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THE GENETICS OF CIVILIZATION: 
AN EMPIRICAL CLASSIFICATION OF CIVILIZATIONS 
BASED ON WRITING SYSTEMS 

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Part I: Cultural DNA

Introduction

Writing is the DNA of civilization. Writing permits for the organization of large populations, professional armies, and the passing of complex information across generations. Just as DNA transmits biological memory, so does writing transmit cultural memory. DNA and writing project information into the future and contain, in their physical structure, imprinted knowledge.

George Modelski acknowledges the central role of the written word in history:

Cities are the hardware, the invention of writing supplies, the software of the infrastructure of world system learning. Writing records and stores information, and it organizes social life both to the past and to the future; it lends continuity to social organization and makes systematic structural changes possible [2000: 34].

The connection between writing and civilization could not be more intimate: writing and civilization share a mutual origin in the Sumerian city-states that emerged by 3000 BC. Civilization is fundamentally a cultural infrastructure of information and knowledge that serves survival and continuity. What distinguishes a civilization from a culture is that this infrastructure, having reached a critical level of complexity, becomes autonomous from constituent cities, nations, and empires. In ordinary cultures, the passing of information and knowledge may depend upon imitation or oral communication; in civilizations, this cultural memory, etched into clay or drawn onto papyrus, takes on a life of its own.

Writing is more than a technology of social organization, however. Writing also manifests the worldview of a particular civilization, revealing its approach to, and interpretation of, reality. Pictographic or logographic systems, for example, are read (and written) largely within the right-hemisphere of the brain, while alphabetic and syllabic systems inhabit the left-hemisphere. Scholars have yet to explore the implica-
tions of this conclusion, but it appears that there may be an important difference in the intellectual templates of eastern and western civilizations.

Furthermore, many letters of the Latin alphabet have roots in archetypal symbols: the letter "A," upside down, is an Egyptian oxhead; the letter "E," on its left side, is a man raising his arms skyward in prayer; and virtually every letter of the Latin alphabet contains "genetic markers" from antiquity. It is also curious that many letters of the Cyrillic alphabet appear to be reverse mirror images of their Roman counterparts. Writing systems share a history of assimilation, synthesis, and metamorphosis [Ouaknin, 1999].

Writing systems emerge as the most appropriate basis for a taxonomy of civilizations for three reasons. First, a writing system is required for truly "complex" social, political, and economic organization, for the kind of communication that cannot be handled by oral communication. Second, a writing system represents, in its totality of texts, documents, and holy books, a compendium of that civilization's information and knowledge. And third, a writing system reflects a distinct interpretation of reality itself, the kind of cultural concept of "soul" that Oswald Spengler described so eloquently.

Civilizations are not either/or propositions. Civilizations are multi-layered, as writing systems reveal in Vietnam, where we find a Chinese foundation, a local Vietnamese formulation (of the longest duration), and, finally, a western colonial overlay, now some three centuries old. Vietnam, therefore, does not belong simply to Western Civilization; rather, it is a region in which the Western "overlay" is dominant.

In India, we find something more complex: the simultaneous existence of many local writing systems (which do, indeed, point to separate civilizations) and of the Latin alphabet, which points to the strong Western overlay. This difference is most visible, in daily life, with many local newspapers being printed in Indian writing systems and national newspapers in English. The existence of so many writing systems (and civilizations) in India is surprising to many, but we should remember the enormous geographic and demographic size of a subcontinent that was never united into a single unit until the British Empire. Not even Asoka the Great or the Mughuls incorporated southern India.

Writing systems reveal historical subtleties. What can be termed "Hebrew Civilization" (after its dominant writing system) has used several writing systems over time: Phoenician, Aramaic and Hebrew, for example. Upon closer inspection, however, these are successive formu-
lations, or evolutionary developments, in a line of descent dating back to proto-Sinaitic and Egyptian. Characters rotate, change shape, fuse with others and become standardized. This changes the outward appearance of the writing system, but its substance remains connected to the past.

The Jewish Diaspora required the adoption of the Latin, Arabic, and Cyrillic alphabets for secular matters. Holy books, however, as mandated by religious law, were written in the sacred Hebrew script and accompanied by vocal pronunciation. It is possible to note that Hebrew Civilization is "multi-alphabetic," and this provides insight into modern Hebrew Civilization, with its Middle Eastern roots and Western orientation.

Writing systems offer a basis for classifying civilizations while revealing the core of what a civilization really is. Arnold Toynbee conceives of civilizations as institutions that "comprehend without being comprehended by others" [1934: 455]). From this, it follows that civilizations end when their writing systems become incomprehensible to others (not their spoken languages, however, which predate civilizations).

Some scholars deny writing as a marker of civilization, largely because of several so-called anomalies such as the Incas' quipu knot-ropes. These, however, were intended as permanent records of abstract information, and there is no obvious reason why a writing system, such as Braille, cannot be tactile. Furthermore, the quipu system, which also used different colors and sizes of knots, was more than tactile.

These scholars also cite the Mississippians of Cahokia as an anomaly because they left no evidence of record keeping. However, neither did they attain the population density, social hierarchy, and state structure of true civilizations such as the Aztec and Mayan. The Mississippians, therefore, are better described as a late Neolithic people rather than an example of a civilization that existed without a writing system.

Those who deny that writing systems are indicators of civilization may be motivated to elevate traditional or aboriginal societies, based on oral traditions, to the level of cultural complexity manifest by true civilizations. While this is perhaps culturally laudable, this desire blurs a clear boundary. All complex and dynamic cultures, that is, all fully-elaborated civilizations, in fact, contain writing systems.

In sum, writing systems are as complex as the civilizations they represent, and for this reason they provide the best basis for a taxono-
my. First, however, it is necessary to examine the flaws in previous efforts at classifying civilizations by other means.

Problems in the Classification of Civilizations

A century of scholarship has resulted in largely congruous lists of the world’s civilizations: Mesopotamian; Egyptian; Minoan; Greco-Roman (or Mediterranean); Western; Orthodox (or Russian); Islamic; Chinese, sometimes with Japan as an offshoot or separate; Hindu (or Indic); Mesoamerican, and Andean [Spengler, 1932; Toynbee, 1934; Bagby, 1958; Coulborn, 1959; Quigley, 1961; Kroeber, 1962]. Unfortunately, these classifications have been based on vague and shifting criteria, producing inaccurate and incomplete rosters.

Most scholars emphasize religion when attempting to identify a civilization. However, close analysis reveals why this fails. Confucianism, for example, appeared one thousand years after the birth of civilization in China. This approach would also group Korea and China into the same civilization when, by every other consideration, they should be considered distinct. Hinduism, which emerged with periodic migrations into the subcontinent, represents a slow accretion of beliefs and presents no coherent organization. And Western Civilization, as will be argued in the next section, began in pagan Rome, where the foundations of Western urbanism, law, democracy, art, architecture and, most important, writing, were laid. Western Civilizations is not synonymous with Christianity.

Another problem with current scholarship in civilizational studies is that it overlooks Burma, Cambodia, Thailand, and Korea as places where societies diverge significantly from the larger cultural hearths of India and China. Similar oversights occur with respect to Georgia, Armenia, and Ethiopia. (When surveying the ancient past, such oversights multiply.) Toynbee attempts to deal with this problem in Asia by proposing the existence of “satellite civilizations” in Southeast Asia, Tibet, Korea, and Vietnam, but his effort is not entirely satisfactory. Other scholars ignore the mosaic of civilizations in India, tending to group them together as a single civilization.

Samuel P. Huntington, in The Clash of Civilizations and the Remaking of World Order [1994] identifies the boundaries where civilizations intersect as the sources of future world conflict. This is compelling, and his call to consider the civilization factor in the making of foreign policy is timely – all the more reason to come up with a workable taxonomy of civilizations.
Consistent with a century of scholarship, Huntington classifies civilizations by emphasizing religion and culture, but his criteria waver. He tentatively breaks off Latin America as a civilization separate from southern Europe, even though both are Catholic, because of Latin America’s indigenous peoples. This seems inconsistent with the fact that Western Civilization has been multi-ethnic since the Roman Empire. Positing a Latin American Civilization creates problems. Do Argentina and Italy really belong to separate civilizations? And what of Mexico, whose economic, political, and cultural interaction with Latin America is nearly invisible when compared to its interaction with the United States?

Huntington identifies a “possible” African civilization, but while many civilizations have risen and fallen within Africa (Mali, Songhay, Meroe and Zimbabwe), there has never been an all-encompassing sub-Saharan African civilization (as Huntington posits). By the time of European colonization, these numerous African civilizations (except Ethiopia) had disintegrated. European colonizers encountered a sub-Saharan Africa based on village life, an Africa whose technology and military organization could not effectively resist the Europeans. In Africa, Western Civilization represents an “overlay,” as will be argued in the next section. Ethiopia is the only independent civilization, the only non-Islamic and non-Western-oriented civilization on the continent.

An entirely different approach is taken by David Wilkinson [1995], for whom there is but one civilization in the world: Central Civilization, basically Western but with roots in Mesopotamia and Egypt. For Wilkinson, civilization represents a political-military network of interaction. So defined, it does become possible to identify a Central Civilization. However, little room is left within that definition for the enduring cultural differences of supposedly assimilated civilizations. Yet these differences propel Muslim revolutionaries in Afghanistan and Pakistan, two countries where the process of assimilation by Central Civilization has been reversed. While the political-military dimension of civilization is undeniably important, perhaps the concept of civilization should not be so restrictive.

The most subjective classification is found in Oswald Spengler’s Decline of the West (1932). Spengler claims each civilization has a unique “soul”—or prime symbol—that appears at a civilization’s birth and serves as a sort of centrifugal force. For example, he says, the West’s soul is defined by “pure and limitless space” and China’s by the
“wandering way.” Despite flashes of brilliant insight, this approach is, to say the least, wildly interpretive.

To date, then, civilization classification systems have lacked the systematic application of a constant variable.

Toward an Empirical Classification

To classify civilizations by their writing systems, parameters must be established. Blackwell Encyclopedia of Writings Systems defines a writing system as, principally, “a set of visible or tactile signs used to represent units of language in a systematic way” [Coulmas, 1996]. Writing systems can include logographic systems such as Chinese or Mayan (images that represent words or ideas, sometimes with a phonetic element denoting the pronunciation); alphabetic systems (consonant alphabets such as Arabic, or phonemic alphabets with vowels, such as Latin); and syllabaries (with symbols for consonants and vowels together), such as Ethiopic.

This approach excludes recently invented or seldom used writing systems. Christian missionaries were instrumental in the development of Cree and Inuktitut, writing systems that might, one day, form the basis of civilizations, but which have not yet demonstrated that potential. Blackwell’s definition also refrains from identifying a writing system that simply adds several letters to one language to accommodate a second language. These minor adjustments occur with the Cyrillic-based Belorussian and Kalmyk alphabets, for example, and with the Spanish alphabet’s inclusion of “ll” and “ñ” as separate letters. Such modifications reflect a relationship to a mother alphabet but do not represent a different writing system.

This paper classifies existing civilizations and their families. More research is required to establish an accurate genealogy of civilizations and to refine the classification of the Indian subcontinent. The names of contemporary civilizations, when appropriate, emerge from systems of writing.

Part II: The Families of Civilizations

The Middle Eastern Family

The Middle Eastern family of writing systems preserves much of ancient Mesopotamia and, especially, Egypt, whose later demotic form became the raw material for the evolution of Arabic and Hebrew. Egyptian was also the foundation for proto-Sinaitic, Phoenician, and
Aramaic, the last of which diffused across western Asia, largely through Jewish communities. By the end of the 8th century BC, the Aramaic alphabet had become widespread. Aramaic, in turn, gave birth to Arabic, Hebrew, and extinct systems such as Palmyran, Syriac, Nestorian, Nabatean, and Avestan (or Persian). Aramaic also provided the foundation for Central Asia Sogdian, Uighur, and Mongolian (which barely survives). The Middle Eastern family of writing systems includes more writing systems than listed here, but the purpose of this paper is better served by concentrating on its surviving members.

Arabic Civilization
Most scholars use the term “Islamic civilization” when describing the culture that spans from Morocco to Indonesia, but in this case, religion and civilization are not synonymous (although nearly so). Bosnia and Turkey are predominantly Muslim, but a majority of their populations use the Latin alphabet (and accept Western values).

“Arabic civilization” is the more accurate term, with “Arabic” not referring to an ethnic group (the majority of Muslims are not Arabs) but rather to the Arabic writing system. Arabic descended from Aramaic by way of Nabatean. It spread across a swath of the Old World with the Ummayad Caliphate of Damascus and, in a second pulse, with the Abbasid Caliphate of Baghdad.

The Arabic script is the second most widely used alphabet in the world, having driven into extinction, or to the brink thereof, Pahlavi, a Persian writing system; Sogdian, a Central Asian system; and Tifinagh, the Punic-inspired writing systems of North Africa.

Hebrew Civilization
The Hebrew alphabet, like its Arabic sister, developed from Aramaic and was standardized around the 3rd century BC. Hebrew writing, however, nearly became extinct in modern times. The Diaspora resulted in Jews adopting Latin, Arabic, and Cyrillic writing systems, and the Hebrew alphabet was lost to all but religious scholars.

Hebrew civilization provides a singular case of a civilization in exile, in Exodus, reconstituting itself in its homeland. The founding of Israel injected new life into the Hebrew alphabet — and into the Hebrew language, which had also had been on the verge of extinction, before the advent of Zionism.

Ethiopic Civilization
The Ethiopic writing system, having evolved in the South Semitic
lineage, is a distant relative to Arabic and Hebrew. South Semitic branched off from the Middle Eastern trunk before the development of Aramaic, even before Phoenician, and traces its ancestry to proto-Sinaitic. The detour in this family history leads to South Arabia, where the Sabaean civilization (and its writing system) was instrumental in the development of the Ethiopic syllabary. Thus, Ethiopia emerged as a distinct civilization.

Mongolian Civilization
Mongolian is another surprising member of the Middle Eastern family. Like Arabic and Hebrew, Mongolian descended from Aramaic. The overland Silk Roads diffused Aramaic forms to the east, and these developed into the Central Asian systems of Sogdian, Uighur, Kök Türki (a prototype of the Hungarian alphabet), and eventually, Mongolian, which, under the influence of Chinese Civilization, was written vertically, suggestive of the cultural synthesis of Mongolia itself.

Mongolian, which developed from a succession of prototypes, crystallized in the 13th century—precisely when the Mongols conquered civilizations only to be conquered by civilization itself. Manchu, an offshoot of Mongolian, was employed during the Ching dynasty from 1644 to 1911. Manchu never completely replaced Chinese, but was used as an administrative script, and thus can be seen as an “overlay” — a concept which will be elaborated in this paper. Mongolian nearly disappeared during the Soviet era and was restricted to private purposes. The deep imprint of Cyrillic is still evident in Mongolia’s industrial and educational infrastructure. Yet today, as proof of its resilience, Mongolian writing (and civilization) is slowly reemerging.

The Greek Family
Because Greek Civilization gave birth to so many other civilizations, four of which still exist, it can be identified as the fount of a distinct family of writing systems. Extinct members of the family illuminate the background of Western Civilization.

Greek Civilization
As the Greek alphabet suggests, the Greeks were a transformational culture. They inherited and then revolutionized the technology of writing around the 8th century BC. Breaking with the Phoenician practice of writing from right to left, the Greeks switched directions. Then the Greeks developed something more revolutionary: vowels. This
made the Greek alphabet practical, flexible and, ultimately, with its classical alphabet of 24 letters, easily exportable to non-Greek cultures. Eastern and western subdivisions of the Greek alphabet emerged, but in 403 BC, Athens adopted the eastern Ionic alphabet, which then became the standard. A Greek alphabet and Greek Civilization continues to exist in close relation to, but apart from, its surviving descendants.

Etruscan Civilization (extinct)

Etruscan was probably the earliest offshoot from the Greek alphabet, which should shed light on the mysterious origins of the Etruscans themselves. The Etruscans established a civilization in Tuscany around the 7th century BC, and their writing served as the link between the Greek alphabet and the many Italic alphabets, from which Latin emerged supreme.

Coptic Civilization (extinct)

The Coptic alphabet represents a Coptic Civilization (or Greek-Egyptian, to be more accurate) that flourished in Lower Egypt after Alexander the Great conquered the ruins of Egyptian Civilization, paving the way for colonization and mixture. In addition to the 24 Greek letters, the Coptic alphabet included seven from Egyptian demotic. (“Demotic” refers to Egypt’s popular and secular script, after hieroglyphs had evolved into cursive and phonetic signs). Eventually, the rise of Islam (and its Arabic script) reduced the Coptic Civilization to a shell. Today, Coptic is confined to tiny religious communities in Egypt, Lebanon, and Ethiopia.

Visigothic Civilization (extinct)

The Greek alphabet also gave birth to the Gothic alphabet (not to be confused with the Gothic font) used by the Visigoths for East Germanic languages in the Crimea—a Visigoth Civilization which, to this author’s knowledge, has not been recognized as distinct. The Visigoths, like the Vandals or even Mongols, can be seen as a “para-civilization” that conquers and then administers more established civilizations instead of just indulging in the usual barbarian plunder. The Visigoths pieced together remnants of the fallen Roman Empire, and their reach brought them as far west as Spain. The Gothic writing system, which looks part Greek and part Latin (with enough new letters to render it unintelligible to readers of the two parent systems), flourished from about the 4th until the end of the first millennium.
Georgian and Armenian Civilizations

The Greek alphabet branched off into two other systems close to the Black Sea: Georgian and Armenian, both of which were developed in the 5th century and were modeled after Greek. This is surprising at first glance because Georgian and Armenian scripts look so exotic. There is a theory that Armenian might have been patterned after the Persian Pahlavi script, which descended from Aramaic, but even if true, the Armenian alphabet still exhibits a strong Greek influence in the direction of writing (from left to right) and the use of vowels. Interestingly, the Caucasus Mountains, and indeed the entire Anatolian peninsula (now Turkey), has long been home to a mosaic of micro-civilizations.

Cyrillic (existing) and Glagolitic (extinct) Civilizations

The Greek alphabet underwent a transformation when it became the liturgical writing system for the Greek Orthodox Church in Eastern Europe and Russia. According to legend, St. Methodius and St. Cyril invented the Glagolitic and Cyrillic alphabets in the 9th century to represent Slavic languages. Glagolitic, mostly used in the Balkans, became extinct. Cyrillic spread with the Orthodox religion in Eastern Europe and Russia. In time, Cyrillic diffused even more with the Soviet Union, which used the Cyrillic alphabet to write many languages: Finno-Ugric, Mongolian, Azerbaijani, Kurdish, Tajik, Circassian, and many others. Today, Cyrillic is on the retreat, having been rejected by Azerbaijan, Moldova, and numerous former-Soviet republics in Central Asia.

Western Civilization

Western Civilization, an offspring from Greek Civilization, is more accurately labeled “Latin Civilization” for its alphabet. But the term “Western” has been locked in by popular use, and “Latin” is often associated with “Hispanic,” so this paper will adhere to Western. Fortunately, Western does have the advantage of denoting the westward shift of this civilization’s center from the Mediterranean to the Atlantic.

Few if any scholars of civilization place Rome and the modern West in the same civilization. But if writing represents the DNA of civilization then the connection is irrefutable. A break actually comes between Greece and Rome, with the Etruscans serving as the pivotal civilization.

There is another equally important reason for viewing continuity from Rome to the modern West. The classical forms of the Roman
world (law, democracy, urban planning, the arts) were resurrected during the Renaissance nearly 1,000 years later. Rome’s vigorous, unrelenting drive to conquer the known world might also be seen to live on in Western Civilization.

Imperial rise and fall occurs within the larger trajectory of civilization in India and China. Why should the West be any different? A highly-unorthodox but sustainable conclusion follows: *The fall of Rome was the fall of an empire, not of a civilization.*

Thus, nearly 2,000 years after Rome, the Latin alphabet reigns supreme in the West, having eclipsed Germanic and Hungarian Runes, Celtic Ogham, and Punic-Iberic scripts. With modifications, the Latin alphabet extends from Iceland to Albania and from Portugal to Poland. Albania presents a peculiar case of a country that has oscillated between Latin and Cyrillic, with movements towards Arabic, and periodic calls for the use of local inventions, Elbasan and Beitha Kukju, as well. After decades of intense controversy, the Latin alphabet dominates, but with extra letters and digraphs such as gj and xh, regarded as single characters.

In the Americas, Spanish colonizers torched the cultural records of Mesoamerican and Andean Civilizations and imposed the Latin alphabet. Equally important, Old World diseases such as smallpox wiped out 90 percent of indigenous people in Mexico and Peru, and European immigration to the Americas was massive. This cultural-demographic one-two punch made the European absorption of the Americas total. The American hemisphere may be home to a kaleidoscope of peoples, languages, and nations, but for the past five centuries it has developed entirely within the framework of Western Civilization.

In Australia and New Zealand, aboriginal populations were too weak to resist European colonization. Rather than being absorbed by Western Civilization, aboriginal populations were marginalized.

In sub-Saharan Africa, Western Civilization represents an overlay. The Latin alphabet was employed at the edge of society by the urban and coastal elite, but it did not penetrate the interior and cores of African societies until the late 19th century.

India is home to numerous civilizations and writing systems, but British rule established English with its Latin alphabet as a *lingua franca*, and today there is a co-existence between Latin and local writing systems, just as there is a co-existence between Indic and Western civilizations.
Western Civilization also exists as an overlay in much of Southeast Asia and the Pacific, where the Latin alphabet eroded the Malayo-Polynesian scripts of Batak, Buginese, and Tagalog. On mainland Southeast Asia, the Latin alphabet partially replaced Cham Vietnamese, as today most Vietnamese is written with modified Latin letters, a consequence of the long French presence. (Another Western form that endures in Vietnam is Marxism-Leninism.)

The former Central Asian republics of Uzbekistan, Tadjikistan, Turkmenistan, and Kirgistan — all of which have a Muslim foundation — appear to have rejected the Cyrillic alphabet, and some republics are moving toward a Latin alphabet based on the Turkish model. However, Arabic script remains popular, especially in Tadjikistan, and the future writing system of Central Asia remains unsettled. Ultimately, Central Asia might split into two spheres, one based on the Turic-Latin model and the other on the Arabic alphabet.

In sum, the Greek writing system gave birth to at least seven others. Of these, four (and, by extension, their civilizations) endure: Western, Cyrillic, Georgian, and Armenian.

The Brahmi Family

Indian and Southeast Asian writing systems descend from the Brahmi syllabary dating to the 7th century BC and common during the Maurya Empire. One theory is that Brahmi branched off from Aramaic, but more certain is that Brahmi gave birth to other writing systems. The genealogy of Indic writing systems is complex as many include shorthand and shopkeeping variations and Buddhist versions. For this reason, the classification below is the most tentative of those advanced in the paper.

Indic Civilization

The main trunk of the Brahmi family is found in the Ganges Valley of northern India. The Brahmi script, already in metamorphosis during the Maurya Empire, evolved into Gupta (from the 4th to 6th centuries) and then into Devanagari, the last of which has remained the standard script in India since the 9th century. Devanagari, with 48 letters, is used to write classical Sanskrit and Hindi in a left-to-right direction. Horizontal strokes at the tops of the letters form a continuous line through the script. Devanagari is the basis for Indic civilization. Indic civilization, now more than 1,000 years old, is the largest and most central civilization in the subcontinent.
Several writing systems (and civilizations) in the second millennium grew out of Devanagari. In northern and central India, these include: Punjabi (based on the Gurmukhi or Sikh out-scripts); Gujarati; and Bengali, which is so similar to Assamese that Assamese does not warrant a separate classification, though it is interesting to note that between the 13th and 18th centuries, the writing system of Assam was Ahom. Some classifications place Oriya into a separate writing system, but the only real difference between it and Bengali, apparently, is that the top horizontal bar is replaced with a half circle.

Tibetan Civilization

Tibetan, whose first inscriptions date from 8th century AD, remains a viable writing system. Tibetan writing system was employed by Buddhist monks and administrators until the Chinese occupation of the 1950s, which made Chinese the official language and writing system. Tibetan endures despite a strong Chinese overlay.

Dravidian and Sinhalese Civilizations

In southern India, there was a version of the Brahmi script called Grantha, which appears to be the basis for Pallava, which in turn gave rise to four writing systems that correspond to the Dravidian family of languages (as opposed to the Indo-European family): Telugu, Kannada, Tamil, and Malayalam. These four might, upon close inspection, form the basis of separate civilizations. There is a fifth writing system - Sinhala - that, like the previous four systems, is written in rounded letters, but it is used for Sinhalese, an Indo-European language. On the island of Sri Lanka, Tamil is used in the northeast and Sinhala on the majority of the island.

Khmer, Thai, Lao, Burmese Civilizations

The Pallava writing system also parented a wide variety of systems in Buddhist Southeast Asia, more than ten in all, of which few survive. Khmer writing, formalized around the 6th century, gave rise to three important systems that continue to be used: Modern Khmer, Thai, and Lao, all of which crystallized between the 13th and 16th centuries. A parallel line of descent runs from Pallava to Champa in the 7th century and then to Cham, which at the beginning of the second millennium became the writing system for Cambodia. Still another parallel line of descent runs from Pallava to Mon and to, finally, Burmese. In Vietnam, French missionaries developed a method for writing Vietnamese with the Latin alphabet (Quoc-ngu) in the 17th century, which replaced a script derived
from the Chinese (Chu-nom) by the mid 20th century. The long French presence in Vietnam and the recent development of a European political infrastructure (Marxism-Leninism) suggest that Vietnam has a western overlay, and this conclusion is reinforced by its Latin-based writing system.

**Malayo-Polynesian Civilizations**

A Malayo-Polynesian sub-family of civilizations, now extinct, emerged from Pallava and Kawi alphabets: Javanese (Java); Buginese (Celebes); Batak (north-central Sumatra); Lampuj (Sumatra); Lontara (Sulawesi); and Tagalog and Tagbanwa (the Philippines). These were civilizations based on rice-growing and fishing, and they engaged in long-distance maritime trade. There may be more writing systems in this family, but virtually all have been supplanted by the Latin alphabet and remain confined to ceremonial, decorative, or academic uses. For all practical purposes, independent Malayo-Polynesian civilizations have become extinct.

In Southeast Asia, the majority of writing systems and civilizations survived on the mainland. On the islands, however, local systems and civilizations have largely succumbed to the onslaught of the Latin alphabet and its Portuguese, Dutch, and English carriers.

**The Chinese Family**

The Chinese family of civilizations has obscure origins. Some scholars trace its ancestry to the earliest scripts of the Fertile Crescent; others insist it represents a case of independent origins. Either way, the millennia-long development of these civilizations and their writing systems proceeded in relative isolation, producing unique results, and for this reason the family should be considered as a separate lineage.

**Chinese Civilization**

Chinese civilization is the oldest and most central in Asia. Several chronologies of Chinese writing exist, among them: Oracle Bone or Shang, 1500 - 1000 BC; Greater Seal or Western Chou, 1100 - 700 BC; Lesser Seal; and Clerkly Script or Han, 500 BC to modern times. This last phase includes Han, Tang, Sung, Ming and Ching dynasties, as well as the modern Republican and Communist regimes.

Where along the 3,500-year trajectory of civilization in China do we identify separate civilizations? Or are there simply successive manifestations of the same civilization? A safe approach would be to accept the continuity of Chinese civilization from 500 BC to the present.
Han dynasty is to China what the Roman Empire is to the West: foundational. More research is required to develop a chronology of Chinese civilizations (their writing systems) for the period before 500 BC. It is also important to note that within China itself there emerged other, distinct writing systems, Nahki, Sibo and Yi, for example, although today they remain confined to small areas or are now extinct altogether.

Japanese Civilization

Chinese Civilization provides much of the original technology for Japanese civilization. Apart from the large-scale cultivation of rice and urban design, Chinese writing also left its imprint on Japan. But the Japanese also developed three parallel writing systems, most notably a system called Kanji. Interestingly, Japan also incorporates the Latin alphabet, an indication of cultural adoption and accommodation.

Korean Civilization

Most scholars accept separate Chinese and Japanese civilizations, but do not classify a distinct Korean civilization, although the existence of a unique writing system, Hangul, lends weight to the proposition. Some linguists claim that the internal structure of Hangul was modeled on Buddhist writing systems from India, but Chinese influences are also evident. More certainly, Hangul crystallized as a syllabary in the 15th century. It shares with Chinese a visual sense of balance and harmony, perhaps reason enough to connect it to the Chinese family.

The American Family (extinct)

Writing systems in the Americas consist of the Mesoamerican and Andean families. In ancient Mexico, the Olmecs of the Gulf Coast served as a mother civilization for the region and developed a writing system, largely logographic, called La Mojarra. Mayan hieroglyphs appear to descend from this, as do Zapotecan and Mixtecan glyphs, although the latter two might be grouped into an Oaxacan writing system. For some scholars, Zapotecan and Mixtecan writing is too much like the drawings of pictures to be considered as true writing systems. The same objection has been made about the Aztec writing system. Of all Mesoamerican systems, Maya hieroglyphs were clearly the most advanced, being both logographic and phonetic. In the Andes, a system of quipu knot-ropes were developed to record information. What kind of information is debated, but it appears to have involved complex numerical notations of tax-collection, calendrics, and dynastic records. All American writing systems came to a sudden end with the Spanish
Part III: The Evolution of Writing Systems

Writing systems—as the cultural equivalents of genetic pools—are subject to evolution: reproduction, mixture, mutation or, as is usually the case, extinction. Writing organizes the future—but with no guarantees, just as with DNA.

Writing enables human societies to move, over the long haul, toward greater structure (size), differentiation (diversity of forms), and connectivity (speed of interactions)—three hallmarks of evolution. From this perspective, world history over the last 5,000 years confirms, first, the fact of cultural evolution and, second, writing as cultural evolution’s vehicle.

Crucially, the four basic mechanisms of evolution are evident within families of writing systems: variety-generation and branching (through innovation); cooperation (through adoption and synthesis); competitive selection (through imperial standardization and technologies like printing); and preservation and transmission (through cultural diffusion, migration and conquest).

These mechanisms produce a widening and narrowing of writing systems that are visible, on a large scale, twice. The first is with the profusion of archaic scripts and the emergence of Aramaic as the most central. Second is the branching of Greek and Brahmi-inspired systems and their subsequent winnowing out, a process still underway. What Matthew Melko observes about civilizations is true for writing systems: “Civilizations, like lesser systems, face three alternatives: either they disintegrate, ossify, or reconstitute themselves and develop further” [1995: 42].

This paper has focused on those writing systems that have, in fact, reconstituted themselves and developed further. These 23 writing systems thus represent 23 contemporary civilizations that can be grouped into four families (listed below).

<table>
<thead>
<tr>
<th>The Middle Eastern Family</th>
<th>The Greek Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabic</td>
<td>Greek</td>
</tr>
<tr>
<td>Hebrew</td>
<td>Cyrillic</td>
</tr>
<tr>
<td>Ethiopic</td>
<td>Western (Latin-based)</td>
</tr>
<tr>
<td>Mongolian</td>
<td>Georgian</td>
</tr>
</tbody>
</table>
Part VI: Conclusion

Experts would be right to amend the classifications for India and Southeast Asia, problematic areas for the non-specialist. In the main, however, this paper avoids the pitfalls of using nations, empires, and religions to distinguish civilizations and, instead, proposes a classification system that is superior to previous efforts for three reasons.

First, this classification system captures the essence of what a civilization actually is: a culture resting on complex and evolving structures of information and knowledge (best reflected by a writing system). The paper also established the intimate organizational and psycho-cultural connection between writing and civilization.

Second, this classification system establishes relationships of distance and nearness among existing civilizations and provides a possibility for outlining a genealogy of civilizations.

And third, this classification is based upon an analysis of writing systems that can be modified or rejected within the empirical tradition of social science.

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