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What was "it" that Colander was defining?

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Abstract

This paper reflects on David Colander's influence on economic theory, policy, and especially pedagogy. In the domain of theory, Colander understood the economy as a complex, unruly system. He advocated the conception of the humble, pragmatic economic policy adviser who "muddles through." All of this bore directly on how Colander viewed economics education and training, especially for undergraduates. The connecting thread running through his interventions—the "it" Colander was defining—is the idea of epistemic insufficiency in economic practice. Colander's contributions to thinking about economics pedagogy fall naturally out of his theoretical insights. He critiqued the repression in the profession of epistemic limits, and by the paternalistic "economist-knows-best" ethos it enables. This has radical implications for how economics educators think about and practice their craft.

Keywords

Economics education; pedagogy; David Colander; uncertainty; economic policy

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This symposium provides us an opportunity to reflect on the ways in which the work of David Colander has influenced economists' thinking on economic theory, policy, and pedagogy. Colander's contributions to the history of economic thought are wide ranging and well known. In this connection he sought to share with the profession the wisdom he found in scholars such as J. N. Keynes, Lionel Robbins, Friedrich Hayek, and, before them, John Stuart Mill, Adam Smith and other classical political economists. Among his many interventions he identified their recognition of a critical fact that went missing in the economics profession by the middle of the 20th century. It is the idea that economic science cannot and should not be taken as an adequate guide to policy design and assessment. Each of these scholars understood that policy application was an art rather than an objective science. Colander regretted the fact that the profession came to eliminate the firewall that had separated the science of economic theory from the art of policy formation (Colander 2005a; Colander and Freedman 2019).

In the domain of economic theory, Colander was among those who came to appreciate the importance of understanding the economy as a "complex system" rather than a "complicated simple system" (Colander 2003; Colander 2005a, 2005b; Colander and Kupers 2014). He understood that complex systems do not trend toward a unique equilibrium, that they do not submit to determinant or even stochastic prediction, and that they defeat economists' attempts to control the economy. These insights blended into his conception of the economist as policy adviser. In place of the economics of control approach that he tied to the work of Abba Lerner and those who followed, Colander advocated the conception of the humble, pragmatic economic policy adviser who "muddles through." The muddler might draw on economic theory, but the good muddler would be just as keen to draw on moral philosophy, engineering, and other disciplines that yielded insights into how policy might play out in the real world. He advocated a

related shift away from axiomatic deductive reasoning to inductivism—a trial and error approach to policy where the economist drew on heuristics and precepts rather than on economic theorems (Colander 2005a, 279).

All of this bore directly on how Colander viewed the mission of economics education and training, especially undergraduate economic training for students who might, but very well might not, go on to become economics majors or pursue graduate economic training. He criticized the standard economic textbook and the way principles courses were taught for generating in the minds of students the idea of the economy as a simple system and the related idea of the economist as possessing adequate knowledge and expertise to control economic events (see e.g., Colander and McGoldrick 2009; Colander 2005b, 2015a, 2015b).

The connecting thread running through all of these interventions—the "it" Colander was defining—is the idea of epistemic insufficiency in economic practice. This paper traces the epistemic problem through these various contributions, ultimately landing on crucial aspects of his contributions to economic pedagogy. Colander's contributions to thinking about the pedagogy of economics fall naturally out of his theoretical insights about epistemic insufficiency. Colander critiqued the repression in the profession of epistemic limits, and by the paternalistic "economist-knows-best" ethos it enables. This has radical implications for how economics educators think about and practice their craft.

The irresolvable epistemic problem—from theory…

For Colander and other epistemic iconoclasts in economics before him, economic agents are understood to confront a world of Knightian uncertainty. They must make sense of their world as best they can, but in doing so, they do not and cannot have access to the "right" economic model. Knowledge of the future will always elude them, and yet they must act despite

their epistemic insufficiency. Colander emphasized how fundamentally this insight challenged standard economics with its "holy trinity" of "rationality, greed, and equilibrium" (Colander 2003, 204-205) that required "infinitely bright agents in rich informational environments" pursuing their narrow self-interests in full knowledge of their environments, which happened to be theorized as simple systems that trend toward a unique equilibrium. Colander substituted the trinity of reasonably bright agents pursuing their enlightened self-interests in the context of informationally inadequate complex systems (Colander 2003, 2005a). While simple systems could be adequately represented by a low order dimensional set of equations (2005b, 257), complex systems could not be. Complex systems involve properties such as emergence, non-linearities, tipping points and other discontinuities. Some of the trajectories of such systems could perhaps be replicated through various techniques, such as agent-based modeling in evolutionary systems, but they could not be predicted with any degree of confidence. Complex systems are non-ergodic, with the implication that one could not make dependable inferences about future events from even deep knowledge of the past (Brock and Colander 2005, 26-27).

These theoretical innovations pose severe problems for standard economics. In this world, agents cannot correctly anticipate tomorrow's events. They must draw on sources of knowledge other than the right model. They must conjure up "images of a future state of affairs" while drawing on "common sense," "intuition," "superstitions," "hunches," the "subconscious," "convictions or opinions" (Knight [1921] 2014, 201, 229–30), "trained instinct" (Marshall [1890] 1920, 337), "speculative hopes and anxieties, the expectations conjured from scarcely recognized suggestions and principles of interpretation" (Shackle [1972] 1992, 112), unacknowledged biases, and the judgments and anxieties of the groups in which they are embedded (Sommers 2011; Bazerman and Tenbrunsel 2011). Knight ([1921] 2014, 202)

articulates the idea this way: “We do not perceive the present as it is and in its totality, nor do we infer the future from the present with any high degree of dependability, nor yet do we accurately know the consequences of our own actions.” Beckert (2016) teases out an important implication: in formulating strategies, individuals are engaged in the practice of imagination rather than rational calculation.

These sources of non-rational decision making might provide useful insight, but they might just as often provide ersatz knowledge. Yet the economic actor can’t ever be sure if the new knowledge is the one or the other. Either way, the new knowledge shapes agent behavior in ways that affect decisively what happens next in an economy.

A fundamental implication of the befuddled economic actor follows. Understood properly, economics is the study of ideas. Shackle [1972] 1992, xx) put it directly: “Economics is about thoughts. It is therefore a branch or application of epistemics, the theory of thoughts.” Rodrik (2017, 159, 163) emphasizes the same point today.: “In truth, we don’t have ‘interests.’ We have ideas about what our interests are” (cf. Knight [1921] 2014, chap. 7). This is not to say that material and technological forces lie beyond the scope of economics. The point is that how agents behave in an economy depends on their understandings and expectations about the material and technological facets of their world, along with expectations about how others will act. Ideas come first, inducing the behaviors that bring the material and technological forces into play.

All of this bears on the economist’s epistemic condition and capacities. Colander argued that there must be a consistency in how economists theorize the knowledge available to economic agents on the one hand and to economists on the other. Both face equally severe epistemic limits (Colander 2003, 205). If agents’ expectations, let alone their preferences, are not

constrained within tight theoretical grooves, then economists can't know how they will behave, and what will happen next in an economy. Colander recognized that much economic theory of the 20th century sought to domesticate economic actors—ensuring that they didn't jump those grooves—so that economists could purport to claim that they could know the unknowable. Colander urged his profession to give up this fantasy—to drop the epistemic pretense that economists could know the unknowable. "Each of the changes currently occurring in the holy trinity can be seen as a movement… toward a search for understanding a system in which the blueprints are missing, nonexistent, or so far beyond our analytic capabilities that we might as well forget about them" (Colander 2003, 206-207).

Edward Leamer (2009, 3) goes even further than Colander in teasing out the implications of economic complexity for economists:

> You may want to substitute the more familiar *scientific* words "theory and evidence" for "patterns and stories." Do not do that…The words "theory and evidence" suggest an incessant march toward a level of scientific certitude that cannot be attained in the study of complex, self-organizing human system that we call the economy. The words "patterns and stories" much more accurately convey our level of knowledge, now, and in the future as well. It is literature, not science.

As the foregoing makes clear, complexity is central to Colander's alternative vision of economic affairs. If the constraints placed on agent behavior and the presumption of epistemic adequacy are dropped, then the range of behaviors that might emerge in a population in response to any stimuli—like an economic policy—expands radically, and so do the possible paths that the economy might follow. In place of a simple economic system in which the change in one variable can be mapped onto a dependable change in another, the complexity approach presumes

that any one change can have unpredictable cascading and compounding effects that alter causal relationships and nudge the economy onto an entirely new path. The complexity approach to economics involves a dynamic vision of the economy that defeats adequate knowledge of economic affairs by economic actors and economists equally. "[T]he economy is not something given and existing but forms from a constantly developing set of institutions, arrangements, and technological innovations", writes Brian Arthur (2013a, 1). While standard "equilibrium" economics 'emphasizes order, determinacy, deduction, and stasis, complexity economics emphasizes *contingency, indeterminacy, sense-making, and openness to change*" (Arthur 2013b, 19; emphasis added).[1]

…to thinking and teaching about economic policy

But what then becomes of thinking and teaching abut policy design and assessment for economists who take a complexity and uncertainty-driven view of economic affairs? First and foremost, the belief that analytical deductive methods to test policy presupposing simple, mechanical, closed economic systems provide insight into the actual world in which an actual policy is to be implemented must be abandoned (Colander 2003). For Colander this meant that economic advisors and policymakers must be humble, draw on heuristics, and hold to a pragmatism tied to "loose-fitting positivism" (Colander 2018; Brock and Colander 2005, 28). Engineering methodology and experimentation were crucial (Colander 2018).[2] Intuitively appealing blackboard demonstrations of how minimum wage legislation will induce unemployment in the real world reflect the unpardonable error of confusing the model world with the real world. Axiomatic deductive reasoning with simple models involves what Mary Morgan calls what-if analysis: "Imaginative stories prompted by the what-if questions that economists like to ask about their model worlds are where we see economists playing their

games of make-believe" (Morgan 2014, 235). Such exercises often yield unambiguous policy conclusions, but only in the model worlds that exist only in the imagination of the economist. Model worlds are typically set up in order to provide that clarity and determinate policy direction. But they tell us nothing necessarily about the actual world. Colander (2009, 438) followed Lionel Robbins and J.N. Keynes in recognizing the limited utility of economic theory for policymaking.

> Both Robbins and Keynes saw this pure science of economics as only a small sub branch of economics—a branch, which in [Robbins'] view, almost by definition, had nothing to do with policy. He specifically saw another branch of what economists do—political economy—as the branch primarily concerned with applied policy, not with science. Here, he wanted value judgments to have free rein, and to play an important part in the analysis.

Theorems were to be understood as entirely secure but only in the domain of the model. Colander (2009, 2015a) advocated instead the application of context-dependent precepts that combined theory, rules of thumb, inductive findings, and political and moral judgment to formulate reasonable policy experiments. And Colander embraced the recent empirical turn in economics, hoping that inductive reasoning might provide more dependable guidance for policymaking (Brock and Colander 2005, 26; Colander 2005b).

If we follow Colander by embracing complexity, then we must alter fundamentally how we teach policy assessment—not least by abandoning the notion of equilibrium. Colander argued that in a complex system there are "so many equilibria in fact that it is unclear whether any one of them will be the dominant one" (Colander and Kupers 2014, 118). One might add that even were we to accept the existence of equilibria in a complex system (itself a questionable proposition from the perspective of Colander and others), these equilibria must be theorized as

unpredictably unstable (cf. Colander and Kupers 2014, 118). In a complex system the parts (economic agents) and the whole (the economy) are mutually constituted and exist in perpetual change. So then must be any equilibria that arise temporarily to exert force on aggregate outcomes. For the control-minded economist, these transformations are rendered unpredictable in complex systems, leaving the social engineer with little grounding for utilizing even the idea of equilibrium in designing policy. Colander concluded that "One never has a full analysis of the entire complex system, and it cannot be controlled" (2003, 205). In reaching these conclusions Colander broke decisively with the approach to teaching theory and policy that has dominated the profession for the better part of a century.

What might take its place?

Colander hoped that interdisciplinary practice that combined the rigor and formalism of economics with the qualitative insights from moral philosophy and the discipline specific insights of other fields would provide the pragmatic muddler and pragmatic economics educator with a more adequate grasp of how any proposed policy intervention would affect the economy. In places he came close to advocating a unified interdisciplinary, multimethod social science that combined today's analytical tools with the mindset and training of the classical political economists (Brock and Colander 2005; Colander 2003; 2005a; 2005b). He often referred to this as a "blending" of disciplines (Colander 2003, 213). Muddling required phronesis as much as technical expertise—an ability to balance and combine insights from diverse disciplines and to consider how the contingent context might enhance and/or limit the efficacy of any policy strategy.

The idea of interdisciplinary, mixed methods training that Colander long advocated is attractive. It has gained traction among academic administrators and teachers of economics in a

variety of settings. Indeed, the idea of "breaking down disciplinary siloes" is a common refrain in contemporary higher education. The idea is also particularly attractive in what are intrinsically interdisciplinary fields where economics is often taught, such as in schools of international affairs, public policy, and urban studies. In these settings teaching about policy applications is central and valued, perhaps more so than in traditional economics departments where it is often an afterthought in the final weeks of the term. For Colander, interdisciplinary, mixed methods training provides leverage over and insight into economic events (e.g., Colander 2003, Brock and Colander 2005). For example, students of international trade necessarily must explore the kinds of multi-layered analysis that Colander advocated. One simply cannot teach about debates in the arena of international trade policies without *inter alia* examining domestic and international politics, national economic conditions, the legal environment, and international organizations. And if the economy is not one unified simple system but a complex set of complex systems, as Colander long maintained, and if the economy is itself embedded in a further set of complex relationships with other complex systems—such as natural and political systems—then the deep interdisciplinary training that Colander advocated is always warranted, even though it necessarily can't move us closer to knowing the ineluctably unknowable. It is prudent in this regard to keep in view the insights of philosopher of science Nancy Cartwright (1983, 50). She observes that "Science is broken into various distinct domains: hydrodynamics, genetics, laser theory." She then warns us that "we have many detailed and sophisticated theories about what happens within the various domains. But we have little theory about what happens in the intersection of domains." This is especially true in the social sciences where the knowledge base in each discipline is far less dependable than in the individual natural sciences. A complexity approach warns economic theorists and educators that in fact much of interest happens in the intersection

of domains that Cartwright speaks of. This is where, for instance, inputs into any economic system are being driven by unpredictable events in the political, cultural, and natural worlds populated by equally inscrutable complex systems.

Colander and Kupers (2014, 53) argue for theorizing policy in the context of a complex economy as nudging the economy into "desirable basins of attraction" where beneficial outcomes are apt to occur. Good policy "involves figuring out a way to get out of one basin and into another" (Colander and Kupers 2014, 54; see Kirman 2016, 536). Basins of attraction hold the system in place "until it experiences another shock that dislodges it" (Colander and Kupers 2014, 118). But Alan Kirman (2016, 546) argues that complexity subverts that effort "since that idea carries forward the idea of equilibrating tendencies that have not been proven to exist (and which seem, more plausibly, not to exist)," in the economy, at least. Beyond that problem is the epistemic one—how is the decisionmaker to know which nudges will move the economy into a desirable basin, and which will instead send the economy off in some unanticipated direction with damaging consequences? We don't find in Colander an adequate response to these insights, which complicate greatly the challenges facing the economic policy analyst. This is hardly an unforgivable failing, since the question of how to intervene effectively in a world one cannot adequately know or control is now among the most difficult problems facing public policy analysts in field after field. But what we do find in Colander are explicit warnings about the dangers of presuming too much, when economists come to believe they have within their reach just the right levers to exert social control.

The idea of thinking about policymaking as "muddling through" was articulated by Charles Lindblom (1959, 1979), someone whose work greatly influenced Colander. The concept of muddling through is deployed to great effect in a jointly authored essay on economic

policymaking by Hirschman and Lindblom ([1962]1971). They argue that "[i]t is clearly impossible to specify in advance the optimal doses of…various policies under different circumstances. The art of…constructive policymaking…consists, then, in acquiring a feeling for these doses" (pp. 83-84). Colander, however, simultaneously connects himself to and distances himself from Lindblom (and, by extension, Hirschman). "Today's muddling is technically impressive muddling and is a far cry from the armchair heuristics that characterized early muddling" (Colander 2003, 198). Colander cited new techniques, including "field studies, agent-based modelling, statistical data analysis…simulation techniques" (Colander 2003, 211). In this regard, despite Colander's deep criticisms of economics, he ultimately adopted a progressive view of knowledge acquisition in his profession.[3]

Epistemic limits, anti-paternalism, and economic pedagogy

Colander's own pedagogy called for greater self-awareness of the instructor (and textbook author), being sure to distinguish between theorems that were unimpeachable only in the context of the models in which they emerged, and the precepts that reached far beyond theorems and that were required to do good policy work (Colander 2019, 14, 487; Colander 2015a). The problem for him was not whether theorems or precepts were taught, but what claims were made for them by the instructor shaping student understandings of the nature, power, and limitations of economic practice. He hoped for a shift away from theoretical overreach, where economic principles training was presented as an adequate science of control.

Colander's insights concerning economists' hubris was associated with a principled stand against what he saw as paternalistic impulses within the profession. This impulse often takes the form of economic advisors pressing for top-down policy solutions. "The problem with having the government solve coordination problems is that it often does so in ways that undermine the

creative energies of individuals" (Colander and Kupers 2014, 36). With Kupers, Colander called for civil discourse and direct, meaningful stakeholder involvement into policy deliberations, engaging those who will be most affected by adopted policies. Stakeholder engagement also conveys respect for those who stand to be harmed by any decisions taken (DeMartino 2022), and is apt to deliver the kind of civil discourse that Colander and Kupers (2014, 277) sought.[4]

Colander hoped that the profession would come to accept the value of cultivating good muddlers with practical wisdom rather than Adam Smith's self-righteous "men of system" who believed themselves to be adequate to the task of controlling economic affairs, and ethically warranted in doing so (Smith [1759]1976, 233-234). For Colander, nuance was essential. "Even if we don't teach the nuance, we can teach the *need for nuance* in policy discussion" (Colander 2015a, 464, emphasis in original). This required a fundamental shift in how economics textbooks were written and curricula designed and delivered to students (Colander 2015a, 2015b, 2005a, 227, 2005b, 255-258; Colander and McGoldrick 2009). On this count, Colander was not optimistic, citing among other factors the market forces that lead to simplified, accessible textbooks that lag behind economic research, a lack of training in pedagogy, the reward structures of academia, and the demographics of the profession (Colander 2015b, 2005b).

Conclusion

Especially in the basic principles courses, the economics profession is training citizens, including future policymakers, in what to expect of the economics profession. Here the suppliers of economic expertise have the opportunity to shape the understanding of the demanders of that expertise about what economists have to offer. Hence the interaction between economic instructor and economic students is vitally important to the liberal democratic project, as Rob Garnett (2009) and Amy Cramer (2023) have argued forcefully.

In the principles courses, economic instructors face a deeply consequential choice, as Colander argued throughout his career. They can present their science as largely adequate to the task of understanding and managing the economy, and present themselves as benevolent paternalists who know what's in society's best interests. Or they can follow Colander, introducing students not just to the power but also to the severe limits of economic science, and the capacities of even the best and brightest economists. Taking this route, they can demystify economic reasoning while at the same time providing students with the capacities to judge for themselves when economists are doing useful work, and when they are selling snake-oil. Is it asking too much of the profession for it to risk losing influence in order to convey the truth about the limits to economic expertise? Perhaps. But Colander was willing to take that risk, and that is perhaps his greatest legacy for economics educators and for the future policymakers they train.

NOTES

[1] Albert O. Hirschman anticipated the turn toward complexity economics. For him, societies are irreducibly complex, the future is fundamentally unknowable, economies are constantly in flux, and even efforts to know the world affect outcomes that arise within it (see Grabel 2017, 40-41; and Hirschman and Lindblom [1962]1971, 83–84).

[2] There is a strong resonance between Colander's emphasis on problem solving and experimentation and that of Hirschman (see Grabel 2017, chap. 2).

[3] There is good reason to be cautious about these new techniques. Economic agents and economists face "irreparable ignorance" that cannot be overcome through new knowledge (DeMartino 2022, chap.5). To the contrary, new knowledge always brings with it new domains of salient ignorance—things we need to know but can't. Physicist John A. Wheeler made the point succinctly. "We live on an island of knowledge surrounded by a sea of ignorance. As our island of knowledge grows, so does the shore of our ignorance" (Horgan 1992).

[4] Amy Cramer has done as much as any economist to promote reasoned, civil discourse over economic policy. Her textbooks (2023) and broader *Voices On The Economy* (VOTE) project teaches economic instructors and introductory economics students the virtues of theoretical pluralism, including how to apply diverse theoretical perspectives respectfully to pressing public policy issues. The project calls on students to think creatively about policy solutions that might be missed owing to the longstanding tendency in economics toward theoretical monism, where proponents of alternative frameworks wage war rather than look to learn from dissenting voices. The project can be found at https://voicesontheeconomy.org/about. In the policy domain a new

approach called Decision Making Under Deep Uncertainty is characterized by direct stakeholder engagement in confrontation with wicked problems. See Marchau et al (2019). More on the project can be found at https://www.deepuncertainty.org/.

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