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GLOBALIZATION AS A SIGNAL OF THE NEXT STAGE IN CULTURAL EVOLUTION

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The development of human culture has not been a gradual, steady-state phenomenon. Rather, it is more like the punctuated equilibrium that has been proposed for biological evolution.¹ That is to say, long periods of relatively little development have been periodically interrupted by complexes of change that produce emergently novel forms of culture. An emergent phenomenon arises at a particular level of complexity; is completely unpredictable prior to its emergence; and leads to a qualitative, as opposed to merely quantitative, difference.²

The first such development predates the development of modern humans. It is the appearance among *Homo Erectus* of the complex of deliberately fashioned tools, the use of fire, and the tendency to wander out of Africa.³ Before this, the creatures in our ancestral tree hardly seem like "people." Afterward, they are clearly our relatives, albeit ones we probably would not want to have come visiting. Then, almost a million years passes with little change.

Next, with the development of fully modern humans during the Upper Paleolithic, about 40,000 years ago,⁴ a complex of change occurs which we mostly observe in the archeological record. It shows itself primarily in aesthetic productions, but it undoubtedly involved many ideas that have left no hard record and that some scholars think may have involved the appearance of fully developed language. These people are clearly like us. Again, not much happens for a while, and people continue in a hunting and gathering lifestyle while gradually covering the entire planet.

Then, within the last 10,000 years,⁵ another emergent change takes place, the so-called Neolithic revolution. While it is still ongoing in some parts of the world, at any given location, once the change starts, the revolution does occur in a *revolutionarily* short time.

I do not propose to get into the issue of why people started planting crops, whether it was a function of realizing a new possibility, or was driven by scarcity and/or overpopulation. It is sufficient to observe that people *did* start planting crops. At first it made little difference in their lifestyle. Perhaps they dropped some seeds in the ground and left those seeds to their fate while the tribe continued its hunting and gathering lifestyle. However, eventually, a second change occurred, and this

led to an emergently different life. They started staying put and tending the crops. At this point the other traits associated with the Neolithic lifestyle followed in short order: permanent housing, pottery, villages, and ground stone tools.⁶ This represented a new way of being human. This has happened repeatedly and apparently independently all over the world, in the Near East,⁷ the highlands of Mexico,⁸ Peru,⁹ and northern and southern China.¹⁰ Of course, it happened in many other places, but those I have named are generally agreed to be independent inventions, not borrowings from some other, previously Neolithic, culture.

These areas then underwent another emergent change - the development of cities. Again, I do not want to get into the issue of cause. It seems clear, from the many areas which entered the neolithic level of culture but did not independently become urbanized that being in the Neolithic stage of culture does not *cause* a culture to become urbanized. Indeed, as I have argued elsewhere,¹¹ there appears to be a certain amount of choice operating here. The Pawnee¹² Indians, when presented with the horse, decided to give up a Neolithic lifestyle and return to hunting and gathering. There is good evidence that both the Anasazi at Chaco Canyon¹³ and some groups of Maya¹⁴ deliberately decided that urbanization involved sacrifices they were not willing to make. No doubt, if we had the same sort of evidence for the old world that we have for the new, we would find similar choices being made there. There is nothing necessary about cultural evolution.

But, for whatever reason, the peoples in the areas I have named moved into being civilized. There have been a number of lists of traits that define civilization.¹⁵ Putting them all together the complete list that I have developed is: (1) enlarged population, i.e., living in cities; (2) an economy with a dominant central city and subservient peripheral villages; (3) specialization of labor and professionalism, especially of trades associated with production; (4) a hierarchically structured social system with at least three classes, elites, skilled workers and peasants; (5) a social system based on residence rather than descent; (6) metallurgy; (7) the use of the wheel; (8) domesticated beasts of burden; (9) trade in essential, as opposed to luxury, goods; (10) building of monumental structures; (11) writing; (12) mathematics; (13) astronomy and calendars; (14) an agricultural surplus; (15) irrigation systems; and (16) a hierarchal governmental system.

While this may not be a completely exhaustive list, it is certainly a very long list of traits and it exhibits the problems which have dogged all attempts to define civilization. That is, there is probably no single

early civilization which exhibits all of these traits. Egypt¹⁶ did not initially develop a city-based system. Peru¹⁷ did not have writing. Mesoamerica¹⁸ did not use the wheel and did not have beasts of burden. Early China¹⁹ continued to base much of its social structure on descent rather than residence. Further, those few traits that seem to be universal, such as social stratification, are not sufficient to define civilization, since cultures that we would not consider civilized exhibit them. Consider, for example the Northwest Coast Native American groups,²⁰ which had a large, hierarchically structured society that we would nevertheless not consider to be civilized. Likewise, the Vinca culture of Eastern Europe appears to have developed writing, but did not also develop civilization.²¹

The problems with this sort of check-list definition became apparent last year when this society attempted to determine which areas most people would consider to be independent, civilized cultures. There was very little agreement on such a list.

I would suggest that at least part of the problem comes from attempting to define civilization in this way. Rather, I would like to suggest that civilization be defined by what I will call "functional characteristics" or what the philosopher John Dewey²² called "instruments," classes of problems and their solutions.

By analogy, I am suggesting we make the sort of shift that medicine makes when it moves from calling something a syndrome with a mere list of symptoms which seem to happen together, to a disease which is a description of the actual structure of the problem. I would suggest that we will get much further in defining civilization if we consider what a trait *does* within a particular culture than we will by merely listing a group of traits that we think come together to form the social system of civilization. Thus, I suggest that we consider how civilization *works*.

(1) Complex and hierarchical social systems.

The first such function that I will propose is that of social complexity, since all civilizations appear to involve crowding a large number of people into a relatively small space. When you put a lot of people together in a small space, the likelihood of conflict increases, and the egalitarian decision-making procedure which has worked for the village will no longer be adequate. Such decision-making procedures are too cumbersome and take too long, so some way must be found to choose a leader who can make quick decisions and whose orders will then be obeyed. The source of the leader and his authority vary from

culture to culture. In Sumer,²³ the role of king appears to have developed out of the war chief. Among the Maya²⁴ the role of shaman was expanded. In China²⁵ the leader was the clan elder. In each case, however, what had been a "first among equals" becomes a king, often a god-king.

Human nature being what it is, the family of this leader generally expected to benefit from his (and it generally was a "he") status and indeed, the leader tended to want to pass his status on to be descendants. Thus, the society develops a hereditary elite. Some scholars²⁶ think that Cahokia did not become civilized because the elite failed to become hereditary.

Such an elite, however, can not run the society on its own, and so, skilled specialists, whether scribes, warriors, or religious figures are co-opted and come to see their welfare as being tied to the success of the elite. At this point we have the hierarchically structured social system listed above. As human complexity breeds complexity in an endless feedback loop, the society becomes more and more complex and stratified.

Why numbers of people initially come to be crowded into a smaller space depends on the ecological situation of the particular culture. In Mesopotamia²⁷ and Egypt²⁸ there was probably a gradual desiccation which led to the need for systems of irrigation and thus a stronger government. In China,²⁹ on the other hand, the problem was flooding and possibly marauding barbarians. In Mesoamerica³⁰ it appears that a shift in the weather pattern led to an increase in microclimatization, making areas suitable to agriculture less common and agriculture in general more difficult. The specific ecological condition is not what's important, but rather the fact of population density and the consequent need to deal with it.

(2) A burst of technological innovation

Operating in tandem with complex and hierarchical social systems is an exploitation of technological innovation. First, of course, more people in contact with each other have more ideas. Then too, the original ecological crisis that produced the crowding requires solutions. Among these solutions may be such things as irrigation systems in Mesopotamia,³¹ raised beds in Mesoamerica,³² or dams and military technology in China,³³ to name just a few.

Also, the elite want ways to demonstrate their specialness. They want to built monuments, dedicate bronze vessels to their ancestors or to be buried with fine pottery and jade ornaments. All these require new technologies. New technologies lead to a requirement for specialists,

thus increasing the social complexity we considered above. Making a cooking pot is fairly straightforward and can be done by the housewife who will use it, but casting a Shang Bronze definitely requires a full-time specialist. Likewise, while guessing at what the weather will be like tomorrow can be done by anyone, developing a calendar and the mathematics to understand it requires a specialist.

I would suggest that the particular technological advances are less important than the rate of change. Wheels were of no real use the jungles of Mayaland³⁴ but were vital on the plains of Sumer³⁵. Having the concept of the zero was not needed to predict the relatively constant weather in Egypt,³⁶ but was apparently necessary in Mesoamerica.³⁷ Thus, arguing about whether a culture must have metallurgy or the wheel or a calendar in order to be civilized overlooks the fact that different situations and different cultural worldviews lead to different technologies.

It is the fact and rate of change, rather than the specifics, that matter. In every culture that we would term "civilized," the relatively slow rate of technological invention that characterizes the village environment changes so rapidly that things seem to happen "overnight." The Egyptians go from the mastaba tomb to the Great Pyramid in about 100 years.³⁸ Shang bronzes burst into the archaeological record so abruptly that at one time western archaeologists³⁹ claimed that the technology must have been borrowed, although borrowed from whom was not clear. Teotihuacan⁴⁰ seems to have grown from a village into a great city in a remarkable short period of time. The Mayan converted with remarkable rapidity from agricultural villages... to... a monument building, symbol using society.⁴¹

(3) Trade: an economy homeostatic, yet not self-sufficient.

The third function of a civilization is somewhat harder to describe in a few words than the previous two. This is, I suspect, because our ideas of economics are so bound up in the notion of trade that we lack good ways to examine the cultural concepts that underlie it.

I would suggest that civilization is characterized by a move away from self-sufficiency and into a situation in which the needs of the members of the society are satisfied by goods from a greater area. A village produces the vast majority of what it needs, both tangible and intangible. It grows its own food, manufactures its own pots, and generates its own religious and social concepts and almost all the goods the village produces, it uses itself. Those few goods and ideas that come from elsewhere are usually not really necessary to the continued exist-

tence of the village.

A city, on the other hand, is not self-sufficient. Its food comes from the surrounding areas, which in turn depend on the city for manufactured goods. The city produces more than it needs of some goods in order to exchange (whether by trade, warfare, or ritual exchange) for other goods. This fact then presents the city with problems, those of transport and finding some way of making the exchange work.

We are accustomed to think of transport in terms of beasts of burden and wheeled vehicles. However, in Mesoamerica, where no suitable animals existed, the solution to the problem of how to transport goods was solved by the building of roads,⁴² thus facilitating the passage of human porters. Roads are as much a mark of civilization in the Americas as the wheel is in the old world.

For an exchange of goods to occur, both parties must be convinced to make the exchange. This may, of course, occur through trade. However, this is by no means the only way for exchanges to occur. If one party is stronger than the other, force can be used, and indeed, in the ancient world, this was the origin of taxes. I suspect that up to and including the time of Rome, the idea that citizens might choose whether to be taxed would have impressed most people as nonsense. Rather, the stronger force, the central city, forced the surrounding village to contribute to the economy of the city.

The villages may indeed have benefited in turn by receiving manufactured goods, weather predictions, religious rituals, etc., but I doubt if most peasants would have seen it as a fair trade. The only true limit on this sort of forced exchange would be the pragmatic one that if the central city took too much from the peasants, the peasants would either starve or leave. Thus, a city set up (probably unconsciously and by trial and error) an exchange system that was homeostatic, and so could be maintained over a period of time.

I suspect that many of the crises in civilization, such as the collapse of the classical Maya⁴³ and the late bronze age destruction in the Near East,⁴⁴ were at least in part failures to produce a system which was homeostatic over a long period of time, an idea similar to Renfrew's⁴⁵ theory of collapse as a sign of internal weakness.

(4) Information processing

That last functional characteristic which I would propose for civilization is that of an increase in information processing. This is a term that we have all become acquainted with without really considering what it means. Information is the intangible data⁴⁶ that results from the

firings of neurons in our brains, occupies the patterns of on and off circuits in computers, is turned into sound by a CD player and, as I have proposed elsewhere,⁴⁷ what Plato and Aristotle meant by *Ideos*, ideas or forms. It exists only insofar as it is actualized by some material carrier, such as brains, computers, CDs or pen and ink.

Information processing is then what we *do* with information. By manipulating it, we get more information. We balance a checkbook and find out how much money we have. We write a letter to let someone else know what we know. We use a computer to predict the location of the moon at some future date so we can send a rocket to the moon's future position.

Information processing is also what we do when we think or speak. Clearly one of the most significant advances in the history of humanity, that symbolic ability developed in the Upper Paleolithic, was an example of an increase in information processing capacity.

The rise of civilization is another point at which such an increase occurred. Keeping track of exchanges may lead to writing, as it did in the Near East,⁴⁸ but writing may also develop in order to engage in communication with the ancestors necessary for the benefit people on earth, as it did in China,⁴⁹ or it may have a ritual significance, as in did among the Maya.⁵⁰ Mathematics can serve to figure out who owes who how much as in the Near East,⁵¹ but it may also be required to keep track of the phases of Venus, as it did among the Maya.⁵²

The needs of society to process information may even be met by techniques that we do not immediately think of, such as the abacus or the Peruvian quipu, the knotted cords which both recorded data about society and enabled the skilled user to make calculations about that data.⁵³

To summarize, then, I would suggest that a civilization is a society which has (1) a complex social structure (2) a large number of innovations in material culture (3) an economy which is both not self-sufficient and homeostatic and (4) an increased information processing capacity. I believe that all the traits in the list I began with can be subsumed under one or more of the functional characteristics. Furthermore, it must have all of these. There are examples of cultures that have only some of these functions but are not civilized, such as Cahokia and the Northwest Coast tribes.

Various other advances in human society have also exhibited some of the same functions. As I mentioned, the shift in the Upper Paleolithic was primarily a change in information processing capacity. The change

involving *Homo Erectus* was one based on technological innovation. The Neolithic revolution resulted from a combination of technology and increased social complexity.

This would suggest that when one or more of the functional characteristics exhibits a high rate of change, there is a fairly good probability that a culturally emergent evolutionary change is occurring. It seems to me that since the beginning of the industrial revolution in about 1600, we have been experiencing change in all four of the areas I have considered.

The change in material culture is obvious. While it might be that an inhabitant of ancient Uruk could understand most of what he saw in classical Rome, the same understanding would not be true for a Roman in New York City. The rate of technological change in material culture in the past 400 years can only be termed stupendous.

Likewise, there has been a major increase in information processing capacity. First was the printing press,⁵⁴ which made information much more available. Then in the 20th century we have experienced a whole new way of dealing with information as great as that brought about by the invention of writing and mathematics. I do not just refer here to computers, although that is, of course a large part of it, but also the numerous ways of transferring information, beginning with the telegraph and proceeding through the telephone, radio, television and the not to be sneezed at paperback book, which has probably decreased the price of a book by almost as great a percentage as did the printing press. There is also the still evolving World-Wide Web, the ultimate implications of which we cannot even imagine.

These two are fairly obvious. However, I would propose that we are also experiencing change in the areas of social complexity and in economics. Seeing the structure of our own society is notoriously difficult, but I would suggest that at least in the developed world, we have a different structure than either the egalitarian one of pre-civilized cultures or the hierarchical one of early civilizations. The social system in the latter was two-dimensional. There was only higher or lower. While there might be innumerable shadings of degrees of status, it would have been possible to rank order each member of society in terms of their class status. Further, this was true even in the European Middle Ages.⁵⁵ This is not possible in contemporary society.

My own rank or status depends on the situation. In the academic world, as a professor, I have a fairly high status. However, I do not make a great deal of money, and so economically, my rank is fairly low. I may

have a high status in one professional society that I have been involved with for a long time and a low one in another which I have just joined and my status will have nothing to do with the relative status of the two societies. It seems to me that we have a social structure which can only be represented by three (or maybe more) dimensions, by a network rather than a line. Such ambiguity of status prior to the industrial revolution was, if not impossible, at least extremely uncommon and grounds for considerable anxiety.⁵⁶

Last, we have experienced a qualitative change in our economic interdependence. We have all heard of "globalism" until we are sick of the term, but it describes a real phenomenon. While an early city did depend on others for many of its needs, that dependence was definitely limited by distance. Most food could be transported only over a fairly limited area because it would not keep. Other raw material and manufactured goods might travel further, but the cost of transport would swamp exchange value over too great a distance.

After all, it was not necessities but luxuries that traveled over the Silk Road from China to the Mediterranean. Thus, while the city was not self-sufficient, there was a larger area that was. In the modern, developed world, no region can be said to be self-sufficient. We are, I suspect, still working on getting our system of exchange homeostatic.

If all four of these functions are experiencing change, then it seems plausible to me that we are living through another age of emergent evolution. Quite possibly there are other functions which are also changing and which, since we are in the midst of it, we cannot see. I doubt if the inhabitant of Uruk realized that they were inventing a new way of being human, but they were. We, I suggest, are doing the same thing.

What this new way of being human will be like can probably be known only in retrospect, but when we consider all the cultures, such as the Anasazi of Chaco Canyon, that did not make it into being civilized or the Maya civilization, which collapsed, it clearly behooves us to work as hard as we possibly can to make this new level of human evolution work.

Notes

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2. T. A. Goudge, "Emergent Evolution," in *Encyclopedia of Philosophy*, Vol. 2, ed. Paul Edwards (N. Y.: Macmillan, 1967),

- pp. 474-477.
3. Ian Tattersall and Jeffrey Schwatz, *Extinct Humans* (N. Y.: Westview, 2000), pp. 147-172.
 4. Roger Levin, *The Origin of Modern Humans* (N. Y.: Scientific American Library, 1993), pp. 115-116.
 5. John McCrone, *The Ape That Spoke: Language and the Evolution of the Human Mind* (N. Y.: Morrow, 1991), p. 171.
 6. Bruce D. Smith, *The Emergence of Agriculture* (N. Y.: Scientific American Library, 1996), pp. 2-5. and Brian M. Fagan, *World Prehistory: A Brief Introduction* (N. Y.: HarperCollins, 1996), pp. 120-125.
 7. Hans J. Nissen, *The Early History of the Ancient Near East: 9000-2000 B. C.* trans., Elizabeth Lutzeler with Kenneth J. Northcott (Chicago: University of Chicago Press, 1988), pp. 19-65.
 8. David Drew, *The Lost Chronicles of the Maya Kings* (Berkeley, Calif.: University of California Press, 1999), pp. 116-120.
 9. Edward P. Lanning, *Peru Before the Incas* (Englewood Cliffs, N. J.: Prentice-Hall, 1967), pp. 48-55.
 10. Kwang-Chih Chang, *The Archeology of Ancient China* (New Haven, Conn.: Yale University Press, 1986), pp. 87-106.
 11. Lee Stauffer, "Native American Decisions Not to Become Urbanized," paper presented to the 1996 combined meeting of the ISCSC and World History Association.
 12. Peter Iverson, "Taking Care of the Earth and Sky," in *America in 1492: the World of the Indian Peoples Before the Arrival of Columbus*, ed. Alvin M. Josephy, Jr. (N. Y.: Knopf, 1992), p. 96.
 13. James H. Hill, "Prehistoric Social Organization in the American southwest: Theory and Method," in *Reconstructing Prehistoric Pueblo Societies*, ed. William a. Longacre (Albuquerque: University of New Mexico Press, 1970), pp. 44-47.
 14. Linda Schele and David Freidel, *The Forest of Kings: the Untold Story of the Ancient Maya* (N. Y.: Morrow, 1990), p. 126.
 15. The list of scholars who have attempted to define the traits of civilization is, of course, extremely long. Among the sources that I have consulted are the following:
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- Fellipe Fernandez-Armesto, *Civilization: Culture, Ambition and the Transformation of Nature* (N. Y.: Free Press, 2001).
- A. L. Kroeber, *A Roster of Civilizations and Cultures* (Chicago, Ill.: Aldine, 1962).
16. H. W. E. Saggs, *Civilization Before Greece and Rome* (New Haven, Conn.: Yale University Press, 1989), pp. 114-115.
 17. Lanning, *Op. Cit.*, pp. 166-167.
 18. Michael D. Coe, *The Maya* (London: Thames and Hudson, 1993), pp. 168-169.
 19. John King Fairbanks, *China: A New History* (Cambridge, Mass.: Harvard University Press, 1992), p. 44.
 20. Richard D. Daugherty, "People of the Salmon," in Josephy, *America*, p. 52.
 21. N. Vlassa, "Chronology of the Neolithic in Transylvania in the Light of the Tartaria Settlements Stratigraphy," *Dania* 7 (1963) 285-294.
 22. John Dewey, *Logic: The Theory of Inquiry* (N. Y.: Holt, 1938).
 23. Saggs, *Op. Cit.* p. 35.
 24. Linda Schele "Sacred Landscapes and Maya Kingship," *The Breakout: the Origins of Civilization*, ed. Martha Lamberg-Karlovsky (Cambridge, Mass.; Peabody Museum of Archaeology and Anthropology, Harvard University Press, 2000), p. 49.
 25. Herrlee Glessner Creel, *The Birth of China: A Study of the Formative Period of Chinese Civilization* (N. Y.: Grederick Ungar, 1939), pp. 126-128. And Fairbanks, *Op. Cit.* p. 43.
 26. David G. Anderson, *The Savannah River Chiefdoms: Political Change in the Late Prehistoric Southeast* (Tuscaloosa, Ala.: University of Alabama Press, 1994), pp. 12-53.
 27. George Roux, *Ancient Iraq* (London: George Allen and Unwin, 1980), p.76.
 28. Milton Covensky, *The Ancient Near Eastern Tradition* (N. Y.: Harper and Row, 1966), pp. 11-12.
 29. Creel, *Op. Cit.* p. 87.
 30. Drew, *Op. Cit.* p. 140.
 31. Daniel C. Snell, *Life in the Ancient Near East: 3100-322 B. C.* (New Haven, Conn.: Yale University Press, 1999), p. 15.
 32. Drew, *Op. Cit.* p. 108.
 33. Kwang-Chih Chang, "Ancient China and Its Anthropological Significance," in *Breakout*, p. 3.
 34. *Ibid.*, p. 15.

35. Snell, *Op. Cit.* p. 128.
36. Eugen Strouhal, *Life of the Ancient Egyptians* (Norman, Okla.: University of Oklahoma Press, 1992), p. 37.
37. Coe, *Op. Cit.* pp. 184-185.
38. Jaromir Malek, *In the Shadow of the Pyramids: Egypt During the Old Kingdom* (Norman, Okla.: University of Oklahoma Press, 1982), pp. 45-47.
39. Creel, *Op. Cit.* p. 35.
40. Esther Pasztory, *Teotihuacan: An Experiment in Living* (Norman, Okla.: University of Oklahoma Press, 1997), p.
41. Linda Schele, "Sacred Landscapes," p. 46.
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43. Drew, *Op. Cit.* pp. 343-349
44. Donald B. Redford, *Egypt, Canaan and Israel in Ancient Times* (Princeton, N. J.: Princeton University Press, 1992), pp. 250-254.
45. Colin Renfrew, "Systems Collapse as Social Transformation: Catastrophe and Anastrophe in Early State Societies," in Colin Renfrew and Kenneth L. Cooke, *Transformations: Mathematical Approaches to Cultural Change* (N. Y.: Academic Press, 1978).
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47. Lee Stauffer, "Information Theory and Platonic Forms," *Southwest Philosophical Studies X* (1987) 79-83.
48. Wolfram von Soden, *The Ancient Orient: An Introduction of the Study of the Ancient Near East*, trans. Donald C. Schley (Grand Rapids, Mich.: Eerdmans, 1994), pp. 31-32.
49. Chang, *Archeology*, p. 302.
50. Schele, "Kingship," p. 49.
51. Roux, *Op. Cit.* p. 334.
52. Vincent H. Malstrom, *Cycles of the Sun, Mysteries of the Moon: the Calendar in Mesoamerican Civilizations* (Austin, Tex.: University of Texas Press, 1997), pp. 176-183.
53. Edward Hyams and George Ordish, *The Last of the Inca: The Rise and Fall of an American Empire* (N. Y.: Simon and Schuster, 1963), pp. 76-87.
54. Gaur, *Op. Cit.*, p. 204.
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56. *Ibid.*, p. 205.

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