

RESEARCH ARTICLE

# Hayek's extended mind: on the (im)possibility of Austrian behavioural economics

Erwin Dekker<sup>1</sup>  and Blaž Remic<sup>2</sup>

<sup>1</sup>Mercatus Center at George Mason University, Fairfax, VA, USA and <sup>2</sup>Independent Scholar, Rotterdam, ZH, Netherlands  
**Corresponding author:** Erwin Dekker; Email: [edekker@mercatus.gmu.edu](mailto:edekker@mercatus.gmu.edu)

(Received 13 July 2023; revised 9 February 2024; accepted 12 February 2024)

## Abstract

Recent work has argued for a Hayekian behavioural economics, which combines Austrian economics with behavioural economics as developed by Kahneman, Thaler, Sunstein, and others. We suggest that this hybrid is misguided because it relies on individual cognitivism. This view of cognition is incompatible with the Hayekian view of cognition which treats rationality as an emergent phenomenon of social interaction in an institutional environment. This Hayekian view, which we call epistemic institutionalism, is compatible with an alternative prominent perspective in psychology, that of the extended mind, sometimes known as 4E cognition. We demonstrate how the Hayekian perspective on individualism, the price system, and the evolution of rules can be connected to the extended mind programme, through concepts such as the coupling of the individual and their environment, cognitive off-loading, and affordances. We suggest that this alternative combination of Austrian economics and psychology provides a more fruitful way forward, especially because it foregrounds the processes of learning, error-correction, and institutional orders, rather than choice, bias, and individual rationality. To explain why Austrian economists have been receptive to behavioural economics, we distinguish epistemic institutionalism from the (radical) subjectivist approach, which shares key assumptions of individual cognitivism.

**Keywords:** Austrian economics; behavioral economics; cognitive off-loading; extended mind; rationality; subjectivism

**JEL Codes:** B53; D83; D90

## Introduction

The behavioural economic critique of rational choice theory has found widespread acceptance. Many economists now suggest that rational choice theory must be supplemented, if not replaced by (behavioural) psychological theories. This has also had an impact on welfare economics, which increasingly relies on behavioural insights to nudge or steer individual choices in a more rational direction (Angner, 2019). Other effects of the critique have been indirect, including a reconsideration of the nature of rationality in markets (Gode and Sunder, 1993; Smith, 2003; Todd and Gigerenzer, 2012).

Austrian economists have been quite receptive to the behavioural critique of rational choice theory and specifically of the idea of the mind as a logical computer (Koppl and Whitman, 2004; Rizzo and Whitman, 2020; Whitman, 2022). These authors have emphasized that Austrian economics has never been as wedded to utility maximization as mainstream economics and have therefore welcomed the behavioural critique. Others have started to explore what a Hayekian behavioural economics might look like (Dold and Rizzo, 2023; Frantz, 2020; Sunstein, 2023b). The work of Rizzo and Whitman (2020) and Robert Sugden (2018) has emphasized that subjectivity has not been sufficiently taken into account in the evaluation and interpretation of experimental results that demonstrated the

© The Author(s), 2024. Published by Cambridge University Press on behalf of Millennium Economics Ltd. This is an Open Access article, distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives licence (<http://creativecommons.org/licenses/by-nc-nd/4.0>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided that no alterations are made and the original article is properly cited. The written permission of Cambridge University Press must be obtained prior to any commercial use and/or adaptation of the article.

irrationality of individual decisions, thereby questioning some of the normative conclusions. However, their work has not challenged the theoretical psychological underpinning of the behavioral economics programme.

Our position in this paper is not, however, that we should attempt to keep psychology and Austrian or institutional economics separate. Both fields are required to analyze decision-making in a complex world. But Austrian economists, and institutional economists more broadly, should proceed with caution in seeking an alliance with the ‘new’ behavioural economics of Kahneman, Tversky, Thaler, and Sunstein, or what has frequently been called the heuristics-and-biases approach (Grüne-Yanoff *et al.*, 2014; Mullainathan and Thaler, 2000; Sent, 2004; Tversky and Kahneman, 1974). We argue that the work of Friedrich A. Hayek is incompatible with individual cognitivism, which is the foundation of this approach. By extension, we, therefore, disagree with Frantz (2020) argument that Hayekian behavioural economics could be linked to the ‘old’ behavioural economics of Herbert Simon. Individual cognitivism is the view that cognition is information processing and symbolic manipulation realized at the level of individual brain. Rationality, according to this approach, is achieved when individuals choose consistent with their preferences.

Hayek’s work suggests an alternative path forward that aligns more closely with the extended cognition paradigm in psychology, sometimes called 4E cognition, for Extended, Embedded, Embodied, and Enacted. In this alternative hybrid between Austrian economics and psychology, rationality is not a result of properties of the individual or their decisions but instead a result of human interaction within certain institutional settings. In this approach, outcomes are rational when they tend toward equilibrium outcomes (or what mainstream economics often calls efficiency) and, more broadly, toward social order. This research in psychology extends and applies Hayek’s argument that the development of reason in human history resulted from advancements in cultural rules rather than increases in cognitive capacities. As Hayek argued, there ‘was much more “intelligence” incorporated in the system of rules of conduct than in man’s thoughts about his surroundings’ (Hayek, 2021: 515). 4E cognition has developed a conceptual framework that includes coupling, cognitive off-loading, and affordances, which allows for a fruitful connection between the two.

While behavioural economists are right in some of their critiques of rational choice theory as a descriptive account of individual choices, the alternative they propose is misguided. The first contribution of this article is to demonstrate that Hayek’s work and the theoretical psychology of the extended mind offer a better way forward. We argue that cognitive institutions are the economic application of the idea of the extended mind and illustrate why this perspective is incompatible with individual cognitivism. This leaves open the question of why some Austrian economists have been so welcoming towards the behavioural critique. Our second contribution is to show that this receptiveness is the result of a latent tension between different conceptions of (individual) cognition in contemporary Austrian economics, which we label here as (radical) subjectivism (Vaughn, 1994) and epistemic institutionalism (Boettke, 2018). Radical subjectivism is compatible with the individualist view on cognition found in both rational choice theory and behavioural economics. Epistemic institutionalism, which we advocate here, is compatible with the extended mind perspective. Finally, we show how the alternative hybrid between psychology and Austrian economics we develop dovetails with recent work in institutional economics on cognitive institutions (Frolov, 2023; Petracca, 2017). These cognitive institutions are part of an approach which studies markets as cognitive systems.

In the first section, we review the recent work arguing for an Austrian behavioural economics. Moving to the second section, we revisit subjectivism as understood in contemporary Austrian economics and demonstrate why it is compatible with modern behavioural economics. The third section contrasts this with the view on rationality and cognitive systems as found in the work of Mises and Hayek. In the fourth section, we connect this work of Mises and Hayek to the work in contemporary Austrian economics and illustrate the importance of epistemic institutionalism. The fifth section lays out the extended mind approach, demonstrating why it reinforces many of the key insights of epistemic institutionalism. Moving to the sixth section, we argue why Austrian economics is not a supplement to behavioural economics that could result in a Hayekian behavioural economics. Instead, the

combination of Hayek's work and the psychology of the extended mind provides the foundations for an epistemic institutionalism that should have relevance beyond those with an affinity for the Austrian approach.

### *The impossibility of a Hayekian behavioural economics*

One of the most significant overlaps between behavioural and Austrian economics is their critique of neoclassical behavioral foundations. While differences in policy outlooks have caused some to frame the discussion in terms of a new socialist calculation debate (Devereaux, 2019), many others have recognized this overlap and the potential for an alliance. This recognition has sparked a lively interchange over the potential gains from trade between these two approaches (Dold and Rizzo, 2023; Rizzo and Whitman, 2023; Sugden, 2023; Sunstein, 2023a, 2023b; Whitman, 2022). The resulting debate is best understood as an attempt to answer the question, 'how Hayek, or a Hayekian, might respond to behavioural findings about individual error' (Sunstein, 2023a: 217).

Sunstein (Sunstein, 2023b) proposes 'Hayekian behavioural economics' as a research programme that considers both behavioural insights about the limitations of individual cognitive capacities, as well as Hayekian insights about the importance of institutions in solving knowledge problems that individuals (and policymakers) are facing in markets. Sunstein accepts Hayek's emphasis on the knowledge problem but argues that knowledge problem can be reduced by considering what 'individual choosers [would] do under epistemically favorable conditions' (Sunstein, 2023b: 176). Epistemically favourable conditions are the conditions 'in which informational deficits and behavioural biases are least likely to be at work' (Sunstein, 2023a: 212). Sunstein thus proposes a Hayekian inspired idea of 'true' preferences. As a result, he considers Hayek's insights to be mainly relevant as a normative benchmark.

But what about Hayek's emphasis on the vital role of institutions in solving knowledge problems? Here, Sunstein's proposal is frustrating. While he acknowledges the epistemic properties of the market as an institution, the subsequent discussion on the role of institutions is framed exclusively in terms of what 'public' institutions – also variously referred to as 'planning', 'expert', and 'regulatory' institutions – should do. In Sunstein's proposal, institutions are always accompanied by a choice architect, who has the power (and knowledge) to modify epistemic conditions and thus nudge the choosers in this way or the other. In previous work with Richard Thaler, Sunstein argued that bad decisions are decisions people 'would not have made if they had paid full attention and possessed complete information, unlimited cognitive abilities, and complete self-control' (Thaler and Sunstein, 2008: 5). Translated to Sunstein's recent language, bad decisions are decisions made under epistemically *unfavourable* conditions. According to Sunstein, the role of regulators or public institutions is thus to construct and implement the choice architecture that helps choosers avoid making errors and therefore make decisions that are good for them as judged by themselves.

The key point of Sunstein's proposal is that providing information is not enough. Given that people tend to unknowingly err in predictable ways, the role of public institutions is to steer the behaviour in ways that result in outcomes resembling decisions made under epistemically favourable conditions. This implies that, in many cases, some form of mandate may be a preferred solution. Although this might appear contrary to the general spirit of Hayek, Sunstein claims that it is in fact impossible to say much about what Hayek would endorse because 'Hayek did not engage behavioral science' (Sunstein, 2023b: 178).

Robert Sugden has provided a different answer to Sunstein's question. His key argument is that the notion of choices independent of a context is nonsensical. Individual choices in different contexts are, according to Sugden, simply different choices. Inconsistency between differently framed choices, as well as temporal inconsistency, 'is not a self-control problem; it is a change of mind' (Sugden, 2018: 82). In his subjectivist perspective every choice is a new beginning and an opportunity to change one's mind, so there is no reason to worry about inconsistencies between choices over time. Institutions hardly play a role, except as the context in which choices are made. Choices are what

they are, they are (nearly) impossible to predict, and it is virtually impossible to demonstrate inconsistency or irrationality of subjective individual choice. By lowering the threshold for rationality, Sugden can neutralize most of the critique of behavioural economics. This response to the behavioural critique might be characterized as the ‘subjectivist retreat.’ It does not deny the validity and relevance of (all) the experimental findings of behavioural economics but argues that a properly understood subjective rationality standard is not violated by these findings.

Robert Sugden has, therefore, been sceptical of Sunstein’s approach to behavioural economics. In a critical response to Sunstein’s proposal, Sugden (2023) argues that his own approach to normative behavioural economics (Sugden, 2018) offers a better way forward for Hayekian behavioural economics. While not explicitly Hayekian, that approach is nonetheless ‘in continuity with the classical liberal tradition to which Hayek’s work belongs’ (Sugden, 2023: 190). One of Sugden’s main criticisms concerns the ‘as judged by themselves’ condition which Sunstein invokes. He is convinced that ‘as judged by themselves’ should simply refer to the judgments people make at the moment of choice. His response to Sunstein’s challenge of Hayekian behavioural economics is to deny that there are any errors to correct in the first place. According to Sugden, Sunstein’s notion of individual error is philosophically incoherent because it relies on a mistaken idea of a ‘neoclassically rational inner agent, trapped inside and constrained by an outer psychological shell’ (Sugden, 2018: 82). Sugden is not silent on policy but suggests that, instead of limiting or steering the choices, policy should seek to expand the opportunity set of individuals.

The analysis by Rizzo and Whitman in their *Escaping Paternalism* (2020) has much in common with Sugden. They argue that the neoclassical notion of rationality is an inappropriate benchmark for judging the rationality of individual actions. And they, too, assert that behavioural economists are misguided in thinking they can justify nudging by inferring people’s true underlying preferences. But, contrary to Sugden, Rizzo and Whitman argue that the proper application of subjectivism includes the possibility of errors in individual judgment and choices, and the personal desire to correct them (see also Rizzo and Dold, 2020). To understand such errors, one should not compare choices with some ideal of rational behaviour. It is better to study what people do to improve their decisions and reach their goals. If Sugden’s agents are impulsive and never question their own desires, Rizzo and Whitman’s agents are characterized by a desire for self-improvement, they seek to self-regulate their behaviour. Rizzo and Whitman are therefore interested in ‘the full range of strategies that individuals may use to reduce the impact of biases on their behavior’ (Rizzo and Whitman, 2020: 218–19). Rather than focusing on understanding errors, Rizzo has argued that a Hayekian behavioural approach should aim to understand and demonstrate how things can ever go right (Dold and Rizzo, 2023).

While Sugden remains largely silent on the role of institutions, Rizzo and Whitman (2020) suggest that institutional solutions can play a role in the mitigation of biases. While they share Sugden’s view that errors are not obvious, they acknowledge that in some cases decisions may be prone to biases. Institutions may help people correct those errors, and repeated errors make it more likely that institutional solutions emerge. Whitman (2022) further elaborates on the emergence of these institutions for the correction of biases. He proposes to reconceptualize biases and choice inconsistencies as intrapersonal knowledge problems, creating opportunities for (intrapersonal) entrepreneurship or self-improvement. The idea is that learning is based on the individual responding to those intrapersonal entrepreneurial opportunities, where the institutional and social environment ‘will tend to spur the individual towards the discovery and management of their own internal opportunities for gain’ (Whitman, 2022: 458). Crucially, this process of self-regulation will lead to behaviour that is ecologically rational in the sense of Gigerenzer (2008). Whitman draws on O’Driscoll and Rizzo (1985) to argue that Gigerenzer’s approach is about ‘cost-saving methods of solving problems that are often superior to the application of formal systems of rational thought in the specific context in which individuals find themselves’ (O’Driscoll and Rizzo, 1985: 11).<sup>1</sup>

<sup>1</sup>In an earlier paper we have demonstrated that Gigerenzer’s account relies on evolutionary heuristics not cultural and institutional rules (Dekker and Remic, 2019).

Institutions, for Whitman (and Rizzo), are habits of the mind and rules of thumb and, crucially, they are personal. The notion of self-regulation assumes that if you leave people alone, they will, over time, discover what is good for them and produce ways to act on that knowledge.<sup>2</sup> They provide a few examples which rely slightly more on the environment. For instance, an individual may put the candy box on the top shelf or not have alcohol at home. These are voluntary strategies but akin to the idea of designing an optimal choice architecture as advocated by Sunstein and others. The difference is that these individual strategies reflect local knowledge and subjective valuations that external observers cannot access.

Rizzo and Whitman's argument against external interventions by regulatory institutions relies crucially on the unknowability of other minds, and the same subjectivism that is of such importance in Sugden's analysis. To Rizzo and Whitman, individual rationality is not a one-size-fits-all concept applicable across institutional and temporal contexts. Instead, their inclusive rationality is mindful of both the subjective preferences of individuals as well as the heterogeneous contexts in which choices are made. The environment plays a role in shaping individual minds. In his recent work with Malte Dold on Hayekian psychological economics, Rizzo points out that Hayek's psychology 'does not assume self-contained individuals whose properties (including their preferences and beliefs) are fixed independent of their social environment' (Dold and Rizzo, 2023: 16).

As such, Rizzo and Whitman might not engage to quite the same extent in the 'subjectivist retreat' we identified in Sugden, to ward off the policy implications such as nudges and the design by experts of the choice architecture. Institutions, although almost as personal possessions, are given a role in promoting self-regulation. But neither Sugden nor Rizzo and Whitman challenge the idea that rational choices are based on cognitive processes inside the individual mind. The social and institutional context in which individuals choose is relevant for the actual decision but it is not part of the cognitive system, as it is for those who have critiqued cognitivism in psychology.

What is clear, is that all three proposals for a Hayekian or Austrian behavioural economics share the view that the role of institutions is (at best) to support individuals in their individual rationality. Sugden seems reluctant to acknowledge this role but praises some institutions for broadening the choice-set (opportunities); Sunstein wants to do this by creating epistemically favourable environments to assist individuals in satisfying their true preferences; and Rizzo and Whitman see institutions as adaptive strategies for self-regulation. All three clearly relate their accounts to the neoclassical model of choice, conceptualized as an individual agent seeking to satisfy preferences – a framework which they stretch in slightly separate ways. All three are therefore compatible with the neo-institutionalist perspective, viewing institutions as incentive structures that provide constraints on individual action (Williamson, 2000).

As has more frequently been observed in the reflective literature on behavioural economics, it has been hard to move away from the very neoclassical foundations that behavioural economics seeks to critique. The Hayekian components in the existing proposals do not change this. This is a result of the fact that Hayek is understood in this literature through a particular subjectivist perspective, which we believe is incompatible with Hayek's psychological work and his epistemic institutionalism. Before we turn to this alternative, we will briefly revisit subjectivism, to be able to draw a sharper contrast.

### *Subjectivism revisited*

In the 1990s subjectivism, the emphasis on the heterogeneous individual valuation of economic goods was hotly debated within the Austrian School of economics. In the *Elgar Companion to*

<sup>2</sup>Following Earl (2016), Whitman (2022) acknowledges that this process need not always lead to adaptive solutions. For example, alcohol consumption can be a personally effective, but maladaptive, self-regulatory response to emotional distress. Yet, such dynamics do not play a role in his account but remain 'questions that Austrians should explore' (Whitman, 2022: 458).

*Austrian Economics*, Steve Horwitz proclaimed that ‘subjectivism is more than just an economic methodology, it is an entire approach to the study of human action’ (Horwitz, 1994: 17). Horwitz, like many other theorists of subjectivism, highlighted Hayek’s viewpoint that all major advances in economic theory were due to subjectivism, and he also noted that this had been true in more recent decades as well. Subjectivism has indeed been further extended in several ways during the post-war decades (although, importantly, not much by Hayek). Buchanan’s *Cost and Choice* (1969) contains the most systematic elaboration of the idea that costs are subjective. Buchanan’s subjectivism had partly different roots in Nietzsche and existentialism, a connection recently explored by Dold and Stanton (2021). This, for instance, is visible in Buchanan’s ‘Natural and Artifactual Man’ (1979/1999), in which he distinguishes between the optimizing rational agent and the agent able to imagine themselves anew, someone in the process of becoming. Buchanan realized well that his vision of the creative individual went further than some leading Austrian economists were willing to go. ‘The market as a creative process’ (1991), his critique, co-authored with Viktor Vanberg, of the work on entrepreneurship by Kirzner, extends this perspective of the creative individual to suggest that entrepreneurs do not merely *discover* opportunities already out there, but that they create opportunities, or even entire markets. While the Kirznerian entrepreneur is alert to opportunities, Buchanan’s entrepreneur is imaginative.

Buchanan’s work drew significantly on the radical subjectivist work of G.L.S. Shackle, especially on his sharp distinction between the past and the present (Shackle, 1972, 1979). For Shackle, the past was of little relevance for thinking about the future and acting in the present. He emphasized the fact that agents could imagine the future to be different from the past, and that they could act upon this imagination to make this imagined world real. For Buchanan, this implied the fundamental inability of the true subjective economic theory to predict human behaviour. As he puts it, ‘[t]he objects for analysis are the choices of persons, which cannot be genuine choices and at the same time subject to prediction’ (Buchanan, 1982: 12).

The influence of radical subjectivism and Shackle’s ideas is also visible in the seminal reformulation of Austrian economics by O’Driscoll and Rizzo (1985). They refer to Buchanan when stating that (dynamic) subjectivism ‘views the mind as an active, creative entity in which decision-making bears no determinate relationship to what went before. Here, the decision-making is literally a ‘cut’, a new beginning’ (1985: 82). O’Driscoll and Rizzo extend subjectivism to the interpretation of information and, therefore, to the formation of expectations. Information is not given and is not discoverable in any objective form. As they put it, ‘genuine learning is not merely the result of a determinate processing of what is already known (...) Much of the future is the result of the free, indeterminate decisions of actors and hence is actually created by them’ (1985: 84). Like Buchanan and Shackle, O’Driscoll and Rizzo emphasize the creative and active individual mind, able to think beyond experience, as the primary mover of the economy.

The radical subjectivist assumes a kind of super-rational individual who is not merely able to evaluate the consequences of different paths of action but is also able to imagine new, alternative paths that have not yet been tried. Paradoxically, the individual can do this because they are ignorant about the future. This ignorance is caused by the fact that other individuals are also free and capable of acting in unexpected ways. The future is thus both open and uncertain. In subsequent debates in the 1990s, this radical uncertainty and the possibility of mutual coordination became a central point of contention because it problematized the notion of equilibrium in a debate that we will not revisit here (see Vaughn, 1994).

What is relevant for us is that this subjectivism is the main influence on recent work in Hayekian behavioural economics. It is strongly individualistic in outlook and treats cognitive processes as occurring inside the individual mind, with little to no role for institutions. Although it rejects the full information assumptions of rational choice theory, it has no theory of knowledge generation outside of the individual mind. This is quite different in Hayek’s own work, or for that matter, that of his mentor Ludwig von Mises.

### *Mises, Hayek, and social rationality*

When we return to Mises' and Hayek's seminal contributions, we encounter a different notion of rationality. They do not think that rationality is a property of independent minds or individual choices but instead suggest that rational decision-making, or something approaching it, only comes about in interaction with other individuals and, more importantly, with an institutional environment that includes the price system and, in Hayek's later work, cultural rules.

This argument is already visible in Mises' early work on the impossibility of economic calculation under socialism. In his seminal article, Mises makes an institutional argument about monetary calculation and emphasizes the institutional differences between money economies and economic systems without money. It is not that individuals would be unable to value different consumption goods, but valuation of goods of a higher order (capital goods) requires a unit of calculation (Mises, 1935: 96). Prices are not perfect guides in the more sophisticated calculations that economic actors engage in, but they are an essential heuristic, argues Mises. Without them, economic decision-making would be impossible, except in the simplest of circumstances where Robinson Crusoe deals with first-order goods (those which can be directly consumed) or when he can safely ignore the intersubstitutability of goods (Mises, 1935: 97). Mises explicitly contrasts his account of the rationality of the economic system with the cognitive limitations of the individual mind: 'The mind of one man alone – be it never so cunning, is too weak to grasp the importance of any single one among the countless many goods of a higher order' (Mises, 1935: 102).

This is different within a system that is characterized by both private property and a universally employed medium of exchange. In such a system, economic calculation becomes possible because of the interaction and, as Lavoie (1985) later emphasized, rivalry between different actors. Mises, however, claims that in their absence, rational production would be impossible. He asks, rhetorically, whether under socialism there would 'in fact, be any such thing as rational conduct at all, or, indeed, such a thing as rationality and logic in thought itself? Historically, human rationality is a development of economic life' (Mises, 1935: 105). This – rationality as a historical achievement – may sound paradoxical at first. But it is precisely what follows from an argument in which rationality is the outcome of cultural and historical evolution, rather than of properties of the mind.<sup>3</sup>

For Mises, rationality is limited to the domain of choices for which market prices are available. Outside this domain of economic organization, extra-economic factors play a role, and we cannot engage in monetary calculation. It is worth emphasizing that Mises believed that the historical process of the extension of the domain of economic organization can also be reversed, in which case 'the remembrances of the experiences' of the past will still provide some guide to the future. Social rationality would not collapse immediately but instead gradually, as the underlying economic conditions would move further away from the patterns of production inherited from the past. Traditions and norms would, in the short run, maintain much of the rationality of the old system, a point which Hayek would later extend.

For Mises, rationality is thus not a property of individual decisions and their congruence with underlying (subjective) valuations but refers to the organization of the production and consumption of goods.<sup>4</sup> It is this organization that can lead to both more and less rational outcomes. However, the primary factor influencing this outcome is not the cognitive capacities of actors but the institutional circumstances in which they operate. Most notably, whether they live in a world of private property and money. Although Mises is not directly concerned with economic fluctuations, he does note

<sup>3</sup>The historical development of rationality and its spread is one of the key themes in the work of Weber (Ritzer, 1975). There is an extensive secondary literature on the significance of Weber's work for Mises as well as the similarities in their views on rationality (Boettke and Storr, 2002; Callahan, 2007; Uebel, 2019). Braun (2023) has demonstrated that Mises' institutional arguments about the unfeasibility of socialism built on earlier institutional arguments developed by economists of the German Historical School.

<sup>4</sup>Whether this remains the case in Mises' axiomatic formulation of praxeology in *Human Action* is beyond the scope of this paper. But it is important to see that accounts that rely heavily on individual rationality cannot rely on Mises' argument to justify the impossibility of economic calculation under socialism.

that fluctuations in prices might complicate monetary calculations. It is not hard to see how, in this institutional account, manipulation of the value of the currency by monetary authorities will make the system less rational because prices are a *relatively poorer* guide to economic decisions. It is therefore important to emphasize that an institutional version of the Austrian business cycle theory is not an argument about individual irrationality. Rather, it is about the miscoordination resulting from manipulation of the value of money, which makes monetary calculation less dependable as a heuristic.<sup>5</sup>

Hayek continued this line of thinking. The obvious place to consider is his ‘The Use of Knowledge in Society’ (1945). It is worth noting, before we arrive at the familiar places in the essay in which he discusses the price system as a means of communication, that he argues that the key question for economics is the construction of ‘rational economic order’ (Hayek, 1945: 519, our emphasis). So, like in Mises, the question is one of economic organization, not of individual preferences and choices consistent with them. Even more than Mises, Hayek is at pains to demonstrate the limits of knowledge of any one actor in the economic system. This idea is famously captured in his notion of ‘dispersed knowledge’, which highlights the fact that different actors know different things, and that each actor only knows a fraction of all knowledge in society.

Yet, one is easily misled by Hayek’s idea of the price system as a communicator of knowledge. His argument might easily be mistaken for the idea that individuals have easier access to knowledge through the price system and therefore know more. But Hayek clearly distances himself from such an understanding of the price system. He argues that the point is not that the price system provides access to (full) knowledge. The goal is not to make any individual smarter but to ‘extend the span of our utilization of resources beyond the span of the control of any one mind’ (Hayek, 1945: 527). Hayek explains the point with a passage from Alfred Whitehead, which concludes that ‘civilization advances by extending the number of important operations which we can perform without thinking about them’ (ibid.: 528). Hayek has contrasted this with the erroneous idea that we become more knowledgeable about what we do. Instead, he argued, as civilization advances, we rely increasingly on institutions and have to think less and less about matters for which institutional solutions have arisen. Language, law, and money, three historically grown institutions he frequently groups together, ensure that individuals can focus their limited cognitive capacities and their limited (local) knowledge on a few specific tasks.

It would be too strong to argue that, according to Hayek, humans become less intelligent as society grows more complex. But, at least in relative terms, it is true, for Hayek, that as society grows more complex and the division of labour advances, the knowledge that any individual has of the entire system becomes relatively smaller, and the individual becomes more dependent on the knowledge of others (Hayek, 2021: 31). There will also be certain cognitive tasks that were of great relevance in the past, which the individual no longer develops because institutional or technological solutions have come in their place.

In his later work, Hayek developed his early insights into the function of the price system into a broader theory of the importance of rules for the development of social rationality. The basic unit in Hayek’s mature analysis of society are (cultural) rules, which emerge from human interaction. He argued that rules did not come about because humans were intelligent, but that, instead, it was through rule-following that humans became intelligent. Like Mises, Hayek puts this in explicitly historical terms, so that even reason itself evolves over time: ‘Cultural evolution is not the result of human reason consciously building institutions, but of a process in which culture *and* reason developed concurrently’ (Hayek, 2021: 512). This cultural evolution is, for Hayek, the evolution of more complex

<sup>5</sup>In Böhm-Bawerk there are clear references to individual cognitivist biases which are an essential part of his theory of interest, including weakness of the will and an underestimation of future wants (Böhm-Bawerk, 1891: 244–45). These no longer play a significant role in Mises’ account of interest. We believe that our interpretation of the manipulation of the currency, as a heuristic provides crucial answers the rational expectations critique levelled at it. This critique, unsurprisingly, treats expectations as formed in the individual mind, rather than as generated within an institutional setting (Cowen, 1997; Wagner, 1999).

systems of classification as well as more advanced systems of rules (Hayek, 2014). This is what Boettke (2018) has termed the epistemic institutionalism of Hayek.

For our argument in the next sections, it is significant that Hayek places intelligence explicitly outside the human mind and treats it as the result of systems of rules. He describes the historical development of systems as leading to a moment when ‘there was probably much more ‘intelligence’ incorporated in the system of rules of conduct than in man’s thoughts about his surroundings’ (Hayek, 2021: 515). Hayek had a lifelong interest in psychology, particularly regarding its connection to the central theme of his work, epistemics. He was interested in how the mind and the environment (including other minds) interacted, and how the mind was shaped through the interactions that individuals had with the world (Vanberg, 2017). His *Sensory Order* is now recognized as a pioneering proto-connectionist work. Connectionism is a psychological approach in which neural networks rather than a hierarchical theory of the mind is presupposed (Marsh, 2011). He therefore did not want to treat the individual mind as the capstone of the hierarchy of complex structures. Instead, Hayek suggested that the mind is embedded in an impersonal structure of rules, which allows this mind to function well, at least if the system of rules is broadly functional. In other words, it is not that individuals have become more moral or intelligent; but that man has gradually shaped his surroundings so that this social and institutional environment enables peaceful cooperation and intelligent decision-making.

The epistemic institutionalism, which we can find in Mises and Hayek, is more historically and institutionally oriented. It regards rationality as an emergent property of economic organization, rather than as an attribute of individual choices. While it avoids strong claims about individual rationality or creative cognitive abilities of the individual, it nonetheless retains the idea that social explanations should start from the actions of individual actors. Although neither Mises nor Hayek denies that humans act purposefully, they think those purposes are not exogenously given, but instead emerge alongside rationality from the interaction between individuals and their institutional environment.

### *Epistemic institutionalism*

In the previous sections, we have drawn a contrast between the (radical) subjectivism strand of Austrian economics and its implications for thinking about individual rationality and cognitive limitations, and epistemic institutionalism found in the work of Mises and Hayek. It is important to make clear that there is a significant strand of work within the Austrian economics since 1974 that has continued this epistemic institutionalism. This is true both at a more applied level, as well as on a methodological level.

The work of Ludwig Lachmann poses a bit of a challenge in this regard. On the one hand, Lachmann was a strong proponent of Shackle’s subjectivism and relied on it to emphasize the fundamental unknowability of the future and the creative potential of individual entrepreneurial action (Lachmann, 1976, 1978). On the other hand, Lachmann was trained in the German Historical School with its more institutional orientation and wrote extensively on hermeneutics and mutual coordination (Lewis and Runde, 2007). More recent work on the correspondence between Lachmann and Shackle has made clear that Lachmann, more than Shackle, recognized the institutional aspects which generate coordination and order in a society (Dekker and Kuchař, 2019). Moreover, Lachmann positioned himself in relation to the work of Weber and his historical analysis of the process of rationalization, both in the economy and other domains of society (Lachmann, 1971).

Don Lavoie explicitly sought to reinforce the hermeneutic strand of Austrian economics. And rather than emphasizing individual subjectivity, he explored the importance of intersubjectivity and social coordination (Lavoie, 2011). This gave rise to a new research direction in which culture came to occupy a central place (Lavoie and Chamlee-Wright, 2000). Culture was understood here along Hayekian lines, as constitutive of the categories of thought. Lavoie’s students, Emily-Chamlee Wright and Virgil Storr, analyzed culture as an emergent property that *enables* decision-making (Storr, 2013, 2014). His argument suggests that it is impossible for an individual to think

independently of culture. This viewpoint takes seriously Hayek's idea that people become intelligent because of their adherence to rules, rather than that people use intelligence to construct rules that facilitate human coordination. Storr has developed his analysis of the role of culture mostly in the direction of entrepreneurship. He relies on Kirznerian concepts to suggest that entrepreneurs in different communities *perceive* other opportunities (Storr, 2013). Although he does not explicitly contrast how his idea of perception differs from that of Kirzner, it is important for us to do that here because it is an obvious entry point for thinking about which cognitive theory is compatible with Austrian economics in its epistemic institutionalist form.

For Kirzner, opportunities are objective properties of the external world to which entrepreneurs are alert. He thus fully accepts the basic tenet of cognitivism that individual minds seek to construct the most accurate image of the world in their head. For entrepreneurs as conceptualized by Storr, however, the world can only be perceived through cultural lenses. These lenses have developed over time through cultural evolution and are, for instance, visible in shared narratives within communities (Chamlee-Wright and Storr, 2011). Our cultural lenses are a combined result of previous interactions with the environment and cultural transmission between individuals, such as from parents or other role models. Storr's conception and implicit critique is in line with the way that Hayek seeks to undermine Cartesian dualism in his *The Sensory Order*. There, Hayek objects to the idea that individuals create images of the world in their mind, but suggests that patterns in the mind are, instead, formed through experience and learning (Di Iorio, 2015: 47–49; Hayek, 1952, 2021: 25–28).

It is worth emphasizing that, from the cognitivist perspective, the imperfection in the image of the world in the mind is considered the source of cognitive bias (Felin *et al.*, 2017). Like Sunstein's view of biases as outcomes of epistemically unfavorable conditions, the idea is that once conditions are improved, individuals will perceive the world more accurately and act in accordance with their true preferences. In the perspective developed by epistemic institutionalists and those working on 4E cognition, it is argued that perception itself is impossible without culture. Accordingly, in this framework, lenses are not biases; instead, they are the very thing that allows us to see, perceive, and understand.

On the methodological level, the tension between individual (radical) subjectivism and institutionalism has been noted by critics before. Geoffrey Hodgson has rightfully criticized what he calls the Cartesian notion of the mind in Shackle, in which there is a sharp distinction between the person and the external world (Hodgson, 2000). He has also encouraged Austrians to build more seriously on the institutional elements in Menger and other early Austrians (Hodgson, 2019). Paul Lewis has similarly critiqued the work of Shackle and the derived conclusions, particularly challenging the idea that 'genuine choice is the 'uncaused cause' of new trains of action' (Lewis, 2017: 6). As an alternative, he has proposed interactionism, drawing inspiration from Hayek's later work.

The alternative to the cognitivist paradigm is a situated stance (Marsh, 2011: xvi). According to this perspective, the variety and complexity of human behaviour does not stem from radically heterogeneous subjective visions or the intricacies of individual minds. Instead, heterogeneity among individuals emerges from the environment in which humans act, an environment which should be primarily understood as culturally shaped. As one of us has previously argued, in this viewpoint, our social and cultural environments are an (evolving) resource, not a constraint (Remic, 2021). Over the past two decades, a theoretical perspective in psychology has emerged that aligns closely with this Hayekian viewpoint.

### *The extended mind and 4E cognition*

The work on the extended mind was kickstarted by Clark and Chalmers (1998) and has since developed into '4E cognition' (Newen *et al.*, 2018). The proponents of 4E cognition reject the inner-outer division of the mind and the world and emphasize: (1) the importance of the physical body for acting and interacting in the environment (Embodied); (2) the importance of learned cultural practices for the emergent coordination between many interacting individuals (Embedded); (3) the reliance on

skilled interaction with external artefacts for relieving the individual cognitive load (Extended); and (4) the importance of active engagement in and with the environment (Enacted).<sup>6</sup> Leslie Marsh recognized early on that this new theoretical perspective in the philosophy of mind had great potential for reinforcing the epistemic institutionalism in Austrian economics (Malt, 2018; Marsh, 2011).

The 4E cognition programme presents itself in opposition to the traditional definition of mental and cognitive processes as computational processes performed by the individual brain (Shapiro, 2019). According to this traditional view in cognitive science, the mind is a machine residing inside the skull for processing internal symbolic representations of the external world. The brain is believed to take in sensory input and translate it into an internal representation of the world that then feeds into the behavioural response. On this view, cognition can be studied independently of the body and the surrounding environment by studying these symbolic processes. However, for the proponents of 4E cognition, the mind, like rationality for Hayek and Mises, cannot be studied at the level of the individual. Instead, cognition results from what is described in this literature as the dynamic coupling between the individual and the environment.

There is an ongoing discussion about the consequences of coupling for the conceptualization of the individual and its environment. In the weaker version of the mind operating in a context, the environment ‘frames’ choices and can offer cognitive tools on which individuals can choose to draw. But to others, the notion of coupling implies externalism, which implies a deeper entanglement between the individual and environment, problematizing a sharp distinction between the two (Gallagher, 2013). To proponents of both views, it makes more sense to speak of cognitive systems than individual cognition.

We discussed the entrepreneurial perception of opportunities above. So let us return to the issue of perception. Gibson’s (1979) ecological psychology was an early direct attack on the stimulus-response paradigm associated with cognitivism. Gibson’s psychology dispensed with the idea of stimulus and demonstrated that perception is direct. He argued that there is no such thing as ‘a stimulus’ that some receptor organ (for example, the retina in the eye) perceives as a discrete event. Rather, perception works in terms of exploration and interaction with the world. When presented with an object, we do not ‘see’ it because of some neuronal information-processing activity, as cognitivism would suggest. To make sense of what is there, we walk around it, hold it, and touch it. In Gibson’s terms, we perceive the world through *affordances*, that is, potential actions enabled by the artefacts in our environment. The important implication of this is that walking, holding, touching, and looking around are as much part of visual perception as the light rays hitting our retina. We do all this to *see* more clearly: ‘perception is something we do, not something that happens to us’ (Noë, 2004).

Gibson’s ideas had a profound influence on the subsequent development of the embodied, extended, and enactive perspectives in cognitive science. In their influential book, Varela *et al.* (2017) argue that perception contributes to the enactment of the surrounding world, which comes about through action. What matters is the kinds of actions we can perform in the world. The individual does not scan the environment for opportunities but acts upon and modifies the environment, thereby learning regularities and imitating others. The extended mind perspective suggests that the relevance of affordances arises out of shared social and institutional reality. Psychologists have, however, not fully recognized how much the evolution of our environment has been a historical and cultural process. From simple symbolic systems such as street signs to elaborate evolved systems such as the price system, money, and the complex rules of civility, humans have transformed their environment to make it more navigable and to increase the number and type of affordances it provides. This is where institutional economists have much to contribute.

The coupling of the mind to its external environment means that we must take into consideration the purposes as well as the social and institutional environment in which these purposes are realized.

<sup>6</sup>Roger Koppl (2018) in his analysis of knowledge has suggested that it should be understood as SELECT, an acronym for Synecological, EvoLutionary, Exosomatic, Constitutive, and Tacit. He draws on the extended mind literature for his discussion of synecological and exosomatic knowledge.

Hayek clearly prefigured this idea of coupling in his work, most notably in *The Fatal Conceit*: ‘What we call mind is not something that the individual is born with, as he is born with his brain, or something that the brain produces, but something that his genetic equipment helps him to acquire as he grows up’. Hayek then explained how it is that cultural evolution, through family and other social relations, is transmitted and pointed out that ‘it may well be asked whether an individual who did not have the opportunity to tap such a cultural tradition could be said even to have a mind’ (Hayek, 1988: 22–23). He recognized that individuality, and by implication human subjectivity, develops through a coupling between the individual and a rich variety of cultural traditions.

Hayek contrasts this with the idea that ‘man makes himself’, a notion which he attributes to constructivist rationalists (see also Malt, 2018). But this problematic idea is shared by the radical subjectivists who believe that man ‘wants liberty to become the man he wants to become’, as Buchanan put it. On a more applied level, it is also clear that this way of thinking goes significantly beyond the idea that context matters, as is recognized by most behavioral economists. The 4E cognition approach suggests that the mind realizes both what it could achieve (ends) and how it could achieve them (means) through reliance on affordances found in the environment. Framing effects, as such cases are discussed in the behavioural economics literature, wrongly suggest that individuals are in certain instances biased in favour of certain decisions. The coupling perspective suggests that ends as much as means are shaped through social interaction and the institutional environment. Hayek recognized this implication of his epistemic institutionalism and therefore emphasized the endogeneity of preferences (Dold and Lewis, 2022; Hayek, 1960).

The notion of affordances is of direct relevance to our discussion of the socialist calculation debate. Money prices afford a kind of economic calculation which was historically not always available, and which would be unavailable when private property and markets in (capital) goods would be abolished. Recall that many of the alternatives proposed by the socialists at the time, such as Neurath, proposed an alternative mode of calculation, not an abolishment. It was thus recognized by both sides that the problem was not with the mental faculties of individuals, but rather with the cognitive tools which were available. This reinforces one of the starting points of 4E cognition, the idea that cognition must be located beyond ‘skin and skull’.

One way of applying this insight is through what is called cognitive off-loading, the reliance on external sources to do cognitive work for us. The standard example in the literature in the smartphone. The smartphone has handy apps, for instance, a navigation app, which does away with the need to remember or ask locals for their help (another potential resource!). It might be a good example of the extended mind, which is readily understandable because many of us have gone through the transition and recognize the transformation in cognitive skills that has accompanied it. But it is also likely to mislead because the smartphone makes us think of designed cognitive systems, even manipulative design. The Hayekian triad of law, language, and money is more useful in this regard because it highlights both the historical development and the gradual evolution of such cognitive off-loading.

More recent work has come to recognize the links between the extended mind and institutional economics. One of the prominent theorists of 4E cognition, Shaun Gallagher, has turned more directly to social science and proposed the idea of *the socially extended mind*, which emphasizes the coupling of individuals with institutions and practices, rather than just the physical environment (Gallagher, 2013; for a discussion of coupling see Slors, 2020). The institutional environment is understood to afford acting in a certain way, which enables extended cognitive processes to be enacted through such actions. Through engaging with cognitive institutions, certain knowledge is enacted which does not exist outside this interaction. The coupling of the individual and the institutional environment thus generates knowledge. This idea has been used to analyze the economic function of cognitive institutions. It has long been recognized that prices fulfil a cognitive function in this system, which facilitates coordination between different individuals (Hayek, 1945; Petracca and Gallagher, 2020). Frolov (2023) in his outline for a research agenda for cognitive institutions provides a very Hayekian definition of the function of rules when he argues that

they are cognitive norms. He also discusses in more detail how they fit into a Northian institutional economics.

There are thus several ways in which this approach differs from the subjective individualist view of cognition. First, it suggests that we should analyze cognitive systems rather than individual cognition. Second, there is cognitive off-loading onto the environment in the form of cultural information systems on which individuals can rely to navigate their environment. Prices are the most obvious cultural information system, but categories probably the most fundamental (Dekker, 2022). Third, the cultural and social environment provides certain ‘affordances’, which enable and encourage certain actions (Felin *et al.*, 2016). In modern Austrian economics, this translates most directly into the concept of opportunities, with the caveat that which opportunities are salient is culturally shaped. Fourth, constellations of institutions and the resulting patterns of interaction generate knowledge. This knowledge emerges from the interactions between individuals and their institutional environment and is thus socially emergent, not individually imagined (Lavoie, 1985; Lewis, 2015).

There is a clear link between the second, third, and fourth points. The emergent knowledge which is generated through social interactions might give rise to new kinds of epistemic systems or alter existing ones. These might make new kinds of opportunities salient and therefore give rise to new patterns of interaction. We believe that the 4E approach is the appropriate theoretical psychological framework to deepen our understanding of what epistemic institutionalism entails. The four elements identified here, and more particularly the last three, capture the process by which the actions of different individuals within an institutional environment give rise to a process of individual learning as well as institutional development. Rizzo and Whitman hint at this in their discussion of institutions which facilitate self-regulation.

The main implication of the extended mind hypothesis is not merely that the mind always operates in a context, a point recognized by most behavioural economists. Nor that external structures are somehow ‘thinking’ on their own. Instead, the extended mind perspective suggests that individual decision-making is always coupled with external structures, within a cognitive system. And since this coupling is always action-based (i.e., it does not exist outside of action, thus the buzz sentence ‘cognition is for action’), it suggests that Austrian economics should move forward with a far weaker distinction between decisions and actions. Interestingly, this distinction is sometimes also criticized by radical subjectivists such as Buchanan (1979/1999).

### *An alternative hybrid between Austrian economics and psychology*

The current literature on Hayekian behavioural economics suggests that Austrian insights can reinforce, supplement, and nuance current developments in behavioural economics. We think this view is mistaken because behavioural economics does little to challenge the traditional cognitivist model of the individual and the associated distinctions between mind and body, as well as that between the individual mind and its social, cultural, and institutional environment. In this section, we suggest why a contemporary Austrian approach should indeed seek to build bridges to psychology, but why this should be a different kind of theoretical psychology, that of the extended mind. We lay out some key concepts which facilitate this bridging, including coupling, cognitive off-loading, and affordances. We furthermore argue that the idea of cognitive institutions is the most recognizable application of the hybrid between extended mind psychology and epistemic institutionalism.

We have argued that the misconception that there are certain synergies between behavioural economics and Austrian economics rests on a particular version of subjectivism which has been developed during the Austrian revival but which is at odds with seminal contributions from Mises and Hayek.<sup>7</sup> This subjectivist interpretation attributes to the individual an agency decoupled from cultural

<sup>7</sup>Forthcoming work by Theresa Steffestun demonstrates that Wieser held many similar views, which were in turn influenced by the work of Ernst Mach. The claims about Mises and Hayek here are not about their originality, but about the difference with later conceptions within Austrian economics.

traditions, social relations, and the institutional environment, which is untenable. This individual cognitivist position also implies that the incidental and systematic errors which have been documented by behavioural and experimental economists are worrisome and cannot be easily overcome. The most obvious reason these findings are significant is that it is accepted between these two approaches, behavioural economics and radical subjectivism, that (normative) evaluation of decisions starts at the individual level. This makes sense for cognitive individualists for whom individual decisions can be approached as discrete units and evaluated as such (see Whitman, 2022).

But when the coupling between the individual and the environment is acknowledged, the way these findings are established, as well as their implications, prove far less. The coupling, first, problematizes the artificial experimental settings often used in psychological and economic experiments. Coupling would at least suggest a preference for experiments based on exchange and social interaction rather than individual choice, such as in the work of Vernon Smith (Dekker and Remic, 2019). For behavioural economists, clean lab settings which isolate specific factors are considered epistemically favourable in Sunstein's terms. But both the notion of cognitive off-loading and affordances suggest that most laboratory settings are based on an epistemically impoverished environment, and we should, therefore, expect inferior outcomes compared to real-world decisions. Alekseev *et al.* (2017) provide an overview of existing studies that have 'reintroduced' meanings and other real-world elements to enable learning. They argue that in many experimental settings, results are likely to improve when settings are less 'pure', and the external validity of experiments is likely to improve in this manner.

More importantly, epistemic institutionalism combined with 4E cognition suggests that the relevant unit to evaluate is not the individual decision but rather the outcomes of cognitive systems, consisting of different individuals, an institutional environment, and the resulting pattern of interaction. To what extent such settings facilitate learning, and its flipside, error-correction, and to what extent they allow for adjustment in desirable directions would become the relevant (normative) evaluative question. Not choice or decision would be the relevant unit to evaluate, but learning and adjustment during repeated iterations. It is, therefore, not surprising that Boettke in his presentation of epistemic institutionalism puts forward comparative institutional analysis as the methodology consistent with this approach. Such comparisons can happen at the macro-scale, between different economic systems, but they are just as relevant for the evaluation of different micro-institutions. They are also potentially compatible with experimental economic settings in which different institutional settings are compared, instead of the comparison between outcomes of experiments to the normative benchmark of individual rationality.

This perspective is consistent with the interpretation of the socialist calculation debate we presented above: social rationality is a gradual process and an historical achievement. In the absence of money prices (and various other institutional features) we should expect less efficient economic outcomes. The superiority of market societies compared to socialist societies is not the result of differences in individual cognition. The cognitive capabilities of the individual are presumably the same in both systems. Instead, the differences are the result of distinct connections between the individual and their institutional environment. They result from a difference in what Lavoie, following Mises, called 'aids to the mind' (Lavoie, 1987). Such aids to the mind, such as monetary calculation, can also be misapplied to a domain for which they are not appropriate or helpful.

The notions of cognitive off-loading and affordances generalize this insight. They suggest that in situations with little social interaction and thus little opportunity for imitation and learning; novel situations in which no or little institutional evolution has occurred (such as in the recent pandemic); or otherwise epistemically impoverished situations (such as certain lab experiments), we should expect comparatively worse outcomes. It is crucial to emphasize that Mises and Hayek considered social rationality to be a historical process, which also means that this process is ongoing. Instead of reaching an optimal state, institutional evolution is an ongoing process because new challenges and novel forms of social interaction demand the development of new cognitive institutions to effectively address them. Therefore, the approach we are presenting here is a process-approach, not a static normative evaluative framework.

Let us be clear that this is not meant to be an insulating strategy that seeks to shield (Austrian) economics from a new set of critiques. Errors occur, and they occur frequently. Our proposed approach suggests, however, that systematic biases are more likely the result of social interaction and the institutional environment. Earl (2022) explores several biases related to coordination and social aspiration. The literature on trust suggests that failures in initial coordination situations might give rise to low trust-levels, making subsequent exchanges more costly (Guiso *et al.*, 2009). Additionally, we can examine new institutional settings where previously effective epistemic filters are, at least temporarily, ill-adapted to the unfamiliar environment. Within Austrian economics, this has, for instance, been done in Storr's work on entrepreneurial spirits shaped in colonial settings (Storr, 2004). This perspective might also be compatible with the view that errors are more likely in infrequent choices or what some have called transformative decisions (Reuter and Messerli, 2018), or when individuals operate in unfamiliar markets (Smith *et al.*, 1988). It could also be analyzed in the digital sphere, where concerns about fake news and identity theft have been raised, particularly in the context of rapidly changing technologies. The discrepancies between cognitive tools and decisions result from novel forms of coupling between individuals and their (technological) environment.

The concept of bias itself, however, might be overly tied to a particular concept of cognition. The great social and economic problem is not individual ignorance or the structure of individual brains. Individual ignorance about most matters in society and aspects of the economy is just the flipside of Hayek's insight into the dispersed nature of knowledge and an outcome of what Mises called the intellectual division of labour. Cognitive institutions, at least good ones, facilitate the generation, aggregation, spread, and accessibility of bits of knowledge but also enable cognitive off-loading, so that individuals do *not* have to know everything. Ignorance of most matters is thus a sign of a complex society, not a sign of imperfections at the individual level. The relevant question for social science is how we can ensure that cognitive institutions emerge and adapt so they can facilitate both social learning (imitation) and error-correction.

Systematic error is likely to result when such error-correction is obstructed or coordination fails to happen. That is a different source of error than a cognitive 'bias'. Hayek has suggested that error-correction is not merely a question of individual learning, but a question of rule-selection and evolution. In recent work, Earl has generalized the notion of rules for behavioural economics. His focus is both on how individuals rely on rules in their decision-making and how social learning can take place from the fact that individuals make mistakes, which socially facilitates the process of rule development and selection, noticing that 'what is problematic for an individual may benefit humans as a species insofar as unsuccessful experiments contribute to the growth of knowledge' (Earl, 2023: 541). The extent to which this will be the case is dependent on the willingness to learn at the level of the individual, as well as socially. This willingness is a function of openness, as well as the institutional features which filter out bad (decision) rules and foster experimentation with new ones. Empirical studies based on the idea of epistemic institutionalism should thus study individual learning and the characteristics of institutional environments which facilitate this. Policy interventions should similarly be aimed to improve the epistemic institutional environment, rather than individual decisions.

## Conclusion

We believe that Austrian and institutional economists cannot and should not ignore the contemporary debates about rationality and behavioural biases. It is tempting to see in the behavioural critique a vindication of a longer standing scepticism of both approaches toward mainstream rational choice theory. However, the behavioural critique does not go far enough. Or, to be more precise, it fails to question whether rationality should be located within the individual mind. It, therefore, maintains what Hayek once called false individualism: an individualism based on the cognitive capacities of the individual and their rational capabilities. We have argued here that this weakness also plagues recent attempts to formulate a Hayekian behavioural economics. The analysis of individual decision-making and social rationality in a complex world requires a different hybrid between psychology and economics, which

considers the epistemic function of institutions in an economy characterized by dispersed knowledge and the division of cognitive labour.

Epistemic institutionalism, rooted in Hayek's work, offers an alternative view of cognitive systems, which starts from the interaction between the individual and their social, cultural, and institutional environment. This view can be connected to the 4E cognition approach in psychology to provide a genuine alternative conceptualization and perspective on cognition, and the importance of cognitive institutions. The notions of cognitive off-loading and affordances dovetail well with the Austrian view of the epistemic role of money, prices, and other emergent phenomena in the economy, as well as with cultural understanding of opportunities.

This offers an alternative theoretical path that leads to a methodology of epistemic institutionalism, which parts ways with radical subjectivism. This approach views efficient outcomes not as a result of rational individual decisions but rather as an outcome of social interaction and the evolution of institutions. There are many important questions which need to be further explored, including how to adequately recognize subjectivity within this framework and what the implications are for methodological individualism (Di Iorio, 2015). But when we reconnect psychology and economics, we must ensure that this is done in a reflective way, which recognizes that psychology, just like economics, is not monolithic. The choices we make in the process of reconnecting the two fields will have important methodological and normative implications and will shape the role institutions play in economics of the future.

**Acknowledgements.** We would like to thank four anonymous reviewers for their valuable suggestions, as well as our friends and colleagues who have provided suggestions on various drafts of the paper during sessions at the Markets and Society conference, the EPERN seminar and the ESHET conference.

## References

- Alekseev A., Charness G. and Gneezy U. (2017). Experimental methods: When and why contextual instructions are important. *Journal of Economic Behavior & Organization* 134(February), 48–59. <https://doi.org/10.1016/j.jebo.2016.12.005>
- Angner E. (2019). We're all behavioral economists now. *Journal of Economic Methodology* 26(3), 195–207. <https://doi.org/10.1080/1350178X.2019.1625210>
- Boettke P.J. (2018). *F.A. Hayek: Economics, Political Economy and Social Philosophy*. London: Palgrave Macmillan.
- Boettke P.J. and Storr V.H. (2002). Post-classical political economy: Polity, society and economy in Weber, Mises and Hayek. *American Journal of Economics and Sociology* 61, 161–191.
- Böhm-Bawerk E.V. (1891). *The Positive Theory of Capital*. London: Macmillan and Company.
- Braun E. (2023). The German historical school on monetary calculation and the feasibility of socialism. *Journal of Institutional Economics* 19, 579–597. <https://doi.org/10.1017/S1744137423000127>
- Buchanan J.M. (1969). *Cost and Choice: An Inquiry in Economic Theory*. Chicago: University of Chicago Press.
- Buchanan J.M. (1979/1999). Natural and artificial man. In *The Collected Works of James M. Buchanan, Volume 1: The Logical Foundations of Constitutional Liberty*. Indianapolis, IN: Liberty Fund, pp. 246–259.
- Buchanan J.M. (1982). The domain of subjective economics: Between predictive science and moral philosophy. In Kirzner I.M. (ed.), *Method, Process, and Austrian Economics*. Lexington, MA: Lexington Books, pp. 7–20.
- Buchanan J.M. and Vanberg V.J. (1991). The market as a creative process. *Economics and Philosophy* 7, 167–186.
- Callahan G. (2007). Reconciling Weber and Mises on understanding human action. *American Journal of Economics and Sociology* 66(5), 889–899.
- Chamlee-Wright E. and Storr V.H. (2011). Social capital as collective narratives and post-disaster community recovery. *The Sociological Review* 59(2), 266–282.
- Clark A. and Chalmers D. (1998). The extended mind. *Analysis* 58(1), 7–19.
- Cowen T. (1997). *Risk and Business Cycles: New and Old Austrian Perspectives*. London: Routledge.
- Dekker E. (2022). How cognitive institutions and interpretative rationality enable markets with infinite variety. In D'Amico D.J. and Martin A.G. (eds), *Advances in Austrian Economics*. Leeds: Emerald Publishing Limited, pp. 151–167. <https://doi.org/10.1108/S1529-21342022000026012>.
- Dekker E. and Remic B. (2019). Two types of ecological rationality: Or how to best combine psychology and economics. *Journal of Economic Methodology* 26(4), 291–306. <https://doi.org/10.2139/ssrn.3168433>
- Dekker E. and Kuchař P. (2019). Lachmann and Shackle: On the joint production of interpretation instruments. *Research in the History and Methodology of Economic Thought* 37B, 25–42. <https://doi.org/10.1108/s0743-41542019000037b005>
- Devereaux A.N. (2019). The nudge wars: A modern socialist calculation debate. *The Review of Austrian Economics* 32(2), 139–158.

- Di Iorio F. (2015). *Cognitive Autonomy and Methodological Individualism*. Cham: Springer.
- Dold M. and Stanton A. (2021). I choose for myself, therefore I am: The contours of existentialist behavioral economics. *Erasmus Journal for Philosophy and Economics* 14(1), 1–29. <https://doi.org/10.23941/ejpe.v14i1.470>
- Dold M. and Rizzo M.J. (2023). Hayekian Psychological Economics: A Preliminary Look. Available at [https://www.researchgate.net/profile/Malte-Dold/publication/367453476\\_Hayekian\\_Psychological\\_Economics\\_A\\_Preliminary\\_Look/links/63d2f00f64fc860638ec6e7b/Hayekian-Psychological-Economics-A-Preliminary-Look.pdf](https://www.researchgate.net/profile/Malte-Dold/publication/367453476_Hayekian_Psychological_Economics_A_Preliminary_Look/links/63d2f00f64fc860638ec6e7b/Hayekian-Psychological-Economics-A-Preliminary-Look.pdf)
- Dold M. and Lewis P. (2022). F.A. Hayek on the political economy of endogenous preferences: An historical overview and contemporary assessment. *Journal of Economic Behavior & Organization* 196(April), 104–119. <https://doi.org/10.1016/j.jebo.2022.01.019>
- Earl P.E. (2016). The evolution of behavioural economics. In Frantz R., Chen S.-H., Dopfer K., Heukelom F. and Mousavi S. (eds), *Routledge Handbook of Behavioral Economics*. New York: Routledge, pp. 5–17.
- Earl P.E. (2022). *Principles of Behavioural Economics*. Cambridge, UK: Cambridge University Press. Available at <http://library.lol/main/9A5880009775347A419BFD62AAE3919C>
- Earl P.E. (2023). Rules all the way down: Consumer behaviour from the standpoint of the ‘ONE behavioural’ research programme. *Journal of Consumer Behaviour* 22(3), 531–546. <https://doi.org/10.1002/cb.2035>
- Felin T., Koenderink J. and Krueger J.I. (2017). Rationality, perception, and the all-seeing eye. *Psychonomic Bulletin & Review* 24, 1040–1059.
- Felin T., Kauffman S., Mastrogiorgio A. and Mastrogiorgio M. (2016). Factor markets, actors, and affordances. *Industrial and Corporate Change* 25(1), 133–147.
- Frantz R. (2020). Before Kahneman and Tversky, there was Friedrich Hayek. *Cosmos + Taxis* 7(5–6), 20–31.
- Frolov D. (2023). Post-Northian institutional economics: A research agenda for cognitive institutions. *Journal of Institutional Economics* 19(2), 175–191. <https://doi.org/10.1017/S1744137422000285>
- Gallagher S. (2013). The socially extended mind. *Cognitive Systems Research* 25, 4–12.
- Gibson J.J. (1979). *The Ecological Approach to Visual Perception*. New York: Psychology Press.
- Gigerenzer G. (2008). *Rationality for Mortals: How People Cope with Uncertainty*. Oxford, UK: Oxford University Press.
- Gode D.K. and Sunder S. (1993). Allocative efficiency of markets with zero-intelligence traders: Market as a partial substitute for individual rationality. *Journal of Political Economy* 101, 119–137.
- Grüne-Yanoff T., Marchionni C. and Moscati I. (2014). Introduction: Methodologies of bounded rationality. *Journal of Economic Methodology* 21, 325–342. <https://doi.org/10.1080/1350178X.2014.972140>
- Guiso L., Sapienza P. and Zingales L. (2009). Cultural biases in economic exchange? *The Quarterly Journal of Economics* 124(3), 1095–1131. <https://doi.org/10.1162/qjec.2009.124.3.1095>
- Hayek F.A. (1945). The use of knowledge in society. *The American Economic Review* 35(4), 519–530.
- Hayek F.A. (1952). *The Sensory Order: An Inquiry into the Foundations of Theoretical Psychology*. Chicago: Chicago University Press.
- Hayek F.A. (1960). *The Constitution of Liberty*. Chicago: The University of Chicago Press.
- Hayek F.A. (1988). *The Fatal Conceit: The Errors of Socialism*. Edited by W.W. Bartley. Chicago: University of Chicago Press.
- Hayek F.A. (2014). Rules, perception, intelligibility. In Caldwell B. (ed.), *The Market and Other Orders*. Chicago: University of Chicago Press, pp. 232–253.
- Hayek F.A. (2021). *Law, Legislation, Liberty*. Edited by Jeremy Shearmur. Chicago: University of Chicago Press.
- Hodgson G.M. (2000). Shackle and institutional economics: Some bridges and barriers. In Earl P.E. and Frowen S. (eds), *Economics as an Art of Thought*. London: Routledge, pp. 51–75.
- Hodgson G.M. (2019). Austrian economics is still not institutional enough. In D’Amico D.J. and Martin A.G. (eds), *Assessing Austrian Economics*, vol. 24. Advances in Austrian Economics. Leeds: Emerald Publishing Limited, pp. 101–110. <https://doi.org/10.1108/S1529-213420190000024010>
- Horwitz S. (1994). Subjectivism. In Boettke P.J. (ed.), *Elgar Companion to Austrian Economics*. Cheltenham, UK: Edward Elgar, pp. 17–23.
- Koppl R. (2018). *Expert Failure*. Cambridge, MA: Cambridge University Press.
- Koppl R. and Whitman D.G. (2004). Rational-choice hermeneutics. *Journal of Economic Behavior & Organization* 55(3), 295–317. <https://doi.org/10.1016/j.jebo.2003.07.006>
- Lachmann L.M. (1971). *The Legacy of Max Weber*. Berkeley, CA: The Glendessary Press.
- Lachmann L.M. (1976). From Mises to Shackle: An essay on Austrian economics and the Kaleidic society. *Journal of Economic Literature* 14(1), 54–62. <https://doi.org/10.2307/2722803>
- Lachmann L.M. (1978). Lachmann – an Austrian stock-taking. In Spadaro L.M. (ed.), *New Directions in Austrian Economics*. Kansas City: Sheed Andrews and McNeel, pp. 1–18.
- Lavoie D. (1985). *Rivalry and Central Planning: The Socialist Calculation Debate Reconsidered*. Historical Perspectives on Modern Economics. Cambridge, MA: Cambridge University Press.
- Lavoie D. (1987). The accounting of interpretations and the interpretation of accounts: The communicative function of ‘the language of business’. *Accounting, Organizations and Society* 12(6), 579–604. [https://doi.org/10.1016/0361-3682\(87\)90010-9](https://doi.org/10.1016/0361-3682(87)90010-9)

- Lavoie D. (2011). The interpretive dimension of economics: Science, hermeneutics, and praxeology. *The Review of Austrian Economics* 24(2), 91–128. <https://doi.org/10.1007/s11138-010-0137-x>
- Lavoie D. and Chamlee-Wright E. (2000). *Culture and Enterprise: The Development, Representation and Morality of Business*. London: Routledge.
- Lewis P. (2015). Notions of order and process in Hayek: The significance of emergence. *Cambridge Journal of Economics* 39(4), 1167–1190. <https://doi.org/10.1093/cje/ueu043>
- Lewis P. (2017). Shackle on choice, imagination and creativity: Hayekian foundations. *Cambridge Journal of Economics* 41(1), 1–24.
- Lewis P. and Runde J. (2007). Subjectivism, social structure and the possibility of socio-economic order: The case of Ludwig Lachmann. *Journal of Economic Behavior & Organization* 62(2), 167–186. <https://doi.org/10.1016/j.jebo.2005.03.009>
- Malt A.J. (2018). Methodological individualism: True and false. *The Review of Austrian Economics* 31, 73–109.
- Marsh L. (2011). *Hayek in Mind: Hayek's Philosophical Psychology*. Leeds: Emerald Group Publishing.
- Mises L.V. (1935). Economic calculation in the socialist commonwealth. In Hayek F.A. (ed.), *Collectivist Economic Planning*. London: Routledge, pp. 87–130.
- Mullainathan S. and Thaler R.H. (2000). Behavioral Economics. NBER Working Paper 7948.
- Newen A., Bruin L.D. and Gallagher S. (2018). *The Oxford Handbook of 4E Cognition*. Oxford, UK: Oxford University Press.
- Noë A. (2004). *Action in Perception*. Cambridge, MA: MIT Press.
- O'Driscoll G.P. and Rizzo M.J. (1985). *The Economics of Time and Ignorance*. Oxford: Basil Blackwell.
- Petracca E. (2017). A cognition paradigm clash: Simon, situated cognition and the interpretation of bounded rationality. *Journal of Economic Methodology* 24, 20–40.
- Petracca E. and Gallagher S. (2020). Economic cognitive institutions. *Journal of Institutional Economics* 16(6), 747–765. <https://doi.org/10.1017/S1744137420000144>
- Remic B. (2021). Environment as a resource, not a constraint. *Journal of Contextual Economics–Schmollers Jahrbuch* 141 (1–2), 85–107.
- Reuter K. and Messerli M. (2018). Transformative decisions. *Journal of Philosophy* 115(6), 313–335.
- Ritzer G. (1975). Professionalization, bureaucratization and rationalization: The views of Max Weber. *Social Forces* 53(4), 627–634.
- Rizzo M.J. and Whitman G. (2020). *Escaping Paternalism: Rationality, Behavioral Economics, and Public Policy*. New York: Cambridge University Press.
- Rizzo M.J. and Whitman G. (2023). The unsolved Hayekian knowledge problem in behavioral economics. *Behavioural Public Policy* 7(1), 199–211.
- Rizzo M.J. and Dold M.F. (2020). Can a contractarian be a paternalist? The logic of James M. Buchanan's system. *Public Choice* 183, 495–507.
- Sent E.-M. (2004). Behavioral economics: How psychology made its (limited) way back into economics. *History of Political Economy* 36(4), 735–760.
- Shackle G.L.S. (1972). *Epistemics and Economics: A Critique of Economic Doctrines*. Cambridge, UK: Cambridge University Press.
- Shackle G.L.S. (1979). *Imagination and the Nature of Choice*. Edinburgh: Edinburgh University Press.
- Shapiro L. (2019). *Embodied Cognition*. Oxon: Routledge.
- Slors M. (2020). From notebooks to institutions: The case for symbiotic cognition. *Frontiers in Psychology* 11, 674.
- Smith V.L. (2003). Constructivist and ecological rationality in economics. *The American Economic Review* 93, 465–508.
- Smith V.L., Suchanek G.L. and Williams A.W. (1988). Bubbles, crashes, and endogenous expectations in experimental spot asset markets. *Econometrica* 56, 1119–1151.
- Storr V.H. (2004). *Enterprising Slaves & Master Pirates*. New York: Peter Lang.
- Storr V.H. (2013). *Understanding the Culture of Markets*. Abingdon: Routledge.
- Storr V.H. (2014). Why culture in economics? *The Review of Austrian Economics* 27, 495–503.
- Sugden R. (2018). *The Community of Advantage: A Behavioural Economist's Defence of the Market*. Oxford, UK: Oxford University Press.
- Sugden R. (2023). How Hayekian is Sunstein's behavioral economics? *Behavioural Public Policy* 7(1), 189–198.
- Sunstein C.R. (2023a). 'Come on, man!' On errors, choice, and Hayekian behavioral economics. *Behavioural Public Policy* 7(1), 212–218.
- Sunstein C.R. (2023b). Hayekian behavioral economics. *Behavioural Public Policy* 7(1), 170–188. <https://doi.org/10.1017/bpp.2021.3>
- Thaler R.H. and Sunstein C.R. (2008). *Nudge: Improving Decisions about Health, Wealth, and Happiness*. New York: Yale University Press.
- Todd P.M. and Gigerenzer G. (2012). *Ecological Rationality: Intelligence in the World*. New York: Oxford University Press.
- Tversky A. and Kahneman D. (1974). Judgment under uncertainty: Heuristics and biases. *Science* 185(4157), 1124–1131.
- Uebel T. (2019). Rationality and pseudo-rationality in political economy: Neurath, Mises, Weber. In Cat J. and Tuboly A.T. (eds), *Neurath Reconsidered*. Cham: Springer, pp. 197–215.

- Vanberg V.J. (2017). The 'knowledge problem' as the integrating theme of F. A. Hayek'S Oeuvre: An introduction to the sensory order. In Vanberg V.J. (ed.), *The Sensory Order and Other Writings on the Foundations of Theoretical Psychology*. Chicago: Chicago University Press, pp. 1–112.
- Varela F.J., Thompson E. and Rosch E. (2017). *The Embodied Mind, Revised Edition: Cognitive Science and Human Experience*. Cambridge, MA: MIT Press.
- Vaughn K.I. (1994). *Austrian Economics in America*. Cambridge: Cambridge University Press.
- Wagner R.E. (1999). Austrian cycle theory: Saving the wheat while discarding the chaff. *Review of Austrian Economics* **12**, 65–80.
- Whitman G. (2022). Austrian behavioral economics. *Journal of Institutional Economics* **18**(3), 449–466. <https://doi.org/10.1017/S1744137421000084>
- Williamson O.E. (2000). The new institutional economics: Taking stock, looking ahead. *Journal of Economic Literature* **38**(3), 595–613.