CHAPTER 17

Sociological Laws

> When we run over libraries, persuaded of these principles, what havoc must we make? If we take in our hand any volume of divinity or school metaphysics, for instance, let us ask, *Does it contain any abstract reasoning concerning quantity or number?* No. *Does it contain any experimental reasoning concerning matter of fact and existence?* No. Commit it then to the flames, for it can contain nothing but sophistry and illusion.
>
> David Hume (1711-1776), *An Inquiry Concerning Human Understanding*

When Auguste Comte suggested that scientific methods could be applied to the study of human societies — an effort he initially named "Social Physics" and only later renamed "Sociology" — he appears to have meant application of precisely those methods which had already proved so successful in classical Physics. Such methods were being applied in Chemistry at his time and would be applied to Biology during this century. Their extension to the study of society would complete the intellectual edifice he called the "hierarchy of the sciences".

In proposing universal application of scientific methods, Comte was simultaneously repudiating pre-scientific attempts to account for observable phenomena: events viewed as resulting from the will of some active agent (explanations which he dubbed "theological" since the presumed agent was often a deity) or as following from the essence or nature of the thing observed ("metaphysical" explanations). Comte referred to scientific explanations as "positive" in the sense that one posits a general law, continually tests it against observations, and uses it to explain specific events so long as it appears to hold.

At the sesquicentennial of Comte's proposal it seems reasonable to ask how much progress Sociology has made, judged against the

criteria he outlined:[1]

> in the final, the positive state, the mind has given over the vain search after absolute notions, the origin and destination of the universe, and the causes of phenomena, and applies itself to the study of their laws, — that is, their invariable relations of succession and resemblance. Reasoning and observation, duly combined, are the means of this knowledge. What is now understood when we speak of an explanation of facts is simply the establishment of a connection between single phenomena and some general facts, the number of which continually diminishes with the progress of science.

Common-sense everyday explanations of human events still rely for the most part on what Comte called theological explanation. When we observe a man-made condition such as war, economic crisis, or discrimination, we want to know who caused or is causing it, who is responsible, who willed it to happen. Even in the loftier context of juridical-legal discourse human behavior is still largely viewed as the result of an act of will (how else do we impute guilt or innocence?). Many professional, academic and even (some would say) scientific explanations of human behavior are still what Comte would call theological in character, though the word "will" is usually replaced by something a little more scientific- sounding: "motive", "intent", "utility", "valence", or what have you.

Many social science explanations, if not theological in this sense, remain basically metaphysical, moving little beyond the approach of the medieval scholastics: *operatio sequitur esse* (literally, operation follows being, i.e., behavior results from the essential nature of a thing). Examples include attempts to account for behavioral phenomena in terms of whether human beings are in essence driven by libido, a territorial imperative, the will to power, nature or nurture, patterns of culture, the need for achievement or affection, self interest, class interests, cognitive or affective-cognitive consistency, or whatever. Debates among symbolic interactionists, functionalists, conflict theorists, and representatives of many other "-isms" are also metaphysical in character, though the focus of debate shifts from human nature to the nature of society.

What is a Law?

It is hard to find examples of the "invariable laws" Comte believed Sociology would discover. Merton noted this state of affairs some years ago[2] and it remains true today:

> Despite the many volumes dealing with the history of sociological theory and despite the plethora of empirical investigations, sociologists (including the writer) may discuss the logical criteria of sociological laws without citing a single instance which fully satisfies these criteria.

Merton's footnote to this remark lists a number of still earlier writers who similarly decried the absence of any scientific laws in the field of Sociology.

I should be specific about what I mean by the term "scientific law". A century after Comte, and very much in the positivist tradition, Pareto outlined three stages of scientific knowledge: in the first, we merely know that interdependence exists between phenomena; in the second, we know that when A increases, B decreases, C increases, and so on (the ecosystem of Fig 11-2); in the third, we are able to determine the exact equations describing these relations. "If we reach this stage, our knowledge of the totality of phenomena ... is complete and perfect".[3]

This seems a reasonable description of the way in which strictly empirical generalizations have been developed in other sciences, though a fourth stage is often possible, namely, the mathematical derivation of the "exact equations describing these relations" from still more general "facts", i.e., the assumptions comprising a theory. Merton stressed this point as well when he distinguished scientific laws from mere statements of an empirical relationship: "The second type of sociological generalization, the so-called scientific law, differs from the foregoing in as much as it is a statement of invariance derivable from a theory".[4]

Some Examples

Among possible contenders as sociological laws, conforming to Comte's positive stage of explanation and to Pareto's third stage of scientific knowledge at least as regards their form, and derivable

from theory, I would suggest the following, all derived from the same Theory of Time-Minimization ("social structures evolve in such a way as to minimize the time required for their operation"):

distribution of service establishments

(10-15) $C = k D^{2/3}$ center density - "density-density"

(10-16) $R = k D^{-1/3}$ centers per capita

(10-17) $a = k D^{-2/3}$ average area - "size-density"

(10-18) $p = k D^{1/3}$ average population served

geographic size of settlements

(9-7) $\log A = K + \frac{7}{9} \log P$ incorporated cities

(9-8) $\log A = K + \frac{8}{9} \log P$ urbanized areas

intra-urban population distribution

(14-12) $D_x = D_o e^{-bx}$ Clark's law

(14-27) $p(x)\,dx = \lambda^2 x e^{-\lambda x}\,dx$ Maxwell-Boltzmann application

place-to-place interactance

(9-9) $I_{ij} = k \frac{P_i P_j}{D_{ij}}$ gravity model

rank-size rule

(9-20) $R^{i/d} s_r = \text{constant}$ Zipf's law

organizational structure

(9-21) $I^{1/3} = a + bE^{1/2}$ square-cube law

There may be other such laws in Sociology, but I am not aware of them. In any case it is not necessary for an illustrative list to be exhaustive. All of those cited here are stated as exact equations describing relationships between measurements made on human social systems. They do not merely assert a tendency for one variable to be associated with another (Pareto's first stage) or to be correlated positively or negatively (the second stage). Instead, they specify the precise form of the relationship.

Unlike many of the apparently exact equations found in economics, these equations are not empty formalisms; they were generated from analysis of real-world data. Unlike certain psychophysical laws (e.g., Weber- Fechner), they do not refer to the behavior of individual human organisms; they describe the

result of a myriad of social actions taken collectively but without conscious collective purpose.

Nor, finally, are these equations simply isolated empirical generalizations. They satisfy Merton's criterion for a scientific law, that the generalization be derivable from theory. Though independent of one another, each has been mathematically derived from time minimization theory. In Comte's words quoted above, these laws represent "reason and observation duly combined".

Inattention to Laws

Considering all this and the long history behind some of these laws, it seems surprising that they are never mentioned in Sociology textbooks which ritually pay lip service to the idea that Sociology is or could be a science. For that matter, they occur only very rarely in the more specialized, advanced level texts. In most scientific fields the testing, reformulation, and mathematical derivation of laws is the quintessential scientific activity, yet even in the professional literature these laws seem to elicit very little interest on the part of sociologists.

The remainder of this chapter is devoted to a consideration of the state of affairs just described. The central question is: given that the discovery, testing and deriving of scientific laws is fundamental to any science, why is there so little interest shown in such activities in the field of Sociology compared with that shown in other disciplines?

Mathematical Skills

One possible explanation for Sociology's lack of interest in scientific laws is probably true but also easily changed: most sociologists lack extensive training in mathematics. It is true that many of us, seeing the above equations in an article, tend to turn to something more readable. Transform those equations to logarithmic form and nearly everyone groans. Derive an equation using elementary differential calculus (now taught in many high schools) and communication drops to near zero.

But this must be only a temporary state of affairs. At Columbia University in 1910 the course in differential calculus was taught

only at the graduate level. In a 1928 textbook on mathematical preparation for Physical Chemistry Farrington Daniels wrote: "... in fact there is no surer way to make the average chemist skip a page of a scientific article than to place on it a couple of exponential equations".[5] This statement became out of date very shortly after it was written, partly, I suppose, because it was written. Economics has undergone a radical transformation in the mathematical skills of its practitioners just since World War II.

I believe that the disinterest in sociological laws lies deeper than simply having, or not having, the limited technical skills involved in attending to them. People who can master the complexities of multivariate analysis (even cookbook or canned varieties) and simultaneously follow and fathom the writings of Parsons and Weber would, I think, find freshman year courses in mathematics for science and engineering surprisingly simple by comparison. And anyway much of the actual work involved in testing laws — the substance of much scientific activity — requires no real mathematical background at all. Testing the above equations with new data sets is far easier than are the research or dissertation projects sociologists normally pursue.

Abstracted Empiricism

C. Wright Mills attacked those whom he labeled "grand theorists" and "abstracted empiricists".[6] It is not surprising that sociologists who resemble either of these stereotypes tend to ignore scientific laws. To the abstracted empiricists, armed with sophisticated techniques for addressing complex problems of measurement and statistical analysis, the simple relationships expressed by the above equations must seem trivial indeed. Testing these laws requires no more than elementary regression analysis. Oh, there may be a little logarithmic transformation involved, some discussion of normality or homoscedasticity, maybe an argument about correlating variables which consist of ratios — but nothing that would tax the skills of advanced statistics students or demonstrate the methodological sophistication of their instructor.

The very variables which comprise these laws must also seem rather anemic to most abstracted empiricists. Of what interest are variables like "area", "population", "distance", or "number of

employees" to those prepared to conduct a variety of tests of validity, reliability and scalability? Are the issues of operational definition (and there are some) exciting enough to warrant attention from those trained to argue (endlessly) about how to measure "social class", "authoritarianism", or "anomie"? And how can anybody possibly be interested in analyzing data which are in many cases already gathered, free for the taking from census volumes, atlases and ordinary almanacs?

To provide just one example of the way in which methodologically sophisticated sociologists — not so extreme as to be called abstracted empiricists — tend to be bored by the above kinds of laws, consider Coleman's treatment of the gravity model.[7] In proposing a very interesting extension of that model, he says:

> In contrast, what is proposed here is that this factor be used simply as a base line, or standardization, which can cancel out differences in interaction due to these *sociologically trivial factors*, and illuminate the differences due to more interesting matters.

I have no wish to challenge Coleman's notion of what is or is not interesting, though it should be noted that population size and the distance over which people can travel/communicate has much to do with social organization, however trivial he finds those variables. And it ought to be mentioned that pursuit of his interests would not have been possible if it were not for the fact that in the past

> A great deal of effort has been devoted to the task of uncovering a definite law which accounts for the amount of communication or travel between any two cities in terms of their populations and the distance which separates them[8]

Most of that effort, unfortunately, cannot be claimed by sociologists.

Grand Theory

The irrelevance of scientific laws to those whom Mills called grand theorists is perhaps even more disturbing. Merton[9] identified a

number of ways in which theory ought to guide research and, conversely, in which research should influence theory. Does the empirical truth or falsity of any of the above laws have any bearing whatever on the theories of Talcott Parsons or those of his critics? Is Weber's theoretical work on the city supported or not by tests of the rank-size rule, the urban density equation or the law of urban areas? Are his theoretical statements on bureaucracy affected in any way by the existence of the square-cube law of formal organizations? If we found that the size-density law or the gravity model of interaction failed to apply somewhere, would we be forced to reassess Durkheim's theory concerning "the progressive preponderance of organic solidarity" (a theory which does say a great deal about territory size, population density and social interaction)?

Reversing the direction of the relation between theory and research, can any of the above laws be derived from anything which currently passes for theory (let alone grand theory) in Sociology? I believe many sociologists would not accept a "merely mathematical" derivation of such laws. Though that is essentially the practice in other sciences, such exercises are usually regarded as "non-substantive" by sociologists. Very well, from what substantive (i.e., purely verbal) theory can anyone derive the precise exponents in size-density or square-cube equations? What substantive theory — of grand or even middle range — leads logically to the rank-size rule?

It is easy to see why grand theorists and their disciples have little interest in deriving scientific laws. It isn't that such laws are too narrow in scope, though that might also be given as a reason. Galileo's law of falling bodies, Priestley's experimental work on combustion, and Mendel's discovery of quantitative regularities from one generation of peas to another all could be thought of as narrow in a sense, but they revolutionized Physics, Chemistry and Biology.

The problem is actually deeper than the narrowness of a law. An empirical finding, no matter how general, cannot be used to sustain or refute **essentially untestable ideas** — metaphysical doctrines on the nature of society. Nor can such doctrines lead logically or mathematically to the kinds of hypotheses which, with sufficient testing, might come to be regarded as scientific laws. As

Blalock[10] has pointed out:

> Although it may be to the advantage of an individual theorist to present a theory that is totally untestable and therefore incapable of being rejected, this is obviously not to the advantage of the discipline, nor to the unfortunate persons who must read and digest a large number of such theories. ...In order for a theory to make relatively precise predictions, it must also be logically tight or basically mathematical in nature. That is, the conclusions (predictions) must be deduced from a set of assumptions.

There is another characteristic of scientific laws such as those listed above which tends to make them unattractive to theorists in Sociology: most laws are products of a long-term research activity carried out by many different investigators. An excellent statement of why this should have any bearing on the problem at hand was made long ago by Henderson[11], a biochemist:

> In the natural sciences both theories and descriptive systems grow by adaptation to the increasing knowledge and experience of the scientists. In the social sciences, systems often issue fully formed from the mind of one man. Then they may be much discussed if they attract attention, but progressive adaptive modification as a result of the concerted efforts of great numbers of men is rare.

The fact that Henderson's comment could also be very appropriately addressed to the history of metaphysics suggests more than a superficial connection between that discipline and what passes for theory in Sociology.

As a counter example consider Auerbach's brief paper[12] on the rank-size rule, which we looked at in Chapter 9. So far as I know, it has never been translated and is, in any case, unfamiliar to most sociologists. It was the first to report the rank-size relation. It has generated an enormous body of subsequent research and theorizing (mostly by geographers and economists), work which continues to grow exponentially. Weber's much better known "classic", his "theoretical" work, *The City*, has generated ... what?

aside from quotation and commentary.

Social Criticism and Reform

I have suggested that scientific laws such as those listed above hold little appeal for either grand theorists or abstracted empiricists. There are sociologists who applaud Mills' lambasting of both camps but who are also disinterested in such laws from the start. I have in mind those who see Sociology's prime purpose as the reform of society, the curing of its ills, the elimination of social inequities and the relief of suffering. I would also include those who, while not actively attempting to reform society, at least see Sociology's principal function as that of providing a critical analysis of contemporary social conditions.

To such people the "positivistic" activities of discovering, testing and mathematically deriving scientific laws must seem truly irrelevant if not downright immoral. Such individuals tend to forget that the father of positivism emphatically justified scientific Sociology as a means for remedying social ills in an increasingly complex world — among such approaches as theology, metaphysics, politics and war, the only method which had not yet been tried. To take but one example of his many comments: "When this spirit is rightly understood, we find that it leads at once to an object far higher than that of satisfying our scientific curiosity: the object, namely, of organizing human life".[13]

In discussing Rousseau and the romantic movement in philosophy, Bertrand Russell wrote[14] what could still be said of many today:

> Cultivated people in eighteenth-century France greatly admired what they called *la sensibilité*, which meant a proneness to emotion, and more particularly to the emotion of sympathy. To be thoroughly satisfactory, the emotion must be direct and violent and quite uninformed by thought. The man of sensibility would be moved to tears by the sight of a single destitute peasant family, but would be cold to well-thought-out schemes for ameliorating the lot of peasants as a class.

I am not suggesting that sociologists turn their backs on social problems or that the few sociological laws listed above can form

the basis for significant "well-thought-out schemes". But ignoring such efforts altogether leaves us with little more to work from than the theological-metaphysical prejudices we have inherited from our (largely pre-industrial) culture.

Is there an idea in contemporary conflict theory or functionalist theory which did not appear long ago, say in Plato's *Republic* or Aristotle's *Ethics*? Is there a diatribe against injustice or a call for good will and humane action toward others which has not already been forcefully communicated by many over the centuries? Trying to develop the kind of science which would make well-thought-out schemes possible in the future may be frustrating to those who want solutions in the present, but it does have the virtue of not yet having been tried (and proved a failure).

This tendency for reform-minded and critical sociologists to view science pessimistically deserves still more attention. No one wants to find truly invariable conditions in the sense that nothing can be done about them. Quetelet[15] was aware that the discovery of laws was a cause for optimism rather than pessimism. Agonizing over the predictability of crime rates, the annual regularity with which "the budget of the scaffold and the prisons is discharged", Quetelet wrote:[16]

> This observation, so discouraging at first sight, becomes, on the contrary, consolatory, when examined more nearly, by showing the possibility of ameliorating the human race, by modifying ... all which influences their mode of existence.

The high-ground farmer who discovers the law that water always runs downhill might despair or pray it were otherwise, but he may also be led to discover how to build a pump and supply it with the energy needed to put water high up on the hill.

Un-applied Sociology

Even the few laws listed here, however, suggest at least limited potential for social criticism or action. And, unlike most of what currently passes for "applied Sociology", such action or criticism would follow directly from application of sociological knowledge (rather than being directed by a government agency to suit its

own needs). For example, in recent censuses, city data tend to depart somewhat from the rank-size rule: large cities are not as large as the rule would predict, based on the pattern displayed by middle-size cities.[17] Urbanized areas — transadministrative entities designated by the Census Bureau to reflect socio-economic rather than legalistic realities — do tend to fit the rule.

It may be that this observation reflects a real-world problem: large cities are increasingly surrounded by socio-economically integrated but legally separated suburbs which deny them not only the population they need to produce conformity with the rank-size rule, but also the tax base they need for solving some of their problems. Incorporated cities and suburbs are legal creatures of the state; as such, their boundaries and corporate identities can be modified through political action. But few sociologists seem even interested in establishing the scientific basis for such action.

To take another example, since the introduction of the automobile there has been a steady erosion of the size-density relation, at the county level, away from the -2/3 value. This doesn't mean the size-density law isn't a scientific law. It means that the observed data tend less and less to support the theoretical condition of time-minimization (and hence minimization of overall cost). It means that as a nation we are still conducting local government activities from a set of county seats established to serve a 19th century population which relied on the horse for its transportation.

Though the introduction of the school bus led to a drastic consolidation of school districts prior to World War II, we still annually pay the cost of operating over 3,000 counties,[18] each with its own judges, jailers, sheriffs, assessors, recorders, etc. This in spite of the fact that new transportation and communication technology, along with shifts in population, has made the vast majority of them superfluous. What this actually costs us as a society is hard (but not impossible) to assess. It would seem that those applied sociologists interested in remedying real problems would find such phenomena fascinating, but that is not the case.

An Ontological Fallacy

There is another orientation common to many sociologists which makes it difficult to develop the kinds of theories from which scientific laws can be derived. It's hard to identify since it is so pervasive that, as far as I know, it has no label. It has to do with the way in which we view theory in Sociology as contrasted with the approach followed in more established scientific disciplines.

Zipf[19] derived a number of diverse sociological laws from his "theory of least effort"; I have derived the laws listed above from time minimization theory. Whether either approach will ultimately prove useful or be rejected in favor of some other, as they sooner or later no doubt will be, both approaches at least do what theories are supposed to do: they permit the derivation of testable hypotheses.

Both proto-theories, however, seem to fall outside the realm of what is called theory in Sociology. I find the reason for such rejection interesting as a comment on Sociology's scientific progress. Both tend to be rejected because "people don't behave that way". That is, each of us knows many people who don't seem to be willingly or by nature minimizing in their expenditure of effort or time. In fact we can find many individual instances where highly motivated people expend great amounts of effort and time. The theories can't be any good.

Behind such reactions is a failure to distinguish theological-metaphysical (in Comte's sense) from scientific explanations. Scientific explanations are fictitious creations of the human mind; as theories they don't assert reality, nor do they necessarily describe the way things actually are. They are a set of assumptions which **if true would** account for things observed. The kinetic theory of gases assumes perfectly elastic tiny little billiard balls darting through otherwise totally empty space in a container, and from this assumption the theorist derives observable relations between pressure, temperature and volume. Elementary Chemistry assumes fixed molecular structures which can be given physical representations with tinker-toy-like objects, and from these the theorist derives certain bonding properties in compounds. Both of these assumptions are fictions (as are later, more sophisticated models), fictions **invented** by human minds for the limited purpose of deriving scientific laws.

Ptolemy's earth-centered universe was a good theory for its time (and actually more useful than Copernicus' heliocentric one for a while after that was introduced). Ptolemy's system of concentric spheres had to be greatly complicated by the further assumption of epicycles in order to account for the apparently irregular wanderings of planets. Copernicus' circular orbits had to be replaced by Kepler's less elegant elliptical ones in response to observations of the movement of Mars. The twentieth century history of theory in atomic Physics and cellular Biology shows much the same story: minor or major modifications in the imagined theoretical world in response to new facts obtained from the observed world.

Theories are not statements of ontological fact; they are intellectually creative responses to facts. A reviewer once rejected one of my theoretical efforts[20] with the statement: "You may wish to assume entropy, I certainly do not". The issue isn't what we wish to assume; it's rather which assumption (however bizarre or unesthetic) leads to the most observed regularities.

Macrobehavior and Micromotives

That theories are not the same as facts leads to a further problem in sociological theorizing. It has become common in our textbooks to distinguish two levels of sociological analysis: the large-scale macro level and the small-scale micro level. There is utility in this distinction insofar as it designates the kind of data one works with, the unit of analysis. But the distinction can lead to difficulty in specifying the relationship between scientific laws and theory.

I don't think it surprising that most of the laws listed above were developed in the field of demography/ecology and are obviously macro-level. Even the square-cube law may be thought of as emerging from a type of organizational ecology, the size of one population being related to the size of another within the same organization. Why should such non-intuitive, precise, empirical generalizations arise from analysis of large scale aggregative data? Quetelet[21] suggests an answer:

> What idea should we have of the mortality of mankind by observing only individuals? Instead of the admirable laws to which it is subject, our knowledge would be limited to

> a series of incoherent facts, leading to a total misapprehension of the laws of nature" .

A problem arises when it comes to theorizing about such laws. As mentioned above, the moment the theorist creates some assumption describing the kinds of imaginary people whose behavior would produce such empirical regularities (least effort, least time), the tendency of most sociologists is to treat the theoretical assumptions as if they were directly testable statements of micro-level fact. Suppose that direct tests of the degree to which individuals minimize time or effort were conducted and the results were negative (as I suspect they would be; none of us is individually that rational most of the time). Do we reject the theory of least effort or least time on that account? I would say no.

With technological advances, some theories can be directly transformed from assumption to fact. The telescope and space flight have made it possible to transform much of our image of the solar system in this way, from theoretical assumption to a statement of empirical fact. The electron microscope has had a similar effect in many areas of molecular and cellular theory. When we study human behavior, however, we are not forced to theorize "in the dark" as we once were in theorizing about planets and cells. If anything we already see too much, being the subjects of our own studies. We can think of many micro-level factors which must be involved in determining the size of urban areas (Eqs. 9- 7,8); why link area and population through time-minimization theory? We know of many micro-level motives for migrating, traveling and communicating (Eq. 9-9); why pick time-minimization as the "motive"?

The answer is that time-minimization is not a statement of motive at all. It is a theoretical assumption which if true would account for the relationships observed and listed above. In this sense it is much more akin to theories of statistical thermodynamics or quantum mechanics, theories whose acceptance is based, not on independent micro-level verification (which is impossible according to the theory itself), but rather on simple agreement between the theory and certain macro-level empirical regularities.

Homans has argued[22] that all the theoretical assumptions of

Sociology must ultimately be psychological propositions.

> Nor will Sociology be alone in this fate. The general propositions of all the social sciences will be the same and psychological, in the sense that they will be propositions about the behavior of members of a species, about what the behaviors of human beings have in common.

From here he charts the goal of the sociological theorist:

> I think the chief theoretical task of Sociology in the near future will be to show . . . how micromotives produce macrobehavior.[23]

I fail to see how our diverse, particular micromotives — assuming they exist and can be measured — would produce the kinds of macrobehaviors described by the size-density law or the rank-size rule. In contrast, I can easily see that both laws can be mathematically derived from the (non-motivational) assumption of time-minimization.

Homans says that even the behavior of individual personalities could be shown to follow from general psychological propositions "if we knew enough about the past histories and present circumstances of the personalities in question".[24] His psychological reductionism could have gone still further, it seems to me. It may be that some of the theories regarding micro-level behavior — my own reason for doing so and so — will someday be directly translatable into neurological or biochemical fact. But that work is not likely to be done by sociologists, and furthermore it need not alter the way in which theory is constructed to account for macro-level findings.

It would not matter if we assembled all the micro-level motives for migration, reducing each to a biochemically based physiological process. If the theoretical assumption of time-minimization leads by mathematical deduction to the observed macro-level regularity, that is all that matters for the purpose of scientific explanation — whatever such an explanation lacks at what Weber would call the "meaningfully adequate" level.

Meaningfully Adequate Explanation

Weber's effort to direct sociologists toward micro-level **verstehen** explanations of phenomena has been so influential that it deserves to be addressed on a scale which is not possible within this or probably any single paper. Suffice it to say that if science is the attempt to discover and account for patterns of **recurrent** events, with whatever level of precision or sophistication, then Weber's methodology is misdirected (for scientific purposes) from the outset.

> The aim should, rather, be precisely the opposite: to identify and define the *individuality* of each development..."[25]

That may be excellent advice for historians and storytellers in general. But as advice to those setting out to discover sociological laws it couldn't be more off target.

It is the equivalent of telling Galileo, "I know you're interested in discovering a law of falling bodies, but our aim is precisely the opposite. We want to attend to the unique shape, color, texture and smell of each rock we drop. We find the recurrent relation between distance and the square of the elapsed time to be rather boring". I think it is not unfair to say that Weber's call for meaningfully adequate explanations in Sociology has had the effect of sanctifying what August Comte had already condemned as non-science: explanations of events, even recurrent ones, in terms of will.

In a sense there is nothing wrong with theological and metaphysical explanations, and perhaps Comte was overhasty in rejecting them altogether. Many times we are not interested in scientific explanations. As pointed out at the beginning of this chapter, much of our everyday thinking is of this kind, and it seems to serve our needs. If I let go of a rock and it falls to the ground, you may be understandably satisfied with the explanation "it fell because I wanted it to and so released it" or "it fell because it is the nature of heavy objects to seek the earth". Maybe you aren't interested in Galileo's law of falling bodies or Newton's law of gravitation (they still won't tell you why the rock fell). But if you do want to know something about the behavior of falling objects,

something which is not part of common knowledge, then Galileo's or Newton's laws aren't bad points of departure.

If we are interested in scientific explanations, if we do want to search for sociological laws, then Weber's meaningfully adequate (i.e., what Comte called theological or Durkheim called psychological reductionist) explanations don't tell us very much. Obviously people have to be motivated to migrate, to locate their residence (somewhere on the urban density gradient), to legally alter the areas of the cities in which they live, to further subdivide or consolidate territorial divisions. These things don't happen without human action, and human action doesn't occur without motivation in some sense. But so what? Plato and Aristotle knew that much. What they did not know, and what Weber's (and Homans') point of view distracts us from attending to even today, is that people make these choices in such a way that the equations listed above result from their aggregated actions. It is attention to such equations which distinguishes, or should distinguish, Sociology from what is literally common sense.

Conclusion

In Comte's terms, we Sociologists don't recognize scientific theories when we see them because we are trained by our culture, and to some extent by our culture-bound discipline, to explain things theologically (with a theory of motivation) and metaphysically (with a general view of human nature or of the nature of society). If our curiosity is satisfied by such explanations, as we have learned it should be, then there is none left over for attending to the discovery and derivation of scientific laws. If praying for rain or a cure for some disease worked, we would have no need for scientific agriculture or medicine. If an act of will could right all wrongs, physical and social, why would anyone except the incurably curious bother with science? Fortunately, however, there have been some incurably curious thinkers in the past — enough at least to have given us the benefits of the laws discovered in other sciences, enough to hope that the search for such laws will someday take center stage in Sociology.

.... and they lived happily ever after.

A Zen Story *

Once upon a time there was a Shogun who wanted a nice picture of a chicken to go in his alcove.

So, he went to a very fine artist and said, "I want you to paint me the best picture of a chicken that you can."

So, the artist said, "Yes, yes, certainly, I will do this."

The artist went to his cabin high on Mount Fuji. He brought books of bird anatomy, many studies of birds done by all the famous artists of the past, He sculpted chickens, he painted chickens in oil, he did one woodblock after another of nothing but chickens. He depicted chickens in bushido poses, crashing through the shoji in a samurai palace. He drew noble portraits of chickens in virtuous attitudes. He used a sumie brush to catch every nuance of a chicken's life. He painted chickens in the landscape and in the boudoir, on the battlefield and in the barn.

Ten years passed.

One day the shogun was at archery practice when he thought of his request to the artist. He immediately mounted his steed and made his way to the artist's cabin. It was hard to enter the door. There were sketches of chickens stacked to the ceiling. There were statues of chickens everywhere. There were skeletons of chickens and paintings of chickens. There was nowhere to sit and very little space to stand.

"Where is my chicken drawing?" demanded the Shogun.

"Oh," said the artist, "I forgot, sorry." And he took a brush, whirled it very quickly on

a piece of rice paper, handed the paper to
the Shogun, and said, "Here."

The End.

* I told this to my roommate Sam Andrew when we were about twenty in San Francisco. He remembered the story and recently sent it to me.

NOTES:

[1] Auguste Comte, *Positive Philosophy* (trans. Harriet Martineau), vol I, p 2, London: George Bell, 1896.

[2] Robert K. Merton, *On Theoretical Sociology*, New York: Free Press, 1967:150.

[3] Vilfredo Pareto, *Sociological Writings*. (S. E. Finer, Ed.), New York: Praeger, 1966:104.

[4] Merton, *Op. Cit.*, 150.

[5] Farrington Daniels, *Mathematical Preparation for Physical Chemistry*, 150, New York: McGraw Hill, 1928.

[6] C. Wright Mills, *The Sociological Imagination*. New York: Oxford University Press, 1959.

[7] James S. Coleman, *Introduction to Mathematical Sociology*, 471 (italics added), New York: Free Press, 1964.

[8] *Ibid*., 470.

[9] *Op. Cit*.

[10] Hubert M. Blalock, "Dilemmas and strategies of theory construction", Pp. 119-35 in William E. Snitzek, Ellsworth R. Fuhrman, and Michael K. Miller (Eds.), *Contemporary Issues in Theory and Research: a Metasociological Perspective*, 122-3, Westport, Conn.: Greenwood, 1979.

[11] Lawrence J. Henderson, *The Study of Man*, 19-20, Philadelphia: University of Pennsylvania, 1941.

[12] Felix Auerbach, "*Das Gesetz der Bevolkerung- skonzetration*", *Petermanns Mitteilungen* , 59:746, 1913.

[13] Comte, *Op. Cit.*, 64.

[14] Bertrand Russell, *A History of Western Philosophy*, 675-6, New York: Simon and Schuster, 1945.

[15] whose priority, scientific orientation, and volume of empirical work I, incidentally, believe easily qualify him to replace Comte as the Father of Sociology — we can keep Comte as its namer or baptizer

[16] Adolphe Quetelet, *A Treatise on Man and the Development of his Faculties*, 6 (trans. B. Knox), New York: Burt Franklin Press, 1842.

[17] see Fig. 9-4.

[18] California's 158,706 square miles are served by 58 counties (most packed in the San Francisco to Reno area; Georgia's 58,910 square miles support 159 counties! Average county size in California is 2,736 square miles; in Georgia it's 370 square miles.

[19] George K. Zipf, *Human Behavior and the Principle of Least Effort*, Cambridge: Addison-Wesley, 1949.

[20] The Maxwell-Boltzmann distribution of city populations in Chapter 14.

[21] *Op. Cit.*, p 6.

[22] George C. Homans, "Discovery and the discovered in social theory." Pp. 17-22 in William E. Snitzek, Ellsworth R. Fuhrman, and Michael K. Miller (Eds.), *Contemporary Issues in Theory and Research: a Metasociological Perspective*, 19, Westport, Conn.: Greenwood, 1980.

[23] *ibid*., 20.

[24] *ibid*., 19.

[25] Max Weber, *The Agrarian Sociology of Ancient Civilization*, (R. I. Frank translator), London: Humanities Press, 1976:385-6

(italics added).