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Rational Action: The Sciences of Policy in Britain and America, 1940–1960

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During the Second World War vital judgements had to made on how equipment, tactics and logistics could all be integrated into success on the battlefield. Scientists and engineers in the United States and Britain developed new ways of thinking in order to do this, and among them was operations research. *Rational Action* traces the legacy of these practices into the early 1960s, charting the rise of disciplines such as management science, systems theory and decision theory – a group of disparate methods which William Thomas labels the ‘sciences of policy’. *Rational Action* tells a rich and unconventional history of these disciplines, whilst also making a bold historiographical statement about the way historians have thought about 20th-century science.

If you were to skip the introduction and conclusion of *Rational Action*, you would find a highly detailed, yet clear and readable account of the rise the organisations, people and problems which ushered in the sciences of policy. Thomas argues that using existing histories it would be possible to synthesize a portrait of the rise of these disciplines which would represent these sciences as ‘more or less interchangeable branches of a general movement to introduce newly “scientific methods” into various public and private institutions’ (p. 6). Much of the novelty of *Rational Action* rests in Thomas’ ability to reveal a diversity in the methods of the sciences of policy which had not been previously recognised. In particular, Thomas draws out the contrasts and similarities between these sciences with a focus on the different ways they relate to policy and to each other. This is a difficult task which he manages to do with clarity, even when cutting across a vast array of individuals and institutions within the militaries, universities and businesses of both Britain and America. Indeed, in its guise as a comprehensive history of the sciences of policy, *Rational Action* is an impressive work. No doubt such a book would be of particular interest to historians working on the production of knowledge during the Cold War and those writing about post-war management and business.

But Thomas also offers something more. Within its particularly well written introduction and conclusion, *Rational Action* frames itself as an argument over how historians should conceptualise the relationship between science, experts, industry and government in the 20th century. It might seem like a strangely ambitious thing to do, but Thomas has been refining his thoughts on the historiography and methodology of the history of science on his blog Ether Wave Propaganda [2] for many years. In taking on this much broader

task *Rational Action* transcends the boundaries of its immediate subject matter. Indeed, the introduction and conclusion of the book, in particular, should be read by all those scholars working on science in the 20th century.

Thomas manages to produce his critique in a clear and succinct way, for the most part, highlighting the historiographical issues he wants to raise through recounting two influential types of narrative. The first historiographical story characterises science as a great force whose benevolent influence is being perennially blocked by a lack of appreciation amongst those in charge. Narratives in this mode were particularly influential within an older historiography of Britain which argued that an anti-scientific bias within the ruling elite was the cause of the nation's otherwise avoidable economic decline. Thomas points out that much of the history of the sciences of policy in Britain was written in this vein.

In contrast, the second narrative depicts the rising dominance of science as the crucial element of modern society. Within this story there is no struggle for the recognition of science in government and industry – it triumphs. This way of thinking about science was key to the thought of many mid-century intellectuals such as Lewis Mumford, Jacques Ellul and Herbert Marcuse. But such a narrative has also been influential within recent historical work, particularly the literature on the United States in the Cold War period. Thomas describes how many historians, journalists and conservative commentators argued that during the post-war period a peculiarly American technocratic liberalism came to dominate the political establishment. It was often argued that a naïve enthusiasm for science and technology amongst liberal elites was damaging for the state of politics, but also the cause of many ill-fated decisions. Indeed, an uncritical enthusiasm for science was said to have caused disasters ranging from America's military weakness to escalating international hostility. Thomas highlights how this type of narrative has been central to many recent histories of science in the 20th century, but particularly those accounts of the sciences of policy.

Clearly, there are major differences in the narratives which Thomas outlines, most obviously over whether science acts as a benevolent or destructive force. Yet Thomas lays out how these stories share deep similarities. They both represent scientific knowledge as radically different from non-scientific ways of thinking. This allows the uniqueness of science to act as a key feature of the historical explanation offered. They also construct their historical stories in a similar manner. Thomas writes:

> Within both narratives, an emphasis on failure – and the tacit role of the narrator as a diagnostician of failure – plays a crucial role in the selection and description of episodes populating the stories (p. 5).

Indeed, working inside both narratives, historians build stories which showcase how the undue neglect of science or an uncritical enthusiasm for science was critical to the ideological outlook of the actors under their concern; the argument then runs that the strange place of science within the thought of contemporaries was the root cause of some broader failure. Through linking failure and ideology in this manner, such histories function as 'morality tales' because within such works 'it is the narrative's moral that lends the author's work its purpose and cogency' (p. 6).

One of the central points of *Rational Action* is that such seemingly authoritative stories run against historical reality. Thomas self-consciously contradicts the assumptions which guide the influential narratives he outlined. A major theme which runs through the book is how important bridging scientific and non-scientific worlds was in the development of the sciences of policy. The nature of this intellectual partnership was something contemporaries were acutely aware of right from the very beginnings of the history of the sciences of policy. As early as 1941, Patrick Blackett, the Chief Adviser on Operations Research within the Admiralty, argued that it was crucial that the practitioners of operations research understood that what constituted making more rational decisions was ultimately defined by military personnel, not the scientist. It was up to those working in operations research to understand and simplify the bewilderingly large economy of information which was available to military officers in order for them to make better decisions. If such

work was not deemed rational by the military, it was of no use.

Moreover, Thomas shows how those working in the sciences of policy believed that intellectual collaboration between independent researchers and those in charge improved the quality of their work. Henry Tizard, the long standing government scientist and important promoter of operations research, put it to the Parliamentary and Scientific Committee in February 1942 that in order for scientists to be an effective part of the decision making process they could not work in isolation, but instead must develop their ideas in partnership with those in charge of making decisions. In fact, he argued that when scientists did this the first thing they realised was that they had a lot to learn from their military partners.

In the post-war period when the sciences of policy were far more diverse, theoretically developed and civilianised, the importance of bridging scientific and non-scientific worlds remained vital. In fact, it was often built in to the institutional structure in which operations research found itself. During the 1950s the American management firm Arthur D. Little, Inc. was one of the first commercial consulting companies to have an operations research group within their business. Whilst the operations research analysis itself was conducted by the experts, the executives of Arthur D. Little, Inc. ensured that they delivered the advice which came from such knowledge and ensured that it was well integrated into the values and structures of their clients. They were worried that if they did not integrate operations research in this manner such work could seem like a gimmick.

More broadly, and perhaps most crucially, at no point does Thomas use an abstract idea of ‘science’ as an explanatory force within his work. Within this history of the sciences of policy, science itself is not at the centre of the narrative. Instead, he focuses on what the scientists and engineers who worked within these various disciplines believed they could offer decision-makers and, equally, what the wants and needs of such decisions-makers were.

This leads Thomas to show how scientific experts had to forge their own space within government and industry by demonstrating the ways in which their work could practically improve decision-making. The account *Rational Action* offers of the rise of theoretical operations research best outlines this more general point. Historians and commentators have argued that operations research became more theoretical in the post-war period in order to enhance its authority and prestige amongst those in the outside world. In contrast, Thomas describes how in the post-war period operations research had to transform to ensure its survival. The discipline had found room amongst military planners in the Second World War as new, complex and particularly technological problems beset the Allied forces. But in the post-war context industry did not suffer from analogous problems. So operations research turned to theorising the processes of decision-making in order to retain its utility within a different context. Against this backdrop, Thomas charts the rise of methods such as inventory theory and linear programming within operations research, approaches which could speak directly to the economic and logistical problems of industry.

Throughout *Rational Action* we find that those working in government and industry were not attracted to the sciences of policy because of an overblown respect for science. The reason for the appeal was more mundane. The promise of a relatively independent viewpoint on a particular problem. Most often those who practised the sciences of policy did not have a particular stake in the result of the decision or decision-making process into which they looked. Thomas shows how it was this outsider status which granted the sciences of policy legitimacy; the procurement of weapons was the central issue for the military forces of Britain and America. Against this backdrop, new organisations emerged in both countries to offer advice in this area, such as the RAND Corporation. Much of the appeal of this American independent think-tank was that it could offer the American government high-level and rigorous analysis on what technologies it would be best to develop with relatively few ties to industrial interests.

Thomas also problematizes the idea that scientists themselves held a quixotic and misguided faith in science by demonstrating that the practitioners of the sciences of policy were often only too aware of the limitations of their methods. A particularly pertinent example is the account Thomas presents of the development of

systems analysis, a discipline developed in the United States in the post-war decades which dealt with how to make informed decisions at the design stages of technological development. A commonly told story about the development of systems analysis was that this was a disastrous attempt by the RAND Corporation to produce a single 'science of warfare' which would quantify all decisions made by the military (p. 200). In contrast, Thomas shows how this discipline was a genuine attempt to compensate for the issues which beset engineering, science and the military in the post-war United States. It was premised on the belief that since military officers always made their decisions based on some implicit logic, it was believed that putting them through a mathematical analysis could help ferret out any errors which such thinking contained. It was never designed to replace such thinking. In fact, far from a representing a naïve faith in the scientific method, critical self-analysis of their own methods was actually a part of their work. Indeed, practitioners of systems analysis endeavoured to weed out any unreasonable assumptions which entered their own ways of thinking.

But *Rational Action* also demonstrates that appearing useful to those within the government and industry was a contest. Thomas frequently outlines the clashes between experts. Right at the beginnings of operations research, we find contrasting views of how this new discipline should develop. Robert Watson-Watt, an engineer and government scientist famous for his role in the development of radar, saw operations research as primarily devoted to offering scientific advice to technical officers on existing military technologies. In 1941 Watson-Watt attempted to control the nature of operations research within the Air Ministry on this basis, but he was thwarted. In fact, it was partly through opposition to Watson-Watt's vision that Tizard came to the conclusion that operations research was most useful when informing the tactics of military planners and only of secondary use to technical advisers. Ultimately, those in the British military believed Tizard's view of operations research was more useful. Indeed, Watson-Watt's association with the discipline ended as it became formally institutionalised within the British armed forces.

Clashes between experts remain a dominant theme throughout this story. By the late 1950s irreconcilable differences had developed within the sciences of policy leading to public arguments between their proponents regarding what constituted the proper role of science in government and industry. Throughout the post-war years, Russell Ackoff and C. West Churchman worked on the philosophy of decision-making. In the 1950s, they became leaders in operations research through encouraging the development of decision theory within the discipline. But in contrast to much of the profession, they believed that operations research had the capacity to be a broad science of management. In this vein, in 1957, whilst president of the Operations Research Society of American, Ackoff gave a speech at the society's annual meeting urging practitioners of operations research to turn their attention to larger issues, namely national planning. Charles Hitch of the RAND Corporation responded to this pronouncement and argued that, broadly speaking, operations researchers were more suited 'lower-level problems' (p. 276). He was concerned that if practitioners of the discipline worked beyond the bounds of their expertise on issues which other policy advisers were more well-suited, this could tarnish the reputation of the whole field. Throughout the 1960s, Ackoff would become increasingly disillusioned by the operations research profession since it was largely unwilling to go down the course which he charted. In fact, by 1970 he claimed that the discipline was scientifically dead and cut his ties with the field.

In contrast to the conventional ways of writing about science, experts, industry and government in the 20th century which defined an older historiography, *Rational Action* has no moral story to tell. This account is not a warning about the perils of ignoring science or the dangers which come from naively accepting what scientists say. Thomas shows us that the assumptions which are built into this moralising do not really hold up well when confronted with historical analysis. In doing this, *Rational Action* serves as a stark warning to historians of science working on the 20th century, urging us to think very critically about the type of stories which we tell, the ways in which we construct them and, in particular, how we think about science. One of the most interesting questions which *Rational Action* poses is why have we not always written the history of science like this. Thomas does address this question. In his conclusion, he once again turns his attention to the historiography of the history of science and he convincingly shows how many of the assumptions which he outlined in his introduction became institutionalised within the history of science and science studies more broadly from the 1970s onwards. To map this history fully would take another book, but this is beside

the point. *Rational Action* deserves serious attention from historians of science for both excellently highlighting problems of an older historiography and for acting as an exemplar of the new sorts of stories we are beginning to tell.

Links
[1] https://reviews.history.ac.uk/item/154194 [2] https://etherwave.wordpress.com/