ficta, because not a man, he may wish to enjoy the rights of citizenship without being ready to fulfil the duties of a subject. The continuance of such an injustice could not but prove the undoing of the body politic.

It would be easy to multiply examples of this type. It suffices merely to open *Le contrat social* and *Le discours sur l'origine de l'inégalité* to find a wealth of examples of mechanisms applied to fundamental problems that sociology ever after has never ceased to face. Another historical source of interest to sociology is quite evidently the Scottish School to which Hayek and so many other historians of sociological thought have devoted such outstanding attention. One of the best-known mechanisms is that of the invisible hand found in the work of Adam Smith but also in that of other Scottish philosophers such as Adam Ferguson. The reader will find comments on such historical texts at several points in the present work, although at no point could they pretend to be exhaustive.

The book contains six chapters. The first three are devoted to the identification and analysis of certain mechanisms in the work of Tocqueville, Durkheim and Weber. The next three deal with the extension of problems that classical sociology had identified and to which contemporary sociology has tried to respond by using powerful intellectual instruments that it has either constructed or borrowed from areas as diverse as linguistics, biology, economics or even

sub-disciplines of mathematics such as game-theory and statistical physics.

The first chapter explores the paradigmatic analyses by Tocqueville which combine the micro and macro levels in order to render collective action understandable, in the case of the French Revolution. This chapter makes no pretensions to have covered all of the questions raised by the author of *L'Ancien Régime et la Révolution* nor of the answers he suggested. It is limited to those which appear to me the most suggestive and particularly the most debated. Why do people revolt at the moment when they are most well-off? Why was the French Revolution so much better supported in the wealthiest and least oppressed regions than it was in those that were poorest and most subject to the laws of the *Ancien Régime* and where it had its most ferocious opposition? Why is it that in an elitist society where inequalities and privileges exist and are recognised as such, where access to the elite is in effect a sort of lottery, we do not see much in the way of frustration? Why is it that in a society where the probability of becoming part of the elite is infinitesimal and where the costs of doing so are very high, everybody accepts the lottery game and it is not a source of frustration? Why does the widely perceived weakness of the central power lead some groups of activists to create a revolution? Tocqueville's answers may readily be incorporated within a general theory of rationality which includes expected utility, the representations of society and of power perceived by actors, social mechanisms such as the inflation of expectations, frustration or the non congruence of status, and the logic of monopolist power as it was in the State on the eve of the French Revolution.

The second chapter is perhaps more of a difficult gamble to the extent that it attempts a route which would breach the rigid and artificial boundaries between certain institutionalised sociological traditions. The reading of Durkheimian theory that I suggest there is a partial conclusion to the work I undertook for another book entirely devoted to the French sociologist (Cherkaoui 1998). How to account for the emergence of the division of labour, on the basis of a system of interactions and of interdependence between individuals? Are integration and regulation mysterious forces which go beyond individuals and constrain them? Or are they instead the result of an aggregate of individual actions in a context of interdependence? Is anomie, which is one of the expressions of regulation or of social control, an entity which would force individuals to develop voracious sexual appetites, to nurse

the desire for economic conquest or social mobility, hopes that will be disappointed and that will result in their frustration or disappointment and to suicide? We will see that on this question Durkheim's response is clear. Nobody seeks by his own action to suffer sexual or economic anomie no more than they seek integration so as to profit by any subsequent advantages from it that they might procure. The same is true of the mechanism that makes private vices into public virtues, of the equilibrium produced by the invisible hand, of the division of labour, of the contraction of the extended family and the emergence of the nuclear family, of the emergent behaviour of crowds and more generally of all of the compositional effects; the profits that societies derive from them as well as the negative consequences that these phenomena sometimes engender are not contained within individuals' intentions. In Durkheim's theory regulation mechanisms are endogenous processes, like those identified by Claude Bernard in the living organism. In the absence of regulation, we would expect to see a chaotic distribution of behaviour. The emergence of institutions, as much as of beliefs and norms and in a general way of the social bonds, is the result of a process that is sometimes suggested because of a lack of empirical data to follow the stages of its formation. In the absence of data and because of the difficulty inherent in an individualist approach to explain complex phenomena, the French sociologist felt driven back to adopt an holistic perspective that he shares with some contemporary economists of the so-called regulation school. Branding Durkheim's approach as holistic in order to discredit it would be to fail to understand that for him, the appearance of new structures and the emergence of new social functions are the results of complex dynamics whose identification is so difficult that he is not able to describe them with precision nor still less to formalise them.

The third chapter analyses certain contributions and limits of rational choice theory with regard to the problem of links between the micro and macro levels. Coleman's criticisms of Weber's theory in *The Protestant Ethic and the Spirit of Capitalism* are examined and certain of his misreadings of Weber brought to light, together with their meta-theoretical bases. An attempt is made to show not only that Weber's theory does identify the mechanisms for moving from micro to macro but also that it accounts more effectively than expected utility theory for macrophenomena such as capitalism, while helping us understand not the emergence of a single norm, which rational choice theory can explain, but a constellation of integrated norms. It also shows how the

theory of instrumental rationality merely contributes to a particular perspective in sociological tradition's understanding of norm emergence, namely the Hobbesian one, and recalls a number of problems that rational choice theory has not convincingly resolved. This chapter is only a small part of a much bigger project on Max Weber which I am completing at the time of writing.

The fourth chapter argues that the research strategy by which phenomena are explained by constructing the elementary mechanisms which engender them is very recent even though it is possible to find their premises going back to ancient times. In abandoning the classifications of natural history and in seeking to understand the causes of invariance in certain characteristics of life or of those things – viral, microbial – that are responsible in particular for illness, biology was at an early stage one of the first sciences to put the principles of the new methodology into practice. By breaking with the empiricist mode of apprehension of reality inherited from the natural philosophy of Newton – for reasons that were internal to the theory – the physics of the late nineteenth century took a similar route. The taxonomic conception remained dominant but non-exclusive in linguistics until quite recently and up to the date of the work of formalist theorists such as Chomsky. In sociology, the systematisation and codification of the processes of generative mechanisms occurred even later. If the early essays of Herbert Simon are left aside, for they had hardly any influence on the sociological community, it was only with the work of Raymond Boudon, the articles of Thomas Fararo and Thomas Schelling, that this approach was finally recognised and its usefulness definitively established.

In this chapter I compare the two research traditions. Without making any claim, however, to have exposed the reasons for the virtually exclusive domination of empiricist methodology I briefly summarise the arguments for its epistemological justification whose strongest expression is positivism. I then examine the main criticisms addressed to it, and explore the principles of the strategy of generative models in sociology, limiting myself to the research of Boudon which is most representative of this methodological orientation.

In the fifth chapter I develop a discussion of questions concerning the links between the micrological and the macrological, which are consubstantial to the problem of explanation in the social sciences. In this contribution, I pursue five objectives. Firstly, I show that the most common definition of the micro and the macro, based on size

or scale, is partial and even faulty. From this I suggest substituting a tridimensional definition that takes into account, initially and before anything else, the nature of the problem to be resolved, then the type of hypothesis or of simplification that the researcher adopts to resolve it, and finally the nature of the observational unit and of the analysis that must be congruent with the first dimension. Secondly, I propose the construction of a typology based on the three dimensions and then to subsume beneath its categories all sociological and economic theories. As with any typology, this one may be simplified or made more complex according to the objectives of the researcher. Thirdly, I argue that the greater part of the debates and controversies between these theories have been concerned with the relationship of the micro–macro. Fourthly, I analyse the solutions that have been suggested for the problems raised by these relations and the reasons for the failure of certain theories. And fifthly, I try to demonstrate that no theory can claim to offer a single solution to the micro–macro relationship despite the fact that in explaining this relationship, certain theories are more powerful than others.

The last chapter is devoted to the syntaxes of social stratification theories. I explore in this essay some of the deficiencies of empirical studies, which try to construct and to test macro-level statements but usually remain confined to the micrological level. In so doing, I will mention some requirements for the transition from the micro to the macro and additionally outline a model of stratification connected to a macrosociological theory that is still to be designed despite the significant advances achieved over the last three decades. Some of the hypotheses and statements found in the empirical studies of stratification are limited to the micrological level inasmuch as it assumes that individuals are independent from each other. This generalised de-contextualisation is typical of microsociology. It is unrealistic to assume that the choices individuals make with regard to, for example, education are independent from each other even if such simplifications are not theoretically forbidden provided that the researcher keeps them in mind all the way through his investigation. But, this forces the sociologist of social stratification to keep asking the recurrent question: are the micro-level statements valid on the collective level? Suppose for example that a correlation between educational attainment and income is found by analysing statistical data collected on the individual level. Could we assert that a policy for the reduction of education inequality will have an impact on the income inequality

on the collective level? In other words, could we shift right from the microsociological level to the macrosociological one? Or should we design procedures allowing for such a transition? A simulation will show that there is no simple answer.

As the reader will understand, although the work which follows has a central theme, it is the result however of the juxtaposition of work produced in different contexts. I have not tried to harmonise them nor to modify the content. They are simply evidence of a research orientation which has always distanced itself from a number of sociological approaches that have claimed to renovate our discipline at the same time as they have taken it into some blind alleys.