

Images of the energy future

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Abstract

This letter draws attention to the aesthetic fascination for images of the energy future and the role of knowledge about the future in organizing energy policy and planning. Envisioning the energy future, once intertwined with notions of progress, has become synonymous with conceptions of risk while efforts to manage risk are an open-ended, future-oriented project. I argue that today's images of the energy future reflect a change in US energy prediction over the past 30 years that can be traced to the birth of a system of energy forecasting on the basis of a narrow organization of experience to the 1970s energy crisis.

Keywords: energy forecasting, foresight planning, history of ideas

1. Introduction

Representations of the future have become an increasingly influential force in the construction of the present. Market analysts, government officials and industry executives devote a vast amount of time and sustained effort toward the deployment of futuristic images for political and heuristic ends. It is as if representations of the future have taken on an agency of their own and are acting as key players in the construction of the present, and thereby the very future they purport to represent. The following is an example taken from the front page of *The New York Times*:

'Arriving on stage in a spaceship and an astronaut suit, Philip Watts, then the senior executive in charge of exploration and production for the Royal Dutch/Shell Group, glowed as he delivered a message of optimism to a conference of 600 company executives. 'I have seen the future and it was great,' he declared' [1].

These remarks functioned as a rejoinder to accusations that Shell was pumping oil out of the ground faster than it could find new supplies. Oil reserves are an indicator of the future worth of an energy company. By positing a future of dwindling reserves, such accusations undermined Shell's profitability. In his remarks, Philip Watts seeks to regain control over the company's worth by positioning the uncertainties of the future as in the past, behind him. His language and dress perform a narrative in which he has already seen what oil reserves lie in the future by visiting there, through his spaceship as it were.

As a gesture of foresight planning, Watts's message represents a radical departure from previous attempts to manage the future. Instead of setting targets based on extrapolation, Watts has the idea of first envisioning a desirable state of things and then developing a strategy for achieving it, which might be called 'back casting', as distinct from forecasting. Watts thereby assumes that the present, while not fully understandable, is open and malleable to a degree that potentially outweighs those aspects which are determining.

My goal in this article is to understand *on what basis* this foresight practice is possible and to know the historical conditions that authorize inserting the future into the present. I believe that Watts's ambition to relocate the energy future is not a rare exception but reflects the overall institutional coherence of today's energy foresight industry. It is a style of operating that accepts humans as part of the forces that influence market evolution and indeed authorizes them to intervene on behalf of some particular future that is desired.

Consider how the future has been drawn into the present by natural gas forecasters who in Fall 2000 emerged as architects of an energy outlook capable of altering the US natural gas industry. Natural gas forecasting has evolved into a lucrative enterprise in the wake of US energy market restructuring. It is a field composed of university trained economists who have been hired by private consulting firms to produce information about the future of energy markets. The increased visibility of firms such as Cambridge Energy (www.cera.com) reflects a growing reliance on consultant advisory

services that try to identify core uncertainties and to help organizations have the capacity to be ready for them.

Basing their image of the future on a forecasted rise in the long-term price for natural gas, these economists envisioned a significant expansion to the historically self-enclosed North American natural gas market [2]. While the rise in price failed to materialize, the image of the future has since inspired government and financial leaders to pursue a variety of strategies for creating a global natural gas industry [3]. Dissemination of consultant forecasts often takes place at energy conferences where PowerPoint presentations are used to sustain the perception of the credibility of a given future. At executive roundtables, including the prestigious Cambridge Energy Week in Houston, Texas, the future is conjured by demonstrating *proximity* between existing energy infrastructure and remote supply areas as well as by projecting increased demand through *rising trend lines*. From these images, the center of our energy consciousness shifts from a concern with methodological safeguards to the indeterminacy of the future, or what Derek Wallace calls an 'open temporality' in which the past has lost its power to determine the present [4].

In this article I argue that such images of the energy future and the role these visions play in policy and planning call attention to a subtle but pervasive change in US energy prediction since the 1970s. This change can be seen as the birth of a system of energy forecasting on the basis of a singular reaction to a shift in energy availability. The 1970s' energy crisis, apparently, could not be experienced as otherwise¹. By examining attitudes toward energy planning between 1969 and 1976, I show how a system of energy forecasting emerges from a period characterized in terms of *limits to growth*. From this narrow organization of experience rises the condition of possibility for today's images of the energy future.

My description of the energy future since the 1970s retrieves historically specific meanings which are both fragile and ordered. These meanings also reveal a past whose coherence when seen from our vantage point appears as a system of contradictions. My approach is inspired by Michel Foucault, from his analysis of modern power relations. The subject matter of Foucault's work is the history of ideas in Europe over the last 400 years and the startling sense of rediscovery these ideas provoke when it is revealed that our thinking no longer resembles a thought from the past [5]. By refusing to see the past through the opinions and facts of our time, Foucault invites us to witness the ground on which various types of knowledge *could* make sense and *could* produce truth within a particular age. By applying a Foucaultian analysis of power/knowledge to the realm of energy planning, I claim to rediscover the overall organization of meanings that bind institutions, experiences and doctrines and to which these meanings refer when elements of them refer to the energy future.

¹ By comparison, today's attitude to global warming does not achieve the singular meaning of ecological *catastrophe*.

2. A history of the energy future

The idea that the future has a significant role to play in the construction of the present is by no means a new one. In the Ancient City, the ritual discourse of truth practiced by Greek poets was by definition prophetic, carrying men along with it and thus weaving itself into the fabric of fate [6]. In the Middle Ages, the division of truth into reason and folly credited words spoken by the insane with strange powers, including future revelation which was taken for truth as often as ignored [7]. From the 20th century, the Manhattan Project and Project Apollo have come to signify the apogee of managerial expertise for projecting future in time and space [8]. Certainly, since the 1950s when cars came to resemble rocket ships, a steady stream of 'future dreams' from science fiction has flowed into the physical realities of consumer society [9]. Such expectations for the arrival of specific futures, utopias and dystopias have also been called Whig histories or manifest destiny histories which tell of where we have got to go with the presumption that we might arrive somewhere else [10].

Today's images of the energy future derive their possibility from the 1970s' energy crisis when, as a result of a semantic shift in the energy industry, technical prediction in the managerial sciences became linked to particular modes of communicative understanding. Roughly 35 years ago a shift occurred in the description of the US energy supply system as a whole. The energy supply system in the US began to be characterized by its own limitations for development. Policy analysts working at the level of individual firms and of the broader interactions of the energy system with society announced that growth in the system was coming to an end. *The Limits to Growth* is the title of one report released by MIT in 1972 [11].

Such talk on the limits of development appeared in association with discussion itself of a US energy supply system. That is, of a supply system expressed in the singular. Previously, energy supply consisted of arenas understood in more individualistic terms, such as nuclear, coal, natural gas, oil, and electricity. Each arena achieved its autonomy and singularity on the basis of certain unique (non-transferable) characteristics including, for example, the historical period during which an object of energy evolved into a mass-produced commodity. After the 1970s, these technically self-sufficient and historically self-enclosed arenas came to be expressed by their sum, in terms of the 'national energy supply system' [12].

The term 'system' as defined during this period by sociologist Talcott Parsons refers to components (institutional, technical) that are related by a network of interconnection, the state or activity of one component influencing the state or activity of other components. Thus, a shift to a national energy supply 'system' suggests that some change in the arrangement of the energy supply arenas had taken place [13].

One need only look to the creation in the mid-1970s of the US Department of Energy (DOE) to identify this new configuration. Following the Nixon Administration's attempt to unify energy organization and planning, the Carter Administration in 1977 signed into law the Department of Energy Organization Act. The Act might well be considered

the first real artifact of this semantic shift. It was the instrument for collapsing various government agencies and programs into a single department. The newly established DOE would administer the energy functions of the federal government while providing a framework for a comprehensive national energy plan.

With talk of the national energy supply system, discussion on the limits of development shifted to the search for solutions through management of the future. During the 1960s, futures research had become popular through the Delphi technique developed by the RAND corporation in Santa Monica, California, which addressed questions about military potential and political issues as well as strategic planning of the business corporation. This was the ‘era in which society had become future-oriented in its thinking’ wrote sociologist Daniel Bell at the time [14].

At the Department of Energy, the future began to be drawn into the present from the work taking place in the affiliated but autonomous research division called the Energy Information Administration (EIA). The purpose of the EIA, which still operates, is to generate reliable data and methods and to produce relevant energy supply forecasts². Today, analysts from some of the more well-known private consulting firms, including Cambridge Energy mentioned above, began their careers as EIA economists.

With establishment of the EIA, the US government provided the nation with its first comprehensive program from which to produce forecasts on the nation’s energy supply system. Previously, government had collected various energy price surveys, some dating back to the 1930s. There were also data gathered from energy production sites and which were ‘housed’ in the Bureau of Mines as well as other ‘pots of data’ that were known to exist within labor statistics [16].

The EIA program of forecasting, in some sense, also originates during the Nixon Administration, in particular, through establishment of what was referred to at the time as Project Independence Evaluations System or PIES (renamed Midterm Energy Market Model during the Carter Administration). According to one member of the initial cohort of EIA economists, the PIES was ‘a big economic model of how to get to the future, of how the future could happen. And the model was independent [of politics]’ [17]. Stanford University economist William Hogan, who is now at Harvard, was the lead developer of PIES³.

During this period, the economist’s role in the service of government was still in its infancy. In particular, the application of cost-benefit analysis in decision-making only started making inroads into government when, within the arena of environmental regulation, a shift occurred from juridical evaluation to favoring economic efficiency through mathematical models. The introduction of this shift, which was later to be called *reform*, was especially welcomed in the

arenas of energy production where industry sought to leaven the ‘dead hand of regulation’, as the true nature of the 1970s’ energy supply crisis was already being referred to by policy analysts of the time [19].

One last event taking place during this period which strikes me as important is the English translation of *Knowledge and Human Interests* (KHI), written by Jürgen Habermas, who first published the book several years earlier in Germany. Its English translation in 1972, incidentally, coincides with the same year of MIT’s release of the report *The Limits to Growth* mentioned earlier. In KHI, Habermas divides the sciences into three spheres: those with an interest in technical prediction and control, as in the natural sciences but also in the managerial sciences; those with an interest in communicative understanding, as in the humanities; and those interested in emancipation, as in Western Marxism [20].

By comparison to topics with similar titles of the period, the observations of Habermas are not unique. American scholars from various leanings had for several years been raising alarms about the fate of a society which, from that point on, was expected to be run by a ‘new class’ of technocratic intelligentsia and humanistic intellectuals whose authority rested in their theoretical knowledge [21]. The English translation, thus, can be seen as a decision by American publishers to increase the circulation of narratives that identify a specific group whose expertise is the basis of their engagement in modernizing society.

The need to promote a class of modernizing experts may itself be a reaction to discussions emerging at the time, some conservative, but others more populist, that highlight the role of technology in society in less formal terms, for example, as the art of (self) maintenance [22]. At any rate, I believe the work by Habermas is significant because it represents a horizon line after which the sciences of technical prediction begin to merge with the sciences of communicative understanding. Evidence is seen from the proliferation of consulting firms in the wake of energy market restructuring, when the advisory service (e.g., scenario planning) of consultants comes to be valued by government and industry leaders as the ‘sum total of what everyone knows’ [23].

It is from this slim epoch then—an era of ‘just prior’ to regulatory reform, a period of inchoate knowledges, of a new managerial science of prediction, the introduction of microeconomic theory to regulation and the advent of energy market restructuring—that I situate the origin of today’s representations of the energy future. To be sure, earlier images of the energy future circulate. Electricity production at the turn of the twentieth century and, in particular, its promotion at trade fairs resulted in a multitude of futuristic images [24]. And this focus on the energy future was contemporaneous with the idea of a *science of administration* (relating to the expanding social sciences), *governmentality* and other forms of ‘constructive social control’ emblematic of the period [25].

Yet, in these images a neo-classical past always penetrates the consciousness of what defines the present. What is absent is the transparency of a set of knowledges that can extend into the future out of the present. It is precisely these knowledges,

² The meanings of reliable and relevant relate to financial accounting and tax reporting. Reliable means faithful representation, verifiability and neutrality. Relevance signifies information having feedback value, predictive value and timeliness for decision-making; see [15].

³ Operations research, mathematical programming and economic equilibrium models became an important tool for economic analysis during the 1970s. See [18].

or early forms of them, that become the rationalities through which an energy future emerges from its *limits to growth* during the 1970s to a post-2000 period in which the slogan is ‘reaching for global frontiers’ [26].

To what end can the aesthetic fascination for images of the energy future lead? Ulrich Beck has written skillfully on the role of knowledge about the future in organizing present activity [27]. He notes that the relevance of a *projected cause*, a *projected variable*, and a *projected outcome*, is directly proportional to their perceived threat. Thus, the future, once intertwined with notions of progress, is now synonymous with terminologies of risk. We are caught up in defensive battles of various types, anticipating the hostile substances in all manners of living. Efforts to manage risk have become an open-ended, future-oriented project, the goal of which is not to confront a concrete dangerous situation, but to anticipate all the possible forms of irruption of danger. As such, *Risk Society* (the title of Beck’s work), is a theme that concerns the topic of decay. As Mitchell writes, we are now acutely aware of the will of things to become more disorderly, to seek entropy, and minimum sense. The modernist anxiety over the collapse of structure has been replaced by the ‘panic over uncontrolled growth of structures’ [28].

Perhaps the drama and character of today’s images of the energy future lie in their capacity for governing over the decay of the present. The images, much like the tax incentives on energy development in US Congress, slide the present into a state of ‘accelerated depreciation’⁴ in the hopes of projecting ourselves rapidly into the future.

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⁴ Testimony to US Senate Committee on Energy and Natural Resources, October 2, 2001 by Terry Koonce, president of Exxon and Joseph Marushack, vice-president of ConocoPhillips.