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Herbert Simon's Epistemological Itinerary on the Limits of Rationality

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Abstract

This article investigates Herbert A. Simon's epistemological itinerary with regard to the limits of rationality presented in his book *Administrative Behavior*, published in 1947. The investigation, grounded in materialism, explores his epistemological itinerary based on two categories of analysis: the key sources used to establish the limits of rationality and the way in which the author proceeded to investigate this object. The investigation revealed that the development of the limits of rationality gained ground in the early decades of the twentieth century and that numerous texts, which reflected a particular trend at the time, served as a conduit for Simon. Simon's assimilation of this development took place within the boundaries of empiricism, continuing the critique of the unrealism of the maximizing agent in the neoclassical school. In procedural terms of research on the limits of rationality, Simon made specific observations and, based upon them, logical inferences regarding the consequences of the limits of rationality for certain organizational aspects.

Keywords: history of administrative science; epistemology; Herbert Simon; limits of rationality

“Science is after the way the universe really is, not what makes us feel good.”
Carl Sagan

Introduction

The “limits of rationality” were first articulated by the American Herbert Simon in 1943 in his dissertation (Simon, 1943a), presented at the University of Chicago, then in the book *Administrative Behavior* (Simon, 1957a/1947¹) (hereinafter *AB*), and finally under the concept of “bounded rationality” (Simon, 1957b)—a term that ultimately brought him renown. His book is considered one of the most influential texts in management and organizational studies from the twentieth century (Bedeian & Wren, 2001). Winner of the 1978 Nobel Prize in Economics, he left behind a vast body of authoritative, influential and critical literature (Ando, 1979; Argyris, 1973; Barros, 2010; Baumol, 1979; Georgiou, 2013; Hortal, 2017; Larkey, 2002; Sent, 2005; & Waring, 1991).

Simon reflected administrative theory’s concern throughout the twentieth century with the choice process of organizational agents. Simon’s version of this theory had a considerable influence, awakening interest in decision-making involving rational and irrational aspects of human behavior (Burrell & Morgan, 1979). It had a significant impact on the theory of the firm (Mahoney, 2004; Williamson, 2004), industrial organization (Spiegler, 2011) and other fields outside of administration (Viale, 2021).

There is considerable debate on the versions of bounded rationality put forward by Simon throughout his career (Gigerenzer, 2021). In general, however, Simon maintained an interest in understanding how human beings make choices, considering that the human capacity to make rational decisions is inherently limited and affected by different factors, thereby making it impossible for them to obtain maximizing answers, as supposedly advocated by the neoclassical economic theory of the time. Simon posed the problem in the following way:

How do human beings reason when the conditions for rationality postulated by the model of neoclassical economics are not met—for example, when no one can define the appropriate utility function, or suggest how the contribution of expenditures to utility is to be measured? (Simon, 1989, p. 377)

This administrative theory was widely critiqued (Argyris, 1973; Waring, 1991), including by Ramos (1989), who had a significant impact in Brazil. For that author, Simon was part of a trend known as “cognitive politics,” that is to say, an impulse to study human choices to find ways to control organizational agents. The point made by Ramos, as well as by other authors, is that there are different rationalities besides the economic rationality that Simon focused on, namely, rationalities that more closely correspond to other organizational spaces and ways of acting.

This discussion continues in the present day and is generally expressed in the frequent clash between administrative theories and critical theories. The debate concerning the rationalities involved in the actions of organizational agents thus remains a heated topic (Bizarria, 2019; Matarazzo & Serva, 2019). This debate is one of the theoretical aspects that helped shape the study of management and organizations that can be traced, in one way or another, to Herbert Simon.

Although this theoretical insight occupies a central place and Simon is one of its emblematic authors, there is insufficient research on the path taken by the author and what led him to the limits of rationality. Studies on certain authors' influences on Simon (Kerr, 2007; Nieuwenburg, 2007) and the development of the concept of rationality (and adjacencies) after 1943 (Barros, 2010; Brown, 2004; Hortal, 2017) do not investigate this path. Even the recent important collections (Viale, 2021) do not dwell on the subject. There is thus an important gap to be filled.

When considering the itinerary followed by Simon, our concern becomes epistemological. Following Serva (2013), epistemology is concerned with knowledge and may be applied in specific areas, such as the theory of knowledge in administration. According to the author, epistemology can contribute to, among other things, the historiography of administrative theories, as it would make it possible to explore other possibilities that diverge from the predominant "established serial nature" (Serva, 2013, p. 61) through which administrative thought is usually presented. Particularly in terms of this latter aspect, the theory of knowledge in the area of administration seems to demand a history of administrative science as a general approach, that is, an effort to situate the production of knowledge in the area within a historical perspective.

As such, this article performs a historical analysis of Herbert Simon's epistemological itinerary as it relates to his arrival at the limits of rationality, as presented in 1947, to fill the gap identified on this subject. To carry out the investigation, this article adopts the understanding that the epistemological itinerary of an author (or group of authors) reflects their knowledge process. With regard to this epistemological itinerary, we can consider two categories of analysis: in relation to both the theoretical-epistemological tradition in which it is situated and the investigative procedures employed. These and other methodological aspects will be presented in the section focused on the subject.

The article is therefore divided into four sections. In the first section, we will present the foundations and the methodological procedures. In the second section, we will more precisely delineate the period and the key texts that described the problem of the limits of rationality. In the third section, we will present the main conduits through which those limits appear in Simon's epistemological itinerary, as well as how the author investigated those limits for his proposals concerning administrative behavior. In the fourth section, we will present final considerations.

Foundations and methodological procedures

As stated, Simon's epistemological itinerary has generally been examined through historical analysis. It is necessary to consider both the foundations and the procedures of this type of analysis, particularly because the history of administrative science has yet to be fully explored within the broader topic of the history of administrative thought.

In terms of its foundations, the approach used is based on literature from scientific materialism, which, similar to other approaches to scientific processes, considers the inescapable demands of objectivity and historical realism (Bunge, 2001, 2006; Schaff, 1991).

In this literature, a special place is given to studies on forms of consciousness, including administrative thought (Paço Cunha, 2020, 2021a; Paço Cunha & Guedes, 2016). In this approach, the ideal formations are not autonomous, nor do they have a history of their own. They are enabled

by concrete-historical conditions, have practical roots independent of the degree of abstraction of those formations, and impact the enabling conditions themselves, producing varied results in different directions—sometimes contrary to the stated intentions. Forms of consciousness, in short, are responses (with a varying effectiveness) to the problems posed by their own objective conditions of possibility. As such, the epistemological itinerary does not occur in a vacuum or as an autonomous movement on the plane of ideas.

Nevertheless, due to the constraints imposed by scope and space, we acknowledge the necessity, in the present article, of provisionally refraining from a direct analysis of the concrete-historical conditions involved in Simon's epistemological itinerary. We also adopt this approach to consider the problems immanent to this specific itinerary and because the materialist approach "does not reduce the world of consciousness with its forms and contents directly to the economic structure, but rather relates it to the totality of social existence" (Lukács, 2012, p. 308), where the study of these forms and their contents does not preclude the influence of the ideas of previous generations. It is, in fact, common and understandable that authors

...supported their arguments with the findings and methods of those thinkers of the immediate and more distant past who had voiced ideas which tended in the same direction and appeared of importance to them. This was all the more so since the social circumstances under which [not only] philosophical propositions and methods arise will show, despite all the – often qualitative – changes, a certain continuity which must naturally be also reflected ideologically [in terms of forms of consciousness] (Lukács, 2020, p. 352)

This recognition is essential to investigating Simon's epistemological itinerary from a historical perspective.

The particular exercise of the history of administrative science becomes crucial if we consider that the main relationship between the history of science and studies of administration and organizations is demonstrated in the broad circulation of texts on the history of management thought, the history of management, and the uses of historical research with a relativistic approach to the whole (Coraiola, Barros, Maclean, & Foster, 2021). In contrast, the actual history of scientific development in the area—in which not deviating from historical objectivity and realism is an essential aspect and one that we embrace in this study—does not seem to have gained the same audience, despite its prominent place alongside, more generally, the sociology of science (Serva, 2016). In this direction, it becomes a significant methodological contribution to establish the historical analysis of administrative science in materialistic terms, following Simon's example.

It is therefore important to establish the categories of analysis in terms of the foundations of the historical analysis proposed. We understand that, although it is part of the history of administrative science as a general approach, the epistemological itinerary we refer to here corresponds, as stated in the introduction, to the path of an author (or authors) that reflects the knowledge process. Despite the existing controversies, this understanding is inspired by the current trend in studies on the history of science, which describes and explains the actual process by which scientists have carried out their research, made certain discoveries, followed certain trends, etc. (Feyerabend, 2007). Similar questions can be posed with respect to the philosophical and social

science thought of a given period (Lukács, 2020). Although this interest is still in its infancy, it is present in studies on management and organizations. The investigation of Henri Fayol's embrace of the experimental method used in nineteenth century physiology is an example of this approach (Paço Cunha, 2021b).

Nevertheless, to study Herbert Simon's knowledge process or epistemological itinerary, we propose two general categories of analysis: (a) the tradition in which he was situated and the legacies he inherited from it and (b) the research procedure itself, which underpinned his key propositions. With these categories of analysis at hand, we focus specifically on Simon's epistemological itinerary with regard to the limits of rationality as an object (what) that is inherited, through his key sources and his investigative procedures (how he investigated that object).

In procedural terms, the analysis of the epistemological itinerary regarding the limits of rationality considered the young Simon's university years, which culminated in his dissertation and, later, in the book that brought him renown, delineating information and published texts that offer important evidence. However, Simon's autobiography (1996) also served as a source because it contains elements—in retrospect—of the period of interest to our investigation. As is customary, we considered other research already performed on the author related to the subject.

The study required a procedure to temporally delineate the texts involved to establish greater closeness to the moment when the limits of rationality first began to take shape in Simon's itinerary. This procedure made it possible to consider what had been accumulated by the author up to that point, given his primary concern with understanding how human beings make choices. It also required a procedure to systematically delve deeper into the many explicit and implicit key sources that animated Simon's intellectual activity, making it possible to not only situate Simon in a particular theoretical-epistemological tradition but also to identify elements that would reveal which procedures he would have carried out to investigate the limits of rationality.

First, we will look at the aspect of delineation.

Delineating the limits of rationality in H. Simon's epistemological itinerary

The attribution of "bounded rationality" to *AB* is an open question. There is some debate regarding whether it is a true anachronism to attribute it to the 1947 text since it does not appear in that exact phrasing (Barros, 2010; Hortal, 2017). Simon (1996) argued, however, that the central elements were already present in that text. A reading of Chapter V shows that the "limits of rationality" (Simon, 1957a/1947) involve the incompleteness of knowledge and the difficulties of anticipating outcomes and discerning all possible alternatives. Virtually the same concerns are found earlier, in his dissertation (Simon, 1943a). We can thus assume that the fundamental elements of "bounded rationality" were present *in nuce* in the discussion of the "limits of rationality." Our interest, however, is delineating the development of these elements from Simon's perspective prior to 1943.

More explicitly, Simon (1957a, 1979, 1989, 1996) attributed the idea of the limits of rationality first present in his dissertation (Simon, 1943a) to the unpublished 1935 study entitled *Administration of Public Recreational Facilities in Milwaukee* (cited by Simon, 1957a/1947). He also

suggested that the idea was supported by research on the incidence of taxation in California (Simon, 1943b) and that the idea of bounded rationality appeared in a muted way in Chester Barnard (Barnard, 1979/1938). In this respect, he stressed that the “closest parallel is Barnard’s notion of opportunism and strategic factors, ideas that he derives from John R. Commons” (Simon, 1996, p. 87). Simon further explained that as he himself had also “read Commons, the latter’s *Institutional Economics* [of 1934] may have been a common source for these various conceptions of rationality that deviate from the economists’ maximization of subjective expected utility” (p. 87).

When considering the indicated sources chronologically, it is possible to add other uncited sources that help delineate the idea with greater precision.

The 1935 article on the administration of recreational parks in Milwaukee indicated as its origin (cited by Simon, 1957a/1947) raises a number of difficulties, not least the fact that it has not been published. The most extensive passages attributed to the text are found in Chapter X of *AB*, on *Loyalties and Organizational Identification*, and are used to describe the relationship between the Extension Department and the Playground Division, where the “focus of attention of participants in an administrative structure is determined by their position in the structure” (Simon, 1957a/1947, p. 211).

Notably, the passages cited by the author, immediately following the previous statement, do not directly suggest the problem of the limits of rationality. Much more indicative is the differences in purpose attributed to each administrative structure mentioned. Notwithstanding the differences, the author himself wrote that each “department understands fully that both objectives are desirable, and to a certain extent necessary, in the administration of a successful program” (cited by Simon, 1957a/1947, p. 212). This statement suggests that the issue identified is linked more to the structure of the departments than to the focus of attention provided by the positions in the structure. Accordingly, we consider it problematic to attribute the limits of rationality to the 1935 text, considering that we are not able to access it. Here, perhaps, there is a certain anachronism, as Barros (2010) suggested for the case of *AB*.

Simon (1937), in *Comparative Statistics and the Measurement of Efficiency*, mentions that efficiency is affected by organizational factors (recruitment, working conditions, remuneration, etc.) along the lines of what would be considered organizational influences on rationality in the decision-making process. However, there is no trace of the limits of rationality anywhere in the text.

In terms of the measurement of municipal activities, there are no clear elements beyond the affirmation of a “heterogeneity of objectives” (Ridley & Simon, 1938, p. 31) among departments. Nevertheless, it is important to highlight the role of this experience of Simon’s in the writing of his 1943 dissertation, the basis of *AB*. For one, Clarence Ridley, Simon’s coauthor and a kind of instructor, had accumulated experience and some scholarship that echoed the concerns that would define Simon’s trajectory. For example, there were texts such as *Measuring Municipal Government* from 1927, the basis of the program that Simon entered in 1936, and *The City-Manager Profession* from 1934. Conversely, a considerable portion of the empirical characteristics of different municipal departments would serve as the foundation for the countless illustrative examples (based on inferences, as we will see below) that Simon used to point out the practical problems of administration (fire department, recreation, municipal planning, health administration, etc.).

Accordingly, through contact with specialists and visits to different departments, Simon made observations that would serve as the foundation for his dissertation in 1943 and be repeated in his book years later. This material seems to have led our author to perceive theoretical gaps based on his experiences. He found himself with questions, arising from the capitulation to the practical needs of management to know, for example, who should run the Recreation Department, how to organize municipal planning, questions for which, he said, no “theory existed that could provide the answers” (Simon, 1957a/1947, p. xiii). The observation provides an interesting way to underscore that the gap identified by empirical experience is the fault of (administrative) theory rather than its epistemological foundations. Furthermore, in 1938, Simon was still a student, and it is therefore debatable whether he had already accumulated the entire theoretical apparatus necessary for a consistent evaluation. As such, the question emerges as a conundrum, guided by a practical interest, when confronted with an empirical situation for which the theory accumulated by the author—and not the entirety of it—seemed insufficient.

By 1940 (considering *The Technique of Municipal Administration*, a collective work by *The Institute for Training in Municipal Administration*, 1947/1940), the path concerning human behavior appeared as a possibility for Simon, partly because of the openness of political science to behaviorism at that time. Charles E. Merriam’s role as a key figure at the University of Chicago was particularly important to Simon (1996). We will return later to the figure of Merriam and his call for empiricism, through which behaviorism entered academic circles in a struggle with orthodoxy in political science, a quarrel in which Simon was very active, learning to, as he put it, later subvert orthodoxy in economics (Simon, 1996).

Also relevant are concepts from the administrative literature, in development at the time, concerning behavioral questions. Echoing Chester Barnard, Simon and his colleagues wrote, in *Determining Work Loads for Professional Staff in a Public Welfare Agency*, that “administration is a form of cooperative behavior” and that the “successful execution of this experiment has been due largely to the intelligent and loyal assistance of those whose ‘behavior’ was under study” (Simon, Divine, Cooper, & Chernin, 1941, p. ix).

The 1941 texts already more closely reflect the problems involved in the choice of agents. With Simon (1941), in *The Planning Approach in Public Economy*, the problem of rationality typically found in neoclassical theory is very evident, despite the difference—now under the apparent influence of Commons (1934)—that the institutional aspects are more clearly introduced as conditioning factors. That same year, however, the question becomes even more explicit in *Controlling Human Factors in an Administrative Experiment*, in which he draws on the psychological factors developed by E. Mayo. There, he wrote that when the worker

has time and sufficient information to make a carefully reasoned decision, that decision will reflect values and objectives derived from his attachment to his profession; when there are not the time and data for a rational decision, a worker will tend to react in terms of the “accepted” standards of performance of his profession. (Simon & Divine, 1941, p. 489)

Based on this evidence, the period between 1940 and 1941 more reliably reflects the development of the problem linked to the limits of rationality. However, we also find uncertainty in the same year that the dissertation was presented. The text on the incidence of taxes on property (Simon, 1943b), which, according to Simon (1996), would have served to deepen the idea of the limits of rationality, does not provide much support for this finding. A reading of the text suggests that aspects related to decisions or to the limits of rationality are excessively lateral, even nonexistent. What, during the research leading up to the article, might have deepened the question of the limits of rationality is not evident. Furthermore, the article published in 1943 coincides with the year of the dissertation, which, also according to the author—and indeed, this fact can be confirmed by a casual reader without any difficulty—contains elements concerning the limits of rationality that would be further developed in the following years.

There are texts, however, that we were unable to access directly, which is a limiting factor in the investigation. The first edition of *The Technique of Municipal Administration*, for example, from 1940, proved inaccessible, and the third edition consulted, from 1947, incorporated many questions present in the 1943 dissertation and in the 1947 edition of *AB*. The preface to the third edition states that several chapters were completely rewritten and that these “revisions have been largely the work of Herbert A. Simon” (The Institute for Training in Municipal Administration, 1947, p. viii). As such, we have not been able to determine precisely what would have been developed in 1940, prior to the revisions made based on the questions posed by the dissertation.

Nevertheless, there are enough elements that support the hypothesis established here that the limits of rationality were more clearly defined beginning in 1940, becoming textually explicit in 1941. This delineation is important, as it enables us to identify what had been accumulated by Simon prior to 1941 and would have illuminated the increased concern with determining *how agents actually make decisions*. In effect, his experiences with public administration, particularly in 1935 and 1938, seem to have brought to the fore the practical needs of this administration, primarily that of organizing and coordinating activities in accordance with previously established objectives. Central to these experiences would be the possibility of understanding the decision-making processes that would influence the consciousness of agents in the direction of desired behaviors². This point is crucial to emphasize the requirement of a distinct kind of “realism” that defines Simon’s epistemological framework in empiricism, as we will see in the following section.

H. Simon’s epistemological itinerary: sources and procedures concerning the limits of rationality

Following the delineation, in this section, we will present the essential aspects of Simon’s epistemological itinerary, considering the categories of analysis presented above.

In this regard, an inescapable aspect of the epistemological itinerary in question are the intellectual sources largely assembled as a foundation intended to illuminate the choices of agents and their behaviors. Here, there is a considerably broad collection that converges in the 1943 dissertation and in *AB* years later: price theory grounded in the neoclassical school; R. Carnap’s logical positivism; W. James, J. Dewey, and E. C. Tolman’s pragmatism and empiricism within psychology; Merriam’s classical empiricism, Chester Barnard’s empiricism and Knight’s positivism

with a rationalist bent, as well as J.R. Commons's institutional economics, the latter being the key component for the reasons below.

The analysis of these key sources will shape the conduits through which the limits of rationality reached H. Simon and will supply the elements for identifying the author's investigative procedure. We will begin by looking at his key sources.

Key sources for the limits of rationality

Simon's university years between 1933 and 1936 provided him with a working knowledge of neoclassical economics. This education gave him the skills necessary to axiomatize statements. His appreciation of mathematical formulation was never lost, but he became increasingly aware of the more formalistic tendencies of neoclassical economics, to the detriment of an empirical interest. This clash would occur explicitly years later—in the widely debated opposition between the maximizing agent and the “satisficing” agent (Brown, 2004; Simon, 1955)—but the demands of “realism”—of a special type³—are already present in the preface to the first edition of *AB*, when he recognized that few studies “have caught and set down in words the real flesh and bones of an organization” (Simon, 1957a/1947, p. xlv). More critically considered, it is also possible to read that the then existing “[a]dministrative description suffers currently from superficiality, oversimplification, lack of realism” (Simon, 1957a/1947, p. 38). That same text anticipates this keen “realism” years later. According to Simon,

Since this “principle of efficiency” is characteristic of any activity that attempts rationally to maximize the attainment of certain ends with the use of scarce means, it is as characteristic of economic theory as it is of administrative theory. The “administrative man” takes his place *alongside* the classical “economic man.” (Simon, 1957a/1947, p. 39) (emphasis ours)

This question is particularly salient, for it suggests that the differentiation posed by the limits of rationality in the figure of the administrative man is not an inflection “outward” from neoclassical economics. We therefore observe a strong line of continuity.

During Simon's university years, he frequently attended Rudolf Carnap's classes on logic and the philosophy of science, particularly concerning mathematically applied science (Simon, 1996). Carnap was one of the luminaries of logical positivism, a movement that had a considerable academic following at the time. Simon's embrace of logical positivism strengthens his foundations in a certain trend of empiricism. Simon (1996) stated that Carnap was “particularly important” (p. 53), as at that time our author was nurturing “a strong interest in the logic of the social sciences” (p. 53), looking at the application of the ideas of logical positivism. Before moving toward the configuration adopted in 1943 in his dissertation, Simon planned to investigate “the logical foundations of administrative science” (p. 54). The influences of logical positivism are most notable at two moments in time.

First, at the time of his initial plan for his dissertation after graduation, he wrote Carnap a letter in 1937, in which he expressed his interest in applying the logical positivist's ideas to

administration. He suggested that the “distinction of analytic from synthetic sentences plays a very important role” (Simon, 1996, p. 54) in his initial project and that he was encouraged by the results of applying the definitions developed by Carnap in *The Logical Syntax of Language*, “for their rigor would make it possible to reach much more definite conclusions than if a less formal idiom were used” (p. 54). This statement calls attention to the fact that the influences seem to have had an effect on Simon’s way of thinking and presenting his ideas (based on the figure of the “formal idiom”)—and that they consecrate the central role of language in logical positivism—but do not suggest the problem of the investigative procedure itself—which we will examine later. This effect is reinforced in the preface to the first edition of *AB*, where Simon writes that he sought “adequate linguistic and conceptual tools for realistically and significantly describing even a simple administrative organization” (Simon, 1957a/1947, p. xlv). Once again, an expository resource is suggested rather than an actual investigation (to which we will return).

Second, in *AB*, the influence of logical positivism is apparent in the distinction between factual and ethical propositions, the former being “statements about the observable world and the way in which it operates” (Simon, 1957a/1947, p. 45), and the statement that it is a “fundamental premise of this study that ethical terms are not completely reducible to factual terms” (p. 46). The latter could be scientifically evaluated, while the former could not. Recognizing this influence, in his dissertation, he acknowledged certain debts to R. Carnap and A. J. Ayer, as well as others, such as Wittgenstein (Simon, 1943, p. 30, footnote 1).

Setting aside the debate about the distinction and its implications for both decisions and the identification of an amorality in Simon (Waring, 1991), the elements presented help place Simon within logical positivism. Tellingly, Simon stated in retrospect that in his university years, “I had already embraced a logical positivism that I have never relinquished,” adding that “I would prefer to call it empiricism now [in 1996]” (Simon, 1996, p. 44). This statement is not inconsistent with the consideration of the “observable” level as the borderline parameter of a scientism grounded in superficial realism; it reinforces the contours of empiricism as the most unshakable foundation of the sources that would characterize Simon’s epistemological itinerary (Hortal, 2017; Kerr, 2007; Waring, 1991), without creating obstacles related to the logical positivism declared.

Delving deeper into this terrain will enable us to more directly identify the consequences of the limits of rationality. It therefore becomes important to observe the interplay between institutional economics, psychology informed by pragmatism and by experimental inclinations, as well as administrative thought itself.

As Simon himself stated, the chapter in *AB* entitled *The Psychology of Administrative Decisions*, in which the question of the limits of rationality arises explicitly, borrows its premises from earlier developmental behavioral psychology. Simon wrote in a footnote that no other text contributed more to the “terminology and viewpoint” (Simon, 1957a/1947, p. 80) of the chapter than Tolman’s (1967/1932) *Purposive Behavior in Animals and Men*. One of the editors of the 1967 edition of this book was enthusiastically of the opinion that Tolman provided “not only a complete psychology but a behaviorism which is neither physiological nor metaphysical. It is a thoroughly intrabehavioral system, dependent on nothing outside itself except experimental observations of animal and human behavior” (Elliott, 1967, p. viii). The concerns with cognition and action are quite noticeable in Tolman’s (1967/1932) text, which are clearly adopted by Simon—and not just in declaratory terms. In Simon’s dissertation, he argued, in Tolman’s footsteps, that when a

human being is confronted with a choice, his behavior, like that of the white rat, is determined by (1) his ends, and (2) his expectations as to the consequences which will flow from the choice of each alternative—that is, knowledge of the appropriateness of the means. Behavior is termed “rational” when it is appropriate to the desired ends. (Simon, 1943a, p. 23)

This remark suggests that the limits of rationality owe more to Tolman and his experimental observation than is generally acknowledged in the literature. Tolman, a practitioner of experimental psychology, is often overlooked as an important influence on Simon. Even more crucial is the recognition that Tolman served as a conduit through which the limits of rationality reached Simon.

To remain within the general territory of psychology, we must consider its sources in the figures of W. James (*The Principles of Psychology*, of 1925) and J. Dewey (*Human Nature and Conduct*, of 1930), authors, incidentally, also cited by Tolman. Simon (1957a/1947, p. 80) considered them important sources for questions concerning habit and attention. These pragmatic and empiricist authors influenced aspects related to the limits of rationality considerably more than what Simon actually states in *AB*. Simon’s dissertation contains more developed elements in this regard, addressing the unintended consequences of practical decisions (Simon, 1943a, p. 55). For a more direct example, our author noted, based on Dewey’s statements (*The Public and its Problems*, of 1927), that institutions “provide the general stimuli and attention-directors which channelize the behaviors of the members of the group, and which provide those members with the intermediate objectives that stimulate action” (p. 71). Kerr (2007) also suggests the proximity we have noted and considered that the influence of James and Dewey is “almost impossible to exaggerate,” adding that the “similarity of James’s notion of the ‘fringe of consciousness’ to Simon’s construction of bounded rationality is readily apparent” (p. 260)⁴.

Moving on to the sources in economics, it becomes even more impossible not to notice the transit of the limits of rationality all the way to Simon. In this regard, it is interesting to observe the introduction of the concept of “uncertainty” and the feasibility of tracing Simon’s attempts to draw closer to the limits of rationality and other related questions. One example is Knight (1921), a professor in Chicago, and his book *Risk, Uncertainty and Profit*, which had a broad impact. In this text, the author established—using the logical method (or a positivism of rationalist inclinations) and based on the price theory of neoclassical economics itself—aspects considered realist regarding the decision-making of agents under ever constant conditions of imperfect knowledge, which would guarantee a permanent degree of uncertainty. He went so far as to stress that with “uncertainty entirely absent, every individual being in possession of perfect knowledge of the situation, there would be no occasion for anything of the nature of responsible management or control of productive activity” (p. 267). At another point, when proclaiming realist demands similar to those Simon would come to make, he emphatically noted that “[g]reater violence is done to reality by the specification of perfect competition among organizations. . . This assumption involves, in the first place, perfect knowledge” (p. 107), which, however, does not exist anywhere, as Knight argued.

Knight’s text appeared as a central influence in Coase (1937), for example, in the development of the theory of the firm, with far-reaching effects on administrative and organizational studies. Debating at length with Knight, Coase wrote that the “question of

uncertainty is one which is often considered to be very relevant to the study of the equilibrium of the firm. It seems improbable that a firm would emerge without the existence of uncertainty” (p. 392). It is noteworthy how Coase’s position, argued prior to Simon’s conception, will be essential to “information asymmetry” and how “bounded rationality” itself will be integrated years later, and without great difficulties, into transaction cost theory, as demonstrated by Williamson (2004). Not coincidentally, Simon (1943a, 1957a/1947) echoed several points by Knight. The problem of imperfect knowledge thus resonates with many elements characterizing the limits of rationality prior to Simon’s conception of it.

It is also possible to observe the problem of psychology in economics in Knight (1951/1925), who wrote that “[t]o live, on the human plane, is to choose” (p. 88). Importantly, Knight also considered the problem of the distinction between fact and value in the social sciences (Knight, 1986/1942) a year before Simon’s dissertation used this differentiation under the stated influence of logical positivism, although the latter did not admit, unlike the former, that “a science of sociology inevitably involves ethical assumptions” (Simon, 1957a/1947, p. 251). It would not be an exaggeration to surmise, however, that important elements may have carried over from Knight’s texts to Simon’s during his years in Chicago. Moreover, Knight’s acquisitions related to uncertainty are entirely embedded within neoclassical theory, with the aim to “state the essential principles of the conventional economic doctrine more accurately” (Knight, 1921, p. vii).

We have already mentioned Simon’s claimed similarities with Chester Barnard regarding the limits of rationality. In fact, a perusal of *The Functions of the Executive* suggests that Simon was certainly influenced, as we can read that the “capacity of most men to make decisions is quite narrow” (Barnard, 1979/1938, p. 191). Additionally, our author suggested that the common territory between them would have been J. Commons’s institutionalism (1934). Indeed, an analysis of *Institutional Economics* suggests that Commons’s influences (already fully visible in Simon, 1941) were crucial for different reasons.

One of them is to clearly counter the claim opposing the trends considered unrealistic regarding the behavior of economic agents that were present in marginalism as a foundation of the neoclassical school. Importantly, here, marginalism was being critiqued in the years prior to Simon’s arrival at the limits of rationality. As shown above, Knight already seems to accommodate those critiques. Not coincidentally, Machlup (1967) observed that disagreements about maximizing behavior and the lack of realism of price theory would have animated discussions between the classical and historical schools of economics well before the 1930s, the decade in which institutionalism protested against the abstract theory prevailing in the neoclassical school, demanding a more realistic model than the theory of the firm at that time. Simon can also be situated within this general framework. Reading Chester Barnard’s text broadens this possibility, given the stated influences for Simon’s conception, as we can identify significant references to the narrowness of the concept of the economic man in the theory of the time (Barnard, 1979/1938).

Furthermore, there is substantial evidence in both Commons and Barnard—at greater length in the latter—of the influence of Pareto’s considerations regarding the illogical behavior of human beings. In fact, under the leadership of Lawrence Henderson—a proponent of Pareto’s sociology in the United States—a group was established at Harvard, in the 1930s and 1940s, which became notable for seeking to develop a general theory of organizations (Cot, 2011; Heyl, 1968; Keller, 1984). Its members included Parsons, Barnard, and Mayo. It would not be amiss to consider this

framework as a source for Simon, as in addition to Barnard's conclusions, Simon wrote in a footnote, when citing Pareto's *Mind and Society* (a translation of *Trattato di sociologia generale*, of 1916), that it is a misconception to assume that the behavior of "human beings [is] always or generally rational." This misunderstanding, present in political theory and classical economic theory, he added, "has been decisively refuted by modern developments in psychology and sociology" (Simon, 1957a/1947, pp. 61-62). In the end, these remarks are suggestive for identifying the conduits through which the limits of rationality reached Simon from the territory in question.

Returning to Simon's earlier acknowledgement of Commons's centrality, we can see that he obtained "many insights in [his] initial studies of organizational decision making" (Simon, 1979, p. 136). By Simon's (1996) own admission, he read this text around 1938 (before he had access to Barnard's *The Functions of the Executive*) and there is thus every chance that he did indeed pass through this conduit, in the direction of both the limits of rationality fully described in 1941 and the research procedure itself.

Furthermore, in regard to the first question, Commons himself made numerous references to James and Dewey. In one of them, commenting on the differences between the pragmatisms of those authors and Peirce, he admitted that James "construed the test of truth of an idea not merely as to whether it leads to expected consequences, but also whether it leads to *desirable* consequences, such as individual happiness, or Dewey's *desirable social* consequences" (Commons, 1934, p. 150). This statement reinforces the hallmarks of psychology indicated above. It is therefore possible to speculate whether Commons might not have influenced him on those points. There are moments when this hypothesis is reinforced by the fact that Commons emphasizes the mental processes involved in choices:

... the economic doctrine of the will is frankly an environmental or institutional will wherein the changing relations between the limiting and complementary factors are directly known or expected through the lessons of experience. Herein it is Dewey's psychology that most neatly fits the case. The human will experiences the *relations* between factors, as well as the factors themselves, else it could not know how to get remote results by controlling the strategic factors which in turn modify other factors; and a result far greater than the individual could accomplish is actually accomplished by machines and institutions.

It is indeed from the relation between limiting and complementary factors that the mind derives the ideas of cause and effect. By controlling the limiting factor at the right time, right amount, right place, it controls the other factors and the result is a going machine, a going business, a going concern. (Commons, 1934, p. 647)

In short, the recognition of limitations in the choice process, institutional constraints, the possibility of controlling the limiting factors, etc. are fully visible in the discussion of the limitations of rationality in Simon's texts under consideration.

Nevertheless, Commons's influence is not limited to this connection between the economic doctrine and James and Dewey's empirical and pragmatic psychology. There are links that are equally important that go back to the epistemological problems initially posed by Hume. Simon does not seem to have directly discussed Hume's work, but there are other suggestions concerning the

existence of convergences that seem consistent (Nieuwenburg, 2007) and therefore merit consideration.

Indeed, an eventual reading of Hume's empiricism makes it possible to capture elements with the power to characterize what would come to be called the limits of rationality. Hume recognizes the influence of past experiences, customs and habits, and belief and memory regarding the processes of the mind (scientific or practical). In the general framework of the problems with knowledge, the recognition of the limits of reason, of influencing factors (such as dogmas in Bacon), is not new. Hume, however, seems to have explicitly developed a skeptical position that also underlies James, Dewey, and, later, Simon. Not coincidentally, Commons (1934, p. 140) linked, through lengthy considerations, Hume, Peirce, James, and Dewey. In this regard, Hume makes an interesting observation, recognizing that the

utmost effort of human reason is, to reduce the principles, productive of natural phenomena, to a greater simplicity, and to resolve the many particular effects into a few general causes, by means of reasonings from analogy, experience, and observation. (Hume, 1971/1748, p. 140)

Hume emphatically argued that the "observation of human blindness and weakness is the result of all philosophy, and meets us, at every turn, in spite of our endeavors to elude or avoid it" (p. 140). He concludes: "No conclusions can be more agreeable to skepticism than such as make discoveries concerning the weakness and narrow limits of human reason and capacity" (p. 160). The similarities that reflect important characteristics of the limits of rationality leap out of the lines and reinforce connectives between Hume, James, Dewey, Commons, Barnard, and Simon through the threads woven between empiricism and pragmatism.

Simon's proximity to a derivation of empiricism anchored in the natural sciences (a stated emphasis on observation as the limit of science) and, at the same time, his abiding concern with how human beings decide (a concern also found in pragmatism), suggests that the limits of rationality was forged using raw material gathered from empiricism. If one considers Hume's skepticism about reason and human capacity as described, the strength of the hypothesis that Simon's epistemological itinerary did not extend beyond the identified tradition in terms of its sources, increases considerably. In other words, it was an acquisition immanent to the complex ramification within empiricism, though not without the aforementioned additions of pragmatism and neopositivism. Thus, the limits of rationality as perceived by Simon derive from previous developments in the very realm of empiricism and the accommodation of the neoclassical school to the critique of its unrealism.

Investigative procedure for the limits of rationality

We can now consider the second question regarding the actual research procedure itself, which complements the epistemological itinerary under analysis. If, in terms of sources, it was initially important to explore the transit of the limits of rationality as an object, it is now important to describe how Simon approached the investigation of that object.

In this respect, there are direct and crucial considerations by Simon (1996) about his inspirations in the empiricism influenced by the classical tradition, characterized by “common observation and experience” (p. 59), which are useful for identifying the research procedure. There is clearly a skeptical position toward systematized investigative operations and simultaneously the notable admission that “much knowledge about human society—even knowledge that might be termed ‘scientific’—has been derived from observation and experience” (p. 58). Simon uses the example of William James, who “was this kind of naturalist, an observer of himself and others, who performed almost no experiments in the laboratory” (p. 58). Similarly, economics “has made almost a positive virtue of avoiding direct, systematic observation of individual human beings while valuing the casual empiricism of the economist’s armchair introspection” (p. 59). Simon recognized the limits of this position and accepted the validity of Merriam’s critique of the “methodological deficits” of this approach. Simon also argued that the empiricist-oriented behaviorism of his political science professor in Chicago provided the corrective methodological innovation for the identified deficits—one of the reasons, incidentally, for the clash with the political science *status quo* of the time. Accordingly, Merriam’s important texts, Simon argued, “belong to the classical, but empirical, tradition of observation, experience, and reflection” (p. 59). Simon’s conclusion is an identification with and embrace of this position. He wrote that he was aware that his “*Administrative Behavior*, while almost wholly empirical in intent and content, lies within this same classical tradition. However behavioral its content, the ‘facts’ in that book are derived largely from observation and experience” (Simon, 1996, p. 59).

This statement reinforces our observation in the previous section about the importance of his empirical experiences (in which the supposed facts were collected), in 1935 and 1938, for writing the dissertation and *AB*. Additionally, in terms of this aspect, the investigative procedure that Simon employed could be discussed with reservations in many scientific circles because, under Barnard’s influence (1979/1938), our author suggested that

a little administrative experience goes a long way. Life in organizations is not very different from life elsewhere. Most of the writing on administration, including Barnard’s, was based on everyday observation, not on esoteric experimental or observational techniques. (Simon, 1996, p. 73)

Reading Barnard’s text corroborates Simon’s understanding, as there are many indications regarding personal experience and direct empirical observation (Barnard, 1979/1938). Considering his empirical background in the classical tradition, Simon found a justification for his own investigative process for the limits of rationality. On reflection, he considered the lack of his own “experiences with organizations posed no particular limit to my development of an alternative approach to decision making.” He then confessed, to his own peril:

Applying the ideas of bounded rationality to organizations [as I did in the dissertation and in *AB*] could then be easily achieved with only a bookish knowledge of organizations. It was simply necessary to ask what the implications of bounded rationality were for the division of labor, for authority, for organizational identification, for coordination, and so

on. Inference rather than empirical observation could, and did, guide this analysis. (Simon, 1996, p. 87)

Accordingly, empirical observation in the classical tradition, albeit limited, took place primarily in 1935 and 1938, in addition to experiential observation (Simon & Divine, 1941, Simon, et. al., 1941). Next, inference took over for writing the more fully conceived text, which resulted in the most developed characterization of the limits of rationality in the 1943 dissertation. This entire process was carried out in the very territory of this particularly delineated empiricism. In other words, the limits of rationality, as an object gleaned in this realm of empiricism, were investigated nonsystematically with little data from reality, leading to inferences about the logical implications of those limits on certain organizational aspects. The scientific rigor of this aspect of the epistemological itinerary could be considered debatable, particularly in the empiricist and positivist traditions of management and organizational studies in which Simon was an active participant.

Brief description of the itinerary

Based on the above considerations, it is possible to more succinctly describe the epistemological itinerary in question.

With regard to Simon's key sources, during his university years (1933-1936), Simon received an education in neoclassical economics and had access to logical positivism. This background which helped him think and write his texts with the linguistic precision he deemed necessary, which was moreover not contradicted at any point in his subsequent personal process. The experiences in 1935 and 1938 provided—through nonsystematic observation restricted to a small number of cases—limited empirical material related to the factual problems of administration, particularly in public administration. Capitulated to practical interests, the limits of rationality were introduced gradually, emerging explicitly in a text in 1941, already with concepts from Commons, which shed light on Simon's previous experiences. The crucial elements can be found in James, Dewey, Tolman and Commons, similar to the central role played by the introduction of "uncertainty" in neoclassical theory, as shown in the example of Knight, with far-reaching implications.

The developments of behaviorism in the political sciences in which Simon was immersed after 1937, under the influence of Merriam and his classical empiricism, should not be overlooked, nor should the concepts advanced by the theory of administration concerning the importance of decision-making processes, with a prominent role played by Barnard and his experience as a manager of a large corporation. Indeed, as shown, the connections with Barnard seem to be far closer than Simon would have admitted. Along with this development came Simon's inclination toward empiricism (which also echoes the latter author), as the connections with Hume's skepticism, the pragmatism and empiricism of Commons, Dewey, and James, and Tolman's experimental observation originate in the aforementioned line of thought.

In terms of the investigative procedures, the initial empirical observations were replaced with inference to apply the limits of rationality—gleaned from the mobilized literature that had already accommodated the critique of neoclassical theory—to management problems. Here, too, there are important sources, such as James, Knight, Merriam, and Barnard, particularly the latter two. The procedures adopted thus paid high tribute to that classical empiricism perceived positively

by Simon, assuring him that a small number of nonsystematic observations coupled with logical inferences would satisfy the scientific demands regarding the limits of rationality. Overall, a classical empiricist position became established as the basis for inferences of this type, so much so that Simon's more formalist inclinations toward "mathematization" gave way to the general model of accessing knowledge through empirical observation and inference based on a small number of cases, valuing the reality of practical agents. All this held, at least, until 1943/47.

Simon's epistemological itinerary regarding the limits of rationality in the period under consideration thus took place entirely in the realm of an empiricism with particular characteristics. It was in this context that the author gleaned the limits of rationality as an object of nonsystematic observations and obtained some support for applying them to organizational aspects in a logically inferential manner.

This observation does not change the fact that before the 1930s—and therefore prior to Simon's dissertation and *AB*—neoclassical theory sought to accommodate the critique regarding the unrealism of the maximizing agent's behavior. The introduction of the limits of rationality therefore maintained the same general framework of the neoclassical school, with the difference that Simon's empiricism, informed by his realism (however superficial), helped extend that critique to the theory, while inferentially applying to administrative behavior those concepts inherited from the tradition that, as we have seen, already had a skeptical attitude toward human reason. Together, these observations suggest a line of continuity, of deepening, and not necessarily an inflection.

Final considerations

Our objective has been to analyze Herbert Simon's epistemological itinerary with regard to the limits of rationality, based on the history of administrative science. Accordingly, we examined the author's knowledge process, considering the key sources for the limits of rationality and the investigative procedures for this object as categories of analysis.

The analysis of the epistemological itinerary made it possible to fill the gap identified regarding Simon's path to establishing the limits of rationality. The historical analysis of this itinerary culminated in a discovery that we consider to be a crucial contribution to the history of administrative science. In general, acquisition with respect to the limits of rationality is regarded as an original discovery by Simon. The author himself suggested as much in the book that brought him renown. However, it was not Simon who arrived at the limits of rationality as part of a process of scientific discovery.

Our conclusions suggest that Simon's itinerary was fully undertaken within the empiricism that had already raised concerns about the possibilities of reason prior to the 1930s. The limits of rationality, as developed by Simon in the 1930s and 1940s, are a problem extracted from the texts that constituted the foundations of *AB* and do not necessarily represent Simon's original discovery, even though it marked an epoch in the study of organizations and administrative behavior. We therefore suggest that there may be a line of continuity from the theoretical critique of the neoclassical school based on a demand for realism whose limit is empirical. Simon thus reflected, in his own way, the critique that was already encircling the assumptions of the neoclassical line of thought in which he participated, without, however, abandoning its epistemological foundation.

Consequently, the historical analysis of our epistemological itinerary suggests that it is more correct to say that the limits of rationality reached Simon through his engagement with the conduits of a kind of empiricism, within which the author primarily proceeded with insufficiently rigorous empirical observations, which he used to draw inferences that were ultimately presented in the book that brought him renown. Notably, however, this crucial finding does not diminish the author's weight in the development of management and organizational studies. Rather, it establishes a more refined and closer mirroring of the actual itinerary, given that scientific interest lies in seeing things as they are.

In any case, in many interested academic circles, one could debate the theoretical implications of Simon's proposition of the limits of rationality, considering the debatable scientificity of isolated observations and logical inferences. Given that the proposition related to the subject helped inform management and organizational studies in different directions, as we suggested in the Introduction, we are left with evaluating the consequences of the fact that it originated in procedures considered potentially shaky. It follows that the debate about rationality, including that between administrative theories and critical theories, should not ignore the epistemological itinerary through which concepts themselves have been fashioned. This point is valid for both sides of the debate.

This investigation encountered a number of obstacles. In more general terms, the history of administrative science is underdeveloped, particularly in Brazil. This fact resulted in the need to propose the epistemological itinerary, inspired by studies of the history of science, to inquire into the author's knowledge process as an investigative alternative whose essence can be better developed. With this article, we hope to contribute to advancing this line of study and its ramifications for research in the history of administrative thought. Specifically, the primary obstacle to this study was the lack of access to certain texts by Simon, which could alter the conclusions reached. Future studies can overcome this difficulty by obtaining direct or indirect access to those texts.

It is fitting to conclude with at least one promising indication for continuing the present investigation, specifically by situating Simon among the proponents of a general trend of the time, in which the nonlogical motivations of human behavior were emphasized theoretically, considering the economic need for their study and control. One hypothesis to be developed is that the critique of the economic man, which we find, for example, in Barnard, Mayo, and Simon and the resulting emphasis on the intuitive aspects of behavior, have incorporated the function of critiquing reason in general, including scientific reason. It would no longer be a matter of scientifically determining the mirroring of objective reality in and of itself but one of obtaining practical results in relation to the economic necessity of shaping the behavior of organizational agents. The exaltation of the nonlogical character of behavior would thus respond to the need to establish it primarily as an object of administration rather than to draw new scientific conclusions.

Consequently, what remains is an analysis that we were obliged to omit from this article for reasons of scope and space, namely, an analysis of the concrete-historical conditions capable of explaining that general tendency mentioned in the previous paragraph, whose arrow pointed predominantly toward the mission of achieving social cohesion in the period immediately following the First World War, including the revolutionary process (in 1917) and the economic crisis (in 1929). Establishing how human beings make choices seems to be a necessary outcome of that mission.

Simon's case is emblematic in this regard. The interest in the illogical behavior of human beings reflects the fact that certain intellectuals are called upon to resolve factual problems arising from economic needs in a given context. We see evidence of this fact in the administrative aim to understand how people make decisions to thus affect them, modifying the consciousness and behavior of agents in directions consistent with the economic needs posed. This intellectual edifice, as a form of scientific consciousness, is an answer to the factual problems of human administration in that period (and beyond). In this direction, there would be a place for the foundations of the materialist approach, in which there are no trends in thought that are autonomous, that do not provide, in one way or another, answers to the problems posed by their own objective-historical conditions of possibility.

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Notes

1. There are four editions of *Administrative Behavior* (1947, 1957, 1976 and 1997). The editions were revised in a way that creates confusion in the discussion of bounded rationality and the "satisficing" agent (cf. Kerr, 2007). We use the second edition (from 1957), which contains an introduction written specifically for it. As such, for every passage included, the year of the

second edition (1957a) is stated, adding the date of the first edition (1957a/1947) for passages that do not pertain solely to the introduction to the second edition.

2. This point connects Simon to thought that is socially determined by the factual and historically conditioned demands exerted on consciousnesses, which shape the behaviors of economic agents. It was approximately portrayed by Ramos (1989), as mentioned in the introduction to this paper, within the framework of “cognitive politics.” A deeper exploration of the subject will have to wait for a more opportune moment in another paper. The interested reader, however, can refer to Chapter IV of Mannheim (1960/1923), in which the author extensively discusses forms of social control, considering methods of influence on human behavior, among which are included “rationalized organizations” themselves. We would emphasize on this point the details of influence over behavior by changing situations, which is very striking in the development of *AB*. Although Simon (1957a/1947, pp. 101, 211) cited this text by Mannheim, he made no statements about having drawn directly from those considerations, perhaps because Mannheim came to align fascism as essentially behaviorist, which seemed unhelpful for Simon’s purposes. Beyond the fact that it is a potential research path, Simon’s propositions may be connected to the general trend of the time, as captured by Mannheim’s sociological sensibility. We will return to this point at the end of the article to indicate further research possibilities.
3. Simon’s (1957a) “realism” is superficial. We will see that the scientific limit supported with past experience, that is, the directly observable level of reality, in addition to abstract definitions without specifics, for example, that an “organization refers to the complex pattern of communications and other relations in a group of human beings” (p. xvi). Additionally, years later, he will refer to organizations influenced by the example of Clarence Ridley: “Watching him, I came to understand that well-managed organizations are powerful instruments for achieving socially important goals, and not yokes around the necks of their members. A few years later, in *Administrative Behavior*, I tried to explain how organizations can expand human rationality, a view quite opposed to popular folklore in our society, which commonly sees them as dehumanizing bureaucracies” (Simon, 1996, p. 72). It is a realism whose limit is the appearance of the observable empirical accessed through experience. For this realism, there are no contradictions.
4. Additionally, with regard to unwanted consequences, although Simon (1957a, p. xxxi) partially rejected these effects, there are many points of connection between him, Parsons, and the structural-functionalism present in sociology. Consider, for example, the problem posed prior to Simon’s key texts on the “unanticipated consequences” of action (Merton, 1936) and its resonances with the limits of rationality, despite Simon’s statements to the contrary.

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