Maya Sustainability and Resilience at Caracol, Belize

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Arlen F. Chase earned both his B.A. (1975) and Ph.D. (1983) from the University of Pennsylvania. For more than 40 years, he has worked in the Maya area of Mesoamerica with his wife Diane Z. Chase. For the last 30 years, he has co-directed excavations at Caracol, Belize, the largest Classic Period Maya center recorded. His research focuses on ancient urbanism, ceramic analysis, landscape archaeology, and the complex relationship that exists between Maya hieroglyphic writing and archaeological data. With Diane Z. Chase and John F. Weishampel, he has also led pioneering efforts in applying laser-based remote sensing, or LiDAR, to the ancient Maya landscape. He has authored over 125 peer-reviewed articles and book chapters, as well as multiple books. Further information and PDFs of his writings may be found at www.caracol.org.

Diane Z. Chase earned both her B.A. (1975) and Ph.D. (1982) from the University of Pennsylvania. Her primary focus of research is on the ancient Maya of Central America. Her research interests focus on archaeological method and theory in the Maya area with particular emphasis on complex societies and hermeneutics, ethnohistory, and osteological and mortuary analysis. For 30 years, she has co-directed excavations at Caracol, Belize; before that she directed a seven-year project at Santa Rita Corozal in the same country. She has authored over 100 articles and book chapters, as well as Investigations at the Classic Maya City of Caracol, Belize (1987, with A.F. Chase), A Postclassic Perspective (1988; with A.F. Chase), Mesoamerican Elites: An Archaeological Assessment (1992; 1994; edited with A.F. Chase), and Studies in the Archaeology of Caracol, Belize (1994; with A.F. Chase). Currently, she is working on a book with A.F. Chase entitled Maya Archaeology: Reconstructing an Ancient Civilization. PDFs of her writings may be found at www.caracol.org.

What we know

We have been carrying out archaeology in Maya area for over 40 years. One of the things that we “know” is that the Maya civilization had a complex human-nature relationship that goes far beyond traditional archaeological reconstructions. All too often interpretations are not based on archaeological data but rather on preconceptions about antiquity. For instance, a variety of models have been debated in terms of the Maya. Most have been developed with incomplete spatial samples and without sufficient data to answer key questions. This is particularly the case in considerations of the spatial organization of the Maya where, with limited data concerning the distribution and size of Maya sites, epigraphic data was used to fill the void, leading to models focused on royal courts presiding over small populations of peasants. The advent of LiDAR now permits a much broader understanding of Maya settlement and reveals problems with a strict interpretation of epigraphic models. This same data also permits new insight into the urban nature of Maya sites and showcases the Maya as a distinct example of tropical low-density urbanism. Archaeological data that has been collected over the long term is also revealing the intricacies of ancient Maya civilization, lessening the need to use more heuristically based general models borrowed from other disciplines and data sources. The complexity involved in the use of the Maya landscape and its associated resources is also only now being more fully defined. These same data...
reveal the diversity of responses and adaptations that were used by the ancient Maya throughout
the Southern lowlands, demonstrating that there are multiple stories that need to be told in lieu of
“the” story.

What we want to know

One of the things that we want to know most about is the effect that micro-climates had on
human-nature responses in the Maya area. While our temporal resolution of past climate change
has increased dramatically with the use of speleothems and lake cores in the Maya area, the old
picture of “the” Maya remains in the background of many of these publications. Data from the
northern lowlands shows distinct rainfall differences over this part of the Maya area – and it is
likely that similar variation existed in the Southern lowlands. Thus, when we consider the potential
impact of drought in the Maya area, we need to know whether it was a uniformly felt phenomenon.
Varied rainfall patterns are usually defined for different sides of a mountain range. Also, the impact
of bodies of water – in the form of lakes and rivers – that may have continued to be available in the
past – even in times of stress – must be considered in regional interpretations. Thus, whatever the
past situation was in terms of climate change and drought, it clearly was more complex than is
implied in the uniform models we generally currently use.

A second thing that we want to know more about is the amount of interconnectivity that
existed among different Maya groups in the past. Analysis of skeletal remains suggests substantial
population movements. What led to migration? And, was migration tied to long-distance exchange?
We know that extensive trade systems existed for non-perishable items, but it is less clear how far
foodstuffs were traded and transported. Who traded with whom? Extensive wetlands and bajos
form during each rainy season in the Southern lowlands. Were these the basis for the easy
transportation of bulk goods? And, what distances were involved? What were the actual
subsistence base limits? Were there “bread-baskets” in the Maya area? And, if they existed, where
were they and how was transportation achieved?

Current Research

Years ago, we recognized that if you wanted to answer big-picture questions, you needed
to immerse yourself in a database that was both large enough and contained the appropriate
archaeological information to answer the questions that you were asking. Thus, we committed
ourselves to attempting to understand how and why the ancient Maya developed a large and
successful city at Caracol, Belize – as well as how and why that development came to an end. This
research will see its 30\textsuperscript{th} field season in Spring 2014. In carrying out this research, we found that
we needed to overcome certain preconceptions and to change our questions and research designs as
the years unfolded. Initially, we sought to find the relationship that existed between the written
hieroglyphic record and the archaeological data at the site. This research directly led into an
investigation of ancient Maya warfare that was able to demonstrate that warfare was not restricted
to the elite of Maya society, was not solely ritual in nature, and had major impacts with regard to
political control – all viewpoints that were not part of the current paradigm at the time. This same
research also revealed a disconnect between the major tombs of Caracol, most of which contain
Maya dates, and the hieroglyphic record found on the site’s stelae and altars – something still not
yet fully resolved. Settlement pattern work revealed a highly integrated site linked together with a
series of causeways connecting distant plazas directly to the site epicenter; eventually, we were able
to demonstrate that these causeway termini functioned as markets and that our view of Maya
economics – as solely focused on redistribution and feasting – was warped, something now
confirmed through archaeological data from throughout Mesoamerica. This survey work also
revealed a densely settled, but regularly spaced, residential distribution that was integrated into a
built landscape with constructed agricultural terraces and reservoirs. While the settlement mapping
at Caracol was difficult due to the hilly terrain and forest growth, the agricultural terraces were even
more time-consuming and difficult to record, as were the reservoirs that were often located at the
edges of residential groups. Work in the 1990s indicated that the environment was far more
extensively modified by the Caracol Maya than even we had anticipated. However, then-current
theoretical interpretations largely derived from central Mexico argued that the complexity of the
agricultural systems we were finding did not exist among the Maya and that the population
estimates we were deriving were higher than expected. The acquisition of LiDAR data for Caracol
in 2009 finally permitted us to demonstrate the fully manipulated and anthropogenic landscape that
existed at the site – and both the extent and density of its ancient occupation. More recently, we
have been investigating the social and economic differences that exist among topographically
The archaeological data that we have collected squarely places this abandonment within the realm of broader social issues having to do with wealth and access to goods – and suggests that climate change was only one of a plethora of factors that were involved in the complex and temporally extended Maya collapse.

**References useful to the themes of this symposium**

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