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Strengths Became Weaknesses

The Direct and the Underlying Essential Causes of the Collapse of the Classic Maya

The Classic Maya civilization reached its peak in the central region around the eighth century when many magnificent architectural structures were built, and beautiful art pieces were produced in great city-states such like Tikal, Copan, Palenque, and Calakmul. However, this remarkable period did not last for a long time. It was soon followed by a significant decline, with diminished populations, disappearing building and art production, reduced economic and trading activities, and eventually the complete abandonment of those great city-states. Once the collapse of the Classic Maya considered as a mystery, but as more and more archeological evidence are found, many archeologists have agreed on that the decline of the Classic Maya is a complex, gradual, and extensive process with a variety of factors. However, the most direct causes are significant overpopulation, widespread warfare, and severe drought, beneath of which also lays the underlying essential reason –the political system of divine kingship.

As the result of the fast expansion, the growth of population became a serious problem for Classic Maya city-states located in lowlands where resources like water and food were limited. The Maya population reached its maximum between AD 700 and 800 due to the success of lowland Maya socioeconomic, political, and religious systems with the support of centuries of continuous agriculture harvest. Based on the result generated by MayaSim, an agent-based model

of the ancient Maya social-ecological system that built by Scott Heckbert (2013) in Alberta Innovates Technology Futures, an estimation of maximum population in Maya lowland is around twelve million, with population densities matching those in some of the largest preindustrial states in the world. This large population group is disastrous for the lowland Maya city-states because of its high stress on food production. To counter the food issue, Maya people shortened the fallow time and cleared more forest area for agriculture activities. The soil data profile study in Copan is strong evidence for this theory. At a depth of 100 to 135 centimeters, pine percentage is relatively low in the profile, while grasses and ferns, which are opened land spices, are dominant (Abrams et al. 1996: 69-70). This data indicates that the nearby forest zone was being deforested and replaced by non-arboreal spices till AD 1000. In fact, this reaction was only helpful in the first place to deal with the food issue, but it also came with severe side effects. Firstly, damaged and dead vegetation is prone to unintentional fire outbreaks, meaning that every time Maya people cleared a crop field, they usually burned a larger area than the one they intentioned to get. More importantly, burned land was suffered from the inability of recovering soil fertility. Therefore, those unintentionally cleared forest areas were a heavy burden for the agricultural production in the long term. Secondly, opened and burned land was commonly invaded by bracken fern, which completed with maize and other agriculture crops absorbing nutrients from the soil and ultimately reduced the food productivity (Turner II and Sabloff 2012: 13909-1310). Due to these negative consequences, Maya's try to solve the food issue was not effective at that time and even exacerbated the situation. Besides, along with the general overpopulation, there was also a fast expansion of the ruling elite during the Late Classic period. There were on average over twenty different noble titles during the Late Classic period (Lecture Notes 9/29). In fact, a large group of elites and their households meant that there was a

disproportionate ratio between nonfood producers and farmers. Ironically, the elite group had higher priority to the food supply than the working farmers, who were essential for society subsistence especially when there was a food shortage. As a result, food production could never catch up with the expansion of Maya lowland city-states.

As more people lived in a resource-limited area, conflicts between city-states were unavoidable in the Maya lowlands, and intensive warfare accelerated the downfall of the Classic lowland city-states. Many pieces of evidence are indicating the intensified warfare, and the most obvious one is the archeological found of ruins of defensive walls in lowland Maya sites. The site layout of Aguateca clearly shows that a large and complicated wall-like structure surrounding the city area, and ancient battlefields are also found around the location (Inomata 1997: 345-347). The direct consequence of intensive warfare was the interruption of food production. More and more working labors became soldiers on battlefields, and because of the high casualty, few of them could survive and back to work, which further reduced the low productivity. Frequent battles also interfered daily agriculture activity as farmers abandoned their crop field and hid behind walls to seek safety. For example, the ruins of some farming communities around Dos Pilas were dated back from AD 695 to AD 730, which was the period that Dos Pilas was involved in warfare. Those communities were believed to had been leaving the zone entirely or abandoning their fields to cluster at defensible centers like Aguateca, Ceibal, and Punta de Chimino. During the same period, walls began going up, and populations began to leave or to shift to defensible locations even at the village level (Demarest 2013: 30-32). Besides, the damage to trade network by warfare was also critical. Landlocked city-states like Tikal and Calakmul relied on trade for income and resources as materials and goods from other Mesoamerican areas were also found in Tikal and Calakmul (Lecture Notes 9/15). However, due

to the intensive conflicts between lowlands city-states, both internal and regional trade networks were abandoned. Furthermore, it is believed that formerly marginal Maya groups like those from Chontalpa on the Gulf Coast started to consolidate seaborne trade routes around the Yucatan Peninsula during the same time based on the find of Maya ports and marketplace along northern Yucatan Peninsula (Sharer and Traxler 2006: 548-570). On the one hand, the decline of riverine trade initiated the growth of seaborne trade. On the other hand, the fast expansion of seaborne trade further decreased the trade along major riverine corridors such as the Usumacinta and Motagua rivers. Therefore, the shift of trade networks and the appearance of a more efficient means of trading placed the Maya lowland city-states at an economic disadvantage and made them more vulnerable to the concurrent food shortage.

Another direct trigger for the breakdown of the Classic Maya city-states was drought. There is more and more evidence shows that there was a prolonged drying trend in Yucatan Peninsula during the Late Classic period, and the most persuasive study is led by paleoclimatologist Douglas Kennett of Pennsylvania State University with an international team of researchers. Kennett analyzed a 2,000 year–old stalagmite from a cave in South Belize and obtained semiannual climate records by measuring the concentrations of 18O2 and 16O2 in 0.1 mm increments of the stalagmite. Higher relative levels of 18O suggest a drier climate while lower relative levels a suggest wetter climate, and the team found that there was a much higher level of 18O2 in the stalagmite increments corresponding to the Late Classic period than those corresponding to the Early Classic period. More specifically, Kennett maps the drying trend to have started in AD 640 and peaked in AD 1020 and suggests that there might be a prolonged drought from AD 800 to AD 1000. (Kennett et al. 2012: 788-790). The drying trend showed by the paleoclimatic is an ecological disaster for the Maya lowland, which is an area reliant on

rainfall for both drinking water and agricultural production. The effects of drought on the availability of drinking water might not have been uniform across the Maya lowlands as some city-states such like Tikal and Calakmul were heavily relied on rainfall for drinking water while other city-states that were close to rivers were not. However, the lack of rainfall had the same negative effect on agricultural production across the Maya lowland that droughts further exacerbated the existing food shortage caused by overpopulation. With drought, not only crops did not have enough water to grow but also there was no guarantee of rainfall at critical times during the agricultural production cycle. Therefore, more deforestation was needed to counter the food shortage. Besides the one showed previously, another evidence of the increased deforestation activity is from Schreiner D. Wahl's study of lake core sediments from Aguada Zacatal, a reservoir located near Petén. A large amount of colluvium was found on the lake bottom. This was believed to have been the result of deforestation of areas with steep slopes that not served for agricultural production till the Late Classic period (Wahl 2007: 216-217). Additionally, due to the intense environmental deterioration in the Maya lowland, there was massive species loss. Therefore, the Maya were not able to meet their protein requirements and suffered from malnutrition and famine, which made farmers incapable of heavy workload during a busy agricultural season (Richardson 2000: 310-311).

Indeed, overpopulation, warfare, and drought were serious problems for the Classic Maya, but what made them unsolvable was the political system of divine kingship, ironically which was also the strength of the Classic Maya civilization. As the core of the divine kingship, Maya kings are the communicators between their people and the Maya gods, and their primary job is to serve the Maya gods for good agricultural production and military victory. Therefore, it is a political system that does not have a focus on production or practical development but

instead relies on religious practice and ritual performance, which makes it vulnerable to social and environmental crisis.

The stress on food supply by a large population is not necessary equivalent to a food shortage problem because a larger population usually means a larger group of labor that could be utilized for food production. However, when facing a potential widespread shortage of food, the ruling elite turned increasingly to esoteric matters instead of instituting practical solutions and more resources and labor were used for ritual practices and the construction of religious architectural structures. A distinct architecture example is the marvelous Temple 22 constructed by the thirteenth ruler of Copan, Waxaklahun Ubaah K'awill, at the end of 7th century. The structure is adorned with numerous busts of the maize god and symbolizes the "Mountain of Sustenance," a mythical place where all the crops –especially maize, that sustain the human race are derived. (Coe and Houston 2015: 136). The Temple 22 is clearly a place for later Copan rulers to perform ritual practices to keep their close relation to the maize god and make sure their ability to bring stable maize production to Copan. Although the construction of temples and monuments could be seen as an attempt to appease the Maya gods that believed to control Maya world, and therefore improve the confidence and morale, the diversion of labor and resources from practical solutions is fatal. Specifically, at the crisis time, investment in a more intensive agricultural system could increase the food supply and construction of new reservoirs or other water storage structures could also help to provide sufficient water supply for agricultural production in rainfall-dependent areas.

Competition over limited resource could lead to violence, but because of the existence of internal and regional trade in the Maya lowland, resources were also coordinated through peaceful means of trade across the area. Alternatively, warfare might be intentionally initiated by

Maya kings for building honor and confidence. Honor is important for Maya kings as Maya society is more or less a moral community. And as reflected in murals and writings, to fight in battles and capture captives is the most common way to build honor. For example, Yaxchilan Lintel 8 depicts a scene of the Yaxchilan king and general captured the king from the rival state as captive (Garrison Lecture Notes: 9/1). Therefore, during the Late Classic period, warfare became necessary for the kings of the Maya lowland city-states to maintain the order of their kingdoms. For the city-states that lost in their wars, they lost subject population and control over critical resources and trade routes. However, for those that won their wars, the situation was not much better as the victories might have solved the morale problem but still left the practical problem of food shortage. Furthermore, to negotiate power relationships and gain supports in warfare, some Maya kings like Bird Jaguar IV of Yaxchilan, granted military authority to their subordinates (Sharer and Traxler 2006: 515). In such cases, some ambitious subordinate lords abused this authority to initiate more wars against their rivalries and even revolt against their prior lords. In fact, this is a dead cycle that the more wars there are, the less the military power is centralized, and the more distributed the power is, the more conflicts there could be and the more wars would be initiated.

Just like when facing overpopulation problem, Maya kings could hardly sponsor practical solutions when faced drought. When a prolonged drought hit, Maya people expected their kings to be able to manage, and Maya kings responded by engaging in prayer, ritual, and sacrifice, hoping that their services would appease the wrath of Maya gods, and thus stop the drought. Apparently, religious practices were not effective, and this ineffectiveness with the existing food shortage and intensive warfare ultimately caused Maya people lost their last faith in their kings, which was the beginning of the disintegration of those dynasties under the political system of

divine kingship. As the decline of major dynasties and their ruling city-states, Maya people gradually moved to smaller subordinate centers, which were less affected by drought with a much smaller population, and the population movement further accelerated the breakdown of centralized power of dynasties.

From a variety of factors, overpopulation, intensive warfare, and severe drought were the most direct causes of the collapse of Classic Maya that accumulated the serious problem of resource shortage. However, what made the problems unsolvable was the underlying essential cause of the political system of divine kingship. Ironically, divine kingship is the fundament of the Classic lowland city-states and was largely responsible for the beauty of its material culture. Over time the very success of divine kingship with its reliance of the "*ajaw*" on religion and social stability later became a weakness in the face of population growth, internal warfare, and external environmental change. With the political system of divine kingship, the problems caused by overpopulation, warfare, and drought were exacerbated and eventually led to ultimate disintegration. Regarding this theory, the collapse of the Classic Maya was the destiny that had already determined at the time when Maya became "classic."

Works Cited

Abrams, Elliot M., AnnCorinne Freter, David J. Rue, and John D. Wingard

1996 The Role of Deforestation in the Collapse of the Late Classic Copan Maya State. In *Tropical Deforestation: The Human Dimension,* edited by Leslie E. Sponsel, Thomas N. Headland, and Robert C. Bailey, pp. 55-76. Columbia University Press, New York, NY.

Coe, Michael D., and Stephen Houston

2015 The Maya. Thames & Hudson Inc., New York, NY.

Demarest, Arthur A.

2013 The Collapse of the Classic Maya Kingdoms of the Southwestern Petén: Implications for the End of Classic Maya Civilization. In *Millenary Maya Societies: Past Crises and Resilience*, edited by M.-Charlotte Arnauld and Alain Breton, pp. 22-48. Mesoweb.

Garrison, Thomas G.

9/1 Maya Sociality and Social Organization. University of Southern California Archology 314.

Garrison, Thomas G.

9/15 External Relationships of the Classic Maya. University of Southern California Archology 314.

Garrison, Thomas G.

9/29 Maya Nobles. University of Southern California Archology 314.

Heckbert, Scott

2013 MayaSim: An Agent-Based Model of the Ancient Maya Social-Ecological System. *Journal of Artificial Societies and Social Simulation* 16.

Inomata, Takeshi

1997 The Last Day of a Fortified Classic Maya Center: Archaeological Investigations at Aguateca, Guatemala. *Ancient Mesoamerica* 2(8):337-351.

Kennett, Douglas J., Sebastian F. M. Breitenbach, Valorie V. Aquino, Yemane Asmerom, Jaime Awe, James U.L. Baldini, Patrick Bartlein, Brendan J. Culleton, Claire Ebert, Christopher Jazwa, Martha J. Macri, Norbert Marwan, Victor Polyak, Keith M. Prufer, Harriet E. Ridley, Harald Sodemann, Bruce Winterhalder, and Gerald H. Haug

2012 Development and Disintegration of Maya Political Systems in Response to Climate Change. *Science* 338:778-790.

Richardson, B. Gill

2000 Great Maya Droughts: Water, Life, and Death. University of New Mexico Press, Albuquerque, New Mexico.

Sharer, Robert J., and Loa P. Traxler

2006 The Ancient Maya. Stanford University Press, Stanford, CA.

Turner II, B. L., and Jeremy A. Sabloff

2012 Classic Period Collapse of the Central Maya Lowlands: Insights about Human Environment Relationships for Sustainability. *Proceedings of the National Academy of Sciences of the United States of America,* 35(109):13908-13914.

Wahl, David, Thomas Schreiner, Roger Byrne, and Richard Hansen

2007 A Paleoecological Record from a Late Classic Maya Reservoir in the North Petén. *Latin American Antiquity* 2(18):212-222.