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REVIEW

G. E. R. Lloyd. *Disciplines in the Making. Cross-cultural Perspectives on Elites, Learning and Innovation* Oxford: Oxford University Press, 2009. Pp. viii + 215. ISBN 978-0-19-956787-4. Cloth price 50.00.

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G.E.R. Lloyd is a most distinguished scholar. He is recognized for important contributions to the history and philosophy of Science. In the last decades, he has authored a considerable number of books and papers, comparing the development of science in early China and Greece. He developed a methodology, examining, for example, how the social and political context was a determinant of the development of scientific ideas. Comparing the scenarios of ancient Greece and China is present in many of Lloyd's works. But Lloyd scholarship has also another strand. He tries to explain why and how different individuals, of the same species, reveal different interests and preferences, talents and abilities, specificities in generating, organizing and sharing knowledge.

In the first sentence of the book under review, Lloyd says "This book is a sequel to my *Cognitive Variations. Reflections on the Unity and Diversity of the Human Mind*." In it, he looks into commonalities and variability of human cognition in response to the natural and cultural environment. Without endorsing either universalists or relativists, Lloyd discusses some categories usually claimed as cross-cultural universals, such as color perception, spatial cognition, classification of animals and plants, emotions, health, action, rationality and the recurrent and ideologically loaded theme of nature versus culture.

In *Disciplines in the Making*, Lloyd draws from a typical university departmental structure and select eight basic disciplines: philosophy, mathematics, history, medicine, art, law, religion and science. These are the eight chapters of the book. This book, as well as the previous one, indeed since the controversial *Demystifying Mentalities* (CUP, 1900), is very difficult to review. Of course, the selection of the eight disciplines is a first problem faced by the author. What does it mean, in different cultural settings, mathematics or philosophy,

medicine or religion, and so on? This book is an example of the fact that dealing with such an ambitious project results more in opening then in answering questions.

The undeniable prestige of the author, acquired through his publications and academic recognition, allows him to venture into exploring even the concept of disciplines. By doing this with the intellectual instruments, such as theory and methodology, developed in the western frame, many factors, which influence the generation and organization of knowledge, may not be fully appreciated. Disciplines are the result of a dynamic complex of organized strategies generated in response to the pulsions of survival and transcendence, both as individuals and as groups. Although we recognize societies that were, until recently, isolated – such as the Amazonian Pirahãs – we may say that, since prehistoric times, cultural encounters have always played a major role in the dynamics of strategies to survive and to transcend. In every cultural encounter, we note either total acceptance or total rejection or, what is more common, syncretism. But in any case, extant conscious and unconsciousness forces play a role in further generation of knowledge.

I see parallels between the research program of Lloyd and the Program Ethnomathematics. Although ethnomathematics was initially concerned with the study of mathematical ideas in cultures without writing and of people with no professional training, which means society at large, including sectors of literate societies that are unfamiliar with written mathematics, it has expanded to the areas of literate societies that are beyond the reach of academic recognized sources, hence beyond academic mathematics. In this broader conception, the name Ethnomathematics was kept, as the result of an *abus de language*, with the meaning of *techné* of *mathemá* in distinct *ethno*. The primary sources of the Program Ethnomathematics are written documents, plus monuments and artifacts, daily behavior and common knowledge implicit in narratives, oral and written, some forgotten or lost, some prohibited or suppressed, some intrinsic in folk tales, in mythologies and in fiction. In all these sources we recognize explicit or implicit ideas of observing, comparing, classifying, ordering, measuring, quantifying, inferring. These categories of ideas result from the will to satisfy the human pulsions of survival and transcendence. The objective is to identify conceptualizations of space and time, spirituality, number, dimension, shape, symmetry and the like in many aspects of ancient and modern life, not restricted to academics.

The subtitle of *Disciplines in the Making* is revealing: *Cross-Cultural Perspectives on Elites, Learning, and Innovation.* Indeed, the concept of elite differs much from one society to another. For example, in China scholars were selected by public examinations and were at the service of the Emperor, the focus of their advances was to respond to the Emperor wishes, hence learning and innovation was subordinated to the Emperor's interests. In Greece scholars organized themselves as small elite, a sort of fraternity, aiming at intellectual enhancement, who practiced outside of public visibility (academy) in their leisure time. Differently than the Chinese scholars, they had to make a living in other activities. The Greek intellectual elite coexisted, although distant, with citizens concerned with common problems of every-day life, typical of a progressive

society, such as urban events, production and commerce. Learning and innovation and the role of elites reflect the structure of the society. We recognize this when we look into the philosophy of education in different cultural environments. It is always possible to recognize two strands for education: to transmit to new generations what is accepted, such as values, and to create opportunities for improving everyday life. In other words, we recognize in education conservative and progressive strands. The equilibrium between the two is the great challenge of education. Disciplines tend to favor the conservative strand. This permeates the eight chapters of this book.

Differently than the other chapters, the title of Chapter 1 is itself a question: **"What is Philosophy?"** The author discusses philosophy in Greece, arguing that in coining the name, a conception was stated. Some authors consider that China had not philosophy, but, instead, wisdom, while Indian and Arabic scholars came closer to the Greek concept. Lloyd begins with a brief mention of some contemporary philosophers, moves into modernity and then to Greece. As expected, the arguments of Plato and Aristotle are the main focus of the brief presentation of Greek philosophy. The conclusion is that the Greeks agreed "that philosophy was important for life, essential for happiness, no mere abstract intellectual discipline." (p. 10). A comprehensive presentation of the main concerns of Chinese scholars points to human behavior, human nature in general and how to achieve good government. In their discussions, it is possible to recognize ethics and political philosophy. Engagement in affairs of state and matters of public interest is noticeable in Chinese writings. India, instead, has similarities with Greece. Concerns involve ontology, metaphysics, philosophy of mind, ethics and Lloyd sees the possibility of a mutual interaction of Greek and Indian civilizations as a result of cultural encounters, mainly in view of the importance given to atomism, logical analysis and the practice of debate. It is very interesting the argument about otherworldliness present in India. Next section of the chapter deals with Islam, in which we recognize a strong, even explicit, influence of Greece thought. The main issue is the compatibility of the authority of the Kur'an with the questioning character of Greek thought. Very provocative are about a dozen of lines, in which Lloyd raises the issues of Intelligent Design and Darwinism on the basic ideas of creation. To conclude the chapter, he turns to what maybe the "trickiest group of problems" (p.23) that is philosophy in the absence of literacy. He places himself in the position that philosophy is associated with basic human cognitive capacities, which allows for informal reasoning. His brief mention of children reminded me of the interesting research of Alison Gopnik as reported in her book *The Philosophical Baby* (NY: Picador, 2009).

Mathematics is the theme of Chapter 2. It is the longest chapter. The author briefly examines conceptions of Platonists, of constructivists, of formalists, and other currents in the philosophy of mathematics. He goes into etymological arguments and synthesizes what have been the main discussions of historians of mathematics. Indeed, the bibliography on the history and philosophy of mathematics in ancient Greece is vast, including contributions by the author. The issues and arguments are familiar. Lloyd moves into the discussion of mathematics in China. Now, unfamiliarity prevails. To say that

"Their map or maps of the relevant intellectual disciplines, theoretical or practical and applied, are very different both from those of the Greeks and from our own." might be an opening caption for this entire book. To compare knowledge which have been organized and structured in different cultural environments is very difficult, almost impossible. The attempts may lead to searching for common concepts and facts and to identifying incidental coincidences, which have no meaning outside the full cultural complex which generated the fact. The dynamics of cultural encounters may be responsible for some coincidences. All this is seen in the excellent review of Chinese mathematics made by Lloyd. The chapter is limited to Greece and China. India and Islam, which were given much attention in Chapter 1, are absent. Except for a few lines on the Peruvian *quipu* and Pirahã culture, non-literate societies are not considered. If we accept Lloyd's view of knowledge as the cognitive response to the natural and cultural environment, and look for organized strategies for survival and transcendence, we may recognize more than incidental coincidences. This is not contemplated in this book.

Chapter 3 deals with **History**. The chapter begins with a discussion of the concept of time, which is associated with an enchainment of past ↔ present ↔ future, be it linear or cyclic. As Lloyd points out, this enchainment is challenged when we consider the mythological and the sacred, the times of heroes or gods. I would add when we explore the unconscious. Time representation is among the earliest manifestations of mathematics. For example, the Ishango bones and similar registers imply chronology, hence may be considered as recoded history. This example shows how difficult is to conceptualize history. The author lists "eleven different, overlapping, non-exclusive aims" for the historians: 1. entertainment; 2. memorializing or commemorating; 3. glorification or celebration versus vilification and denigration; 4. legitimization; 5. justifying past actions and politics; 6. explaining why things happened the way they did; 7. offering instructions based on past experience; 8. providing records for administrative purposes; 9. warning agents or groups; 10. criticizing other interpretations of the past, particularly by other historians; 11. 'just' recording the past, telling what and how things actually happened. I see the emphasis on 'just' given by the author as the recognition of this aim being purely illusory. The selection of what to be recorded is biased, indeed subordinated to the other ten aims. This guides the author in the selection and comments of several cases studied by him from recorded history of Greece, Rome and China. Lloyd lists three fundamental problems faced in historiography: 1. no description can be entirely neutral, value-free; 2. history as instruction; 3. agents in history are individuals or groups? History is, probably, the most challenging discipline among the eight selected by the author. It could be much enriched by a discussion of history in non-literate societies, that is, about oral history. It goes deeper than narratives: "messages from the past exist, are real, and yet are not continuously accessible to the senses."[1]. If we decide to look for an hierarchy and try to elect a master discipline, I would vote for History, where we find the traditions and the roots of a culture. A culture that does not recognize its root is doomed to be subservient.

[1] Vansina, Jan. *Oral Tradition and History*, Madison: University of Wisconsin Press, 1985 (p.xi).

But I will not reflect on this, although I believe this is the most exciting and necessary follow-up of this book regarding the threatened future of civilization. I will return to this.

Chapter 4 discusses **Medicine**. Rightfully, Lloyd considers this the least problematic of the chapters. Diseases are regarded as perturbing the well-being, which is a common notion. How to reestablish well-being is approached in very different ways, from invoking supernatural powers to appropriate feeding and use of drugs, to skills in dealing with sprains, bruises, fractures and even to the resource to surgery, and now to neuroprothesis, not contemplated by Lloyd. The scientific developments since the Renaissance led to a scientific and highly technical medicine. The author briefly discusses some aspects of shamanic societies and focuses most of the chapter on learning medical traditions of China, Greece and India. In all three, disease is a sort of disorder or imbalance, which may be within the body or between the souls or mind and the body or between the person and as a whole and the environment. Thus, health is related to the cosmos as a whole, to morality and to values. In Greece and India, much importance was given to humours, while in China circulation was the key concept. Particularly in Greece and China, there was a great effort to not only systematize the key concepts, but also to accumulate medical experience, recording case histories of individual patients. There is a reference to the importance of dissection to investigate the bodies of humans and animals, both in Greece and China, although with different purposes. In all three societies, the learned medical elites were prestigious and plurality is noted. Different approaches coexisted. Particularly the knowledge of plants and mineral remedies were present outside the learned medical elites, creating a sort of peripheral group of practitioners. Then Lloyd discusses the similarity of the tensions in the ancient scenario and in the modern world, with an interesting discussion of what may be labeled the official medicine and alternative medicines. The chapter closes with an observation that I consider very relevant for the proposal of this book, considering that the making of disciplines is a process that is going on. Lloyd says "the possibilities of mismatch between what biomedicine [with a battery of tests to call on] pronounces to be the case and what individual patients feel, are unlikely ever to be completely removed. If so, alternative styles of medicine, with their more or less articulate elites to promote them, are likely to continue to bear witness to the complexities of our understanding of what it is to be truly well, and it would surely be foolhardy to suppose that biomedicine has nothing to learn from its rivals." (p.92)

Art is the subject of Chapter 5. The author starts with a list of authors responsible for widely divergent theories about the aesthetic experience, focusing political, economic, ideological, symbolic aspects of art. Instead of discussing approaches to the concept of art, Lloyd goes into the commercial aspects of art. The elites, he considers, are the artists, who produce the objects of interest, and the connoisseurs, who create fashions and influence taste, and in many ways induce both consumers and producers of art. Art is a highly priced commodity, bringing remarkable profit for art dealers. We see art museums, galleries, concert halls even in small communities all over the world. There is a remarkable touristic activity motivated by special exhibits and concerts. Replicas and records and the facilities for producing and consuming are responsible for a large sector of the economy. It becomes

almost impossible to deal with the question "what is art?" Lloyd brings the example of the club that accompanied Claude Levi-Strauss when he was writing *La Pensée sauvage*. The club was an instrument that the fisherman used to kill the fish that he caught. It was required, for this piece, *functionality* – working as a weapon – *skill* – to execute the carving – and *symbolic appropriateness* – its meaning as part of a natural equilibrium of predator and prey. Indeed, every authentic artifact has in a cultural setting has a symbolic meaning. This might be taken as characterizing a piece of art. Lloyd makes this clear when he gives examples from Melanesia, from body-painting in Amazonia, from meeting-houses in the Maori tradition and textiles and carvings. This chapter, more than the others, examines non-literate societies as a way to capture symbolic meaning, which is essential to art.

Chapter 6 treats **Law**. Every society has ways of dealing with individual behavior in matters affecting others. Some have formal legal systems, other have authorities caring for the appropriate behavior. Both cases have a system of values as support. The agenda for this chapter focuses the relationship between law and morality; the issue of how the law is interpreted and applied; the origin and status of law; change and innovation of laws; the separation of powers between the legal and the political authorities; and the differences of attitudes when laws deal with intra-state and inter-state affairs. As expected, China and Greece dominate the discussions of the chapter. But it is preceded by a brief study of three societies: the Barotse, with no writing at all, the decisions being taken as the result of rhetoric argumentation, in which every member of society might enter into the discussion; the Babylonians, who produced the most ancient written detailed code of Hammurabi; and the Islamic societies, in which the Shari^{c}a derives from the unquestionable Kur'an and the sayings of Muhammad. Discussing China, references to Confucius are recurrent; and the appeal to Zeus rewards and punishments permeates early Greek legal procedures. Plato brings a new vision on law, favoring its practice as a professional activity. His disagreement with Archytas, who came to his rescue from Dionysius II, focused the fact that Plato did not agree with giving the control of law to ordinary citizens. It should be a matter for professionals. Lloyd remarks that two attitudes coexisted in ancient Greece and China: those who saw the government focusing on the benefit of society as a whole; those who claimed the law should serve the interest of the powerful, kings and wealthy oligarchs or the system, i.e., democracy itself. This is the tone of his critics of the current legal institute, particularly in questions of international relations. Particularly critical is the situation of crimes against humanity. Lloyd concludes with a comment that implies the equivocal model of modern civilization: "unwritten laws, to encapsulate shared moral principles, remain as much in the realm of utopian dreaming as they ever did in the days of ancient Greece and China." (p.136)

Religion is the theme of Chapter 7. The first line is a question, which defines the complexity of the subject "By what criteria should we judge a belief or a practice to be 'religious'?" (p.137) The discussions contemplate not only the monotheistic, but also several forms of polytheism, pantheisms, personal gods, and many forms of spirituality, even ancestor worship. A critical issue is agency, which leads to cults and mediators, hence priesthood. Other critical questions are enquiries about born or reborn and death as a

passage, with life being considered a mission leading to afterlife. Believing and being challenged marks much of the religious conflicts, as well as the views on omnipresence and omnipotence. The authoritative characters of orally transmitted religions and of sacred books are comparable. Lloyd contemplates the relations between religion and society, religion and science, religion and morality and, indeed, religion is present in all the previous chapters of this book. There is an interesting discussion of prestige in religious matters deriving from individuals who master and interpret sacred texts or who have charisma and recognized sagehood, holiness, sainthood, benevolence. But also derive from sumptuousness of temples and rites. Lloyd does not discuss current political issues associated with the theology of liberation and the widespread emergence of "new religions", many as evangelical denominations.

The final chapter is **Science**. It might well be titled "What is Science?" Lloyd challenges the conventional view that science is a uniquely modern Western phenomenon. He claims that science exists wherever there is a systematic search for understanding phenomena, even in the absence of a recognized method. Indeed, the satisfaction of the pulsions of survival and transcendence, present in every individual and in every group, is resolved by *ad hoc* solutions. This leads, necessarily, to methods, and the search for understanding and explaining these methods lead to theories. The intellectual adventure of the human species is synthesized in the steps: *ad hoc* solutions → methods → theories → innovation. These steps permeate the arguments of every chapter of this book. The recognition of these steps are the critical issues which Lloyd calls the conventional view. When Lloyd says "On a view that has become increasingly influential the opinions of the scientific community are what count in determining the acceptability of a theory. On that view scientists themselves constitute the sole ultimate court of appeal as to what science is – and what counts as good science – and it is recognized that as the opinion of the scientific community change, we have to allow for changes also in how science is to be denied." (p.158) this implies that the elites appropriate, or expropriate the methods and are responsible for building up theories. Later, Lloyd says that to propose innovation, the elites are faced with acceptance, which asks for conforming "to the patterns and ideals that, consciously or otherwise, the elite uses to define itself." (p.170). This is the most critical obstacle humanity faces to overcome the dramatic moment we are now facing. Mikhail L. Gromov, Abel Prize of Mathematics of 2009, makes it clear when he says "Everything will essentially come to an end within fifty years. What will happen after that? I am scared. It may be okay if we find solutions, but if we don't then everything may come to an end very quickly! ... Being inside our ivory tower, what can we say? We are inside this ivory tower, and we are very comfortable there. But we cannot really say much because we don't see the world as well enough either. We have to go out, but that is not so easy."[2] A major barrier to go out is related to language. Lloyd says that European languages express the concept of science, which define the object of scientific enquire, with all the controversies

[2] Raussen, M & C Skau. Interview with Mikhail Gromov, *Notices of the AMS*, v.57, nº 3, March 2010 (pp.391-409).

arising from disciplines claiming to be science, mainly those focusing social issues. He exemplifies the importance of language in conceptualizing science when he gives the example of the elaborated taxonomies of the Hanunóo, in the Philippines. He recognizes that this kind of example might be multiplied all over the world and also in ancient societies. The same we may say of astronomy. There is an interesting discussion about observation, the recording of data, and experimentation. Intriguing questions such as the emergence of agriculture, of pottery, weaving and metallurgy, calls for a broader concept of experimentation. Questions raised by Lloyd are "What observations were made, and how deliberate were they? How was new knowledge built up, and were there ways of recording and transmitting it? ... What were the interests that motivated the societies as a whole or groups within them? ... Were they supported by state institutions, or were they left to provate individuals? If the former (as in Babylonia and China, for instance) what were the state's interests, and if the latter (as generally in Greece) what motivated those individuals?" (p.165) These questions suggest moving into the very delicate question of Science as an instrument of power and the humanitarian responsibility of scientists. Lloyd does not discuss these questions, which are not in the scope of this book. But he closes the chapter with what might be interpreted as an answer to the question posed by Gromov about going out of the Ivory Tower. In a footnote, he says that even if pre-institutionalized science is not a learned discipline, it is a widespread human activity (I understand as the concern of every human being), sharing with the limited elite, the responsibility for progress and advancing knowledge. This calls for the recognition of knowledge produced outside the "official" circles, outside the academy.

The final chapter on **Conclusion: Disciplines and Interdisciplinarity** is an overview of the eight chapters, summarizing what was discussed in each discipline contemplated, particularly discussing the role of elites and the forces that stimulate or inhibit innovation. While the eight chapters emphasized cross-cultural comparison, Lloyd tries, in this concluding chapter, to open an interdisciplinary perspective to his study, by considering commonalities and interrelations among the disciplines. Although the election of the disciplines drew from departmental organization of typical universities, the ways they are organized and practiced differ much in different cultural scenarios. But in any case, elites play a strong role. The members of the elite claim, and indeed are regarded this way, that they are the specialists, they detain knowledge not accessible to just anyone. Even granting that specialized knowledge is important, this perception of the elite creates a sort of power structure which may inhibit innovation. Lloyd goes through an acute view of the criteria for the selection, qualification and training of the next generation and discusses the conservative character of curricula. He discusses the increasing narrower specialization, which has advantages but at the same time may hinder innovation. He gives many examples of how objects of study and methods are shared among disciplines, leading to interdisciplines. Interdisciplinarity has no established elite, which favors innovation. It is noticeable a kind of paradox: while innovation is easier, the absence of firm epistemological boundaries and of an established elite makes more difficult its acceptance in academic circles. Lloyd concludes observing that different forms of inquiring are the result of human imagination, which sometimes have to circumvent the conservatism of

elite and to overcome the hazards of creativity. "But then who would expect the history of human endeavour to be one of uninterrupted progress?" (p.182).

In summary G. E. R. Lloyd has produced an ambitious work about disciplines in different societies, ancient and modern, literate and non-literate, and the factors that encourages or impedes their progress. In particular, he examines the roles, both positive and negative, of elites in the process. Although the book sometimes compares East and West, mainly ancient China and Greece, it is broader, in the sense of going into the nature of the disciplines and of pointing to the inevitability and to the difficulty of the emergence of new interdisciplinary fields.

The book has a Glossary of Key Chinese and Greek Terms and Names (4 pages), Notes on Editions, a Bibliography of over 300 references, a generous Index, and many useful footnotes. Although the book is well cared with respect to misspellings and typographical errors, it is surprising that footnotes 1 and 3 of the Conclusions are missing.

Reading this book is a stimulating and enriching exercise. The general tone of the book gives the impression of a "brainstorming" session. Issues are raised, discussed and opened for further reflection. This book would be an excellent guide for an Advanced Seminar.

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