

# **The Art of Experimental Economics: Twenty Top Papers Reviewed**

## **Book Review**

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I don't know much about art, but I know what I like. Experimental Economics *is* art. yes, in some sense, all or most science is art. Like the artist, the scientist can follow established methodology only to a point. Sooner or later, every scientist reaches the point where she has to find her way forward. But there is something deeper here. Unlike most scientists, experimental economists create worlds. Like all creators, we want our creations not only to serve their scientific purpose—but also to be beautiful. This artful joy of creation is absent for those who deal with naturally occurring phenomena (sometimes mistakenly referred to as “the real world”). In *The Art of Experimental Economics* (2021), Gary Charness and Mark Pingle present us with a selection of key papers from the history of experimental economics that convey this artfulness vividly.

### **What do we think of when we think of experimental economics?**

The book's value for the novice and expert alike lies in how Charness and Pingle collated and presented these papers to the reader. One is the choice of papers. The careful selection process outlined in the book's introduction tells us much about what *kind* of research experimental economists consider fundamental and indispensable to the discipline. I tried to categorize the papers according to their contribution: is it policy-relevant, applied, theoretical, or methodological? Of course, quite a few papers fall into more than one category.

One distinction is immediately apparent and perhaps not surprising to people within the field. None of the papers included in the volume

makes, by my reading, an applied contribution.<sup>1</sup> Although informing policy is often cited as one of the core aims of laboratory experiments (e.g., Davis and Holt, 1993; Kagel and Roth, 1995), only around one-quarter of the papers can be said to have (indirect) policy implications. Clearly, the experimental community sees the main role of economic experiments—as reflected in this selection of papers—to be addressing basic theoretical and behavioral issues. Close to half of the papers have clear theoretical underpinnings, and most of the papers study empirical behavioral phenomena. Many papers are part of an ongoing interplay of the two, as the experimental results motivate theoretical development, inspiring, in turn, new experimental investigations.

However, the most striking pattern is that—with very few exceptions, those mainly being the field experiments—the papers included herein introduced a new methodological paradigm or experimental game. About half of these became standard workhorses (think Ultimatum Game or Trust Game) used in countless subsequent studies to study a diverse set of research questions not necessarily related to the motivation behind the original study.<sup>2</sup> By a rough estimate, almost half of the papers in the volume received most of their citations for originating the experimental paradigm used in the citing paper and not for their theoretical or empirical contribution.<sup>3</sup> When thinking of cornerstone papers, experimental economists tend to value methodological innovations above conceptual advances.

This tendency, I think, has its roots in two observations. First, method and message are quite often interlinked. To illustrate, think of how the revolutionary observation of Smith (1962) that market prices converge to the competitive equilibrium even with private information is closely

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<sup>1</sup>Applied work played a crucial role in the development of experimental economics; however, this is not reflected in the selection of papers at hand (Svorenčík and Maas, 2016, pp. 100–16). This, I believe, is in stark contrast to what we could expect from a similar volume dealing with RCTs (Duflo, 2017).

<sup>2</sup>Gneezy and Serra-Garcia, in their review of Fischbacher and Föllmi-Heusi (2013), do an excellent job of outlining how such research “proves vital in starting new lines of research.”

<sup>3</sup>A standout example for this is the paper by Selten (1967). In their review, Keser and Kliemt (2021) emphasize (and seek to correct) the disparity between the prevalent perception of the paper and its actual motivation. Keser and Kliemt clarify that Selten (1967) originally used the strategy method to study bounded-rationality decision procedures when decision makers face incomplete information—and not full strategies in well-defined games, as most citing literature assumes. The chapter concludes with the statement that “[the paper’s] focus on bounded rationality should be borne in mind when referring to it.” Implicitly, Keser and Kliemt state the obvious, namely that most citing articles fail to do so (including, incidentally, references within the current volume).

linked with the double-auction market mechanism.<sup>4</sup> The—surprising at the time—observation that people cooperate at a personal cost is similarly closely linked with the linear Public Goods game that first came into prominence in Isaac and Walker (1988). Second, as Sugden (2005) so eloquently argued, much of the scientific progress in our field is driven by *Exhibits*: surprising (from the viewpoint of standard theory), robust and replicable phenomena (See also Chapter 5 in Bardsley, Cubitt, Loomes, Moffatt, Starmer, and Sugden, 2010). Individual papers typically draw specific conclusions and test specific explanations for the experimental observations. These conclusions are later amended and replaced by either more nuanced explanations or radically different approaches. As researchers collect new empirical evidence and develop new theories, the old theories and explanations become a thing of the past, threatening to render the old papers obsolete. In contrast, many of these seminal papers’ strong and persisting effect comes from providing a new paradigm that challenges established views and inspires new research programs.

## **What can we learn about experimental economics?**

The choice to present the papers in chronological order of publication reveals the development of experimental economics step by step. When reading the chapters in order, we see the methodological developments (in the narrow sense of research tools and practices) unfold. More importantly, we follow the developing view of what experimental economics can and should accomplish as it fights to take its rightful place within the broad discipline of economics. This historical view is augmented by how the chapter authors place the reviewed papers in context, carefully delineating the background for the papers and subsequent research agendas that they sparked. When viewed as a whole, the book paints a vivid picture of experimental economics as a rich case study in the history of science that teaches us a powerful lesson about how science works.

Not less—and possibly more—important than the selection of papers in the book is the decision to involve a diverse group of chapter writers who, at the best sections of the book, bring their unique points of view and agendas to illuminate the classic papers reviewed. The book truly shines and transcends the “Greatest Hits” genre when the contributors add their musings and personal knowledge. To highlight just a couple of the many examples spread out across the chapters, Andreoni (2021) lets us

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<sup>4</sup>And subsequent studies of varying market mechanisms directly built on the experimental protocols developed by Vernon Smith in his early work.

see the seminal paper by Isaac and Walker (1988) through the eyes of a then young and enthusiastic graduate student. Similarly, Smith (2021) brings his broad view as the father of experimental economics and his deep interest in relating modern experimentation and Adam Smith (see Smith and Wilson, 2019, and related papers).

The development of experimental economics, as reflected in the book, is particularly interesting to consider in view of the ongoing discussion of QRP (Questionable Research Practices, see Fiedler and Schwarz, 2015; John, Loewenstein, and Prelec, 2012; Simmons, Nelson, and Simonsohn, 2011). As complete research programs appear to crumble under the replication crisis in psychology, it is clear that the core findings in experimental economics—as perceived by the scientific community that informed the editorial selection—are extremely robust and replicable. Price convergence in markets; voluntary contributions to public goods, with and without punishment; behavior in Ultimatum, Dictator, and Trust games; overbidding in common-value auctions; these are all examples of exhibits that have been replicated hundreds of times and under varying conditions.

Why are QRP not as ubiquitous in experimental economics as in neighboring fields?<sup>5</sup> There are a few possible explanations that are reflected in the book. The early experiments typically did not aim to test a single unidimensional hypothesis but were rather an ongoing discovery process. This legacy persisted, even as research practices became more streamlined and explicit operational hypotheses became the norm. Arguably, the current view is that data should follow hypotheses and that learning from the data as you go is “merely exploratory” research and constitutes a QRP in itself. Nonetheless, we should remember that “all normal science is, in a sense, hypothesizing after some results are known” (Hollenbeck and Wright, 2017). The history of experimental economics, as reflected in this book, teaches us that following the data leads to viable discoveries as long as it is done honestly and transparently. As noted above, new results lead to new theorizing and discoveries in an ongoing movement forward.<sup>6</sup>

A related aspect that is evident in *The Art of Experimental Economics* is that the founders of the field thought more in terms of effect sizes than sig-

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<sup>5</sup>For a thorough analysis and discussion, see Page, Niederle, Noussair, and Slonim (2021).

<sup>6</sup>In their thank-you note that closes Andreoni’s review of Isaac and Walker (1988), Mark Isaac and James Walker point out that the explicit and implicit requirements that come with preregistration impede the advance of knowledge. Grosskopf and Nagel (2021) make a similar comment in their review of Güth, Schmittberger, and Schwarze (1982).

nificance levels.<sup>7</sup> The early papers established a standard by which emphasis is placed on detailed description and understanding of the data,<sup>8</sup> with explicit  $p$ -values taking a secondary role. Although significance tests take a more prominent role in later papers, they still support theory-driven data analysis and explicit modeling. Experimental economics, as all economics, largely deals with multifaceted economic systems that include many factors. With the help of disciplining theoretical principles, this open-minded data-driven approach constantly reveals new insights while largely avoiding spurious results.

## Concluding remarks

*The Art of Experimental Economics* came out just as the 2021 Nobel prize was announced. Commenting on the prize, one former Nobel laureate wrote that “Economists generally can’t do controlled experiments — all we can do is observe.” (Krugman, 2021). The papers collected in this volume—which, incidentally, include the work of six Nobel laureates—unequivocally prove him wrong. *The Art of Experimental Economics*, accompanied by the original papers, is a must-read for anyone interested in understanding the development of experimental economics and how experiments helped propel economics forward in the quest to better understand economic decision-making and economic institutions.

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<sup>7</sup>Much of QRP is attributed to the focus on significance testing. Consider, for example, the following quote that preceded and possibly prophesied the replication crisis in psychology: “Statistical significance testing retards the growth of scientific knowledge. it never makes a positive contribution.” (Harlow, Mulaik, and Steiger, 1997). Even if exaggerated, this quote reacts to traditional overreliance on hypothesis testing in psychology.

<sup>8</sup>Certainly at the level that instantly reveals unexpected uniform distributions.

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