

## MALTHUS AND FORMAL ANALYSIS : A CAUTIONARY TALE

The remarks which compose this paper are the result of speculation upon a problem that is all too familiar: how is it that published arguments which can readily be shown to be inaccurate, and logically unnecessary, nonetheless exercise considerable influence over generations of students? The example of Malthus's writings on population suggests itself in part because it is a notorious and familiar case to most students of human populations, but also because it seems particularly applicable to present anthropological environs. Of course no claim can be made for the generality of a single case, nor can I pretend to point up all the troubling aspects of the problem.

In approaching this example in a short paper, several methods of examination may be ruled out from the start. For instance, it does not seem helpful to attribute the character of Malthus's argument and the ways it has been read to external forces influencing his or his readers' analyses - say, economic conditions in capitalist societies, which have given partisan support to his version of political economy - simply because this requires further enquiry and extensive invasion of social history and historical materialism. I do not doubt that economic factors can be considered determinant, but an approach in these terms has the effect of substituting for our immediate problem a much larger one. It might be pointed out that these approaches have not resolved the problem in any case; besides, there are tidier ways of addressing the issue which do not commit us to systems which have already engaged Malthus in debate with little effect.

Nor does it seem helpful to posit an underlying logic to his argument, an abstract structure which has been found 'good to think'. Recourse to logical possibility, to relational notions such as symmetry, complementarity and transitivity, or to more elaborate structural models, is sometimes a useful thinking stage in understanding social phenomena. Again, there is no doubting that such structures can be posited, and that they bear some fundamental relation to the nature of the human mind, social order etc. But these are age old matters of speculation, and what we are interested in are certain tiresome features of precisely this sort of activity. The artificiality of posited underlying logics, forms or structures has certain effects, which are by now notorious, on the products of analysis. Since these have some relevance to my example, a few of them may be listed.

(i) The most visible problem arising from attention to formal methods is the prominence of finished products of analysis - elaborate terminological tables, statistical tables, lists of oppositions, flow diagrams, and the like - which, within anthropology, has been particularly fancied by ethnoscientists and 'high' structuralists. Given complex and manifold social materials, these are often necessary devices, as those better known users of structural methods, statisticians, have long maintained. Anthropological formal studies show the same tendency as quantitative applications to make these devices the end of analysis rather than contributory means. It is interesting to ask why these finished products hold such fascination.

(ii) Interest in underlying structures carries with it morphological postulates: elementary forms, atoms, essences, relations, principles, properties - in short, the final or empty posits which often go into or are the results of the tables. There is an expectation that these cavities will be filled up with ethnographic contents; in this way an analytical separation of structure and meaning, or structure and function, is effected. There is an inevitable tendency for these posits to become

real, so that it becomes necessary, for example, to remind anthropologists that terminologies cannot be used to predict the actions of the individuals to which, in a given context, they refer. This is a fate which has met many useful posits, including Chomsky's 'transformations', Kuhn's 'paradigms', demographers' 'projections', and so forth. Like the tables, these posits are necessary to manage social materials, yet it seems impossible to keep their analytic status from being taken as merely descriptive.

(iii) This problem has infected formal analysis itself; that is, the way these analyses are carried out. The impression often given by writers using these methods is that formal analysis is something separable from meaning, function, indeed, from language. This is undoubtedly encouraged by the tabular displays, and, particularly in the case of numerical analyses, by the fact that many sequences of elision, approximation, and equation have no direct social analogues. In any case, the selection, manipulation, and interpretation of posits inevitably involves conventions for reading them. This aspect of analysis has not received attention in anthropology, which again marks the similarity of anthropology to other fields in which structural methods are characteristically applied. It may be argued that formal analysts seriously misrepresent the practice of these methods insofar as they portray their application as occupying a rarified domain in which rigid procedures are brought to bear on reduced forms, a domain divorced from semantics and things ethnographical.

(iv) One of the effects of this hyperformalism (we may as well give it an ugly name) is that the work of formal analysts is continually being misunderstood. We may express this as the combined effect of points (ii) and (iii): on the one hand, the unaware or uncritical may read the course of events into formal classifications; on the other, anthropologists will inevitably talk about formal relations with reference to ethnographic contexts. This is especially clear in kindred formal subjects like demography, in which the professional will deny that a population 'projection' is a prediction of population changes over a given future period. Why, then, does he engage in this exercise, and why do governments, corporations, journalists and fellow demographers then talk about these future states in realistic terms? How else could they talk about them, except in terms of linguistic conventions which express the future as a continuation of the present, in which specified similar events are likely to occur? Anthropologists, also, interpret formal relations using substantive terms, either in referring to particular social situations, or in the comparison of societies which happen to share classificatory forms. This is analagous to the demographer's predicament. Rather than modify terms - e.g. 'projection' for 'prediction' - anthropologists seem to prefer to live with their familiar notions enclosed in inverted commas, under the maxim that 'of course no such things exist'. Whether this is an adequate defence against the whole way language is used in the development and subsequent discussion of analytic terms remains to be seen.

(v) Formal analysis involves characteristic ways of reading abstracted forms which are not entirely controlled by the analyst, and probably cannot be. The suggestion of (iv) is that there is much to formal analysis that analysts do not admit. There is also inevitably much more in some analyses than the analysts suspect. Formal methods are not and cannot be simply representational devices; they lay down their own special orders, they change things, they carry with them their own informal glosses and self-emending procedures. By pointing out

that this is not simply a matter of abstractness or reduction, we can at least identify the fantasy of purity (or perhaps merely cleanliness) which often surrounds formal analyses. The formalist renounces language, at least at one stage of analysis, in favour of logical possibility, or a notation, or a calculus - which is only to say that he agrees not to examine the linguistic effects of what he is doing. For in subsequent applications he may talk about his formal constructions willy-nilly, his object by this time being fully formed, and it can be little surprise that it seems eminently applicable to the world as we ordinarily describe it.

(vi) Finally, we can draw the implication of points (iv) and (v): recourse to formal methods, to structures, is a way of changing the world. The interest gained by a particular formulation is a consequence of the particular combination of inclusions and exclusions it performs. Its interest also lies in the means it provides of aligning previously diverse forms. In short, it encourages new and programmatic means of overdetermination. The history of the application of these methods is enough to assure us of this: the use of registration techniques in the Victorian social reforms of the 1830's through 1870's; Clerk-Maxwell's application of probability to mechanics in the same period; a similar but later application to biology by writers such as Pearson or Lotka; Saussure's early linguistic structuralism; and so forth. Surely it is no accident that when Leach, himself trained as an engineer, wanted people to rethink anthropology, he used his Malinowski lecture as an advertisement for formal, structural methods?

To return to Malthus, the present interest of his argument has to do with its construction, how it works at once logically and as a rhetorical device, laying down patterns of inclusion and exclusion for all those who would traverse the same or similar topical ground. In the form and content of his analysis we shall see simultaneity and not difference. Of course Malthus is not ordinarily considered a formalist, indeed his work appeared just prior to the institutionalization of these methods in social studies. I find this priority helpful, for it enables me to fit my argument to a known historical sequence. If forms are carried in language, or language is used in discussing them when they are for certain purposes separated from language, we should consider formal analysis the natural combination of these as they are used. Malthus is useful here because his method is expressly arithmetic - i.e. a part of ordinary language which is also embodied in notation and forms the basis for linguistic and non-linguistic speculation. His argument may thus be dissected, and yet the forms remain content-laden. We can then introduce examples from the period immediately following Malthus's writings which mark the entry of institutionalized hyperformalism into social study, through the work of the Registrar-General's Office from its inception in 1837.

To direct these issues to the opening question: the specific interest of this case is to show the way in which the unattended reading of linguistic forms into supposedly ultimate and purely formal ones is not only systematically misleading, but a powerful, persuasive, and not entirely conscious rhetorical device with far-reaching effects.

The opening paragraph to Malthus's A Summary View of the Principle of Population states the well known numerical principle

upon which his argument is based:

In taking a view of animated nature, we cannot fail to be struck with a prodigious power of increase in plants and animals. Their capacity in this respect is, indeed, almost infinitely various, according with the endless variety of the works of nature; and the different purposes which they seem appointed to fulfil. But whether they increase slowly or rapidly, if they increase by seed or generation, their natural tendency must be to increase in a geometrical ratio, that is, by multiplication; and at whatever rate they are increasing during any one period, if no further obstacles be opposed to them, they must proceed in a geometrical progression (1953:119).

Malthus's object of attention, 'increase', is at once a natural capacity, a principle, and the series of social products which both of these yield. It is the specific character and operation of this simultaneity which is at issue. Merely by identifying 'increase' with 'progression' Malthus sets in motion an arithmetic apparatus of interpretation, for the increase may vary only by its rate of progress, according to the 'obstacles' or limits which arithmetic series inevitably have. Even infinity is a practical limit, whether as the impossibility of endless counting, or as a limit to internal continuity, in the form of irrational numbers. It is common knowledge that populations cannot grow infinitely large, and a popular misconception that population declines are usually due to deaths. Malthus's arithmetic provides him with a way of showing that these extremes converge long before any question of infinity arises. His method consists of a repetitive application of the concepts of 'series', 'rate', 'limit', and 'convergence'.

'By the laws of nature man cannot live without food' (1953:143). Toward this limit possible and actual increases of two series, population and food production, advance and converge. First, the food series: the phenomenal growth of population in the United States in the late 18th century provides Malthus with a case in which actual increase approximates to geometric potential. This establishes the factuality of multiplication in conditions of food production which permit it; but as fertile territory is limited, and gradually being used up, increased use of less fertile land becomes necessary, and the rate of increase in food production must gradually diminish. Malthus argues that even if agricultural production in settled areas were to double - that is, increase faster than he conceived possible - the limit would nonetheless be reached. In this way Malthus is able to use the upper and lower limits of possibility in place of data on declining agricultural produce; fact is manufactured out of a formula for the limits of possibility.

Note that the limits on the rate are natural ones e.g. the fertility of the soil. Social limits on population, Malthus argues, operate only through natural ones, speeding or slowing the convergence of the two series. For example, unequal distribution of property lessens the rate of increase: both luxury (land set aside for hunting, non-productive expenditure, lack of attention to proper management) and the small capital return on less productive land have the effect of taking land out of cultivation and thus reducing the demand for labour. This premature fall in profits and the check on cultivation increasingly enforce the limitation of population by decreasing wages and subsistence. Good government has the opposite effect: it means that more and more

people are able to work and survive and produce offspring; but this merely slows down the operation of the check on subsistence, by delaying the point at which the ultimate limits begin to be reached. It allows more and more people to live on the margins of subsistence. The moral of both of these contentions is plain: privilege is not responsible for the condition of the poor, either in numbers or in physical conditions. The argument provided ammunition against the poor laws, since it meant that relief could never solve the problems of the poor, for the poor would only use the benefits to produce more and more offspring. His mode of argument proceeds, then, by adding to the original series of population and subsistence further parallel series: luxury, property, poverty, administration of the poor, popular morality, proper moral attitudes to the poor. Indeed, Malthus's argument enjoins puritanical rigour in the face of an 'increase' whose inevitability can only be a source of increasing pessimism. Hence the famous 'checks' on population: misery, vice and moral restraint.

It appears that the evils arising from the principle of population are exactly of the same kind as the evils arising from the excessive or irregular gratification of the human passions in general, and may equally be avoided by moral restraint. Consequently, there can be no more reason to conclude, from the existence of these evils, that the principle of increase is too strong, than to conclude, from the existence of the vices arising from the human passions, that these passions are all too strong, and require diminution or extinction, instead of regulation and direction (1953:180).

The objective in describing this arithmetic order is not to establish an underlying or implicit formal structure to Malthus's argument; that would encourage the view that for the moral content with which the structure is filled we must look elsewhere - to political economy, to contemporary theology, etc. Such a separation of syntax and semantics is unnecessary, aside from being artificial. The terms of this verbal arithmetic are not mere place-holders; not only do 'many' and 'increase' take a special meaning from the configuration in which they are applied, they admit of modification of evident overtones - 'too many', 'prodigious increase' and so forth. Whatever the political, moral or other influences upon writers in this period, there can be no doubt that the arguments were worked out in the process of their writing, according to these devices. This established characteristic patterns for generally available evaluative terms, as in the above quotation: 'excessive', 'irregular', 'too strong', 'diminution', 'extinction', 'regulation', 'direction'.

We can be impressed with the machinery of Malthus's argument even if its effects are unpleasing. The series of series give consistent logical and persuasive form to his economic, moral and material predilections; all of his arguments move as one, despite the fact that they are rather different sorts of argument, involving terms and ideas with very different ranges of meaning. But this overdetermination, this reiteration of fact with fantasy and fantasy with fact, is not merely a matter of a content-laden morphology. One of its characteristic features is that it is not worked out in full; for example, there is no need for Malthus to detail the serial effects of God's will or of improprieties he finds scarcely mentionable:

The remaining checks of the preventative kind, are the sort of intercourse which renders some of the women of large towns unprolific; a general corruption of

morals with regard to the sex, which has similar effect; unnatural passions and improper arts to prevent the consequences of irregular connections. These evidently come under the head of vice (1953:153).

The verbal arithmetic at some indefinable point becomes an effective whole, and may speak with the authority of social convention.

Thus, in addition to content-laden serial form, there are procedures, one might even say predatory procedures, which have to do with flexibility of the argument, its ability to expand or contract in order to make its diverse points. Most of these seem to be 'almost' processes - ways of saying that one social fact can effectively be taken for another. A number of examples have already been provided: historical cases of population growth approach the limits of possibility, the natural growth potential, the dictates of the principle of population, and may be taken as proof of them; conversely, the limits of the possible may be used to manufacture the actual, where no data are available. There are, further, a whole range of terms employed by Malthus to gloss elements he wishes to consider together - 'tendency', 'expectation', 'estimation', 'assumption', 'deduction', 'resemblance'. The procedure of comparing facts and figures from different areas, collected in different ways, brings together on a 'more-or-less' basis, diverse elements which can be used for similar purposes. That is, they turn 'almost' or 'effectively' into 'the same as' or 'is', a shift inevitably forgotten whenever evidence is later produced. This elision is a regular feature of the way objects are constructed by discourse; it is one of those techniques by which a given unit, for purposes of discussion, is taken as a coherent total, even though it is, rather, totalizing. These 'tendencies' thus serve both the purpose of approximation and, by injunction, of equivalence. This is only to assert that the characteristics of reading also affect the reading of formal arguments: ordinary practices of reading legislate misreadings, insofar as the manifold 'almosts', with their varying references to varying kinds of contents, are systematically erased.

To return to the earlier diagnosis of what formal methods in fact entail, my argument that Malthus's essay is of formal character comes down to the following features:

- (i) it utilizes a certain version of logical possibility or ultimate relations based upon the arrangement of a few ordering concepts.
- (ii) this involves an immediate and not entirely conscious reading of language into these forms.
- (iii) it lends itself to illustrative and calculative notation (to which we will refer below).

Another notable feature of formalism is that it lends itself to certain themes, in this way playing a particular role in the construction of a moral view of the world. The most noticeable of these is pessimism as to the inevitable consequences of the trends identified in the application of formal methods. This is accompanied by a sort of Anglican rigour: the exhortation to personal and moral resolution of the trends in terms of self-awareness and restraint. Such an individualist approach is obviously naive given the automatic, partly conscious, and collective nature of the reading processes we have been discussing.

This gloomy thematic is really a version of naturalism applied to human society, and finds strong means of confirmation in the over-

determining procedures of formalism. This is easily demonstrated with reference to Malthus's argument, and is an important and persistent feature of the subsequent use and development of formal methods in human studies. We have seen how the identification of population increase as a natural capacity obeying natural laws is given an elaborate conceptual order in terms of a few serial notions. This reduction of material limits to logical limits is a powerful argument for inevitability. Indeed, without attention to the specific character of the posited logical limits - that they are one arrangement of limit notions out of many possible, and that this arrangement must be read - it is not surprising that a particular inevitable end is taken as the end. This problem evaporates when it is recognized that formal analyses are not merely reductive: they do not treat the essence of the natural world, but certain conventionalizations of it.

This view of inevitability also has considerable and conservative effects upon what is regarded as possible in human studies. Particular limit configurations are taken not only as definitions of the possible, materially and/or logically, they seem also to embody the limits of the expressible. This is, again, due to the practice of surreptitiously reading language into arbitrarily selected natural and logical possibilities. In this way the limits of the currently expressible seem to subsume both what can exist and what it is possible to express. This is really a tautological movement in which current conventions are used to confirm that reality is subsumed by those few posits with which analysis now happens to begin.

The appearance of this combination of hyperformalism-naturalism-personal moralism-pessimism is worth noting since it is one in which it is still possible to become trapped. The trap, as we have said, is an illusion which disappears once the conventional nature of posited structures and the way they are read is carefully examined; once, that is, a realistic idea of the practice of formal methods is introduced. The human sciences since Malthus's time have witnessed a considerable number of expressions of this thematic. To take one dispersion: Darwin derived his concept of natural selection from a reading of Malthus; the moral implications of the ruthless competition of individuals in nature made a forcible impression on the late 19th century; the statistical bases of selection then received formal treatment as a project of eugenics, and appeared as part of a series entitled 'Studies in National Degeneration'; and the subsequent biomathematical and demographic uses of these formal methods have advertised first the supposed imminent threat of depopulation of the western world, and now the over-population of the world as a whole.

There is not room in a brief paper for a thorough explication of these instances. Instead I shall concentrate on the influence of Malthus's formalism upon some of those writers who tried to respond directly to his argument. This enables a description of the procedures by which formal methods such as verbal arithmetic come to be notated, and something of the influence of this upon reading procedures. It is some comfort, given the excesses to which naturalistic hyperformalism has tended, to note that the course of institutional and technical development of formalism is not dependent upon it, but answers to a number of themes in any given period.

Alison's The Principles of Population is typical of early criticisms of Malthus in that it mostly adjusts the verbal arithmetic to fit an alternative and more hopeful set of trends. Thus Alison accepts the

essentiality of 'increase', but rearranges the related series so that the total effects are positive. He notes that in the period in which Malthus was writing the agricultural population was declining, yet it produced more and more food. The subsistence series answers, as Malthus noted, to the movement of capital and the demand for labour; and while this does decrease the land under cultivation, and the number of labourers, the investment of capital in machinery, trade and management increases productivity. While increased food production is accomplished with less labour, the desire to accumulate capital among the upper and middle classes stimulates the demand for labour in industry, while regulating wages and thus limiting the numbers of offspring that may be supported. Alison's world is one in which there are more and more well-to-do who gradually come to have less children. The working classes are simply well-behaved. Increased reason, foresight, property and luxury win out over a decline in animal instincts and in the various vices Malthus emphasized.

Other writers, for example, Edmonds, Lloyd, and Sadler, also responded by describing various arrangements of increase and decrease, according to different moral, political, economic and other assumptions. No one of their writings ever replaced Malthus's as the focus of debate, or as the argument to be refuted. The polemical effects of Malthus's verbal arithmetic remained decisive over their factual corrections, and over the alternative arithmetic logics they put forward. For as long as his commentators confined themselves to suggesting alternatives, they continued the debate on the ground Malthus had set out. The closure achieved by Malthus's argument was very effective: the authority it established in the simultaneity of its formal method - at once the limits of nature and of logical possibility, at once a law and a sequence of events - was never questioned. Indeed this authority must have seemed unavoidable since other options were practically inconceivable. For example, while the need for data on population was recognized, neither the institutions nor the theory for its collection were in place; conclusive refutation could not be accomplished merely by citing a few different facts from Malthus's, when what was required was a superior basis for factuality. Appeal to an alternative logical authority was excluded since it amounted to a denial of arithmetic.

In a situation in which comparable data cannot be entirely agreed upon, and authority is subsumed in arguments whose reading processes remain invisible, those arguments which take up extreme positions have an advantage. They act most completely on the authoritative premises which the chosen formalism lays down as ultimately valid. In short, they read limit conditions as such. There is a sense in which writers such as Malthus, who appear to originate and monopolize formalisms in this way, have said all there is to say about the particular logical construction they have laid upon the world. Under these circumstances there is little option but to ignore the debated terrain, and work on something else. This was in fact exactly what happened in the mid-nineteenth century, for the interest in and requirements for formal methods extended far beyond the one version Malthus presented.

What appeared was a theory of data, embodied in numerical forms and a calculus, with conventionalized reading procedures, and public (usually governmental) institutions. In the field of population, this involved medical, actuarial, and political authorities, and took the form of vital statistics, institutionalized in the office of the Registrar General. However, the broad dispersion of applied and



theoretical mathematical discourses in the middle of the last century, of which the Office was a small part, is not well understood. This distribution can be recognized superficially in a list of new familiar names, in a variety of fields: Bernard, Boole, Cantor, Clerk-Maxwell, Dedekind, Farr, Jevons, Louis, Mill, Quetelet. The dispersion doubtless has a great deal to do with our notions of fact, evidence, formalism, and scientificity, whether or not our formal methods are explicitly mathematical. It remains a curious fact about anthropology that anthropologists do not take the time to understand the historical and cultural specificity of the scientific methods and perspectives they employ.

Malthus's formal method was basically ignored in the formulation of registration systems, and while the data and procedures produced in this new social formalism were used on occasion to comment upon Malthus, this was never more than a scathing backward glance. Writers such as Malthus and Alison merely used statistics to illustrate their argument; discussion of increases was repeated in tables in which lists of numbers grew and grew. The Registrar-General's Office, however, utilized life tables, and thereby generalized actuarial techniques by applying them to the national data which the Office was for the first time collecting. For the purposes of the present discussion, three features of the method of the Office may be noted. First, authority was invested in the collection of data, that is in a specially constructed multi-dimensional object which represented events in the world. Language was read into this object in the same way - if much more elaborately - as it was into the more simple device of increase. The basic change was that the central formal notion became that of aggregate or population; the series and series of series were arranged in the form of a grid rather than of parallel and convergent sequences. Thus, increases or decreases in numbers were localized geographically, and distributed by age, sex, occupation, marital status; these were arranged, in turn, in various combinations, such as age at marriage, population density, mortality and birth order.

Second, the compilation and manipulation of these aggregates involved an idea of calculation which was both a mathematical operation and a reading or glossing procedure including operations such as standardization, averaging, correlation and interpolation. The products of analysis included units which introduced, reordered, or specialized linguistic usage, such as distinctions between 'probable duration of life' and 'expectation of life', which were distinguished simply by mode of calculation.

Finally, the procedures of the Office and the authority it constituted were conducive to a variety of social themes. This was in part due to the constitution of its formal authority as the instrumentation of science, rather than as fixed laws which it hoped or professed to reveal. The Reports of the Registrar-General's Office provided a basis for public health reform, particularly in diagnosing the spread of epidemic diseases such as cholera, and were used as evidence of social conditions by writers as diverse as Chadwick, Cobden, Gladstone, Engels and Marx.

While this sketch of an early formal method is quite inadequate to its object, which deserves archaeological consideration, it helps to complete the tale of the influence of Malthus's formal method. It reminds us of the conventionality of formal methods and the need to recognize that they obtain their purposes and limits in particular

historical instances. Formal methods may appear to give exhaustive accounts of a certain range of possibility, and this enclosure is enforced by the simultaneity of its posits, their readings, the ways in which the construction seems to exclude or subsume other possible constructions, and the moral themes that are sometimes used to describe them. The analytical development of formal methods, while showing a preference for certain thematic interpretations, varies independently of them. At the point at which the various means of closure seem to leave the method little scope for operation, while they make every effort to foreclose other options, and further, by means of a thematic, pretend to speak for fundamental limits of knowledge, there is little choice but to recognize the historical limits of this closure, the considerable scope of formal developments elsewhere, and the continuing presence of a wide range of practical problems which very likely require formal means for their solution. Unfortunately, while it is possible to turn one's back on entrenched formulations, there is nothing to keep them from maintaining and promoting their favourite double binds, nor to keep them from later 'rediscovery'. As nearly 150 years of exhumation of Malthus have shown, dead systems can live long and infamous lives.

Why, then, do certain known bad arguments remain compelling? The short answer is that people do not attend to their own or others' use of method as a practice which constructs a certain view of the world. Put another way, methods contain reading procedures which, by their simultaneity, very effectively keep questions about their mode of operation from ever being raised.

In discussing Malthus we have produced something of a recipe for the construction of the operation of formal methods. This requires separating four ingredients:

- (i) posits or basic concepts of method which are at once structural and content laden.
- (ii) the reading procedures by which these concepts are overdetermined.
- (iii) effects of notation.
- (iv) polemical themes.

It seems quite impossible to perform this separation independently of the historical instances in which given formal methods were made sensible. Of course, drawing out elements in this way is itself a simultaneous procedure, with its own characteristic forms of closure. Nonetheless, it would be interesting to trace the extent to which the independent experiments of anthropologists with formal methods have only re-invented forms such as the combination (hyper-formalism-naturalism-personal moralism-pessimism) we have particularly called attention to.

Finally, restating the problem in this way enables us to recognize certain limits implicit in the question as originally asked. Plainly this is a question that is likely to be asked from within an enclosure such as we have described, and accordingly it takes on something of the character of this enclosure. In particular, it is a personal question, with definite moral overtones of good and evil. Our recipe runs counter to merely personal resolutions, since it emphasizes the collective, automatic and partly linguistic nature of processes of analysis, and the historical shaping of formal methods. The differences between formal methods

raises a large and open question as to their varying suitability or capability of revision for the purposes of restructuring the way we view different social situations.

Phil Kreager.

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