

# Why the Humanities Are Not Science: Thinking Comparatively from Aristotle

*In memoriam: Paul Ricoeur (1913-2005)*

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## Introduction

The title of my essay, “Why the Humanities are Not Science,” may recall for some Anglo-American colleagues in literary studies a similar essay title by Harry Levin, who used to be the Irving Babbitt Professor of Comparative Literature at Harvard and one time president of the American Association of Comparative Literature. Delivered first in 1967 as a lecture at Churchill College, England’s Cambridge University, Levin’s essay was entitled “Why Literary Criticism is Not an Exact Science,” and the reason he intimated in this short and—for me—quite disappointing piece was because literary criticism, as he construed it, could not basically agree on what would constitute the object of its inquiry that would garner for the investigator’s new knowledge. Was it “the verbal expressions” themselves, the creative faculty or “imagination” of the artists, or literary history?<sup>1</sup>

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This essay is an expanded and revised version of a lecture given at the invitation by Dr. Chi-huey Wong (翁啓惠), President, Academia Sinica, at the twenty-third meeting for Taiwan resident academicians on September 17, 2007. It was actually delivered in a Chinese translated version most kindly and expeditiously done by Ms. Tsai Su-Ching (蔡淑菁) of Academia Sinica. The lecture was also presented in seminar form on September 14, 2007 at the Academy’s Institute of Chinese Literature and Philosophy in Nankang. The author extends his sincere gratitude to his kind hosts for both invitations and their generous hospitality.

<sup>1</sup> See Harry Levin, “Why Literary Criticism Is Not an Exact Science,” in *Grounds for Comparison*

In another public event connected fortuitously with Cambridge University but much better known to vast readership around the world, C. P. Snow in 1959 delivered the Rede Lecture which brought him and the subject of his inquiry sustained attention and debate. Although a slim volume of four essays was soon published thereafter, the title mapping the book's overall coverage was taken from that of the first lecture. Interestingly enough, the "polar groups of western society" discussed throughout *The Two Cultures* were also identified by Lord Snow as that of scientists and that of what he called "the literary intellectuals." In a recent edition of the book, the activities most characteristic of this last group were readily identified by the scholar writing the "Introduction" as "the humanities."<sup>2</sup> Despite its enormous popularity even among very learned persons, the book for me again is quite disappointing, because it does not seem to offer an explanation of why there should have been an abiding and even escalating opposition between the scientists and "the literary intellectuals" beyond the seemingly incorrigible communal habit of mutual indifference or ignorance. The category of literary intellectuals, moreover, seems to me to be impossibly narrow and restrictive. Much as I admire the few novelists and poets cited by Snow, it is a travesty to human culture for his classification not to include philosophers, historians, and what in American context would be denominated as social scientists working in such fields as psychology, anthropology, sociology, political science, and economics. Thus in an issue devoted to the survey on the current status of the humanities in the US, the official journal of the American Academy of Arts and Sciences assigned the seven fields of classics, American literature, comparative literature, history, art history, black studies and cultural studies, and philosophy to different scholars for critical reflection, with an interesting eighth essay focused on the interdisciplinary linkage between philosophy and law.<sup>3</sup> Although such a schematization and its possible variations clearly would reflect the historical process of new forms of organizing knowledge eventuating as academic disciplines in post-Enlightenment Europe, intensifying especially in the nineteenth century,<sup>4</sup> the process itself could be traced back further to the medieval curriculum of the "liberal arts": the *trivium* of grammar, rhetoric, and logic, and the *quadrivium* of arithmetic, geometry, astronomy, and music.

If we reach even earlier than the Middle Ages, we may encounter possibly the first definition of "the humanities" found in a minor grammarian of the second century, Aulus Gellius (b. ca. 125-28, fl. until after 185 CE), who was the author of *Noctes Atticae* (Attic Nights), a volume in twenty books of collected notes on readings

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(Cambridge, MA: Harvard University Press, 1972), pp. 40-56.

<sup>2</sup> C. P. Snow, *The Two Cultures* (Cambridge & New York: Cambridge University Press, 1998), pp. 3-4.

<sup>3</sup> See *Daedalus: Journal of the American Academy of Arts and Sciences* 135/2 (Spring 2006): 11-126.

<sup>4</sup> See Stephen Toulmin, *Human Understanding: The Collective Use and Evolution of Concepts* (Princeton, NJ: Princeton University Press, 1972), esp. pp. 133-358.

in philosophy, history, law, grammar, and language that included literary and textual criticism. In Book XIII, Chapter 17, Gellius assigns special meaning to the word *humanitas* by associating it with correct usage of Latin, especially as exemplified in Varro and Cicero.

Those who have spoken Latin and have used the language correctly do not give the word *humanitas* the meaning which it is commonly thought to have, namely what the Greeks called *philanthropia*, signifying a kind of friendly spirit and good-feeling towards all men without distinction; but they gave to *humanitas* about the force of the Greek *paideia*; that is, what we call *eruditionem institutionemque in bonas artes* [sic], or “education and training in the good arts.” Those who earnestly desire and seek after these are most highly humanized (*maximi* [sic] *humanissimi*). For the pursuit of that kind of knowledge, and the training given by it, have been granted to man alone of all animals, and for that reason it is termed *humanitas*, or “humanity.”<sup>5</sup>

Gellius’s praise for the two philosophers and rhetoricians might have typified the ancient Roman pride of culture, but his definition of “the humanities” succeeded in winning at least partial endorsement from even a modern scholar like the late Ronald Crane from The University of Chicago. “The goodness of these arts” so commended by Gellius, according to Crane, “is made to reside in the fact that those who earnestly desire and seek after them come to be most highly humanized, in the sense of being endowed with the virtues and knowledge that separate men most sharply from the lower animals.”<sup>6</sup>

Such a formulation, however, may generate more dissension than agreement in today’s academy, because one may ask immediately whether the hard sciences do not provide just as much, if not more, “virtues and knowledge that separate men most

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<sup>5</sup> The original Latin text reads: “Qui uerba Latina fecerunt quique his probe usi sunt, ‘humanitatem’ non id esse uoluerunt, quod uogus existimat quodque a Graecis *φιλανθρωπία* dicitur et significat dexteritatem quandem beniuolentiamque erga omnis homines promiscam, sed ‘humanitatem’ appellauerunt id propemodum, quod Graeci *παιδείαν* uocant, nos eruditionem institutionemque in bonas artis dicimus. Quas qui sinceritur cupiunt adpetuntque, hi sunt uel maxime humanissimi. Huius enim scientiae cura et disciplina ex uniuersis animantibus uni homini datast idcircoque ‘humanitas’ appellata est.” See Aulus Gellius, *Noctes Atticae*, ed. with critical introduction, P. K. Marshall, Scriptorum classicorum bibliotheca Oxoniensis (Oxonii: E Typographeo Clarendoniano, 1968), 2:399-400. Cited and translated by R. S. Crane, *The Idea of the Humanities and Other Essays Critical and Historical*, 2 vols. (Chicago: University of Chicago Press, 1967), 1:23. Crane’s two volumes, despite the two minor numerical and typographical errors of the Chapter cited that have been corrected in the text of my essay, still provide the most informative historical survey of the subject and the shifting definition of “the humanities” from late antiquity to the modern era.

<sup>6</sup> *Ibid.*, 1:7.

sharply from the lower animals.” This rather obvious criticism notwithstanding, the important phenomenon of how Western civilization had evolved historically in dividing and organizing fields of knowledge, in the context of its equally venerable history of education, still seems to me to be the most fundamental and promising basis of comparing and contrasting the sciences with the humanities. For this study, therefore, I propose to revisit one earliest source of such division of knowledge in the ancient Greek philosopher, Aristotle (384-322 BCE), and enlist some of his key ideas to elucidate how I tend to think about my self-imposed subject.

### **A Detour of Cultural Difference**

Before I proceed further, I should insert at this point a word of needed qualification, perhaps even caution. If I were writing strictly for a Western readership, such a caveat might not be needed unless I chose to embark on an East-West comparative inquiry. In the context of speaking and writing in Taiwan, a place of indisputable participation in historical East Asian civilization, any comparative discussion of the sciences and humanities must also acknowledge that China never became familiar with any such Western taxonomic scheme for structuring institutional units, curricula, and faculty hiring until the last two hundred years, even though Italian Jesuits two centuries earlier had already introduced to Chinese readership some of the different subjects in the sciences and humanities then available to the education of Western youths. Despite its undeniable munificence of culture, including the world’s oldest and longest continuous history of education, China from the pre-imperial era to the end of emperors had developed schemes of dividing knowledge or varied forms of its organization that could not be easily compared with those of the West.

My last statement, let me emphasize, in no way denies the presence of scientific knowledge in pre-modern China. On the contrary, we have known for quite some time that there was an abundance of what we today would call science and technology even in China’s high antiquity, and the Chinese achievement is noted usually by reference to astronomy (particularly instrumental in the correlative development of calendrical science), mathematics, optics, medicine, agricultural and pharmaceutical botany, proto-scientific chemistry, geology and mineralogy, geography, and engineering both civil and mechanical. Indeed, in the Table of Contents to his monumental enterprise, *Science and Civilisation in China*, Joseph Needham (1901-1995) listed twenty-six major topics that, in his initial projection of 1970, would be treated in five huge volumes. Today, more than a decade since his passing, the more-or-less completed and magisterial set of books bearing his name and editorship has ended with 7 volumes in 22 book-length parts.

As it is well known, China has had a different understanding of the nature of virtually all pre-modern knowledge, its acquisition, and its use. Equally significantly, the culture is also formed and sustained by a language that radically differs from the representational symbolics of Indo-European languages. How the Chinese language or

languages may affect human thought, emotion, and reasoning is much too large a topic to be entertained here, but its possibility must be noted in crucial junctures of even so brief a study as this one, because the linguistic factor is unavoidable in examining subjects like the humanities and the sciences.

If we consider briefly the canonical sources of China's historical culture, the earliest schemes of taxonomy seem to have been based on collecting and transmitting kinds of linguistic or textual materials devoted to historical or apocryphal accounts of political events and persons such as we find in the *Classic of Documents* or *Shangshu* 尚書. This broadly conceived pattern preserved in inscriptions on various materials—oracle bones (ironically, not discovered until the late nineteenth century), metals, rocks and stones, bamboos, an invented substance like silk (*bo* 帛), and finally paper—would repeat and expand variedly in such diverse forms of writings as ritual and sacrificial hymns to popular verses (*Shi* 詩), state or principality annals (*Chunqiu* 春秋, *Zhushu jinian* 竹書紀年), and divinatory formulations used in royal courts (*Yi* 易). In the process familiar to Chinese students, these four types of writing by court archivists and scribes would gain quickly a fifth one in the late Zhou period, the writings treating the justification and prescription of ritual (*Li* 禮). Beginning in 136 BCE and lasting until 1905, these five collections of *shi*, *shu*, *li*, *chunqiu*, and *yi*, were elevated to the supreme status of the Five Classics (*wujing* 五經) alleged to be sanctioned by Confucius himself. So designated, these collections, in a modern scholar's words, "formed at least part of the curriculum tested by the [imperial] government examinations required of nearly all candidates for the Chinese bureaucracy."<sup>7</sup>

The *Shangshu*'s patterning of history, arguably followed but modified by Sima Qian 司馬遷, is continued and refined in all the major works of canonical history. Amid the dominant but new forms of writings on dynastic houses (Basic Annals, or *benji* 本紀), ruling chronology (Tables of Reigns, or *nianbiao* 年表), hereditary households (*shijia* 世家), and biographies (*liezhuan* 列傳), the *Shiji* 史記 has an odd insertion of the "Eight Treatises" 八書 that dealt with seemingly unrelated topics. These essays on rites, music, astronomy, calendrical calculations, religious ritual of legitimation, economics, and controlled traffic of river and canal were actually given a place of equal structural prominence to the other longer segments apparently because they would contribute decisively to the establishment and maintenance of the socio-political order. The contents of the subsequent *Han Shu* 漢書 indicate not only a form of classification repeating the Grand Historian's paradigm but also adding new topics such as punishment and law (*xingfa* 刑法), agriculture and commerce (*shihuo* 食貨), cosmogonic and cosmological principles (*wuxing* 五行), geography, and refined writings (*yiwen* 藝文). The topical broadening in canonical history, like the canonization of the Five Classics in the early Han, similarly aims at serving a

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<sup>7</sup> Michael Nylan, *The Five "Confucian" Classics* (New Haven & London: Yale University Press, 2001), p. 1. Nylan's study provides a convenient and fairly concise account of the process of canon formation.

socio-political ideal of the state cult by strengthening the imperial court while both informing and legitimating its interests. The difference from the discovery of old or new knowledge for knowledge's sake alone should be obvious, even if we admit at once that defining knowledge and its use are always historically, and thus socially, determined.

Ancient Chinese writings, of course, are not confined to the Five Classics or the two histories I just cited. There is a huge group of writings, the so-called "Various Masters of a Hundred Lineages" (*zhuzi baijia* 諸子百家) dating from the Early Warring States down through the Han and supplemented by recent archeological findings of previously unknown texts, that recorded sayings, dialogues, disputations, well-crafted lectures, anecdotes, stories and fables, and specific teachings on a variety of topics including politics, ethics, linguistics, logic, law, medicine, sex, and religion. Neither these early corpora of known or unknown authors nor the encyclopedic collectanea of later centuries (e.g., the famous four titles of the early Song—*Taiping guangji* 太平廣記, *Taiping yulan* 太平御覽, *Wenyuan yinghua* 文苑英華, and the *Cefu yuangui* 冊府元龜), however, could be said to have abandoned the ultimate socio-political purpose of enhancing state interest by facilitating the imperial court's unchallenged right of governance and control of knowledge. Nor could the storage, transcription, editing, and printing of such voluminous sets of books occur without governmental intervention at the highest level. Indeed, the supreme intellectual *raison d'être* stated for the proliferation of division and subdivision of gathered data and documents is none other than taxonomy itself based on the principal criterion of resemblance (*lei* 類),<sup>8</sup> if *Taiping yulan zonglei* 太平御覽總類 (The Imperial Reader of Complete Classified Reference of the Great Peace), the original name of the *Taiping yulan*, may be used as an example. Authorized by imperial decree in 977 CE, the collection and classification by topic, genre, and sometimes rhyme of large bodies of extant texts on immensely diverse fields of knowledge were said to serve the privilege of "imperial canvassing" 御覽. The "gaze of the emperor," if he were indeed so diligent as to read the court-stipulated daily submission of three *juan* of the encyclopedia, also functioned as synopsis. It was his power to select and promulgate that defined simultaneously unity and import for these fields of knowledge: "The *Imperial Reader* makes available the principles of all things in heaven and on earth; the origins of governance, teachings, statutes, and measurements; the reasons for order, chaos, prosperity, and dethronement; the mysteries of the Way, Virtue, Nature, and Fate; . . . Emperor Taizong has established unrivalled learning for the hundred sages; has inaugurated the great peace for ten thousand generations; has collected the grand perfections of our culture for the sake of past and present; and has summed up the ultimate import of affairs and principles for the empire" 御覽備天地萬物之理, 政教法度之原, 理亂興廢之由, 道德性命之奧 . . . . 太宗皇帝為百聖立絕學, 為萬世開

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<sup>8</sup> See *Shuowen jieji Duan zhu* 說文解字段注, 10.23a, *Sibu beiyao ben* 四部備要本 (Taipei: Zhonghua shuju, 1966).

太平, 爲古今集斯文之大成, 爲天下括事理之至要。<sup>9</sup> Such thinking, of course, was already familiar to court Confucians of the Han. They began the unbroken tradition of lexical compilations and other major kinds of *leishu* 類書 that would multiply across the centuries until it reached those monumental projects of the Ming (e.g., the compilation in the first years of the fifteenth century of the *Yongle dadian* 永樂大典 in 22,877 *juan* that filled 11,000 plus volumes) and of the mid-Qing era (e.g., the compilation completed in 1725 and eventual publication of the *Gujin tushu jicheng* 古今圖書集成 in 10,000 *juan* for 5,020 volumes, and the preservation of the *Siku quanshu* 四庫全書 manuscript that contained some 3,000 items from a possible list of 16,000 titles). These huge corpora were expected to endure in serving the purpose and pleasure of an emperor and his courtiers.

Pre-modern China has thus produced and preserved a boundless sea of texts, in which, as I also have observed, there are countless specimens that would illumine many aspects of the understanding and development of the theoretical or practical sciences in her own historical context. That, however, it should take a modern scholar like Joseph Needham, a foreigner aided by a huge team of collaborative savants with very different assumption, motive, and educational specialization, to organize such materials differently in order to write a history of Chinese science is itself of enormous significance.<sup>10</sup> That observation should also provide a convenient transition to Aristotle.

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<sup>9</sup> “Preface” 序, *Taiping yulan* 太平御覽 2 vols. (Beijing: Zhonghua shuju, 1960), 1:1. A glance at the collection’s contents would reveal topics divided by sections (*bu* 部) as diverse as *tian* 天 (Heaven), *shixu* 時序 (seasonal order), *huangwang* 皇王 (august rulers), through cultural affairs and inventions such as *liyi* 禮儀 (rituals and protocols), *yue* 樂 (music), *wen* 文 (writings, inclusive of inscriptional utensils), *fuzhang* 服章 (caps, gowns, and emblematic adornments), materials artifacts such as *zhou* 舟 (boats), *ju/che* 車 (vehicles), *bubo* 布帛 (cloth and silk), to organic things such as *shou* 獸 (beasts), *linjie* 鱗介 (scaly creatures), *zhu* 竹 (bamboos), and *guo* 果 (fruits). It seems that the venerable tendency of the Chinese to rely on state power to define and determine knowledge for the rest of the population did not end with the imperial era. To gloss and support its definition of “science” 科學 as “the system of differentially classified knowledge that reflects the objective laws of nature, society, and thought” 反映自然, 社會, 思維等的客觀規律的分科知識體系, the *Hanyu da cidian* 漢語大詞典, ed. Luo Zhufeng 羅竹風 (Shanghai cishu chubanshe, 1987-1995), 8:57, felt necessary to quote immediately thereafter from the writings of Mao Zedong. By contrast, Taiwan’s *Zhongwen da cidian* 中文大辭典, ed. Zhang Qiyun 張其昀, rev. ed. 10 vols. (Taipei: Huagang chubanbu, 1973), 6:1565, offers only this definition that is more in accord with lexical entries of other languages: “All organized, systematic knowledge in a broader sense may be called science. The narrower sense refers only to the natural or physical sciences” 廣義, 凡有組織有系統之知識, 均可稱爲科學. 狹義則專指自然科學.

<sup>10</sup> In my all too brief account of one Chinese scheme of dividing knowledge based on canonical collections of texts of different genres, I have deliberately avoided using the term “natural philosophy” often favored by historians of Chinese science, including Needham. The problem

## Aristotle's Division of the Sciences

From the brief attention paid to the Chinese imperial institution, the first thing to be said about the advancement of learning and knowledge in ancient Greece is its different social character and context. At Athens, for example, the city center (*agora*) clustered around the base of the Acropolis rock was the seat of governmental, religious, civic, and cultural activities. Extending outward to the Areopagus, a low hill north-west of the Acropolis, not only many affairs of the city-state were discussed and carried out, but itinerant and residential groups of “intellectuals” of various specialized interests—in philosophy, politics, law, astronomy, medicine, mathematics and other branches of science—would gather to argue and debate with “aggressive adversariality.”<sup>11</sup> It was in this environment that Plato (429-347 BCE) founded in the early fourth century his famous Academy which was, as far as we know, a private school. How it was funded, in fact, has remained a curious puzzle to this day. So were other well-known

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with this nomenclature referring to the study of nature or “the spatiotemporal world [a somewhat outdated term]” before the rise of modern science is that it is an invented name of post-Enlightenment discourse. Historically associated primarily with physics and astronomy, *Naturphilosophie* after the mid-nineteenth century tends to augment the “blue print of archetypes” and evolutionary development in biological studies (e.g. Stephen Jay Gould’s writings on animal form). Nathan Sivin, in an early monograph, significantly has authored the following sentence: “there is in Chinese natural philosophy on the most abstract level a concern (seldom marked off from others in discourse) with the organization and intelligible features of the world of living creatures, and even a conception of evolution as a succession of developments. . . .” See his *Chinese Alchemy: Preliminary Studies* (Cambridge, MA: Harvard University Press, 1968), p. 7. For me, the fact that Sivin has identified an inseparable linkage between such a “proto-scientific concern” in ancient Chinese thinking with “other” concerns in discourse would certainly signify a different way of construing knowledge and its possible classification or division. As I have noted in listing some of the topics enumerated in the Table of Contents of the *Tai ping yulan* and what I have written later in this essay, the noteworthy characteristic of ancient Chinese intellectual culture was its tendency to link culture and nature quite indiscriminately. If such a generalization has some truth, then it would be difficult to use the term “natural philosophy” without anachronistic connotations in the Chinese context. I have no objection to the modern theory of evolution, but I do question whether the use of this word, by Needham, Sivin, and others in the context of pre-modern Chinese writings is more accurate or useful than the occasional assertion one encounters that Song Neo-Confucians might have had some notion of atomic physics.

<sup>11</sup> Geoffrey Lloyd, *Adversaries and Authorities: Investigations into Ancient Greek and Chinese Science* (Cambridge: Cambridge University Press, 1996), p. 121. One familiar attestation to the Greeks’s—especially Athenians’s—p penchant for argumentation may be found even in Hellenistic times, in Christian scriptures. See the episode on St. Paul’s preaching at the Areopagus recorded in Acts 17: 16-34, in which some of the debaters of the apostle are specifically named as Epicureans and Stoic philosophers.

educational institutions of the time: Aristotle's Lyceum, Zeno's Stoa, and Epicurus's Garden. Although some of these might have received partial support from political powers, the practice of retaining stipendiary heads for schools began only with Roman times. Throughout the classical and early Hellenistic periods, according to Sir Geoffrey Lloyd, these schools "were mainly self-supporting, relying on the wealth of their members [pre-eminently Plato himself] and (as much and sometimes even more) on fee-paying pupils."<sup>12</sup>

Soon after the time when Plato's Academy was thought to have been founded, an odd coincidence saw another academy established at 360 BCE half way across the world in Shandong, China. This was the equally famous Jixia Academy in which Xunzi, the arch Confucian rival and critic of Mencius, once taught. The economics relative to this school was no mystery, for what was to become one paramount model for all subsequent Chinese institutions of higher learning owed its creation and continuance for several decades to the Duke Huan of Qi 齊桓公 (400-357 BCE; r. 374-357 BCE, but it should be noted that this was not one of the famous and powerful Five Hegemons [*wu ba* 五霸] of the early Warring States period, who ruled from 685-643 BCE). Not only did it manage to train thousands of students, Confucians, Daoists, and others, for government service, but its success also perpetuated the emphasis for all China's posterity that henceforth, the state would be responsible, even without its citizens' solicitation, for virtually all the advanced levels of education.<sup>13</sup>

This difference between the Chinese tradition of education and the ancient Athenian situation may seem one ready form of contrast between public and private funding of learning, but that is not my theme here. Plato might have used his own considerable wealth to help finance his school, but his thought indicated an intense interest in making education serve the public good, even though in the historical Socrates (469-399) that was also Plato's literary hero, the clash of intellectual ideals and public opinion already ended eventually in a great teacher's ultimate sacrifice. The city-state's politics, however, that condemned Socrates to suicide never lessened the urban Greeks's sustained and agonistic emphasis on the search for knowledge, even at great cost to individual welfare or communal harmony. In this sense, the context and the person of Aristotle seem to have forged for Plato's most illustrious student a specially felicitous vocation of public service anchored in an unceasing quest for intellectual excellence.

Born of a known physician in the Macedonian peninsula of Chalcidice, Aristotle

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<sup>12</sup> *Ibid.*, p. 130. For Plato's Academy, see Tiziano Dorandi, ed., *Platone e l'academica*, Storia dei filosofi [an Italian translation of Philodemus, ca. 110-50 BCE], in *Academicorum historia, Italian & Greek* (Napoli: Bibliopolis, 1991); Harold F. Cherniss, *The Riddle of the Early Academy* (Berkeley & Los Angeles: University of California Press, 1945).

<sup>13</sup> See Zhang Bingnan 張秉楠, *Jixia gouchen* 稷下勾沉 (Shanghai: Shanghai guji chubanshe, 1991); Thomas H. C. Lee, *Education in Traditional China: A History* (Leiden: Brill, 2000), pp. 44-46.

at age 17 went to Athens and entered Plato's Academy, studying and eventually teaching therein for twenty years until Plato's death in 347 BCE. After a period of traveling and biological research on Lesbos, he was invited by Philip II of Macedon to Pella in 342 BCE to become the tutor of the latter's son, Alexander the Great, for seven years before returning to Athens in 335 BCE and establishing his own school in what was called the Lyceum. His voluminous writings in concise and elegant prose, unlike his own teacher's favored mode of the fictional dialog, made it apparent that many of them could have been developed from his lecture notes or texts, for their expository discussions on sundry topics often refer to students (*pepaideumenoí*) much as their rhetorical voice relentlessly seeks to convince and persuade through precise and orderly argumentation.

In contrast to Plato's lifelong quest for the unity of all knowledges, Aristotle took the opposite stand that different subjects would dictate different kinds of knowledge requiring different levels of precision deemed adequate to particular subjects. Though assumed to be endowed with sensation, intuition, memory, and rationality—undeniably all sources of some knowledge—a human for Aristotle cannot “be born and become at once knowledgeable” 生而知之, as the Chinese say, in his scientific sense.<sup>14</sup> Because each person can judge well only the things one knows, particular knowledge depends on training in a particular subject, and a person will judge well in general only if he has an “all-around education (*pan pepaideumenos*).”<sup>15</sup> From this fundamental premise arises the Aristotelian argument for the division of the sciences understood as different kinds of knowledge based on different objects to be known, the different ends or purposes for which the knowledge is sought, and the different methods utilized (proofs built on formal logic of deduction and induction combined with causal reasoning).<sup>16</sup> The knowledge acquired is determined by the object selected and dialectically related to human reasoning, because in principle this knowing process seeks to “discover” the “ultimate causes (*aitia*) and first principles (*archai*)” that should define the studied object by identifying its “inherent attributes”—that is, qualities or characteristics without which the object would not be such *qua* object.<sup>17</sup>

For example, a triangle as an object of *mathematical* knowledge is simply, but definitively, a figure of conjoining sides ABC whose internal angles equal to a straight line, and its shape (whether isosceles, obtuse, acute, or scalene) and material (whether

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<sup>14</sup> Aristotle, *Metaphysics*, 980a 22-981a 14. All Greek texts of Aristotle's writings for this essay are taken from the available modern editions in the Oxford Classical Texts series, or Scriptorum Classicorum Bibliotheca Oxoniensis with different editors and dates of publication. English translations consulted include those of the Loeb Library editions and *The Complete Works of Aristotle*, ed. and trans. Jonathan Barnes, Bollingen Series 71 (Princeton: Princeton University Press, 1984).

<sup>15</sup> Aristotle, *Nicomachean Ethics*, 1094b 13-1095a 1.

<sup>16</sup> Aristotle, *Posterior Analytics*, 87a 19-88a 17.

<sup>17</sup> Aristotle, *Physics*, 184a 10-16.

made of wood, metal, or lines drawn on parchment) are regarded as merely accidental properties. If, on the other hand, we want to understand the meaning of the triangle in Picasso's paintings and sculpture, the knowledge we seek will be that of the triangle as an artistic object made by a particular person in the context of Western art history. In this latter investigation, the triangle's various possible shapes and its material forms may be extremely relevant. For Aristotle, therefore, any object or phenomenon in principle can be the object of more than one kind of knowledge. Science as used in the context of discussing ancient Greek thought thus does not have entirely the modern connotation of "natural" or "physical" science, for frequently, it is but the derivative of the Latin *scientia* used historically to translate the Greek word for *epistêmê* (knowledge, understanding, or specialized skill), or occasionally the substantive of the Greek verb to know, *gignôskô*. Nonetheless, knowledge or science for Aristotle still has the meaning of knowledge as trustworthy conviction (*pisteuê*) based on proper reasoning, in contrast to opinion (*doxa*) or belief (*hypolêpsei*).<sup>18</sup>

Scientific knowledge relies on the recognition in the object what Aristotle has named "the universal (*to katholou*)," the function of which is to provide a true and accurate demonstration of the cause(s) of the object. In this passage Aristotle, perhaps with comic irony, declares that if "we were on the moon and saw the earth covering the sun's light, we would not know the cause of the eclipse" until "repeated observations had helped us to grasp the universal."<sup>19</sup> Though Joseph Needham astutely observed that the Greek philosopher in his writings seldom explained clearly how an "experiment" of, say, "such repeated observations" could be carried out,<sup>20</sup> it is clear that for Aristotle, the concept of "the universal" that validates knowledge in a crucial sense is itself validated by repeatability. The particular, the exceptional, the accidental, or the incidental can generate no science because "scientific knowledge (*epistêmê*)" of "a fact (*hôristhai*)" is restricted to "that which is always or what is usually so (*tô aei hê tô ôs epi to polu*)."<sup>21</sup> To these two criteria of fixity and preponderance is added a third one of rational certainty; a scientific fact is one rendered necessary by proof.<sup>22</sup> The proof, existing in the form of mathematical formulation, discursive or symbolic [in later Western philosophy] articulation of logic, controlled empirical experimentation, or a combination thereof, purports to clarify for us two inter-related aspects of a fact: that it *is* so and *why* it is so.<sup>23</sup> Thus in our modern knowledge of chemistry, each time a single atom of nitrogen bonding with one of oxygen must produce nitric oxide, NO, a gas that can have both toxic or beneficial effect. Increase the nitrogen to two atoms

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<sup>18</sup> Aristotle, *Nicomachean Ethics*, 1139b 17, 34.

<sup>19</sup> Aristotle, *Posterior Analytics*, 87b 38-88a 8.

<sup>20</sup> Joseph Needham, *Science and Civilisation in China*, volume 3, *Mathematics and the Sciences of the Heavens and the earth* (Cambridge: Cambridge University Press, 1970), p. 161.

<sup>21</sup> Aristotle, *Metaphysics*, 1027a 21-29.

<sup>22</sup> Aristotle, *Nicomachean Ethics*, 1139b 18-37.

<sup>23</sup> Aristotle, *Posterior Analytics*, 71b 9-72b 4.

bonding with one of oxygen and we will have instead nitrous oxide, N<sub>2</sub>O, the “laughing gas” once used by dentists that still provides cinematic fun for Hollywood (e.g., *Lethal Weapon 4*).

Aristotle accordingly divides the three main branches of the sciences into the theoretical (*theoretikē*), the practical (*pratikē*), and the productive (*poiētikē*).<sup>24</sup> The first branch, involving metaphysics, mathematics, and physics, must utilize necessary (i.e., demonstrable and logically irrefutable) hypotheses or propositions. The end of each of these sciences and the subordinate issues generated in their respective domain is knowledge itself. For example, once the force of gravitation is ascertained to be a true account of causality for Newton’s fabled “apple,” the purpose of the quest for that particular explanation in the science of physics is deemed satisfied, even though the application, use, and further understanding of gravity can expand for more than four centuries and beyond. The second branch, involving politics and ethics, substitutes action for knowledge as the chief end of these two sciences. Aristotle’s reasoning for the shift in understanding the final purpose of these practical sciences is noteworthy.

As he famously says in the sentence opening his *Metaphysics*, “all men by nature desire to know (*tou eidenai oregontai*),” but the crucial lesson conveyed by his thought here is that for Aristotle, both to desire generally and the desire to know involve objects that differ significantly. The theoretical sciences thus in his formulation can satisfy our desire to know only by granting knowledge itself as the object successfully acquired, based on the firm discrimination between what is necessarily true or false within these fields of knowledge. We must recognize, however, that we have other desires which involve other objects. For the sciences of ethics and politics, Aristotle argues that both the desires and their objects are different because they are already known: in the realm of ethics, we desire virtue and in politics, good government. The assumption here is not unlike one also shared by Chinese thinkers of the Warring States era: most humans tend to shun undesirable objects precisely because they *are* undesirable, because they may actually or potentially injure human life or harm human well-being. In the theoretical sciences—for example, in mathematics—even a conclusion that clarifies one simplest question, what does 2 + 2 equal, would satisfy that particular quest for knowledge.<sup>25</sup> But in the practical sciences, the attainment of intellectual clarity alone cannot adequately satisfy our desire. Why? Because merely to have an intellectual affirmation or denial of what is virtue or what is good government amounts to no more than, in Chinese parlance, “discussing warfare on paper” 紙上談兵 or “drawing biscuits to satisfy hunger” 畫餅充饑. The object of our desire for virtue

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<sup>24</sup> Aristotle, *Metaphysics*, 981b 26-982a 3; 1025b 19-31; 1046b 3-4.

<sup>25</sup> The problem of whether Aristotle considered mathematical numbers as objects of knowledge themselves and whether he succeeded in avoiding Plato’s need in the latter’s philosophy to construct “ideal objects” is one of longstanding controversy. For a recent and enlightening discussion, see Jonathan Lear, “Aristotle’s Philosophy of Mathematics,” in *Aristotle: Critical Assessments*, ed. Lloyd P. Gerson, 4 vols. (London and New York: Routledge, 1999), 2:118-139.

must thus eventuate in our exerted effort to choose virtue and eschew vice, just as the object of our desire for good government must end in the actual implementation or avoidance of a particular form of polity. In this sense, the object of our knowledge, of our desire to know, cannot be reached without its actualization. “Pursuit and avoidance (*diôxis kai phugê*)” in the practical sciences thus “correspond” to intellectual assent or negation in the theoretical sciences,<sup>26</sup> and the end or goal of the practical sciences must therefore be deliberate or informed action. In the familiar story of “Confucius passing by the side of Mount Tai” 孔子過泰山側, for example, Confucius instructed his students to learn (“Little Ones, understand this” 小子識之) the lesson that “harsh governance is more fierce than tigers” 苛政猛於虎也 exemplified in the woman’s story and experience, for she resisted fleeing despite her father-in-law, her husband, and her son were all killed by tigers.<sup>27</sup> Her remaining by the mountain side would have made Aristotle praise her for knowing and acting correctly in politics. Her refusal to leave, thereby indicating her active avoidance of “harsh governance” 苛政, demonstrated concretely both the Confucian moral and the Aristotelian ideal.

### Aristotelian Insights and Implications

For the last branch of science denominated as the productive, Aristotle has sometimes been ridiculed by detractors for failing to distinguish between the high arts (music, painting, sculpture, dancing, and poetry) and artisanship, for his view seems to regard composing poetry as not much different from making shoes or constructing tables. In answer to this form of criticism, the *first* point one may make is that beginning with Homer, many early Greek artists and thinkers beside Aristotle did group poetry together with other forms or kinds of human craftsmanship under the rubric of *technê*, translated often as arts or skills. In the etiological reasoning advocated by Aristotle and made requisite of the sciences to account for how a thing or phenomenon has come to be, poetry and pastry can be classified as fundamentally similar because neither verse nor bread grows on trees! A planted seed will grow into a tree, whereas no stone or rock of itself will grow into a building. Poetry and pastry are thus objects invented and made by humans and not nature, and thus for good reason, Aristotle defines *technê* as “a productive capacity involving true reasoning (*hexis meta logou alêthous poiêtikê*).”<sup>28</sup>

The *second* point about Aristotle’s formulation of a science of the arts—since his discussion in the *Poetics* mentions all the forms of fine arts and classifies the main literary genres of drama, lyric, and epic (then known to him) under the general category of poetry—continues this emphasis of differentiating nature from culture, an emphasis

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<sup>26</sup> Aristotle, *Nicomachean Ethics*, 1139a 23-30.

<sup>27</sup> “Liji zhengyi” 禮記正義, 10.85, in *Shisanjing zhushu* 十三經注疏 2 vols. (Beijing: Zhonghua shuju, 1979), 1:1313.

<sup>28</sup> Aristotle, *Nicomachean Ethics*, 1140a 11.

underlined by modern historians, philosophers, and anthropologists as characteristic of early Greek civilization in significant—perhaps irreconcilable—contrast to Asian, and particularly Chinese, civilizations. For Aristotle, artifacts are nothing if not artificial, as are all human cultural products. The study of such products follows similar procedures and analogous propositions derived from the theoretical and practical sciences so as to retrace and recover the reasoning process that may explain how this product has come to be in such a material, form, manner, and for what purpose. As in the other two branches of knowledge, our inquiry into the arts of making necessarily concerns the investigation of causes (*aitia*), but the causes identified and enumerated for any particular object of *technê* would be radically different from, say, those adumbrated in the study of physical force relative to motion and rest or, in modern science, genetics relative to heredity and disease. Consistent with the knowledge of his time, Aristotle asserts that *technê* that distinguishes human making cannot therefore produce things that “exist by necessity (*anagkê*) or through their own nature (*kata physin*),” things that, in sum, “have in themselves their origin (*en autois gar echousi tauta tèn archên*).”<sup>29</sup> However, a protracted attempt to transcend these ostensibly insuperable limiting conditions noted by Aristotle, one may also say, has been the stuff of the Faustian dream, the Frankensteinian struggle, or the bold vision of Hermes Trismegistos in the long history of Western science.

The Aristotelian concept of imitation or *mimesis* as the defining character of the arts has further generated misinterpretation and hostile critique. My *third* point here thus stresses that this common Greek word allows Aristotle to reinforce and sharpen the distinction between human making and natural genesis. His writings make apparent that *mimesis* is not slavish copying; it is, rather, a natural activity much more favored and skillfully practiced by humans than by other animals, even though we all know long ago that different species of monkeys (and a few other animals) can also be taught to act—perhaps to a remarkable degree. Echoing his teacher Plato, Aristotle asserts that humans in their childhood “learn their first lessons by imitating things.” “Mom, look! I’m Monkey Sun!” 媽, 你看, 我是孫猴子! a young boy may say this as he grasps a rod and tries to assume a one-legged stand while shading his eyes with the other hand to peer ahead. In Aristotelian language, the boy has imitated in language (the medium of imitation or material cause) the action of *Xiyouji*’s “humanized” monkey (the object of the imitation as formal cause or what imitated) through playing the monkey’s part (the manner of imitation as its efficient cause of how imitated) for the pleasure of his mother as audience (the final cause of imitation or for what end).

The human tendency to imitate, coupled with the propensity to enjoy (*to chairein*) witnessing such acts of mimicry, mime, and play-acting, constitute the two particular but natural causes of poetic imitation (*tèn poiêtikên aitiaí duo tines kai autai physikai*).<sup>30</sup> The enjoyment defined as pleasure, according to Aristotle, is essentially

<sup>29</sup> *Ibid.*, *loc. cit.*, 14-15.

<sup>30</sup> Aristotle, *Poetics*, 1448b 2.

cognitive or intellectual. Through a synthetic act of reason, the spectator or reader undergoes an experience of recognition in the imitation as a gathering of the meaning of things (*sullogizesthai*) thus represented. What the mother learns, if I use my own example just cited, is that the child “is so and so (*ti hekaston*)”–“Look, the child does seem to look a bit like Monkey” 你看, 孩子果然有點猴子的味道。 Potently and pointedly clinching the argument for mimesis itself as the decisive factor separating art from nature, Aristotle turns to the possibility of an imitation’s different receptions in different circumstances. In life, an ugly beast or a corpse would repulse, but such a thing might even be welcomed or praised in artistic representation.<sup>31</sup> This general human tendency to enjoy imitation or representation, in turn, prepares Aristotle for advancing the lengthier and more important argument on pleasure as the causal end or *telos* of tragedy in his *Poetics*. His thesis goes to the heart of the paradox structured in our reception of art: what we find ugly and painful in real life can become pleasurable in our experience of its aesthetic depiction. In other words, none of us would want to live as the targets of Qin Shihuang’s alleged policy to burn books and bury alive the Ruists. But if Ang Lee 李安 or Zhang Yimou 張藝謀 makes another big-budget movie with some of the first emperor’s policies as the subject of a story, few of us would hesitate to purchase tickets. The terrifying fates of an Oedipus, an Orphan Zhao 趙氏孤兒, and a grievously wronged Maiden Dou 竇娥 are what we shun in real life, and they themselves or their sufferings as such thus cannot entice our repeated visitations of these literary works. Aristotle’s contention is that only a painful experience wrought well in the medium of art can make the story of a Lin Daiyu or an Othello unflinchingly pleasing and engaging.

For the final part of the essay, I would conclude with *five* propositions that this Aristotelian scheme of dividing knowledge, if I had interpreted him accurately, also provides a useful basis for considering how the study of the humanities differ from—but also relate to—the other sciences. Given the Greek philosopher’s distinctions and assumptions, (1) the humanities in my proposed formulation are those intellectual disciplines that target strictly human products as objects of knowledge, whereas “on the simplest level, science [in our modern, contemporary understanding] is knowledge of the world of nature.”<sup>32</sup> To study the humanities, in Aristotelian terms, is to study the arts (*technē*) concerned solely with “bringing something into existence, i.e. with contriving and considering how something may come into existence that may or may not exist (*peri genesin . . . kai einai kai mē einai*), and whose origin is in the maker and not in the thing made.”<sup>33</sup> The usefulness of this distinction between nature and human

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<sup>31</sup> Aristotle, *Ibid. loc. cit.*, 2-6. For an excellent treatment of pleasure in Greek aesthetics and Aristotle’s particular view, see Stephen Halliwell, *Aristotle’s Poetics*, with a new Introduction (Chicago: University of Chicago Press, 1998), pp. 61-82.

<sup>32</sup> “History of Science,” in *The New Encyclopaedia Britannica*, 15th ed. 32 vols. (Chicago: Encyclopaedia Britannica, 2002), 27:32.

<sup>33</sup> Aristotle, *Nicomachean Ethics* 1140a 12-14 (Oxford translation; text modified).

products as object of knowledge is functional and heuristic, covering most disciplines, but the wisdom of Aristotle's insight extending to studying "something which may or may not exist" will be examined again at the essay's very end.

(2) Because a human product is the object of inquiry, the study of humanities properly does not concentrate on either the maker or the actual process of making, even though knowledge in both these areas may assist our own attempt to understand the object. Strictly speaking, therefore, an educational program in the humanities cannot aspire solely to producing through training more persons like Shakespeare, Cao Xueqin 曹雪芹, Gao Xingjian 高行健, or Zhang Daqian 張大千, nor proceed with the only purpose of discovering the "original intent" of the maker and the execution thereof as the norm for understanding the meaning of the product.<sup>34</sup> It is the product made as a discrete entity, a "whole" in itself as Aristotle says, that elicits the humanist inquirer's supreme interest—the invitation to analyze and comprehend "the quality of reasoning truly in the making (*meta logou alêthous poiêtikê*).” In Aristotelian thinking, therefore, the end for such productive capacity is a thing well made, but this seemingly tautological generalization also provides a possible differentiation of *technê* into the useful and fine arts. A table attained its purported purpose of utility if it sufficiently fulfills that function, and different criteria of functional utility may further be developed and specified by deliberation on shape, size, use, material, circumstance (i.e., how does this table-top serve the needs of your studio apartment or the cramped quarters of the space station?), etc. An art object, on the other hand, has as its final end only the criterion of being well made, but in what sense is a particular object considered well made could produce protracted discussion. In the *Poetics*, Aristotle has gone to some length to spell out the criteria for the well-made tragic drama, but he has relatively little to say about other literary genres of his time, let alone those that have yet to appear in subsequent history. Apart from noting their imitative nature, he is also completely silent with respect to the other fine arts.

(3) Because there is no universal or irrefutable formula for defining an art object as well made, the knowledge that the humanities seek and promote cannot be absolute certitude (the theoretical sciences) or right action and choice (the practical sciences). To use my example of the boy impersonating Sun Wukong one more time, I can now imagine the father's reply to the mother's approving words: "He doesn't look at all like Monkey! He's so chubby! And such a dark tan from the sun! He is actually Monk Sha!" 哪裏像猴子! 這麼胖! 給太陽曬的黑黑的, 簡直是沙和尚! To which the mother may retort: "Nonsense! How could Monk Sha wield a rod?" 瞎說! 沙和尚怎麼會拿棍子? In this little debate of someone's living room, I would argue, the parents undertake the Aristotelian attempt to unravel the reasoning process in the imitative

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<sup>34</sup> A recent journalistic account of "piano rolls of Debussy playing Debussy" records the critic's forthrightly scathing remarks on the faults of the composer playing his own music. See Bernard Holland, "Debussy's Ghost Is Playing, So What Can a Critic Say?" in *The New York Times*, 24 July 2007, B1 and 6.

making, for they are taking up the task of dramatic criticism through interpretation. Granted, the subject of their disputation is trivial, and for one reason or another, they may never reach any kind of consensus. But notice that even in such a simple invented illustration, both parents seek to persuade by language in which the use of logic and the appeal to evidence are all too obvious. For Aristotle, these intellectual pursuits as instrumental sciences make up the obligated means of persuasion and demonstration in all the sciences known to him. The scholarly discourse in the humanities, as in the other sciences, must also aim at being a discourse of reason. Even a seasoned reader in a first encounter with Joyce's *Finnegan's Wake*, Faulkner's *Sound and the Fury*, or Wang Wenxing's 王文興 *The Man Who Backed against the Sea* 背海的人 may think of it as a work of linguistic madness. The responsibility of the humanist scholar, on the other hand, must always search with *Hamlet's* Polonius to recognize "though this be madness, yet there's method in't."

(4) Because the objects of the productive sciences are inventions, they themselves and the knowledge generated are historically conditioned and subject to change. Three of the four principal causes of their being specified by Aristotle—the medium, form, and manner—not only will vary with time and geography, but the particularized causes themselves so identified are also human products that may be culturally specific. The linguistic medium in which literature assumes mimetic being is conditioned wholly by cultural difference and time. We know only too well that poetry was composed and written in all three high ancient cultures of Greece, India, and China, but the intricate grammar of Greek and Sanskrit simply is of little use (except for occasional and elucidative comparison) to those working with classical Chinese. The material medium for iconographic and plastic arts would vary from such matter as stone, wood, and metal known to antiquity (subject to geographical and climactic variations) to contemporary alloy and space age synthetics (the production of which requiring sophisticated technology), their physical difference engendering immense diversity in conception, structure, and form. The formal consideration of action imitated may differ in conception and execution in literary works of sundry periods (e.g., is the "stream of consciousness" technique pioneered in James Joyce's writings an action or a narration, or something else?). Examining the manner of imitation permits Aristotle to divide literary genres known to him conveniently into the two major modes of showing a story and telling a story, of dramatization and narration. The contemporary use of computer technology to produce "virtual" object and action, however, has blurred the distinction between natural and mimetic reality.

To aver the historicity of both the object studied and the knowledge acquired (as interpretation) is not necessarily to contrast the ambiguity of knowledge in the humanities with the "certainty" or "timelessness" of scientific knowledge. Even as a complete layman, I don't think I am wrong in saying that the history of science can be written largely as a history of change wrought by new knowledge of both invention and discovery. Nonetheless, it is the preponderant emphasis in science that verified new knowledge will frequently displace the old, and one can hardly

imagine a contemporary physicist attempting to construct a new cosmology based on the Ptolemaic conception of the universe or even on Newtonian mechanics. This liability for dated obsolescence is not often applicable to knowledge in the humanities. Scholars today still consult scrupulously and profitably the ancient commentaries of Homer or the meticulous annotations of Wang Bi 王弼, thus validating the usefulness and truthfulness of Confucius's dictum: "Review the old and you know something new" 溫故而知新 (*Analects* 2.11).

Whatever "new" may signify in that statement, one can safely say that it cannot be measured by the criterion of scientific accuracy, alone, and thus the new in the knowledge of the humanities is not *per se* better. Much more plausibly, the new is to be gauged by original perception, unprecedented inference, redirected formulation, and novel understanding of old materials or data. Knowledge in the humanities is therefore historical in the sense that it is unavoidably cumulative and sedimented. Notice that in Confucius's memorable statement, the old functions at least as an indispensable stimulus for the production of the new. One requires at least some knowledge of the old in order that the new be certified in this contrast as genuinely new without, paradoxically, needing to discard the old. Parenthetically, that is why humanists still need huge libraries and books—including microfilms, DVDs, chips and microfiches to store data, and search engines to sift such accumulated knowledge. Notice as well that even this list concerns only verbal knowledge. Other arts such as music, paintings, sculpture, and dance cannot be studied only with miniaturized replicas.

For more than two millennia, the play *Oedipus Rex* by Sophocles has been received as one unrivalled specimen of dramatic tragedy (Aristotle calls it the best) that has not only spawned countless commentary but also inspired numerous adaptations and re-writings, notably by Euripides, Caesar, Seneca, Shakespeare, Jean Cocteau, and Igor Stravinsky. No one in that long history, as far as I know, had done what Sigmund Freud (1856-1939) did when he appropriated the solitary myth of Oedipus's tortured relations with his parents preserved and dramatized in the ancient play and transformed it into a universal paradigm for his psychoanalytic theory. Our acceptance and use of Freud today, however, in no way diminishes or alters the Sophoclean drama's worth and significance in their own right. Continuing in the science of Western medicine, one may point to the practice that clinical training in the treatment of fever need not require medical students to know that one preferred method used in the nineteenth century was blood-letting or bleeding. On the other hand, a modern physician seeking to learn acupuncture cannot avoid studying pre-modern Chinese texts and the familiar but enigmatic term *qi* 氣, even though the word defies precise translation, has no exact referent even in Chinese *materia medica*, and thus cannot attain accurate linguistic representation in the current discourses of physics or physiology of Western science.

(5) My use of the *qi* example here is deliberate, because my fifth and final proposition asserts that a proper understanding of the humanities and science necessitates our moving beyond the Aristotelian taxonomy to which this essay has paid obvious homage. Much as I have been influenced by the Greek philosopher's thinking

on the division of knowledge, I must also acknowledge that both his formulations and the broader contexts of the history of knowledge in different civilizations would indicate that the division cannot be an absolute one. Among other topics, the history of Greek philosophy began early with speculation on conceptual truths, generally tagged as topics of metaphysics, that could receive little or no empirical verification. Whereas simple notions of numbers could be conveyed even by representation through correlation with physical objects (4 figs minus 1 = 3 figs), concepts like Plato's "ideal forms" and Aristotle's "essence," "substance," and "universals" exist only in intellection; their validation or negation depends entirely on mental apprehension and discursive disputation.

Awareness of constraints did not deter the Greeks from thinking difficult thoughts; instead, they seemed to have thrived on riddles and enigmas of cognition in their push to widen the boundaries of thought. Thus the Platonic Socrates has referred to "knowledge undetected by the soul," the bringing of which into memory and consciousness depends on his own mode of dialectics, "the art of midwifery (*tês emês technês tês maieutikês*)."<sup>35</sup> Beyond hidden, forgotten, or latent knowledge, Greek philosophers initiated a long tradition in Western thought on the mysteries of being and non-being (*mê on, ouk on*), a tendency explained by many scholars as largely driven by the peculiar potency of the Greek verb "be or to be (*einai, eimi, estin*)" in its grammatical and semantic versatility. In addition to a copula's varied functions of attribution, constitution, identity, instantiation, verification, and localization, the verb also predicates existence of its subject directly but recursively (e.g., "this Academy *is . . .*"). Not only does this grammatical part have thus direct relevance for the philosophical problem of ontology, but its munificent meaning also contributes to the conceptual complexity of Aristotle's object of *technê*, described by him as one that "may or may not exist." By way of brief comparison, we may note that in literary Sinitic, the multiple senses of one Greek verb will have to be spread out among words like *you* 有, *wu* 無, *zhe-ye* 者-也, *ran* 然, *dang* 當, *shi-fei* 是-非, *zai-cun* 在-存, and *wei* 爲.<sup>36</sup> In the context of this comparative inquiry, we may well ask whether *qi* exists or not exists, and whether it exists as a natural force (*physis*) or as an imaginative product (*technê*)—in sum, whether it belongs to nature or culture.

That final dichotomy of categories that has so supposedly mapped our way

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<sup>35</sup> Plato, *Theaetetus*, ed. E. A. Duke Hicken, et al. (Oxford: Clarendon Press, 1995), 161E 6.

<sup>36</sup> For a learned and illuminating study of the Greek verb and Chinese equivalents, see "To Be" in Greece and China," in Jean-Paul Reding, *Comparative Essays in Early Greek and Chinese Rational Thinking* (England: Ashgate Publishing Ltd., 2004), pp. 167-194. The classic study of the Greek verb is Charles H. Kahn, *The Verb "Be" in Ancient Greek*, with A New Introductory Essay (Indianapolis, Cambridge: Hackett Pub. Co., 2003; rpt. Dordrecht, Boston: D. Reidel, 1973). See also Leslie Brown, "The Verb 'to be' in Greek Philosophy: Some Remarks," in *Language*, ed. Stephen Everson, *Companions to Ancient Thought 3* (Cambridge: Cambridge University Press, 1994), pp. 212-236.

of distinguishing Western and Chinese intellectual tendencies deserves this terminal query, because even in my modest survey of Aristotle's philosophy here, I find it hard to affirm rigidly such a distinction. As any student of his literary corpora will notice, one recurrent and crucial feature therein is how variedly the human person and animal incorporating mind, emotion, and body have been turned into an object of investigation—among the widely divergent sciences of psychology, biology, physics, metaphysics, ethics, politics, poetics, and rhetoric. The brilliant, layered complexity of Aristotle's discourse on the human in disparate dimensions has more than once recalled for me the following observation: "I have become a great riddle to myself (*factus eram ipse mihi magna quaestio*)."<sup>37</sup> These words by St. Augustine (354-430), actually more of lament than of elation in discovery, belong to the acclaimed *Confessions*, frequently credited with initiating the entire Western tradition of autobiography devoted to verbal excavation of one's own history. His efforts, however, could also be regarded as profoundly and persistently symptomatic of certain intellectual predilections of the ancient Graeco-Roman world, succinctly epitomized almost nine hundred years before already in the Delphic maxim to "know thyself (*gnôthi seauton*)."<sup>38</sup> In that one command, the human person—and not, ironically, the transcendent deity allegedly authorizing such injunction—is enshrined as both subject and object of knowing, thereby already conjoining inextricably the domains of nature and culture, the knowledge that is supposed to derive from the sciences and the humanities.

Those ancient oracular words, I would like to point out, might well have reflected, if not started, the Western tradition of obsessive wrestling with the questions of the self.<sup>38</sup> Burdened with Apollo's injunction, the person might well ask: who am I (Oedipus's burning question in the play)? What am I (the sphinx's riddle in again the Oedipus legend)? Do I exist, and how do I know I exist? What part of me is my true self (Plato, Aristotle)? Across the centuries, René Descartes (1596-1650) illustrates one attempt to find knowledge of the self away from sense perceptions that, in his judgment, render life indistinguishable between dream and wakefulness (odd parallel, perhaps, with Zhuangzi). His famous maxim, *cogito ergo sum*, built on the lucky fact that the Latin verb "to be (*sum*)" enjoys similar power with its Greek counterpart, is thus thought to have enabled Descartes's certitude of predicating identity and existence in his own thought, only to have that certainty challenged, and eventually "shattered," by subsequent critics like Nietzsche and others.

However one may judge the value of Cartesian ideas, they provide but one example of the stubborn Western effort to turn the human person into a multifaceted object of inquiry—viz., the visible or microscopic parts of bodily anatomy, the physiologically or discursively constituted areas of mind and psyche, the bio-

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<sup>37</sup> *Confessiones* IV. 4.7.

<sup>38</sup> Scholarly studies of the Western idea of the self are legion. For a recent and magisterial investigation of the sources, see Richard Sorabji, *Self: Ancient and Modern Insights about Individuality, Life, and Death* (Chicago: University of Chicago Press, 2006).

chemically regulated or philosophically constructed zones of subjectivity. Most importantly for this consideration, a thinking human subject can make both subject and thinking itself an object of thought. In this huge and unending enterprise, I would argue, one cannot dismiss easily how a familiar family of Western languages has shaped the investigation through the correlative linguistic signs of the self: *autos* (Greek), *ipse* and *idem* (Latin), *soi* and *même* (French), *Selbst* (German), *se* (Italian), *mismo* (Spanish). Much more than even the verb “to be,” this aspect of Western languages enjoys a certain advantage over a language like Chinese because “each grammatical peculiarity sheds light on part of the essential meaning sought.”<sup>39</sup> Exploiting the morphological multiplicity of their grammatical and syntactical components (e.g., the proliferation of pronouns and pronominal prefixes, the middle voice in classical Greek), the languages succeed in conveying the difficult notion of reflexivity to an extent hard to match in traditional Chinese. It is no accident that in the most recent major monograph on the subject of “self,” its author declares:

Again and again, they [the ancient philosophers of the West] show the same interest in the individual person, and especially the individual viewed from the first-person point of view as ‘me’. Moreover, like ourselves, they often express these ideas of self just as we do, by the use of pronouns. They talk of ‘I’, ‘we’, ‘each’, the reflexive ‘oneself’ (*heautos*), or the emphatic ‘himself’ (*autos*), or (Plato *Laws* 959B3) ‘that which is each of us truly’. Where *autos* is used without an accompanying noun, it sometimes *demand*s to be translated by the English ‘Self’, and *autos* is sometimes combined with *hekastos*, meaning *each self*.<sup>40</sup>

If the human had long been regarded as both the studying inquirer and the thing studied, one should not be surprised that we have in Western culture the development of “the human sciences [Fr., *sciences humaines*; Ger., *Geisteswissenschaften*]” as part of a different grouping of scholastic disciplines since the European Enlightenment. However the meaning of that designation is to be conceived, the name itself again connotes the crossing or merging of boundaries. For the “archeology” of the late Michel Foucault, the human sciences are properly related only to biology, economics, and linguistics, because these three major disciplines, according to him, are built upon the specifically and uniquely human activity of life, labor, and language.<sup>41</sup> Even

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<sup>39</sup> “. . . chaque particularité grammaticale propre à éclairer une partie du sens fondamental recherché.” Paul Ricoeur, *Soi-même comme un autre* (Paris: Éditions du Seuil, 1990), p. 11. English translation by Kathleen Blamey as *Oneself as Another* (Chicago: University of Chicago Press, 1992), p. 1.

<sup>40</sup> Sorabji, *op. cit.*, p. 32. This book complements Ricoeur’s earlier book of philosophical formulations by providing a solid history of Western notions of the self that had been indisputably language-based.

<sup>41</sup> Michel Foucault, *Les mots et les choses : une archéologie des sciences humaines* (Paris:

in this largely “materialist” formulation of the disciplines so named, Foucault is too alert a contemporary scholar to ignore how potently mind and subjectivity would impinge on the sciences of life and language. In this way, one may say that the human sciences themselves seem to follow a linguistic paradigm (Western, to be sure) of reflexivity, in which the study of the human as self, as an object, is also the study of “an other (another)” self, what Foucault calls “the Double.”<sup>42</sup> At this juncture where the discourses of linguistics, philosophy, biology, and psychology converge, we may discern the unambiguous meeting of the different domains of knowledge hitherto classified as science and humanities. Here we encounter the human thriving on the privilege of reflexive knowledge but also existing as one unavoidably implicated in the Foucauldian “impensé (unthought),” the figure/figuration lurking as the turbulent Unconscious that irrupts into the human as its ineluctable shadow and companion.<sup>43</sup> In this context of comparing preferences for nature or culture allegedly dividing Chinese or Western ways of knowledge, it is interesting to observe the transgression of frontiers once more. “The unnameable” 吾不知其名 styled by Laozi as the cosmic Dao has

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Gallimard, 1966), pp. 262-313.

<sup>42</sup> For Foucault, however, “the Double” could never have been contemplated as an autonomous object; “de ce dont il était l’Autre et l’ombre, il a reçu la forme complémentaire et le nom inversé; il a été l’*An sich* en face du *Für sich*, dans la phénoménologie hégélienne; il a été l’*Unbewusste* pour Schopenhauer; il a été l’homme aliéné pour Marx; dans les analyses de Husserl, l’implicite, l’inactuel, le sédimenté, le non-effectué: de toute façon, l’inépuissable doublure qui s’offre au savoir réfléchi comme la projection brouillée de ce qu’est l’homme en sa vérité, mais qui joue aussi bien le rôle de fond préalable à partir duquel l’homme doit se rassembler lui-même et se rappeler jusqu’à sa vérité.” See *ibid.*, p. 338. English translation may be found in Michel Foucault, *The Order of Things: An Archeology of the Human Sciences* (New York: Vintage Books, 1973), p. 327: “it has received the complementary form and the inverted name of that for which it was the Other and the shadow: in Hegelian phenomenology, it was the *An sich* as opposed to the *Für sich*; for Schopenhauer it was the *Unbewusste*; for Marx it was alienated man; in Husserl’s analyses it was the implicit, the inactual, the sedimented, the non-effectuated—in every case, the inexhaustible double that presents itself to reflection as the blurred projection of what man is in his truth, but that also plays the role of a preliminary ground upon which man must collect himself and recall himself in order to attain his truth.”

<sup>43</sup> See Foucault, *Les mots*, p. 337: “L’impensé (quel que soit le nom qu’on lui donne) n’est pas logé en l’homme comme une nature recroquevillée ou une histoire qui s’y serait stratifiée, c’est, par rapport à l’homme, l’Autre: l’Autre fraternel et jumeau, . . . lui est liée sur un tout autre mode; elle lui est à la fois extérieure et indispensable: un peu l’ombre portée de l’homme surgissant dans le savoir; un peu la tache aveugle à partir de quoi il est possible de la connaître.” English translation, p. 326: “The unthought (whatever name we give it) is not lodged in man like a shrivelled-up nature or a stratified history; it is in relation to man, the Other: the Other that is not only a brother but a twin, . . . it is both exterior to him and indispensable to him; in one sense, the shadow cast by man as he emerged in the field of knowledge; in another, the blind stain by which it is possible to know him.”

perhaps entered the human as its Double,<sup>44</sup> the “unthought” as “whatever name one gives to it (*quel que soit le nom qu'on lui donne*).” For the ancient Chinese thinker and the modern French philosopher, what cannot be named or resists precise denomination is nonetheless knowable reality. Does this reality, however, exist as nature or as the product of language and thought? Put that way, the final question seems obvious: can nature and culture truly and independently exist as separate entities? Is this, too, part of the meaning of Aristotle’s assertion—perhaps bearing implications much beyond his own foresight and anticipation—that there can be certain objects of knowledge “that may or may not exist”?

My essay has come to conclude on a slightly but unintentionally “deconstructionist” note, surprising even to me. Having gone to this length in discussing divergent classifications of knowledge, I should perhaps revise my titular assertion with an added clarification: and why the humanities and science have never quite separated.

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<sup>44</sup> *Daode jing* 道德經 25. See Chen Guying 陳鼓應, *Laozi zhuyi ji pingjie* 老子注釋及評介 (Beijing: Zhonghua shuju, 1984), p. 163.

# 人文學科何以不是科學？

## ——從比較的角度自亞里士多德的觀念談起

余國藩

本文探討西方文化一個重要問題：「人文學科」何以異於其他種類的知識？從古至今，「人文學科」曾經有不同的定義，我們看來雖耳熟能詳，但總覺論證欠周，難以服人。本文立論有異，不僅重探亞里士多德的學科三分法，並以此為據，進一步檢視人文學科的定義。此外，本文也上溯中國史上迥然有別的知识分類法則，再為本研究提供必要的背景，以資比較。本文繼而簡述亞里士多德對「知識」所下之定義，故第三部分探討亞氏所稱「理論性學科」（形上學、數學與物理學）的假設與主張，認為他之所以覺得有其必然，乃因目標在尋求對錯分明的知識使然。至於「實踐性學科」（道德與政治學）的目的則非知識之獲得，而是貴其身體力行的一面。本文第四部分主要由亞氏的《詩學》下手，討論他的「創造性學科」之見，另及他的「擬現」觀。亞氏認為後者乃人工或技藝所成之概念。由亞氏的論點可知「人文學科」所擬研究者乃人為之產物及其背後的意義。根據亞里士多德，要獲知是類意義，我們往往得求諸事物的製作過程，認識作者力求完美的理性經過。本文結論取中國文獻與語言稍加比較，再證亞氏的分類法何以令人折服的原因，並指出人文學科與我們今日所謂自然或物理科學實難二分。

關鍵詞：人文學科 知識 學科 / 科學 因 擬現 產物

## Why the Humanities Are Not Science: Thinking Comparatively from Aristotle

Anthony C. YU

This essay examines a venerable question in Western culture: how to distinguish the “humanities” from other forms of knowledge. The Aristotelian threefold division of the sciences in Part I of the essay, in contrast to some familiar but unsatisfactory options for defining the humanities from modernity to antiquity, is re-considered as a basis for a different approach to the subject. Part II, however, relates the divergent system of knowledge taxonomy in historical Chinese culture to provide the necessary comparative context. From a brief review of what Aristotle proposes as criteria for true knowledge as distinct from opinion or belief, Part III proceeds to present his formulation of the *theoretical* sciences (metaphysics, mathematics, and physics) mandating necessary hypotheses and propositions that aim to end in absolute certitude of knowledge. The *practical* sciences (ethics and politics), by contrast, have as their end not knowledge but right action. In Part IV, Aristotle’s understanding of the *productive* sciences (articulated principally in the *Poetics*) and his concept of mimesis as an artificial or artful product lead to our thesis that the humanities represent the study of the meaning of human products. Such meaning, according to Aristotle, is inseparably tied to deciphering the rational process of how a thing is made and made well. The essay’s closing section further argues, however, that even in this compelling schematization of Aristotle, contextualized comparatively by brief reflection on Chinese materials and language, the separation of the humanities from what we regard today as natural or physical sciences cannot be complete or absolute.

**Keywords:** Humanities knowledge sciences cause mimesis products

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