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*MP3: The Meaning of a Format* by Jonathan Sterne (review)

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and a refreshing consideration of Bergson's interest in what early-twentieth century thinkers referred to as "Psychical Research" (G. William Barnard).

The one drawback of this anthology is the absence of essays addressing the legacy of Bergsonism among Catholics, which would have led to consideration of the so-called Modernist controversy and philosophical luminaries like Edouard Le Roy and Jacques Maritain. In addition the lack of any discussion of such issues as the placing of Bergson's writings on the Papal Index in a book devoted to "Bergson, Politics and Religion" is unfortunate, given the anthology's scholarly focus. But that only suggests one of the subsequent steps that need to be taken in this burgeoning field. Taken together these essays make a significant contribution to the field of Bergson studies, and they will be of special interest to those actively engaged in the reevaluation of Bergson for the twenty-first century.

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**Jonathan Sterne. *MP3: The Meaning of a Format*. Durham, NC: Duke UP, 2012. 360 pp.**

Jonathan Sterne's *MP3: The Meaning of a Format* joins a growing body of research on the pre-digital origins of digital media. The major work of the book is to trace the history of the technological research and theoretical assumptions that would eventually be codified in the MP3 format. The meaning of the format, as he describes it, arises not so much from its current dominance of online file sharing or its physical structures – although the book touches upon both topics – as from its incorporation of ideas about the relationship between recorded sound and listening subjects. Sterne advocates "format theory" as an alternative to media theory, and his excellent book demonstrates the rich potential of this approach. In the process, *MP3* highlights the contributions of agents who are often downplayed in histories of media: scientific researchers and the developers of corporate infrastructure.

The book's organization is roughly chronological, moving through the three main phases of research that, according to Sterne, led to the codification of the MP3 standard. He locates the MP3's origins in hearing research conducted a century ago. In order to maximize its use of bandwidth (and thus its profits), AT&T worked to determine which frequencies of sound were perceptible and thus strictly necessary for telephony. This allowed the company to harness "perceptual capital," value created not by labor but by what users do *not* perceive. This research was part of the larger growth of psychoacoustics, which shifted the emphasis of research on sound and hearing towards the inner ear and the mind. Sterne contends that early telephony research was the foundation for information theory and cybernetics – both in

its conclusion that biological ears and technological media were interchangeable and in its de-emphasis of semantic content.

The second period in the MP3's history is the change in the status of noise in the 1950s, 1960s, and 1970s. Where the first phase changed assumptions about human hearing, the second led to the development of perceptual coding, the compression method used in MP3s. Perceptual coding research arose from the confluence of three factors: the theorization of masking and critical bands (both of which enabled scientists to build models of hearing that did not depend on the subjectivity of the hearing subject), the use of computers in sound, and, critically, the domestication of noise. Using masking, engineers no longer needed to eradicate noise: communication systems and sound recordings could manipulate the perceived level of noise rather than the actual level.

Finally, Sterne discusses the development of the MP3 standard during the past three decades. In the late 1980s and early 1990s, multiple companies and institutes collaborated to create a series of standards. Sterne's account is carefully anti-teleological: MP3 was one of several standards created under the aegis of the Moving Pictures Expert Group (MPEG), and its eventual dominance in music recording and file sharing was neither guaranteed by its inherent properties nor even initially anticipated by MPEG. The competing MPEG standards were evaluated using a series of listening tests, based on the principles of psychoacoustics. Although the tests aspired to universality and objective measurement, they required users to exercise aesthetic judgment (evaluating whether noise was "annoying"), and they were subject to the idiosyncrasies of individual users. Nevertheless, these tests established a sonic baseline for the MP3 format. This history raises the question of which expertise counts when we listen to music: do we trust engineers, expert listeners, or the artist herself when we evaluate the sound quality of an MP3 version of "Tom's Diner" by Suzanne Vega (a recording whose warm tones allegedly set the ideal for MP3 sound)?

The sixth chapter, "Is Music a Thing?," considers the current status of MP3s and their use in file sharing. Sterne argues that music is best understood as a "bundle of affordances," both process and thing, and that MP3s are best conceptualized in terms of licensing. Chronicling the MP3's rise in prominence as a music format, the book cautions against romanticizing MP3 piracy. Illegal file sharing need not challenge either the traditional music industry or the inequities of capitalism. *MP3* concludes by speculating on the format's future. Although it is probable that MP3s will eventually lose their dominance, their current ubiquity likely guarantees their persistence for some time. MP3s raise problems for archiving, however. This is due not only to the general problems of obsolescence that tend to affect digital media but also to the fact that copyright makes it difficult to distribute and preserve genres like mashups. Whatever the future of the MP3 format, Sterne asserts that compression in sound recording will persist. While communication history has been understood largely through the lens of media, an emphasis

on format and infrastructure will be better able to account for future developments in the ways that we exchange information and listen to sound.

A reader seeking a sustained examination of the MP3's role in the contemporary music economy should look elsewhere. Sterne's work is no less valuable for shifting the temporal and theoretical contexts in which the MP3 matters beyond this framework. *MP3* is an engrossing read, blending thorough historical research, clear explanations of technical concepts, and flashes of wry humor. In describing the multiple strands of technological research that would become encoded in the MP3 format—and in opening up the kinds of contexts that make formats meaningful—this book makes an important contribution to sound studies and media theory (even as it exposes the limitations of the latter).

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**Cornelis de Waal and Krzysztof Piotr Skowroński, eds.** *Normative Philosophy of Charles S. Peirce*. New York: Fordham UP, 2012. 344 pp.

There is a tension in the idea many of us have of Charles Saunders Peirce and his illusive statements concerning normative philosophy. Peirce never falls into categories other than his own and an introduction to his work might very well leave one, even one literate in the American Pragmatists, with a buzzing confusion of categories and technical terms. Many Pragmatists, including Richard Rorty himself, see Peirce only as a logician who establishes a basis for future pragmatists and then tend to dismiss him on matters of normative philosophy. Peirce himself does not help matters when he admits to little knowledge of aesthetics and, in the 1898 Cambridge Conferences lectures, states that “vital matters” like morality are potentially dangerous to and conceptually separate from the sciences. Bringing out the ethical and aesthetic elements of Peirce's thought is the topic of de Waal and Skowroński's *The Normative Philosophy of Charles S. Peirce*. The fundamental assumption that unites the essays of this work is Peirce's claim that logic is itself a “normative science” along with ethics and aesthetics. Whatever else is argued in the chapters, each contributor forwards the volume's thesis that Peirce's philosophy is permeated by norms that unite the conduct of philosophy within a value-laden framework.

Evaluation of a collection of essays can be a difficult task—as the reviewer must analyze multiple theses and points of view. Thus, allow me to evaluate the volume in a particular manner: on its achievement of the goals the editors put forth in the preface. This reviewer believes it does. Not because the essays reflect agreement about how to interpret Peirce, which they not univocally do, but rather because the essays show that there is a deep and under-studied normative aspect to Peirce's philosophy that can contribute