



Perspectives

Energy ideals, visions, narratives, and rhetoric: Examining sociotechnical imaginaries theory and methodology in energy research



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ABSTRACT

Sociotechnical imaginaries emerged in the last decade as a potentially fruitful approach to understanding how collective social values inflect on the production of scientific knowledge and the design of technological systems. Yet insights generated to date have focused on the categories experts use to define a society's idealized organization, either as the direct subject of analysis by documentary analysis or through the ways such categories circumscribe the field of authorized "values" open for adjudication in public engagement events. We argue that sociotechnical imaginaries require a new methodological framework for designing research in order to examine the collective values of citizens as they live their daily lives, rather than focusing on experts and the state in order to understand the shared moral, material, and scientific goals of a society. Drawing inspiration from rhetoric, corpus linguistics, and dialectology, we present the *Social Energy Atlas*, a new and burgeoning research project that employs such methods for studying emergent narrative patterns and variation at the local level. Advancing the theory and practice of studying sociotechnical imaginaries is of tremendous benefit to Energy and Social Science researchers, and it is our intent this commentary encourages further careful development and use of the concept.

1. Advancing a new framework for sociotechnical imaginaries

A core principle behind establishing *Energy Research & Social Science* was to advance inquiry into the social dimensions of energy systems and technologies [1]. Relegated to the purview of marketing professionals, keen-eyed ethnographers, and historians, the everyday, lived experiences of people involved in managing, operating, and using some of the most significant infrastructural projects of the last 100 years – electrification and transportation systems – were peripheral to the narrative of technological advancement. Yet as we reflect back on the journal to date, and the larger body of literature in Science and Technology Studies, Anthropology, History, English and a myriad of other disciplines concerned with the role of energy in constituting that problematic condition we call "modernity," is it enough to simply acknowledge there are humans *in* energy systems? More to the point, is the project of energy social science research fundamentally concerned with the views of individuals in specific social, political, and institutional contexts or with the larger norms, values, and systems of morality that, exercised through existent social and political infrastructures, dominate daily life?

One emergent line of energy social science research inquiry that

seeks to understand the norms and values driving innovation are studies of "sociotechnical imaginaries." Building on Jasanoff and Kim's [2] comparative study of the underlying visions of ideal social life and order, or "the good life," as brought about by the pursuit of commercial nuclear industries in the United States and South Korea, sociotechnical imaginaries are a new approach to understanding the collective cognitive schemas that bound "rational" pursuits of innovation through policy transformation. For the energy social science research community familiar with the body of work encapsulated in the field Science and Technology Studies, Jasanoff and Kim's analytical tool brings a wider frame of examination to ongoing research on "imagined publics" and the sociology of expectations. In particular, they articulate how normative commitments to social life and order are reflected in the construction of technoscientific pursuits at the multiple levels of design, system implementation, and policy development in pursuit of the "good life."

Our view, contrary to what has previously been argued in sociotechnical imaginaries research, is that the currently implemented framework in energy social science investigations constructs a contradictory perspective of analysis that has produced studies primarily focused on expert discourses as the locus of collective social visioning.

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In principle, sociotechnical imaginaries at once embrace the complexity of the social body writ large as the center of commonly held notions of what is morally right/wrong, what is rational, and what is in the self interest of the society. In practice, this approach has focused on eliciting these collective forms of cognition through institutionally-mediated documentation and preordained “social groups” surrounding particular technological projects. This results in a conundrum in which sociotechnical imaginaries’ intellectual lineage manifests a divergent analytical structure that merits teasing out. Contemporary sociotechnical imaginaries research can be tempered by performing analogous studies of the perceptions and imaginaries held by people from all different walks of life within society. As Claudia Strauss notes, human beings’ visions of the “good life” are inflected by the context in which they emerge ([18], p. 337):

Attending to real people’s cultural models, rather than the imaginaries of abstract subjects, reveals that Americans hold a great variety of cultural models for explaining people’s behavior, some of which are individualistic and others not.

What is needed is a new way to think about designing research and theory to examine the collective values of “real people’s cultural models,” when directed towards specific moral, material, and technoscientific goals.

Building on the works of cultural imaginaries theorists such as Anderson [3], Appadurai [4], and Taylor [5], sociotechnical imaginaries research focuses on explicating how science and technology are shaped by a given society’s norms and values. Broadly defined, sociotechnical imaginaries are “collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology” ([6], p. 4). Unlike master narratives, such as the concept of American exceptionalism, sociotechnical imaginaries are tools through which communities and nation-states formalize and justify exercises of power on themselves and others. Sociotechnical imaginaries are in this respect unique features of political cultures that serve to define what modifications to daily life are rational and desirable. Furthermore, this perspective explicitly emphasizes the intertwined roles of scientific knowledge, technology, and the exercise of power by nation-states through policymaking.

It is through this emphasis on policymaking that current sociotechnical imaginaries research argues it can explore and explain why particular societies and political institutions enact specific scientific and technological projects through the limited interactions of members of the public, scientists, and other governments. These collective notions of “the good life” through science and technology are assumed to be the underlying force behind the phenomena of “co-production” – the idea that ways of producing knowledge and living in the world are inexorably linked ([7], p. 2). Sociotechnical imaginaries research seeks to achieve a more nuanced understanding of the dynamics of co-production through studying how politically powerful institutions in specific cultural settings articulate social progress through advancements in science and technology ([6], pp. 2–3). Such a focus on expert imaginaries elicited through interviews and documentary analysis implements a thoroughly institutionalist perspective whereby government institutions, businesses, and non-governmental organizations are unmediated representations of a social body’s norms and values.

While current approaches to sociotechnical imaginaries research is useful for documenting how such techno-epistemic networks construct notions of society within the context of building knowledge for policy implementation and technology design, as is already captured within the existing imagined publics and sociology of expectations literatures, it provides little insight as to how such notions are collectively held and, in tandem, how they emerge in the social body as a whole. Visions of the “good life” are held broadly, and to begin such an analysis from the positionality of expertise inflects an ontology of sociotechnical

systems that presents an intractable observer’s paradox when confronting the narratives non-experts use to describe their experiences and notions of idealized futures. As a result, much research in this field up until now has overlooked the opportunity to extend this body of inquiry by creating a framework for examining how individuals make sense of and act upon alternative forms of living and working through science and technology. In an attempt to bridge this chasm between the shared understandings of energy as manifested in policy and the cultural models held by the real people for whom we assume those policies represent, this commentary brings to the table an underexplored intersection between energy social science, science and technology studies, and language studies while simultaneously presenting a novel methodological framework for studying the emergence and change of visions of science, technology, and social order.

2. Standard vs. normal, and the aesthetics of sociotechnical imaginaries

To date, the energy social science community has been conspicuous in its attempts to look beyond simply noting science and society are interlinked to ask the question, “why are social and technological orders interlinked, and how do they change across scales of interaction, forms of governance, cultures, and time?” Building on work broadly conceived under the Sociology of Expectations field of study, recent work examines how particular technological and epistemic networks engaged in developing new energy systems (e.g., electric vehicles, microgrids, low carbon housing) make sense of the human dimensions of energy systems within the context of larger commitments to decarbonization, economic development and cultural identity [8–12]. Focusing on the emergence of sociotechnical imaginaries in-situ, these works emphasize what actors at a multitude of scales do in the pursuit of new forms of daily life. In doing so, they recognize that imaginaries are thoroughly embedded and incorporated into the design of both the policies that drive their emergence and the material systems through which individuals are expected to experience alternative forms of social life and order.

What these works, amongst others, emphasize is the larger energy social science research community’s interest in studying the actions individuals and communities in pursuit of the “good life.” All of these endeavors seek to define why societies organize energy systems in particular ways, and how they might be shaped to meet emergent social, political, and ecological challenges, and yet there are ample opportunities to think creatively about the scale and scope of such studies. If the “why” behind the organization of science, technology, and society is partly described by the collective norms and values that inflect on daily behavior, it seems prudent to study how individuals describe such actions directly.

Designing a study of the imaginaries of specific sociotechnical systems that embraces the complexity of human interaction, rather than focusing on the perspectives of a select subset of any particular society’s population, begins with unpacking the implications of collecting narratives of the “good life” at the nation-state level from institutional documentation and expert perceptions and then subsequently interpreting them as being “collectively held” for the society as a whole. This is not to say that the previously-used approaches for investigating sociotechnical imaginaries are bad or wrong, but rather that they could and should be qualified as not being perspectives of society as a whole. Scholars employing these methods are risking their philosophical objectivity and viewpoint by elevating a perspective of the “‘good’ life” that at times is quite at odds with what we must then assume is a “‘not so good’ life” perspective by members of the populace of those same nation states that we hear anecdotally within our own communities and interpersonal networks. Although we may perceive certain patterns in the language-based information we are all influenced by aesthetics, or the social component of our perception as individuals ([13], p. 132):

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