

What Happened during the Mid-Holocene in Arid Western Argentina?

A Reply to García

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García (2010) states, as we recently proposed, that the environmental changes originating during the mid-Holocene had a significant impact on various aspects of human occupation in western Argentina between 32° and 38°S (Neme and Gil 2009). However, he offers some observations about our model. His critique points to the representativeness of the archaeological record that we use and of our interpretation of the observed trends in terms of human adaptive strategies. We appreciate the opportunity that *Current Anthropology* gives us to respond to these remarks.

First, he identifies two radiocarbon dates not considered by Neme and Gil (2009) that would, from his analysis, weaken our argument. However, the dates in question only appear as part of a more general list (Bárcena 1998). The archaeological site in question has yet to be published in any detail and thus lacks the contextual information essential for analysis of this kind (Neme and Gil 2009:151–153; Rick 1987; Shennan and Edinborough 2007; Surovell and Brantingham 2007).

Moreover, and contrary to what García suggests, the inclusion of these dates in our discussion does not significantly alter the patterns we described: radiocarbon dates from the mid-Holocene continue to be rare (fig. 1). We interpret this as a significantly diminished rate of cultural deposition compared to earlier and later periods (Neme and Gil 2009:154, 160), and that pattern continues to persist despite having added new sites dating to the mid-Holocene (Gil, Guerci, and Neme 2009). Although we believe that any absolute dating gaps will eventually be filled, this will not modify the basis of our argument as long as the chronological pattern continues to demonstrate a decreased frequency in the occupation of the region at this time (Neme and Gil 2009, figs. 2–5).

García's second remark suggests that the inclusion of data from scantily reported surface sites (García 2005) points to human occupation during the mid-Holocene. To include data from surface scatters with only tentative chronological placement and without geomorphological and chronological analysis (e.g., obsidian hydration) is, from our perspective, ill-

advised, and García explicitly recognizes the chronological problems in two mid-Holocene assemblages: Morrillos and Fortuna (García 2005:62). As he notes, these unstratified assemblages have little chronological control (García 2005:62). Although we recognize the importance of surface assemblages (Gil and Neme 2006; Lagiglia, Neme, and Gil 1998), we also note that such assemblages are ill-suited for creating finely tuned chronologies and do not provide an adequate basis for quantitative dating of such sites. Currently, we can rely only on minimally controlled data to define the chronology for the surface data that García seeks to include.

García uses the dates from the "Morillo" assemblages (ca. 7,200 BP) from Gruta del Manzano (García 2005) to posit the antiquity of the surface scatters assigned to the mid-Holocene. Paradoxically, this archaeological site is one in which the mid-Holocene hiatus is expressed most clearly. The radiocarbon dates recently obtained from this site jump from 7,110 to 2,100 BP (Gil, Guerci, and Neme 2009). So despite our having redated the site, a significant part of the period in question is not represented, and a strong chronological discontinuity can be seen. Thus, we discard García's proposed chronology, as there is yet to be a reliable and fine-tuned chronological model for the cultural history of the region. There is no doubt that the lithic record shows evidence of variability during the mid-Holocene (Garvey 2008; Pérez Winter 2008), and the surface record could be used in this way, but at the moment it has limited value as a chronological indicator. We must develop a more rigorous methodology to interpret surface data to verify their attribution to the mid-Holocene (Beck 1999; Jones and Beck 1999).

His third and fourth points can be considered together. On the one hand, he argues that it is necessary to explore other alternatives that may explain the dearth of mid-Holocene archaeological sites, including low visibility and the destruction of sites as a consequence of different formational process. On the other hand, he argues that the hypothesis of an extended hiatus of about 3,000 years for the Mendoza plains is based on only two sites, and he affirms that these records cannot be representative of the rest of the plains. We share his concerns, and as archaeologists, we understand the importance of evaluating the limitations of sample size, sampling strategies, and formation processes of the archaeological record. All these factors are part of the methodological foundations of the discipline. By no means have we intended our study to be exhaustive but instead only propose a model that is consistent with the available data and with hypotheses that guide the development of alternatives such as those that García proposes.

García notes that neither decreases in the frequency of occupation (or abandonment) of some environments, changes in lithic technology, nor changes in the taxonomic patterns in the assemblages (Neme and Gil 2009:153–158) are directly or exclusively associated with a decline in population or with increased mobility. Our work discusses the patterns observed

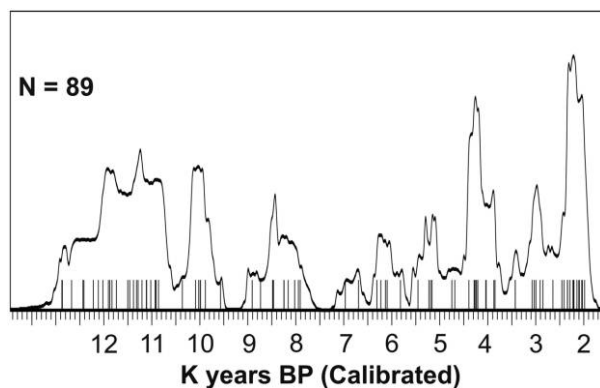


Figure 1. Trends in calibrated radiocarbon dates in the context of dates suggested by García (2010). Sum of probabilities; calibrated date based in CalPal (ver. March 2007). For detail, see Gil, Guerci, and Neme (2009) and Neme and Gil (2009).

in the data that are available, and we articulate our explanation parsimoniously. Without doubt, and this applies to all science, other explanations for this pattern can be proposed. This is not to deny that alternative hypotheses can be discussed and supported, but the alternatives must explain the patterns that are illustrated by the data, or they must present new data that compel changes in the previous hypotheses. For a large portion of central-western Argentina, the known archaeological record shows a decrease in the number of archaeological sites in the region, a decrease in the number of radiocarbon dates, and, more important, a decrease in the quantity of artifacts deposited in the few archaeological sites that are attributed to this period.

García also suggests that the available archaeological record mostly reflects changes in the occupation of stratified rock shelters and should not be considered representative of the regional cultural development or of trends associated with population mobility or demography. The archaeological record used in our paper (Neme and Gil 2009) includes all the available and published archaeological information. In this framework our research has evaluated the available data, including both rock shelters and open air sites.

Finally, and contrary to García, we do not believe that the accumulation of data itself will reveal the mid-Holocene past in western Argentina or in any other region. The history of science teaches that it is tortuous to proceed in this way. Far from convincing the community of a final scenario for the human occupation of the mid-Holocene, we intend to show a pattern of the archaeological and environmental records and discuss it in terms of human adaptive strategies. Even with the addition of the two dates that García suggests, the pattern remains fundamentally the same; what should be discussed is its meaning. Undoubtedly, additional research will change these patterns; refuting this hypothesis would represent a greater advance in science than simply identifying methodological limitations. As we noted (Neme and Gil 2009:160),

The complex responses in which an ecosystem could have developed in the face of the climatic change of the mid-Holocene are only in the initial stages of research. If this analysis reveals meaningful patterns in the structure of archaeological data for the southern Andes, it should be understood to be tentative rather than conclusive. Our primary goal is to provide a hypothetical framework that defines specific areas, field research, and laboratory methodology directed toward the verification or refutation of these ideas.

If our proposed model stimulates research and reevaluation of old collections, then we have advanced knowledge. It will now be interesting to see what relevant information sites like Paso Paramillos (Bárcena 1998), Gruta El Manzano (Gambier 1985), and Caverna Piuquenes (Stehberg, Blanco, and Labarca 2005) can contribute. We have specific questions with strong empirical content in order to understand the variability of the mid-Holocene with respect to human strategies and demographic history. Undoubtedly, the main extension of our knowledge will not be a mere accumulation of data. We will have a more fruitful interpretation of the meaning of the archaeological patterns, or a new generation of information, triggered by the questions that we have formulated with regard to ecological structure, climate change, and human strategies.

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