บทปริทัศน์หนังสือ

The Three Cultures: Natural Sciences, Social Sciences, and the Humanities in the 21st Century

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ชื่อหนังสือ: The Three Cultures: Natural Sciences, Social Sciences, and the Humanities in the 21st Century
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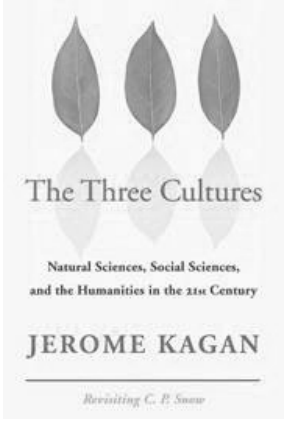

Introduction

Jerome Kagan (1929-present) is a renowned American psychologist and an emeritus professor at Harvard University, whose works generally deal with developmental psychology, infant's temperament, and assumptions of the social sciences. Due to his remarkable contributions to the field of Psychology, in 2002 he was named one of the 100 most eminent psychologists of the 21st century (Haggbloom et al, 2002).

The Three Cultures: Natural Sciences, Social Sciences, and the Humanities in the 21st Century (2009) is a result of Kagan's attempt to argue against C. P. Snow's

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premise that the academia is divided into two cultures—natural sciences on one hand, and arts and humanities on the other—after rereading Snow's 1959 book *The Two Cultures.* Kagan asserts that the premise does not reflect the true nature of the intellectual world, claiming that another culture has left unexplored by Snow: social sciences. In writing *The Three Culture,* he aims at analyzing the meanings of the languages used by the three cultures, describing and criticizing seminal assumptions of the three cultures, and highlighting their contributions.

Aiming at reconstructing the essence of Kagan's arguments, this book review comprises three main sections. First, I will elaborate the varying nature of the three cultures in term of their characteristics, goals, foci, vocabularies, strengths, limitations, and so on. Second, extracting from Kagan's epistemological propositions, I will discuss a possible methodology for going about research—especially, on cross-science collaboration—will be asserted. And, third, I will lay out strengths and shortcomings of the book.

Cultural Diversity of Sciences

Kagan argues that the academia is composed of three communities—namely, natural sciences, social sciences, and humanities—and each community has its own culture that reflects through its vocabularies, methods, interests, and so on. Kagan defines culture as "a community of persons who share the same symbolic meanings for its myths, religion, art, history, and the actions and beliefs classified as right or wrong" (Kagan, 2009, p.107). Kegan uses the term to signify, if not intensify, the importance and influence of differences among the three communities in term of their shared assumptions and methods for intellectual practices that result in diverse contributions to the advancement of knowledge. Cultural diversity of each of the three communities not only is constituted by scholars' interests and mundane practices, but also formulates and manipulates their worldview and interpretation. Therefore, it is necessary, for scholars across the academia, to be aware of such differences for mutual understanding and fruitful collaboration.

The differences among the three cultures are reflected through nine dimensions of epistemological behaviors: interests, sources of evidence and control of conditions, vocabulary, historical influence, ethical influence, dependence on outside support, work conditions, contribution to the national economy, and criteria for beauty. Factors that contribute to cultural diversity include different types of mental structures, different referents for the meaning of truth, and different types of scientists. Types of mental structures are: (1) mathematical concepts and equations; (2) semantic networks; and (3) schematic representations. Four usual referents for the meaning of truth are: (1) consensual observations affirmed by others; (2) consistent logical or mathematical arguments; (3) meaning coherences; (4) and compelling feelings. Four types of scientists are classified by their interests and aims in practicing scientific activities: (1) intellectual potency demonstrators or grand theorists; (2) specialized inquirers (3) public celebrities; (4) routine experimentalists (Kagan, 2009). Below I articulate how these dimensions and factors constitute and influence each of the three cultures.

Natural Sciences

Natural scientists are primarily interested in predicting and explaining natural phenomena by means of experimentally controlled observation of material entities. Their vocabularies are unusually based on semantic and mathematical concepts (Kagan, 2009, p.4). There are three seminal, fundamental assumptions of natural sciences: first, no scientific explanation is permanently true; second, all phenomena are the final products of a sequence of material processes that are predictable; and, third, there are no ethical values in natural phenomena (Kagan, 2009, p.57-8). These premises allow natural scientists to successfully explain a wide variety of mysterious natural phenomena and highly contribute to the national economy, and, as a result, enjoy high public prestige (Kagan, 2009, p.51).

Social Sciences

Symbol and culture are two fundamental concepts for social sciences (Kagan, 2009, p.104) and lead to different characteristics and contributions from

those of the natural sciences. Social scientists are predominantly interested in predicting and explaining human behaviors and psychological states, often in uncontrollable contexts (Kagan, 2009, p.4).

In comparison with natural scientists, social scientists have lost their confidence and public esteem due to the facts that: (1) social sciences are relatively *young;* (2) most of social scientists mimic theoretical perspectives and empirical methodologies hold by natural scientists; and (3) social scientist failed to invent a large number of methods to measure human psychological states (Kagan, 2009, p.128-30). Nevertheless, the most prominent contribution of social sciences is that they provide a wide range of corrections to misunderstandings hold by the natural scientists and the humanists: social sciences serve as a bridge connecting the natural science and humanity cultures.

Kagan argues that social sciences are in an early, unhappy phase of growth and lacking a unifying theoretical perspective and methodology. However, the absence of a unifying theory does not necessarily yield fruitless outcomes: it allows *a thousand flowers to bloom* (Kagan, 2009, p.214-7). This argument is in line with one of Kuhn (2012)'s propositions regarding the preparadigmatic period of a scientific revolution, in which a wide range of theories and methods occur and later lead to the advancement of science. Kagan claims that there have been two choices for social sciences to choose regarding research strategy: a physics methodology or a biology one. Considering the characteristics of social sciences, he argues that the biology methodology is more promising than that of physics due to biologists have no unifying theory to encompass all life phenomena as do social sciences (Kagan, 2009, p.250-1).

Humanities

The primary interest of humanists is neither to predict nor to explain, but to understand human reactions to events and meanings that humans impose on experience as a function of culture, historical era, and life history. Historical

conditions and ethical values, which are neglected by natural scientists, play essential roles in the humanity culture (Kagan, 2009, p.4-5).

Following the ascent of natural sciences, humanities lost substantially more confidence than social sciences due to: (1) the changing membership in the disciplines; (2) the changing modes of transportation and communication; (3) the proliferation of postmodernism; and (4) scientists' invasion of the humanists' territory (Kagan, 2009, p.222-7). Despite lacks of epistemological and objectively rigors in term of methodology, humanities perform several critical functions and yield a wide variety of contributions to the academia. First and foremost, humanities provide divergent perspectives on the human condition and create objects of beauty. They also remind society of its contradictions, articulate salient emotional states, detect changing cultural premises, confront their culture's deepest moral dilemmas, and document unpredictable events that punctuate a life or historical era (Kagan, 2009, p.230-1).

A Call for Epistemological Pluralism

After clarifying Kagan's propositions concerning the differences among the three cultures, I now turn to an illustration of how such propositions would look like if to be implemented. Essentially, Kagan's methodological stance appears to be in line with that of Flyvbjerg (2001) and Feyeraband (2011). That is, Kagan calls for epistemological pluralism, collaborations between and among the sciences, and emphases on ethical values. It is inevitably true that the epistemological behaviors of one culture vary from those of the others, leading to a different set of contributions to the academia as well as to the global society. However, it is not an either-or question that matters inasmuch as it is not about ranking.

To Kagan, there exists no such thing as one best way in knowledge inquiry: you do not need to choose between a given methodology among many others rather than to understand their differences. If you—as a scholar, a scientist, a theoretician, an experimentalist, or a practitioner—are not aware of the strengths and limitations of your culture as well as of the other cultures and fixate on the

assumptions of only one culture, you are tapering off your vision, interest, methodology, and possible findings. As a result, you are detained in either a psychic prison or an epistemological silo of your own. Fixation leads to decline. Hence, Kagan calls for, on one hand, a respect of the differences among the three cultures, and, on the other hand, a critical thinking with regard to such differences. To thoroughly understand a given occurrence, different worldviews and methodologies are necessary, and collaborations among scholars of the three cultures are important.

Moreover, Kagan denies the conventional conception and perception of hierarchical positioning of sciences, in which physics is perceived as the center of the solar system of sciences. Kagan argues that such perception not only misleads but also fails to represent the true nature of scientific communities. Instead, Kagan proposes a political model to illustrate the relationship of the three cultures: the academia serves as a democratic political system, in which each of the three scientific communities play a partisan role. In this model, there exist ongoing tensions, oppositions, conflicts, and collaborations from time to time, leading to the proliferation and advance of knowledge.

As well as Flyvbjerg and Feyerabend, Kagan pays immense attentions to ethical values. In the final chapter, he proposes some corrections to conventional misunderstandings about the three cultures, mainly with regard to ethical values. First, fundamental standards of a given society do not necessarily meet scientific facts. Second, symbolic meanings, aka sources of knowledge, rest on the daily conducts of humans. Third, scientific advances should be related to human acts beliefs, and emotions (Kagan, 2009, p.252-3).

Evaluation

Strengths

Kagan's attempt to address the diverse characteristics of sciences not only is admirable but also successful. Listed below are some of the strongest points of the book.

Insight into the Nature of Sciences. Kagan exceptionally shows his in-depth understanding in the characteristics and functions of the sciences, especially in Chapter 1 where he describes and compares the differences of the three cultures in multiple dimensions.

Systematic Conceptions. Kagan gives the impression of having a passion for such systematic conception as typology building, classification, and categorization. One would find it is not demanding to follow his arguments inasmuch as he constructs and presents his ideas with a wide range of typologies. Although typologies are very helpful in understanding the different characteristics and functions of each culture, it could be very deceptive if such typologies were to stereotype a given culture.

Credible Historical Accounts. Kagan shows his exceptional knowledge in the history of sciences—especially, of natural and social sciences, which are laid out smoothly and coherently. This results in a more thorough understanding on how the sciences evolved, proliferated, and emulated over the course of history.

Weaknesses

Lacks of Definitions. First and foremost, despite his passion for typologies, Kagan seems to have less obsession with giving definitions. The book contains tons of terminologies and jargons but with limited clarification for each of them. For instance, the term culture, which is the central thesis of the entire book, is not clarified until one third of the book is read, and when the definition comes, it comes in a very vague fashion. This is also true for a number of more complicated terms, such as, semantic networks and schematic representation.

Contradictory Stances. Throughout the reading, contradictions regarding Kagan's stance on a given issue are found several times. For example, one of his conclusions that social sciences should inevitably emulate the methodology of biology instead of that of physics not only is misleading but also contradicts his advocacy for diversity and epistemological pluralism. To be fair, these

contradictions may be a result of his dialogue with himself, particularly concerning what he sees and what he wants to see.

Inconsistent Structure. Although Kagan's writing is relatively systematic, the book structure is not. Arguments in Chapter 1 are systematically and comprehensively laid out, serving as the core content of the entire book. When I first read Chapter 1, it seemed as if Kagan was going to elaborate the nine dimensions of differences of the three cultures in the following chapters. However, it turned out that the points he makes in Chapters 2-5, do not follows the dimensions he asserts earlier in Chapter 1, or even the three main goals of the book: while several dimensions are discussed in details in each of the following chapters, some of them are omitted.

Selective Sampling. Last but not least, considering Kagan's aim to analyze and describe the characteristics and assumptions of the three scientific communities, it is righteous to expect a thorough arguments complete with samples of all-inclusive disciplines within a given science. However, it appears that he is very selective and exclusive in choosing certain disciplines to represent a culture: biology dominates the natural sciences chapter; psychology, economics, and political science are overstated the social sciences ones; and in a very short chapter on humanities, the emphasis is on history with slightly limited arguments on films. A crucial question regarding legitimacy looms: to what extent do these selected *fields* holistically represent the *science* as a whole? The likely answer would be: not so much. Kagan's main thesis would be much more significant and promising if his selection was more inclusive.

Conclusion

In writing this essay I aim at reconstructing, analyzing, and criticizing the essence of Kagan's arguments regarding the differences and contributions of the three scientific cultures—natural sciences, social sciences, and humanities. Kagan argues that three cultures, whose shared assumptions and mundane practices differ, have different contributions to the understanding of truth as well as to the

development of the academia. Kagan rejects the conventional perception of the relationship of sciences as a hierarchical structure, claiming that such perception not only is deceptive but also hinders scientific progress. Kagan encourages scholars in the academia to be aware and critical of the differences of the three cultures, and calls for mutual understanding, fruitful collaboration, and epistemological pluralism. The strongest points of the book rest on Kagan's insight into the nature and historical context of the sciences as well as his systematic writing style. At the same time, the major limitations are lacks of definitions, contradictory stances, inconsistent structure, and selective and questionable disciplines representing each of the three cultures.

References

Feyerabend, Paul. (2011). *The tyranny of science.* Malden, MA: Polity Press.

Flyvbjerg, Bent. (2001). *Making social science matter: Why social science inquiry fails and how it can succeed again.* Cambridge: Cambridge University Press.

Haggbloom, S. J. et al. (2002). The 100 most eminent psychologists of the 20th century. *Review of General Psychology , 6*(2), 139–152.

Kagan, Jerome. (2009). *The three cultures: Natural sciences, social sciences, and the humanities in the 21st century.* New York, NY: Cambridge University Press.

Kuhn, Thomas S. (2012). *The structure of scientific revolutions.* (4th ed.). Chicago: The University of Chicago Press.