On Building Knowledge: Comments on “Qualifying Consequences”

Carolina Martín Albaladejo, *Museo Nacional de Ciencias Naturales*

Borja Sanchiz, *Museo Nacional de Ciencias Naturales*

Abstract: This essay summarizes the authors’ methodological approach to historical research, which is based on methods employed in evolutionary biology. Emphasis is placed on the initial research questions and hypotheses, selection of operational units, and variables to be used. The numerical results obtained, though restricted pieces of information, may be combined with other similar ones to generate predictive models. Comparisons are made between this methodology and classic holistic narrative ones.

If it is accepted that an understanding of history may be achieved as the result of a collective enterprise, then alternative methodologies should be explored with regard to whether, and how, they might be integrated with research by others. In this context, holistic narrative approaches, such as those advocated by Kristin Johnson, may be the least effective. These approaches allow for comparisons with similar narratives, but they cannot be merged as *elements* in the research endeavors of other historians. The excellent works Johnson cites regarding explorations of French decline and Soviet resilience are very good examples of this limitation. Reductionist tactics are better suited for exploratory or preliminary studies.¹ Our essay is part of a research project that applies methods adapted from integrative organismal biology.² In the past, the study of biological evolutionary processes has encountered methodological difficulties and controversies similar to those currently seen in history. Thus, it may be fruitful to transpose some of the strategies developed in evolutionary studies to overcome such difficulties. Given that biological systems (organisms, species, ecosystems, etc.) are entities that change over time, and that their history can be deduced, it seems reasonable to use such an approach in historic analyses.³ A description of the process we follow may clarify the divergences between our methodology and the classic approaches advocated by Johnson.

First, research should always start with a clear and precise question, explicitly stated. Johnson raises several very interesting issues as examples for research, but they are too vague to

¹ See the different meanings of “reductionist” in Peter Godfrey-Smith, *Philosophy of Biology* (Princeton, N.J.: Princeton Univ. Press, 2014).

² In our essay, a basic quantitative exploration was used as a historical tool. A scientometric analysis of this topic would have required a redefinition of objectives and a quite different numerical analytic approach. Our research program deals not only with entomology and the Spanish Civil War but also with paleobatrachology, with the aim of analyzing *mechanisms*—that is, relations among human, economic, and technological elements. Examples of methods applied in integrative organismal biology can be found in Lynn B. Martin *et al.*, *Integrative Organismal Biology* (Hoboken, N.J.: Wiley-Blackwell, 2015).

³ Regarding biological systems and their history see Ernst Mayr, *This Is Biology: The Science of the Living World* (Cambridge, Mass.: Harvard Univ. Press, 1997).

be taken as questions that can be answered directly. Hypotheses have to be made and tested, including the probability of being correct.

Second, explicit operational units for the study have to be selected. This is a crucial part of the research. These units are not expected to address holistic generic questions, because all other relevant information involved is left aside. The spectrum of possible units is very broad—from individuals, collectives, institutions, networks, and so forth to virtual units such as causality links, interactions, and emergent properties.

Third, variables representing the operational units have to be devised, maximizing their reliability (consistency and accuracy) and validity (degree to which they really measure what interests the historian). Quantitative results are obtained, frequently time related. In this regard it is clear that data on the number and editorial characteristics of publications have limited value as regards their quality. Thematic issues and quality were not considered in our essay; these are additional matters that still require both data gathering and the nontrivial task of selecting the variables.

Fourth, the same procedure will ultimately be applied to other historical aspects that remained in the black box, obtaining finally a set of related results. Because of their numerical nature—in contrast to subjective narrative interpretations—all these separate results, or their combinations, are able and are expected to generate predictive models, uncovering hidden regularities.

It might be argued, as Johnson explicitly does, that a set of limited results of this sort will be almost useless for historical understanding unless they are combined with “arguments, debates, motivations, and justifications.” We agree that a whole set of independent atomized results will hardly provide a holistic historical picture. However, narrow generalizations could be derived from their combination; they may perhaps not be strict laws, but they surely apply more widely than to unique historical events. Therefore, they are open to testing and refutation by other cases of the same type. General models may not be achieved in the short term, but the intermediate results provide trustworthy building blocks for the construction of history.