UNDERSTANDING ORIENTAL CULTURES

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Edward Said's *Orientalism* has been almost universally acclaimed by Western intellectuals as a brilliant critique of discourse on the "Orient." However, there appears to be a lack of appreciation, by those who acclaim this work and the work of the subaltern historians influenced by Said, of all its implications. Said is not merely revealing the underlying power relations and distortions associated with discourse on major regions of the world; he is attacking the whole notion of understanding the cultures of these regions. And less explicitly, he and the subaltern historians are not merely questioning the adequacy of the narratives that attempted to put the history of the world in perspective; they are attacking the quest for such "grand narratives." The significance of these arguments becomes manifest when considered in relation to Joseph Needham's monumental *Science and Civilisation in China*. Although Said was primarily interested in discourse on the Islamic world, and subaltern historians are primarily interested in the history of people in India, their arguments against Orientalism apply to Needham's work.[1]

My contention is that if the views defended by Said and the subaltern historians imply that Needham's work is invalid, there must be something wrong with them. Here I will defend Needham's work and argue that what the present world situation now requires is an effort to create a new, more complex post-Eurocentric grand narrative based on, and facilitating, a new appreciation of the diverse cultures that have developed throughout the world; and I will argue that Needham's work provides a model and a starting point for the appreciation of other cultures and for developing such a grand narrative. But I will not defend Needham simply as a Marxist, as he is normally understood, and counterpose the value of Marxism to the poststructuralism of Said and the subaltern historians. I will defend Needham's work through reference to recent work on hermeneutics and through the ideas of Alasdair MacIntyre on understanding rival traditions, at the same time showing how Needham's open, undogmatic form of Marxism contributes to the hermeneutic tradition.[2]

Said argues that the analysis of the politics of Western ethnocentrism must begin with discourse analysis as developed by Michel Foucault in *Archaeology of Knowledge* and *Discipline and Punish*.[3] Foucault, opposing both hermeneutic and Marxist approaches to understanding systems of thought, contended that knowledge is constructed through discursive formations that determine the range of objects of knowledge, concepts, methodological resources, and the theoretical formulations available.[4] Any writer has to conform to the prevailing dis-

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cursive formation and to accept the rules for the construction of objects in order to communicate, to be understood, to remain "in the true," and thus to be accepted. Furthermore, he argued that discursive formations emerge as part of the process of controlling people, of disciplining bodies, so that claims to knowledge and the exercise of power are indissociable.[5] Said attempts to apply these insights to European or Western constructions of other cultures. He argues that a complex set of representations was fabricated by the discursive field of Orientalist studies that for the West effectively became "the Orient" and determined the West's understanding of it, providing as well the basis for the West's subsequent imperialist rule. The Orient appeared as "a system of representations framed by a whole set of forces that brought the Orient into Western learning, Western consciousness, and later, Western empire."[6]

The central characteristic of this framework of knowledge is its essentialism. Analyzing Orientalism, Anouar Abdel-Malek wrote:

> According to the traditional orientalists, an essence should exist—sometimes even clearly described in metaphysical terms—which constitutes the inalienable and common basis of all the beings considered; this essence is both "historical," since it goes back to the dawn of history, and fundamentally a-historical, since it transfixed the being, "the object" of study, within its inalienable and non-evolutive specificity.... Thus one ends with a typology—based on a real specificity, but detached from history, and, consequently, conceived as being intangible, essential—which makes of the studied "object" another being with regard to whom the studying subject is transcendent; we will have a homo Sinicus, a homo Arabicus (and why not a homo Aegypticus, etc.), a homo Africanus, the man—the "normal man," it is understood—being the European man of the historical period, that is, since Greek antiquity.[7]

Quoting and elaborating on this, Said argues that the essence of the "Oriental" does not have a great deal to do with the people living in regions designated as the Orient, but is more the repository of the characteristics in opposition to which people in the West define themselves. The Orient is the "Other" in relation to which people in the West establish their own identity, usually to affirm the values they exalt and occasionally to lament those values they suppress.

Said does not provide us with any alternative forms of knowledge of the Orient. He argues:

> The methodological failures of Orientalism cannot be accounted for by saying that the *real* Orient is different from Oriental portraits of it.... It is not the thesis of this book to suggest that there is such a thing as a real or true Orient (Islam, Arab, or whatever).... On the contrary, I have been arguing that "the Orient" is itself a constituted entity, and that the notion that there are geographical spaces with indigenous, radically "different" inhabitants who can

be defined on the basis of some religion, culture, or racial essence proper to that geographical space is equally a highly debatable idea.[8]

He does allow, though, that "interesting work is most likely to be produced by scholars whose allegiance is to a discipline defined intellectually and not to a 'field' like Orientalism defined either canonically, imperially, or geographically."[9] This implies that scholars should abandon the effort to understand any but isolated aspects of those regions designated as the Orient, and that all our knowledge of these regions should be filtered through established academic disciplines. Or more radically, that all efforts to construct narratives about the "Other" be abandoned. This essentially is the conclusion drawn by subaltern historians influenced by Said such as Gyan Prakash and Partha Chatterjee, who have set out to subvert the historical narratives of India based on the Indian nation, which, according to them, are derivative from, even if defined in opposition to, Western Oriental studies.[10]

Needham's *Science and Civilisation in China*

Where does this leave Needham's monumental study, *Science and Civilisation in China?* To see how Needham's work stands in the light of Said's arguments we must first ask, "What has been Needham's approach to culture?" The size and unfinished state of *Science and Civilisation in China* make it very difficult to sum this up, especially as the crucial seventh volume, setting Chinese achievements in science and technology against their social background, has not yet been written. However, it is possible to gain some idea of his approach from the volumes already written and from occasional books, essays, and lectures.

In his famous essay "Science and Society in East and West," Needham referred to efforts to account for the social origins of science and efforts to describe civilizations, and defined his own project as a refinement of such work. He writes in conclusion to this:

> The study of other civilisations ... places traditional historical thought in a serious intellectual difficulty. For the most obvious and necessary kind of explanation which it demands is one which would demonstrate the fundamental differences in social and economic structure and mutability between Europe on the one hand and the great Asian civilisations on the other, differences which would account not only for the development of modern science in Europe alone, but also of capitalism in Europe alone, together with its typical accompaniments of protestantism, nationalism, etc. not paralleled in any other part of the globe. Such explanations are, I believe, capable of much refinement. They must in no way neglect the importance of a multitude of factors in the realm of ideas—language and logic, religion and philosophy, theology, music, humanitarianism, attitudes to time and change—but they will be most deeply concerned with the analysis of society in question, its patterns, its urges, its needs, its transformations.... In sum, I believe that the analysable differences in social and economic pattern between China and

> Western Europe will in the end illuminate, as far as anything can ever throw light on it, both the earlier predominance of Chinese science and technology and also the later rise of modern science in Europe alone.[11]

This reflects what Needham has tried to do in *Science and Civilisation in China*. The first volume begins with a characterization of Chinese language and writing, and then goes on to treat the background geography and history and the conditions of travel of scientific ideas and techniques between China and Europe. The second volume, the most controversial, is a study of the various systems of thought or world outlooks that have emerged in China and that have contributed to or impeded the growth of a scientific tradition in China. In this work, Chinese and European systems of thought are contrasted, and their genesis explained in terms of the social and economic organization and the class conflicts in each civilization. Specific accounts of developments in science and technology are situated in relation to general world outlooks, which themselves are explained in terms of forms of cognition developing in socioeconomic practices.

Such explanations are essentially in accordance with the theory of "sociomorphisms" of the Russian Marxist philosopher Aleksandr Bogdanov.[12] According to Bogdanov, all advances in knowledge are based on substitution—taking an object and effectively changing it into something else, while at the same time admitting the essential difference. For instance, to say that the sun is a star, a conglomeration of gases in space that behaves according to the laws of motion, is to substitute something else for the sun as people visually apprehended it. Advances in understanding are made by substituting for a simpler, less plastic complex with which relatively little may be done in practice or consciousness, a complex that is more subtle, more plastic, and therefore more useful. In this way experience is organized into a unified whole. The cognitive models that are used as substitutes originate in simple social-labor practices, in the methods of social-labor technique, or in economic relations. Cognitive forms taken from practical life then reinforce the way this life is organized. For example, atomism "originated in ancient thought when *individualism* developed in society, setting men apart. People were accustomed to think about themselves and others as isolated entities, and they transferred this habit onto notions about nature: in Greek, 'atom' means an 'individual,' and in Latin it means 'indivisibility.'"[13] The atomistic view of nature was then used to justify such individualism.

Similarly Needham accounts for the conception of nature that emerged in Europe in the seventeenth century, that is, nature as governed by laws promulgated by a divine lawgiver, as the product of a substitution by the dominant form of European social relations. This is contrasted with the conception of nature in Chinese thought, where law did not play a major role in society, and what was extolled was the ca-

pacity of people to organize themselves on the basis of example, where "Universal harmony comes about not through the celestial fiat of some King of Kings, but by the spontaneous co-operation of all beings in the universe brought about by their following the internal necessities of their own natures."[14] According to Needham, this reflects Chinese socio-economic relations and practices associated with what Marx called the Asiatic mode of production.[15]

While this mode of production itself is seen by Needham as self-reproducing, and as such having greater stability than the European feudal mode of production, its origins and its maintenance are accounted for in terms of peoples' responses to geographical and historical circumstances—what crops could be grown, how invaders had to be dealt with, how classes formed and struggled against each other, and what were the outcomes of these struggles. The ultimate context constraining these developments is taken by Needham to be the life of language, without which no complex human organization would be possible.

On the face of it, then, Needham is an Orientalist of the classic school, or at least the Marxist branch of it. Although he is now accepted as a historian of science, the broad scope of his work was initially greeted with suspicion by established members of the discipline of science history, and for a long time he had to conduct his research while holding a chair in biochemistry. And he seems to have all the failings Said identified in Orientalism. Not only does he attempt to characterize the people of a large geographical region over their entire history, but we also find him setting up a conception of China that is then used to define the West.

Should, then, Needham's work be dismissed? As I have suggested, I believe *Science and Civilisation in China* can be justified through recent work on hermeneutics. However, Foucault, Said's mentor and source of inspiration, rejected hermeneutics in the process of developing discourse analysis. If Needham is to be defended through hermeneutic philosophy, it is necessary first to consider Foucault's arguments against hermeneutics.

Archaeology and Genealogy versus Hermeneutics

Foucault counterposed his archaeology, and later his genealogy,[16] to hermeneutics as part of a general attack on all approaches to the history of ideas that are "related to the synthetic activity of the subject" and that aim to provide a shelter for the sovereign subject.[17] As Foucault formulated the opposition, hermeneutics seeks to rediscover the meaning expressed in an enunciation while archaeology tries to discover "the rules of formation that govern it."[18] In defense of this new approach, he subjected to searching criticism the "subjective unities" that are the objects of standard hermeneutic approaches to history, from the *book* or work of a given writer to the *oeuvre,* the assemblage of all the writers'

works, to the *periods* and *traditions*, the works of authors related by interests and influences, to *disciplines*, which include different traditions through different periods, to the *spirit of an age* formed by the generalized influence of all on all.[19] Archaeology is presented as an alternative to the search for geneses, filiations, kinships, and influences between ideas, and to "total history," which seeks to reconstitute the overall form of a civilization, its spirit, its *Weltanschauung*, its fundamental categories, and the organization of its sociocultural world.[20]

There are two prongs to this attack on hermeneutics: one, more general, deriving from Foucault's alliance with the structuralists and with Nietzsche's rejection of the explanatory role of consciousness, and a more specific attack against unilinear conceptions of history deriving from Foucault's alliance with the history of science of Gaston Bachelard and George Canguilhem and with the *Annales* school of historians. Foucault's efforts, following the work of Claude Lévi-Strauss, to find the rules controlling discourse beyond the level of the sentence in the same way that structuralists had discovered the rules of differentiation and combination of phonemes, morphemes, and lexemes, thereby to explain the production of statements independent of conscious intention, was a failure, as Manfred Frank has shown.[21] And while the later recourse to Nietzsche's arguments, invoking power to account for the order of discourse, does provide a basis for criticizing the overemphasis on the role of consciousness in history characteristic of existentialist social philosophy, it does not provide a basis for totally rejecting consciousness.

Foucault's arguments against the centrality of consciousness and the sovereignty of the subject are complemented by his arguments against unilinear history, that is, by his defense of discontinuities and of multiple histories. However, these arguments do not really invalidate hermeneutics. In fact, Foucault's insights frequently enrich the tradition of hermeneutic thought. His characterization of epistemes in *The Order of Things* provides a more rigorous formulation of the notion of *Weltanschauung* and of the fundamental categories characterizing the spirit of an age, while his concept of discursive formations developed in *The Archaeology of Knowledge* provides a more rigorous formulation of the concept of tradition.[22] Even the critical analysis of the "subjective unities," such as the book, the author, and the oeuvre, can be taken as refinements of these concepts, revealing how they are socially constituted, rather than as a total rejection of them. This analysis is only problematic when it is taken to deny any autonomy whatsoever to these "unities." It is possible for theorists of hermeneutics to accept Foucault's arguments and still allow a partial autonomy to such unities, as for instance Pierre Bourdieu allowed authors and artists within their cultural fields.[23]

Recent developments of hermeneutics by Hans Georg Gadamer, Paul Ricoeur, and Alasdair MacIntyre are either free of the features of

hermeneutic thought shown to be problematic by Foucault, or answer Foucault's objections. Gadamer has rejected the sovereign subject and conceived of language as an order transcending the individual consciousness.[24] Ricoeur's work, showing the central place of narrative in life and understanding has confronted the work of the *Annales* historians, showing how their postulation of multiple histories can be accepted without thereby abandoning the concept of agency and of narrative describing this agency.[25] Developing his ideas independently of, but in accordance with, the tradition of hermeneutics, MacIntyre provides a basis for combining and extending the insights of Gadamer and Ricoeur.[26] He not only provides a careful analysis of all the problems associated with efforts to understand the point of view of others coming from very different traditions of thought, he also has examined the role of narrative in achieving this understanding.

In doing these things, these hermeneutic theorists have avoided the pitfalls of archaeology and genealogy. The fundamental problem with Foucault's approach to history, and correspondingly with Said's attack on Orientalism, is that the starting point is without foundation, and this approach precludes even the possibility of understanding other cultures. Foucault had followed Bachelard and Canguilhem to argue that major advances in science involve the construction of new theoretical objects and, associated with this, new concepts. This insight informs both Foucault's concept of "episteme" and his concept of "discursive formation." But if all statements are generated by some framing episteme or discursive formation, then how is it possible to defend any particular episteme or discursive formation, or make statements that bring to consciousness the history of previous epistemes or discursive formations? Statements are relative to particular discursive formations. Said, taking over Foucault's archaeology and genealogy, is in the awkward position of condemning not only most, but all, Orientalists because he has virtually presupposed that there is no such thing as the understanding of other cultures, that statements or representations can be nothing but exercises of power as parts of discursive formations. And at the same time he has undermined any basis to justify his own critique.

Gadamer and MacIntyre have addressed these problems. Gadamer has addressed the issue of the relation between the tradition within which one is situated and the texts produced in cultures sharing radically different presuppositions, showing the necessity of approaching these texts from the prejudices of one's own tradition. This enriches this tradition by revealing its prejudices and by facilitating the appropriation to it of what had been lost in past traditions. MacIntyre, developing his ideas through an analysis of the history of science, provides support for Gadamer's arguments, but in such a way that there is more room for creative thinking and for a more critical attitude to the tradition or tradi-

tions dominating the present. In his paper "Epistemological Crises, Dramatic Narrative and the Philosophy of Science," MacIntyre addresses the problem of radical innovations in science revealed in the work of Thomas Kuhn and Paul Feyerabend, philosophers whose ideas support the claims of Bachelard and Canguilhem,[27] and, following them, Foucault, that the development of science is characterized by radical discontinuities.[28] Noting that major advances in science cannot be evaluated in terms of some absolute criteria because they transcend old assumptions and create new ways of arguing, changing the standards of relevance and proof and advancing our understanding of understanding and what is involved in achieving it, he argued that it is through narratives that radically new scientific theories are evaluated. The superiority of the new theories is revealed by the narrative comprehension they facilitate of the achievements and limitations of the theories transcended. As MacIntyre put it:

> Wherein lies the superiority of Galileo to his predecessors? The answer is that he, for the first time, enables the work of all his predecessors to be evaluated by a common set of standards. The contributions of Plato, Aristotle, the scholars at Merton College, Oxford and Padua, the work of Copernicus himself at last all fall into place. Or to put matters in another and equivalent way: the history of late medieval science can finally be cast into a coherent narrative. Galileo's work implies a rewriting of the narrative which constitutes scientific tradition.... The criterion of a successful theory is that it enable us to understand its predecessors in a newly intelligible way. It, at one and the same time, enables us to understand precisely why its predecessors have to be rejected or modified and also why, without and before its illumination, past theory could have remained credible. It introduces new standards for evaluating the past. It recasts the narrative which constitutes the continuous reconstruction of the scientific tradition.[29]

This argument is actually foreshadowed by Bachelard, who allowed for the possibility of history of science being formulated from the perspective of current science.[30] According to him, each successive framework of concepts will represent progress over its predecessors by attaining a more general perspective from which the range and validity of previous perspectives can be assessed. But in accepting Bachelard's arguments for discontinuities in science, Foucault denied the possibility of such a history of progress.[31] And although Gary Gutting makes a convincing case that Foucault was not a relativist,[32] there is no way that Foucault could avoid relativism from the perspective of his theory of epistemes and discursive formations. It is clear that Said has absorbed Foucault's position, and the problems he has with Orientalism as an object of knowledge derive from an inability to see statements as anything more than the product of particular discursive formations. In solving the problem of relativism as it had been raised by Kuhn and Feyerabend, MacIntyre

provides support for Bachelard's notion of scientific progress despite discontinuities, and this undermines the extreme skepticism implied by Foucault's critique of the human sciences and, derivatively, Said's extreme skepticism about Orientalism.

MacIntyre, Traditions, and Civilizations

In his more recent work, MacIntyre has extended his analysis of the conflict between scientific ideas within traditions and the narrative reconstitution of these traditions to conflicts between traditions and the creation of new traditions. In *Whose Justice? Which Rationality?* he analyzed the way in which Thomas Aquinas reconciled the tradition of Augustinian Christianity with Aristotelian thought. He summed up the problem, and the way to overcome such a conflict, thus:

> When two rival large-scale intellectual traditions confront one another, a central feature of the problem of deciding between their claims is characteristically that there is no neutral way of characterizing either the subject matter about which they give rival accounts or the standards by which their claims are to be evaluated. Each stand-point has its own account of truth and knowledge, its own mode of characterizing the relevant subject matter. And the attempt to discover a neutral, independent set of standards or mode of characterizing data which is *both* such as must be acceptable to all rational persons *and* is sufficient to determine the truth of the matters about which the two traditions are at variance has generally, and perhaps universally, proved to be a search for a chimera. How then can genuine controversy proceed? It does so characteristically in two stages.
>
> The first is that in which each characterizes the contentions of its rival in its own terms, making explicit the grounds for rejecting what is incompatible with its own central theses, although sometimes allowing that from its own point of view and in the light of its own standards of judgement its rival has something to teach it on marginal and subordinate questions. A second stage is reached if and when the protagonists of each tradition, having considered in what ways their own tradition has by its own standards of achievement in enquiry found it difficult to develop its enquiries beyond a certain point, or has produced in some area insoluble antinomies, ask whether the alternative and rival tradition may not be able to provide resources to characterize and to explain the failings and defects of their own tradition more adequately than they, using the resources of that tradition, have been able to do.[33]

MacIntyre went on to claim that, as a necessary assumption to this analysis,

> Every such tradition, to some significant degree, stands or falls as a mode of enquiry and has within itself at each stage a more or less well-defined problematic, that set of issues, difficulties, and problems which have emerged from its previous achievements in enquiry. Characteristically, therefore, such traditions possess measures to evaluate their own progress or lack of it, even if

such measures necessarily are framed in terms of and presuppose the truth of those central theses to which the tradition gives its allegiance.[34]

MacIntyre argued that Aquinas had been successful in mediating between the traditions of Augustinian Christianity and Aristotelian philosophy, and although he does not state this, it is evident from what he has written that in producing this new synthesis, MacIntyre believes that Aquinas provided the basis for a new narrative that could relate these two traditions.

This analysis of the conflict between traditions within European culture has since been extended to a consideration of the more demanding situation of reconciling traditions between civilizations. The case he considers is the relation between Confucian and Aristotelian accounts of virtue.[35] Here the difficulties are truly great. Neo-Confucians and Aristotelians present crucially different and incompatible accounts of the best way for human beings to live, so that even those theses where there appears to be agreement function in significantly different ways. Confucius had a relatively small place for explicit theorizing within moral life itself. Within the Confucian mode of thinking there is no place for the classical Western contrast between the rational and the aesthetic mode of ordering, and Confucian modes of expression are themselves ordered in accordance with the modes of ordering that they expound. Furthermore, the Chinese language has no terms for and therefore contains no discussion of the most familiar Western moral concepts, including that of morality itself. Consequently there is even a problem about stating the nature of the contrast between Western and classical Chinese modes of thought.

The outcome of this more testing trial of the approach to reconciling traditions led MacIntyre to add further guidelines. To begin with, he argued that insofar as two incompatible and incommensurable bodies of theory and practice are able to provide an accurate representation of each other, these representations will be of the other as a historically developing body of theory and practice, succeeding or failing at each stage, each in the light of its own standards, in respect of the difficulties or problems internal to it. Furthermore, the only way to approach a point at which our own standpoint could be vindicated against some rival is to understand our own standpoint in a way that renders it—from our own point of view—as problematic as possible, to appreciate it as a historically developing body of theory and practice, succeeding, and also failing, at each stage of its development. To see it in this way is to see its vulnerability to defeat by its rival as possible. It is necessary to take with full seriousness the possibility that we may in the end, as rational beings, have to abandon our point of view. But, in conclusion, MacIntyre also points out that since there is no independent, neutral standpoint to begin

with, the approach to the Confucian tradition will necessarily be from within the Western tradition.

It should be evident from these studies that MacIntyre's concept of tradition has much in common with Foucault's concept of "discursive formation." Like Foucault, MacIntyre recognizes the way in which inquiry, and correspondingly speech, is constrained and guided by institutionalized ways of understanding the world. However, unlike Foucault, MacIntyre stresses the role of inquiry and acknowledges that traditions have within them the capacity to confront their inadequacies and to transform themselves. And he has shown how rival traditions can confront each other and give rise to new traditions. He has nothing to say about the power relations associated with such traditions and the claims to truth that they support, or about the nondiscursive practices underlying discourse. However, despite Foucault's different concerns, all that MacIntyre has revealed about traditions could still be held to pertain to discursive formations as Foucault has conceived them.

Needham Evaluated through MacIntyre's Hermeneutics

In the light of hermeneutics in general and MacIntyre's work in particular, what can we now say about Needham's work? Needham was examining not only one exotic tradition, but a complex of traditions bearing on the development of science in China. In volume 2 he examines Confucianism, Taoism, the Mo Chia and the Ming Chia (Mohists and Logicians), the Fa Chia (Legalists), the skeptical tradition, Buddhist thought, Chin and T'ang Taoists and Sung Neo-Confucians, and the Sung and Ming Idealists. Despite the ambitious nature of his work, it still accords with the demands made by MacIntyre for achieving a fruitful debate with radically different traditions.

To begin with, when Needham began his work he was a leading scientist of Western civilization, holding a chair in biochemistry at Cambridge University. He embarked on his study of China because his research, attempting to develop a new approach to biology—mathematico-physico-chemical morphology—in accordance with the most recent advances in physics and philosophy, was blocked by the University.[36] He also had a deep understanding of the whole history of Western science, philosophy, and civilization, of its achievements and limitations. Needham was therefore prepared to accept the possibility that the tradition or traditions he was studying might be superior at least in some respects to the tradition from which he was engaging in this study.

What Needham presented was a history of Chinese traditions of thought, evaluated in the first instance according to their successes and failures by their own criteria. In presenting these traditions, Needham also showed how they responded to each other in a way that accords with MacIntyre's analyses. Most importantly, the twelfth-century Neo-

Confucians of the Sung dynasty, notably Chu Hsi, responded to the continuing challenge of the Taoist tradition and the newer challenge of the Buddhist tradition by borrowing from them to develop a Neo-Confucian cosmology that enabled these rival traditions to be put in perspective.[37] Needham extolled the achievements of Chu Hsi for this reason. By the twentieth century, the Chinese themselves had come to regard their own technological and scientific traditions as inferior to Western technology and science. That is, in terms of the criteria of the Chinese traditions Needham was studying, Chinese technology and science were in crisis. Needham took a more positive attitude toward these traditions of technology and science than did the Chinese.

It could be argued against Needham that he has imposed categories on Chinese culture deriving from the West. For instance, when I asked a Chinese historian of China about Needham's work, she said that China did not really have a tradition of science before appropriating the Western tradition. However, as MacIntyre pointed out (and as Gadamer has forcefully argued), it is necessary to begin with the categories of one's own tradition or traditions, and the adoption by nineteenth- and twentieth-century Chinese of these categories provides further justification for their use, at least as a starting point. And Needham was doing far more than examining Chinese thought in terms of Western categories.

In fact, Needham has been far more than a historian. His history is part of the elaboration of a new synthesis of ideas transcending both Western and Chinese thought. Needham argued that Neo-Confucian thought had not been able to be understood properly in the past by Western thinkers because "they lacked the background ... of modern organicist philosophy,"[38] the outstanding Western representative of which, he suggested, was Alfred North Whitehead. As he went on to argue:

> On the organic view of the world, the universe is one which simply has the property of producing the highest human values when the integrative level appropriate to them has arisen in the evolutionary process.... From the point of view of the scientist ... the levels of organization can be described as a temporal succession of spatial envelopes; thus there were certainly atoms before there were any living cells, and living cells themselves contain and are built up of atoms. It would, of course, be absurd to suggest that Chu Hsi and his Neo-Confucian colleagues talked like this, or even to interpret what they said as implying any of these detailed conceptions, still less to translate their words accordingly. But I am prepared to suggest, in view of the fact that the term *Li* always contained the notion of pattern, and that Chu Hsi himself consciously applied it so as to include the most living and vital patterns known to man, that something of the idea of "organism" was what was really at the back of the minds of the Neo-Confucians, and that Chu Hsi was therefore further advanced in insight into the nature of the universe than any of his

interpreters and translators, whether Chinese or European, have yet given him credit for.[39]

As we have seen, Needham regards very highly the work of Chu Hsi for his having created a new synthesis of ideas, guaranteeing the dominance in China of Neo-Confucian thought at the time by having absorbed and transcended the cosmologies of the Taoists and the Buddhists—in much the same way that Aquinas guaranteed the dominance of Christianity by absorbing and transcending the ideas of the Aristotelians. It is for this reason that the tradition of Neo-Confucianism can be taken as more "representative" of Chinese civilization than others.

However, what is more important is that, according to Needham, Chu Hsi is a major source of the organic view of the world in terms of which Needham's history of Chinese science and civilization is constructed. While Needham refers to Whitehead as the foremost representative of this view, he argues that Whitehead is the culmination of a tradition going back through Lloyd Morgan, S. Alexander, Smuts, Engels, Marx, Hegel, Schelling, and Herder to Leibniz, and he argues that the spectacular originality of Leibniz, the ultimate source of the opposition to the tradition of Galilean-Newtonian science, derives from the influence on him of Chu Hsi.[40] Of Chu Hsi, he wrote: "Behind him he had the full background of Chinese correlative thinking, and ahead of him he had—Gottfried Wilhelm Leibniz."[41]

Needham was not a passive recipient of this organic view of the world. His work on science, developing a new view of life that was neither mechanist nor vitalist, borrowed from both Marxist philosophy and the philosophy of Whitehead and from recent developments in the physical sciences. His study *Science and Civilisation in China* was a continuation of this project by other means. To construct his history, he creatively appropriated Marxist social theory. This was itself an effort to mediate between Marxist social theory and Whiteheadian natural philosophy, which were themselves radical critiques of the intellectual traditions of Western civilization, and he reformulated each in the light of the other to create a new synthesis. This allowed him to put in perspective the tradition of Marxist thought, the ideas of Whitehead and the tradition of antimechanist thought leading up to his work, and the mainstream of Western science and Western philosophy that he was opposing. And his interpretation of Chinese traditions of thought and Chinese science are actually interpretations from the perspective of this synthesis.

So what we see in Needham's work is a further effort to develop and justify the organic view of the world that was itself seen as the product of the effort to synthesize the traditions of Western and Chinese thought or, more specifically, to respond to the crisis in Western philosophy brought

about by the triumph of the mechanical view of the world, by embracing the most fully developed tradition of Chinese thought represented by the work of Chu Hsi. He offers us a narrative in terms of this synthesis that enables us to appreciate the achievements and limitations of both Western and Chinese science and civilizations, and the construction of this narrative, to the extent it is successful, legitimates the organic view of the world in terms of which it is constructed, as the new narratives about late medieval science formulated in terms of Galileo's theory demonstrated the superiority of this theory.

It could be argued against this interpretation that it ignores the fact that Needham's whole approach to the history of science is externalist, and that the theory of "sociomorphisms" amounts to a causal explanation of scientific development that precludes evaluation. This is a dimension of Needham's work that is not given a place within MacIntyre's analysis of traditions—nor for that matter within traditional hermeneutic philosophy. Externalist accounts are usually associated with debunking the claims to knowledge being made by science, and this has certainly been the case with more recent Marxist historians of science such as Robert Young and Les Levidow. However, earlier Marxist-inspired historians of science such as Bogdanov and Needham were themselves scientists with enormous respect for what science had achieved. Their concern in providing "externalist" histories of science was to show the conditions for new developments in science and how oppressive social relations were sustaining defective forms of thinking, in order to facilitate the revolution in science begun in the late nineteenth century and continued on into the twentieth century. In fact they were showing that socioeconomic relations are not external to science, which can explain them in simple causal terms, but are integral to science, and if the rationality of the advance of science is to be grasped fully, these socioeconomic relations have to be acknowledged and evaluated as part of the history of science.

It is here that Needham addresses what is really a very important point raised by the works of Foucault, and an aspect of science to which traditional hermeneutic philosophers and MacIntyre appear to be blind—the relation between knowledge, power, and nondiscursive practices.[42] Needham had good reason to be interested in these. As I pointed out, Needham's own scientific research had been blocked, and Needham had to struggle to get his research on Chinese science accepted. Power and the nondiscursive practices associated with knowledge were therefore of far greater immediate concern to Needham than they were to Foucault, or to Said for that matter. However, Needham saw the power affecting science not so much within the institutions of science and the practices of control of which these institutions are part, but in the broader context of politics and economics. Like Bogdanov, he was

suggesting that socioeconomic formations, the modes of production and social relations on which civilizations are based, can themselves be held responsible for advances and failures to advance in science. And to understand fully the emergence of these, it is necessary to understand the history of class struggles, the relation between civilizations, and geographical conditions. It was the rise of commercial capitalism, facilitated by the geography of Europe, its past conflicts with Islamic civilization, and the success of the rising bourgeoisie in Italy, then Holland, then England, then France, and then Germany that ultimately enabled the Galilean-Newtonian world outlook to displace the world outlook of medieval cosmology. This facilitated an enormous advance in science. However, capitalism is now a hindrance to the advance of knowledge. According to Needham, "Chinese bureaucratism and the organicism which sprang from it may turn out to have been as necessary an element in the formation of the perfected world-view of natural science, as greek mercantalism and the atomism to which it gave birth."[43] It is implied that what is now required is a new ordering of society to facilitate the full development of the revolution in thought begun in the late nineteenth century, and, not surprisingly, Needham was sympathetic to the Communist revolution in China, suggesting that "perhaps socialism was the spirit of un-dominating justice imprisoned within the shell of Chinese medieval bureaucracy. Basic Chinese traditions may perhaps be more congruent with the scientific world co-operative commonwealth than those of Europe."[44]

Conclusion

What can we conclude from this analysis? That measured against MacIntyre's analysis of the tradition-bound nature of rationality and the problem of understanding radically different traditions of thought, Needham's work is defensible and a major achievement. Analyzing Needham through MacIntyre also highlights the basic deficiencies of Edward Said's work and shows how these can be overcome. Said has generalized Foucault's critique of the social sciences to Orientalism. Foucault not only showed that there has been a close relationship between the social sciences and social control; he has allowed no other possibility, leaving room only for efforts to subvert the discourses subjecting people. The problem with Said's work is not that he has identified a close relation between the discourse of Orientalism and imperialism. This is a major achievement. The problem is that in following Foucault he has not allowed for any other possibility. Hermeneutics provides a place for inquiry, which achieves mutual understanding and which liberates people. MacIntyre furthers this tradition, but he also allows a greater place for creative thinking, for the elaboration of new ideas, including new scientific ideas, in achieving this common understanding;

and, even more than Ricoeur, he shows the importance of narratives in relating diverse ideas and traditions. Most of Foucault's arguments against the tradition of hermeneutic history can be accommodated by these more recent developments in hermeneutic thinking. However, Needham's work is defensible not only in terms of hermeneutics and MacIntyre's work on understanding rival traditions. In his analysis of the interaction between a number of traditions, in showing the relationship between these and class struggles, socioeconomic formations, struggles against invaders, efforts to adapt to geographical conditions, and the specific language and form of writing of a people, he has added a number of other dimensions. And in doing so he preempts Foucault's valid criticism of the tradition of hermeneutics that the dimension of power cannot be accommodated by these approaches. Power is given a place in a way that complements the form of power recognized by Foucault and Said. Needham's work could be enriched by Foucault's insights on the microsociology of power and knowledge in discursive formations (as it could be by Bourdieu's insights into how power operates in cultural fields), but there is no reason to dismiss Needham's insights into the macrosociology of power, knowledge, and socioeconomic formations. And as far as the relation between power and discourse about the Orient is concerned, Needham's work, far from being complicit in Western imperialism, has contributed in at least a small way to the liberation of China from Western domination.

Finally, what are the implications of MacIntyre's ideas and Needham's work for the future? In the service of achieving greater mutual understanding between people, in developing a better understanding of the world, in freeing people from Eurocentric grand narratives that impose Western values and forms of thinking on non-Western societies, what is required is not merely the subversion of Eurocentric narratives, but the construction of grander narratives beyond Eurocentric perspectives, narratives elaborating ways of thinking that allow the achievements—and the failures—of all people in the world to be properly appreciated. *Science and Civilisation in China* has begun this task.

NOTES

1 – Edward Said, *Orientalism* (Harmondsworth: Peregrine, 1985). Joseph Needham, *Science and Civilisation in China* (Cambridge: Cambridge University Press, 1954–).

2 – As in M. Teich and R. M. Young, eds., *Changing Perspectives in the History of Science: Essays in Honour of Joseph Needham* (London:

Heinemann, 1973). I do not want to reject Needham's Marxist credentials completely—only the dogmatic formulations of orthodox Marxism. As the Polish philosopher Marek J. Siemek has argued ("Marxism and the Hermeneutic Tradition," in *Phenomenology and Marxism,* ed. Bernhard Waldenfels et al., trans. J. Claude Evans, Jr. [London: Routledge & Kegan Paul, 1984], p. 31), despite the origins of hermeneutics in biblical studies and the naturalistic self-interpretation of Marxists, "Marxism is and always has been a hermeneutics."

3 – Edward Said, *Orientalism,* p. 3. Said discusses Foucault in "Criticism between Culture and System," in Edward W. Said, *The World, the Text and the Critic* (1983; London: Vintage, 1991), pp. 178–225.

4 – Foucault expounded his archaeological approach to knowledge in *The Archaeology of Knowledge,* trans. A. M. Sheridan Smith (New York: Pantheon Books, 1972).

5 – Foucault added the dimension of power to his analysis of knowledge in his later work, his "genealogies." The most important texts discussing this are "The Discourse on Language," which is included as an appendix to *The Archaeology of Knowledge,* and "Nietzsche, Genealogy, History," in *Language, Counter-memory, Practice,* ed. D. Bouchard (Ithaca: Cornell University Press, 1977). The fully developed application is *Discipline and Punish,* trans. Alan Sheridan (Harmondsworth: Penguin, 1979), which, more than any other work, is the model for Said's study. See Said, "Criticism between Culture and System," pp. 222–223.

6 – Said, *Orientalism,* pp. 202–203.

7 – Anouar Abdel-Malek, "Orientalism in Crisis," *Diogenes* 44 (Winter 1963): 102–140; cited by Said in *Orientalism,* p. 97.

8 – Said, *Orientalism,* p. 322.

9 – Ibid., p. 326.

10 – Partha Chatterjee, *Nationalist Thought and the Colonial World* (London: Zed Books, 1986), and Gyan Prakash, "Writing Post-Orientalist Histories of the Third World: Perspectives from Indian Historiography," *Comparative Studies in Society and History* 32 (2) (1990): 383–408. For a critique of subaltern studies, see Rosalind O'Hanlon, "Recovering the Subject: Subaltern Studies and Histories of Resistance in Colonial South Asia," *Modern Asian Studies* 22 (1) (1988): 189–224, and Rosalind O'Hanlon and David Washbrook, "After Orientalism: Culture, Criticism, and Politics in the Third World," *Comparative Studies in Society and History* 34 (1) (1992): 141–167. This is followed by a reply by Prakash.

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11 – Joseph Needham, "Science and Society in East and West," in *The Grand Titration: Science and Society in East and West* (London: George Allen and Unwin, 1969), pp. 215 ff.

12 – See Needham, *Science and Civilisation in China,* vol. 2, p. 338. It is possible that Needham came to learn of Bogdanov's work on science at the 1931 symposium on science history attended by B. Hessen and N. I. Bukharin. See N. I. Bukharin et al., eds., *Science at the Crossroads,* 2d ed. (London: Frank Cass, 1971). On Bogdanov's philosophy and approach to the history of science, see K. M. Jensen, *Beyond Marx and Mach: Aleksandr Bogdanov's Philosophy of Living Experience* (Dordrecht: Reidel, 1978). See also Arran Gare, "Thinkers: Aleksandr Bogdanov," *Capitalism, Nature, Socialism* 5 (1) (June 1994): 65–94.

13 – A. Bogdanov, *Essays in Tektology: The General Science of Organization,* 2d ed. (1921; Seaside, California: Intersystems Publications, 1984), p. 29.

14 – Needham, "Human Law and the Laws of Nature," in *The Grand Titration,* p. 232. See also *Science and Civilisation in China,* Chap. 18.

15 – On this, see Needham, "Science and Society in East and West," pp. 193 ff.

16 – Foucault's genealogy builds on his archaeology. On this, see Gary Gutting, "Foucault's Genealogical Method," in *Midwest Studies in Philosophy, Volume XV: The Philosophy of the Human Sciences,* ed. Peter A. French et al. (Notre Dame: University of Notre Dame Press, 1990), pp. 327–343.

17 – Foucault, *The Archaeology of Knowledge,* p. 14.

18 – Ibid., p. 162.

19 – See in particular the essay "What is an Author?" in *The Foucault Reader,* ed. Paul Rabinow (Harmondsworth: Penguin, 1986).

20 – See Foucault, *The Archaeology of Knowledge,* pp. 9–10, and *The Birth of the Clinic,* trans. A. M. Sheridan (London: Tavistock, 1976), p. xvi.

21 – See Manfred Frank, *What is Neostructuralism?* trans. Sabine Wilke and Richard Gray (Minneapolis: University of Minnesota Press, 1989), Lectures 10, 11, and 12, and "On Foucault's Concept of Discourse," in *Michel Foucault: Philosopher,* trans. Timothy J. Armstrong (New York: Harvester/Wheatsheaf, 1992). Frank's arguments parallel those of Paul Ricoeur against Claude Lévi-Strauss (in "Structure and Hermeneutics," in *The Conflict of Interpretations,*

ed. Don Ihde [Evanston: Northwestern University Press, 1974]) and V. N. Volosinov against Ferdinand Saussure (in *Marxism and the Philosophy of Language,* trans. Ladislav Mateejka and I. R. Titunik [Cambridge: Harvard University Press, 1986]).

22 – According to Gutting, "Foucault regards a discursive formation as involving four basic elements: the objects its statements are about, the kinds of cognitive status and authority they have (what Foucault calls their *enunciative modality*), the *concepts* in terms of which they are formulated, and the *themes* (theoretical viewpoints) they develop. However, he does not think of a given discursive formation as defined by a unique system of objects, a single enunciative modality, a distinctive conceptual framework, or a consistent set of themes or theories" (*Michel Foucault's Archaeology of Scientific Reason* [Cambridge: Cambridge University Press, 1989], p. 232).

23 – See Pierre Bourdieu, *The Field of Cultural Production* (Cambridge: Polity Press, 1993).

24 – See Hans-Georg Gadamer, *Truth and Method* (New York: Crossroad, 1984), pp. 345 ff.

25 – Paul Ricoeur, *Time and Narrative,* vol. 1, trans. Kathleeen McLaughlin and David Pellauer (Chicago: University of Chicago Press, 1984), pp. 96–111, 206–225.

26 – That MacIntyre can be conceived as contributing to hermeneutics has recently been argued for by Georgia Warnke in *Justice and Interpretation* (Cambridge: Polity Press, 1992).

27 – On the similarities and differences between Kuhn and Feyerabend on the one hand and Bachelard on the other, see Mary Tiles, *Bachelard: Science and Objectivity* (Cambridge: Cambridge University Press, 1984), pp. 152, 181. See also Roy Bhaskar, "Feyerabend and Bachelard: Two Philosophies of Science," *New Left Review* 94 (1975): 31–55.

28 – For a comparison of Kuhn and Foucault, see Ian Hacking, "Michel Foucault's Immature Science," *Nous* 13 (1979): 39–51. See also G. Gutting, "Continental Philosophy of Science," in P. D. Asquith and H. E. Kyburg, eds., *Current Research in Philosophy of Science* (East Lansing, Michigan: Philosophy of Science Association, 1979), pp. 94–117.

29 – Alasdair MacIntyre, "Epistemological Crises, Dramatic Narrative and the Philosophy of Science," *Monist* 60 (1977): 453–472, 459–460. MacIntyre developed and refined this idea in "The Relationship between Philosophy and its Past," in *Philosophy in History,*

ed. Richard Rorty, J. B. Schneewing, and Quentin Skinner (Cambridge: Cambridge University Press, 1984).

30 – On this, see Gutting, *Michel Foucault's Archaeology of Scientific Reason,* pp.19 ff.

31 – On the relation between Foucault and Bachelard, see ibid., chap. 1.

32 – Ibid., pp. 272 ff.

33 – Alasdair MacIntyre, *Whose Justice, Which Rationality?* (Notre Dame: University of Notre Dame Press, 1988), pp. 166–167.

34 – Ibid., p. 167.

35 – Alasdair MacIntyre, "Incommensurability, Truth and the Conversation between Confucians and Aristotelians about the Virtues," in *Culture and Modernity: East-West Philosophical Perspectives,* ed. Eliot Deutsch (Honolulu: University of Hawaii Press, 1991).

36 – This whole episode has been examined by Pnina Abir-Am, in "The Biotheoretical Gathering in England, 1932–38 and the Origins of Molecular Biology" (Ph.D. thesis, Université de Montréal, 1983).

37 – Needham, *Science and Civilisation in China,* vol. 2, pp. 452 ff.

38 – Ibid., p. 474.

39 – Ibid.

40 – Ibid., p. 291

41 – Ibid.

42 – As Marek Siemek pointed out in defending Marxism as a form of hermeneutics, "the specific 'text' which dialectics 'reads' and attempts to reconstruct is not written in semantic objects (words, signs or meanings), but rather in units which are broader and more fundamental: in sense-constituting relations where the direct semantics of meanings is always 'inscribed' in the ontology of its contemporary historicity" (Siemek, "Marxism and the Hermeneutic Tradition," p. 32).

43 – Needham, *Science and Civilisation in China,* vol. 2, p. 339.

44 – Needham, "Science and Society in East and West," p. 202.