



Preface: Of Ancient Econs and Modern Humans



The core premise of economic theory is that people choose by optimizing... That is, we choose on the basis of what economists call "rational expectations." The premise of constrained optimization, that is, choosing the best from a limited budget, is combined with the other major workhorse of economic theory, that of equilibrium... There is, however, a problem: the premise on which economic theory rests are flawed (Thaler, 2015:5–6).

The concept of an "Economic Man", dubbed *Homo economicus*, was conceived in economics in the 18th century and was forged into a deductive model to explain human decision-making in the 19th century (Hockett, 2012). *Homo economicus* was a self-interested and rational optimizer, always making cost–benefit decisions after careful considerations of his immediate circumstances. This model has formed the basis of economic theory for the past couple of centuries. Its tenants have come to be considered sacred, and criticizing them sacrilege. Richard Thaler (2015), one of the founders of the field of Behavioral Economics, recently stated that:

...the problem is with the model being used by economists, a model that replaces *homo sapiens* with a fictional creature called *homo economicus*, which I like to call an Econ for short (p. 4).

... this model of economic behavior based on a population consisting only of Econs has flourished, raising economics to that pinnacle of influence on which it now rests.

Critiques over the years have been brushed aside with a gauntlet of poor excuses and implausible alternative explanations of embarrassing empirical evidence...

It is time to stop making excuses. We need an enriched approach to doing economic research, one that acknowledges the existence and relevance of Humans (p. 7).

Thaler, now of the University of Chicago Booth School of Business, recognized that Economic Man as an interpretive model to explain human decision-making was faulty on multiple grounds. While Thaler has not attempted to "kill" Economic Man *per se*, in the field of economics he has worked diligently throughout his career to curtail the often over-reaching ramifications of the model for understanding human behavior as it has been applied in his field of study.

Decades ago anthropologists, economists, and natural philosophers alike gave Economic Man chronological depth. If modern humans were all Econs, then surely these behaviors represented adaptations – behaviors acted upon and favored by natural selection through time. Simply put, those human actors who behaved as self-interested and rational optimizers should have had more children survive and reproduce than those who, in the words of Thaler, "misbehaved" (see Hockett, 2012 for a review). The Ancient Econ, or Primitive Economic Man,

became fully developed in archeology in the 1970s and 1980s through the borrowing of the hallowed ground upon which economic theory rested. The goals were laudable and appropriate for the time: use the strengths of economic theory, including the use of a singular, cohesive model to simplify and explain the essence of human behavior to interpret the artifacts and features that archeologists excavated from the ground. Behaviors that did not appear to conform to such a simplified and reductionistic model would be considered irrelevant to understanding the key factors influencing human decision-making, and, by extension, the patterns we see in the archeological record. Thaler (2015:9) calls these latter behaviors SIFs, or "Supposedly Irrelevant Factors". John Stuart Mill, the originator of the Economic Man deductive model, called them "disturbing causes" as early as 1836. With the elimination of the consideration of most behaviors that make humans, well, humans, archeological interpretation became simple and more mathematically-based; in short, it looked like economic theory – real science. So many archeologists replaced the term "economic theory" with "foraging theory", using all the nuts, bolts, and baggage that came with Econs, and used it to interpret food choices in the past in an attempt to understand changes in subsistence practices through time. The only problem with the Ancient Econs model is that it is as flawed as the modern Econ model, which is a predictable outcome since the former derives directly from the latter.

While many researchers recognized the faulty logic of foraging theory throughout the 1980s and 1990s while it was developing and flourishing in archeology, one of us (B. Hockett) came to this same realization in the late 1990s. What developed from this realization was an archeological version of "nutritional ecology", which combined anthropological studies of human food habits and preferences with current advances in nutrition science to interpret the causes and consequences of changes in ancient subsistence practices, health patterns, and demographic trends (Hockett and Haws, 2003, 2005). Nutrition science, however, has far outpaced both economics and archeology in dumping variations of economic theory as the guiding force behind interpretations of their respective data sets. The discovery of non-energy producing micronutrients in the 2nd decade of the 20th century, and their role in shaping human mortality and fertility trends nullified the cost–benefit Economic Man model in nutrition science. One of the seminal papers in this regard was McCollum and Davis' publication entitled "The nature of the dietary deficiencies of rice", published in 1915. This publication effectively killed Primitive Economic Man in nutrition science, and it is that year that we take as his official death in order to celebrate the 100th anniversary of his passing here.

Not surprisingly, there have been numerous squabbles with traditionalists who defended the usual way of doing economics. Those squabbles were not always fun at the time, but like a bad travel experience, they

make for good stories after the fact, and the necessity of fighting those battles has made the field stronger (Thaler, 2015:10).

The papers in this Special Issue stem from an organized session entitled “Celebrating the 100th Anniversary of the Death of Primitive Economic Man: Nutritional Archaeology in the 21st Century”, held at the 80th annual meeting of the Society for American Archaeology, April, 2015, in San Francisco. The goals of the symposium were twofold: (1) bring together a group of papers that go beyond the faulty logic of foraging theory, and instead incorporate modern facts derived principally from the nutrition sciences, genetics, and anthropology to interpret ancient diets, health patterns, and demographic trends; and (2) demonstrate that holistic views of human decision-making can offer new and innovative understandings of the consequences of past subsistence choices.

In “Why Celebrate the Death of Primitive Economic Man?: Human Nutritional Ecology in the 21st Century”, Bryan Hockett briefly expands upon this Preface to the Special Issue, challenging the use of Primitive Economic Man (PEM) paradigms. He discusses the inaccurate assumptions of human behavior implied by this theory, and thus, demonstrates the falsehood of its applicability. This discussion covers the theory first developed by economics and nutritional sciences over a century ago while emphasizing the useful nature of the alternative approach of nutritional ecology. He demonstrates the validity in replacing optimality approaches with nutritional ecology, enabling the development of more comprehensive interpretations of human behavior in the archeological record.

R. G. Matson’s paper “The Nutritional Context of the Pueblo III Depopulation of the Northern San Juan: Too Much Maize?” discusses dietary changes during the terminal occupation of the Four Corners’ region. Matson argues that the emphasis on maize resulted from the development of a limited number of large defensive sites. He concludes that the combined affects compromised nutritional quality for the inhabitants of the northern San Juan region, and that the maize diet combined with changes in settlement patterns ultimately led to the collapse of these groups during the Pueblo III period.

In “Behavioral Ecology and Optimality: Seeking Alternative Views”, Tim Ferguson presents evidence of a lack of trade between the regions of southern Nevada and the St. George Basin based on ceramic typologies. This challenges the assumptions of Human Behavioral Ecology focusing on optimal ecological models of the economy. The paper considers an alternative model, Uncertainty Avoidance Index, as a more appropriate method of understanding the complexity of human behavior.

In “Paleoethnobotany at the LSP-1 Rockshelter, Southcentral Oregon: Assessing the Nutritional Diversity of Plant Foods in Holocene Diet”, Jamie Dexter Kennedy and Geoffrey Smith present a paleoethnobotanical analysis of a rockshelter in Oregon’s Warner Valley from deposits spanning much of the Holocene. The analysis reveals temporal variations in the procurement of seed taxa. The variation of taxa and differing nutritional quality do not conform to the predictions of Optimal Foraging Theory’s principle of human foraging being driven by cost–benefit net caloric returns.

Madonna Moss’ paper “The Nutritional Value of Pacific Herring: an Ancient Cultural Keystone Species on the Northwest Coast of North America” emphasizes the application of nutritional ecology to the understanding of dietary, economic, and socio-cultural practices. She describes modern use of herring (*Clupea pallasii*) as a food source, also noting the presence of herring in archeological assemblages across the Northwest coast. In discussing the various products of herring and their nutritional quality along with its archeological presence, the importance of herring as a food source in facilitating demographic expansion over time is well demonstrated.

Jelmer Eerkens, Kelli Sullivan, and Alexandra Greenwald’s “Stable Isotope Analysis of Serial Samples of Third Molars as Insight into Inter- and Intra-Individual Variation in Ancient Diet” examines inter-individual variation in diet, and dietary changes throughout an individual’s lifespan through stable isotope analysis of molars from a hunter–gather site in Central California. Their results show marked dietary shifts in some individuals while others reveal stable diets suggesting differing access to resources. They provide three possible interpretations for the varying dietary signatures illustrating that multiple factors affect human food acquisition.

“Investigating Fluoride Toxicity in a Middle Woodland Population from West-central Illinois: A Discussion of Methods for Evaluating the Influence of Environment and Diet in Paleopathological Analyses”, by Elizabeth Nelson, Christine Halling, and Jane Buikstra discusses the importance of multiple lines of evidence in paleopathological analyses with emphasis on environmental and dietary factors through the discussion of a less known condition, fluorosis. They illustrate the challenges in paleopathological analyses based solely on osteological observations, highlighting the importance of incorporating environmental and dietary factors, along with epidemiological data and new technological methodologies.

“Tropical Forager Gastrophagy and its Implications for Extinct Hominin Diets”, by Laura Buck, provides the first thorough description of the practice of gastrophagy, referencing extant participant populations. The nutritional benefits and ethnographic data suggest this practice may have been a beneficial aspect of extinct hominin lifeways. This example of the complexity of human behavior and dietary practices illustrates the potential for gastrophagy to affect the accuracy of paleodiet reconstructions in ways not generally considered by most archeologists.

In “Dietary Isotope Patterns and Their Social Implications in a Prehistoric Human Population from Sigatoka, Fiji”, David Burley conducts isotope analysis of the Sigatoka Sand Dunes burial site, Fiji. These data reveal variation in diet across the village. Although there is no variation in diet between biological sexes, there is correlation with differential burial treatment between individuals and diet as observed through isotope analysis. He discusses the diet observed along with burial practices, concluding that social rank played a role in dietary resource access.

In “Epigenetic Mechanisms as an Archive of Ancestral Dietary History of Populations: The Premise, Proposal and Pilot”, MJ Mosher sets the framework for what we currently know about epigenetic mechanisms mediating dietary effects on gene expression. Her paper focuses on Lep-*tin* (LEP) methylation patterns in its discussion of nutrition and DNA methylation and investigation of maternal/offspring methylation differentiation. While the study reveals no generational differences in methylation patterns, Mosher discusses the complex and multi-factorial nature of methylation, illustrating diet as only one component.

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