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## The End of Oil: On the Edge of a Perilous New World

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## The End of Oil: On the Edge of a Perilous New World

PAUL ROBERTS

HOUGHTON MIFFLIN, BOSTON, 2004

399 pp. \$25.00 HARDCOVER,

\$14.00 PAPERBACK

REVIEWED BY JIM IGOE

*The End of Oil* is a semi-popular book written by an investigative journalist. Why should such a book be reviewed in the *Journal of Ecological Anthropology*? It is my considered opinion that good investigative journalism rivals ethnography in many ways, especially in cases where journalists spend significant time in the places they are reporting about. An example of this type of work is Michael Maren's *Road to Hell* (1997), a scathing account of the global development industry. Raymond Bonner provides an equally trenchant and well researched critique of the global conservation industry in his book, *At the Hand of Man* (1993). Another favorite of mine is *Fast Food Nation* (2001) by Eric Schlosser, which provides a compelling account of the impacts of the fast food industry on American culture, and especially the agricultural economy. What these works may lack in ethnographic connection and theoretical analysis they make up for in accessibility—in distilling complex issues for a popular audience without compromising their complexity. I have used all of these books in the courses that I teach. Not only do students respond very positively to them, they are also able to relate their detail to the ideas of theorists like Marx, Foucault, and others.

*The End of Oil* is an especially salient example of this type of work. While a bit long on detail and a bit short on organization (a shortcoming of which many of my favorite ethnographies are equally guilty), it is definitely the most far-reaching and accessible work on the global oil economy I

have ever read. The book addresses issues that I originally learned about in an unfortunately obscure book called *Beyond Oil* (Gever et al. 1986). This book, out of print since the early 1990s, pointed to the early warning signs of our current geo-political crisis, as well as the difficulties inherent in the inevitable transition to alternative fuel. It almost goes without saying that the need for this kind of insight and analysis is more pressing today than ever before—so I was delighted to see a popular book that repeats the most important insights of *Beyond Oil*. Furthermore, *The End of Oil* has direct relevance for anthropological theory, especially the works of Leslie White and Sydney Mintz.

I was especially struck by how much this book illuminates White's 'Energy and the Evolution of Culture' (1943) as well as demonstrating its continued relevance to the present day. In this article, White argued that the capture of energy from the environment is the foundation of human culture. Roberts' descriptions and explanations of how we capture energy from the environment instilled me with a new appreciation for the significance of this seemingly facile observation. In an extraordinarily accessible passage, Roberts explains that most of the ways we capture energy have to do with breaking the bond between carbon and hydrogen to capture energy produced through photosynthesis or metabolism—energy that has been stored in the earth by binding with carbon.

Just as White argued in 1943, Roberts explains that the increasing efficiency of human technology in capturing this stored energy has driven cultural change over time; for the most part this change has occurred in leaps rather than in increments. Specifically, Roberts traces the global capitalist economy to the invention of the engine in the 18<sup>th</sup> century. As an 'automatic self-acting device' the engine was capable of transforming chemical energy into physical work and to do it anywhere that fuel was available. More importantly, the engine could be used to capture energy from the environment in the form of fuel and to transport that fuel anywhere that work needed to be done. As long as fuel sources are abundant, it does not even matter if engines are especially efficient at doing this work. All that

matters is that more energy is captured from the environment than is lost as heat by the engine doing the work.

This process was described by White in his equation:  $E \times F = P$ , in which  $E$  represents the amount of energy captured from the environment,  $F$  represents the efficiency of human technology in capturing this energy, and  $P$  represents the product—the total goods and service that this process provides to a particular society. Roberts' historical account illustrates that the global economic growth of the past two centuries has been driven primarily by increased energy capture and increased technological efficiency. In the U.S., the  $E$  in the equation has been especially salient as we have discovered increasingly energy abundant sources of fuel (wood  $\rightarrow$  coal  $\rightarrow$  oil). During the oil shocks of the 1970s, we demonstrated that we could also bring about economic growth through increased fuel efficiency, although this was an unfortunately short-lived historical moment.

The problem with this scenario, however, was the dominant role of  $E$  in U.S. history. To put it simply, our culture and national infrastructure reflect our misplaced perception that we have been sitting on top of an inexhaustible supply of fossil fuels. Here Roberts departs with White's more optimistic prediction that new sources of energy combined with technological innovations would allow economic growth to continue unabated into the future. The details of Roberts' work clearly illustrate that White's predictions are not coming true. Our inability to move 'beyond oil,' in spite of the fact that we are clearly coming to 'the end of oil,' is definitely reflective of what White would have called 'social inertia.' It is unlikely, however, that this 'social inertia' will be overcome by technology as White predicted. As Roberts aptly demonstrates, future moves to alternative fuels represent a fundamentally different proposition than our previous fuel revolutions (e.g., moving from wood to coal). These differences have to do with the nature of oil as an energy source.

This is where the analysis of Sydney Mintz comes into the picture. In his book, *Sweetness and Power* (1985), Mintz traces the rise of sugar in Europe and the U.S. as part of the industrial revolution and the

spread of global capitalism. As a food source that is almost pure energy and easily portable, sugar was ideally suited for industrial capitalism. It provided workers with a cheap source of energy, the portability of which would minimize their time away from their machines. As if this were not enough, sugar also tastes good and is highly addictive. Once people had a taste, they would want more and would gladly pay their hard earned wages to procure it. This was a double win for capitalism: 1) a highly energized work force; and 2) a profitable commodity to sell to them. Mintz further explains that this ongoing historical relationship severely limits our choices today. When it comes time to decide what to eat, sugar and other highly processed foods are usually our only choices—or at least they appear to be our only choices in the context of our hectic workaday world.

In the course of teaching *Beyond Oil*, I realized that the same argument could be applied to fossil fuels (hydrocarbons as apposed to carbohydrates). Oil's high energy content, viscosity, and portability made it an ideal fuel for an expanding capitalist economy. The fact that early oil deposits were large, and so highly pressurized that they literally shot out of the ground, created the impression that it was an unlimited resource. Our acquired taste for abundant and readily available fossil fuels will not easily be overcome. New alternatives are not nearly as attractive, and the global infrastructure that we have built around oil will not be easily converted to other fuel sources. Even in the face of rapid global warming, Roberts questions whether we will find the political will to wean ourselves from oil before it is too late.

Finally, however, he does offer some hopeful scenarios. Specifically he points out that we have not nearly begun to tap the potential of increased fuel efficiency. If our experience in the 1970s is anything to go by, the U.S. could save more fuel than what currently remains in our untapped domestic oil reserves. As such, increased technological efficiency (the  $F$  in White's equation) could in fact buy us time to develop alternative energy sources. The key he concludes is to move beyond being a society of 'energy illiterates' to one in which people are increasingly aware of the energy costs of their activities. His book represents an important, albeit small, step in that direction.