

THE REALIST RATIONALITY OF EVIDENCE-BASED MANAGEMENT

DENISE M. ROUSSEAU

Carnegie Mellon University, Pittsburgh, Pennsylvania, United States

“The perfect is the enemy of the good”
(Old proverb)

This essay has three themes:

- (1) Evidence-Based Management (EBM) pursues a pragmatic form of rationality I will call *realist rationality*. Realist rationality is informed by the science regarding the limits of human cognitive processes and biases inherent in organizational roles, which limit decision frames and attention to relevant information. Realist rationality recognizes the value of decision aids and routines in support of more mindful decision making. At the same time, realist rationality recognizes the inherent uncertainty in human understanding and the tentative nature of knowledge.
- (2) EBM comprises a family of principles, processes, and decision practices intended to enhance decision quality under realist conditions. It does so through formal education, skills training, adaptive practices, and decision aids that support effective use of multiple sources of evidence vetted for quality in organizational decisions.
- (3) The realist rationality EBM reflects is part of a liberation movement seeking to overcome the limits of self- or local interests and the preferences of the powerful to improve decision quality and broaden how decisions are framed. It does so through use of evidence-based decision processes and supports, in line with the concerns and interests of a decision’s diverse stakeholders. Evidence-based management is *organizational* not managerialist. It focuses on organization-related decisions and the practitioners who contribute to them—from executives and entrepreneurs, coaches and consultants, workers and volunteers, to labor organizers and civil servants. With its organizational focus, EBM is sector-neutral, including for-profit, non-governmental and governmental

organizations (cf., Center for Evidence-Based Management membership).

To begin, evidence-based management is the conscientious use of multiple sources of evidence in organizational decisions (Barends & Rousseau, 2018). Part of the wider movement toward evidence-based practice in medicine and public policy, EBM is a family of approaches to organizational decisions that make use of four sources of evidence: scientific findings (particularly cumulative bodies of research), organizational information (such as data and contextual factors), practitioner judgment (including experience-based knowledge), and stakeholder interests and concerns (such as effects on and perspectives of employees, clients, and constituents representing the broader environment). The evidence-based practice movement began as a response to the underutilization of scientific evidence in medicine, particularly in medical school education, and its concomitant overreliance on tradition and authority. It has broadened to recognize the importance of other forms of evidence (see interview with Amanda Burls and Gordon Guyatt, the latter who coined the term “Evidence-based Medicine,” Barends & Briner, 2014).

As is the case of the broader evidence-based practice movement, EBM is as much a teaching innovation as it is a source of new organizational practices and ways of making decisions (Rousseau & McCarthy, 2007). EBM is predicated on the idea that rational or goal-appropriate action is the aim of management education and the practitioners we educate. Scientific evidence, however, leads us to question the quality of decision making in organizations based on conventional approaches to rationality (e.g., the “rational choice” model; Herfeld, 2012). In management learning and education, EBM offers an alternative concept of rationality I call “realist rationality.”

REALIST RATIONALITY

Realist rationality conceives of decision making in organizations as the pursuit of goals through means intended to overcome the limits of bounded rationality and its adverse effects on organizations and

I thank Morten Sørensen Thaning for his thoughtful feedback on this essay. Its writing was supported by an H. J. Heinz II Professorship.

their stakeholders. It recognizes that decisions come in many forms, from the routine, to the complex, to the truly novel. Consider the 2020 pandemic. Although very little is routine in this international crisis, the decision to insist that healthcare workers wash their hands and wear personal protective equipment is routine practice based on scientific evidence regarding infection control. Yet the high uncertainty in the face of ongoing viral infection also means that learning by doing is essential to effectively re-open society in a fashion that does not accelerate infection and death rates. Thus, the Gates Foundation funded at least 7 different Covid-19 vaccine initiatives, because it is impossible to know in advance which will work (Hamilton, 2020). The availability and quality of evidence varies because much or little may be known relevant to a decision, making the level of uncertainty a factor in the kinds of decision processes appropriate for a given decision (Rousseau, 2018).

EBM and the realist rationality that underpins it recognize the importance of education and training along with organizational practices (e.g., guidelines, checklists, decision reviews) that provide scaffolding and support for improving decision quality. Under realistic rationality, individuals and organizations need to undertake deliberate efforts to use the best available evidence and evidence-based decision processes, efforts eased by environments that facilitate both. Realistic rationality recognizes that the tentative nature of knowledge and the hard fact of human cognitive limits necessitate the development of skills, routines, and practices that offset often irreducible uncertainty and incomplete information.

Since the seminal work of Herbert Simon (1997) and the Carnegie School he fostered, a number of science-based inferences may be taken as based on best-available evidence (e.g., Kahneman, 2011): Nobody knows everything. Humans are limited by their personal experience, attentional resources, and the information readily available to them. Organizational roles create decision frames that bias the information decision makers consider. Given the same business case, sales managers are inclined to see marketing issues, and personnel managers people issues. Decision frames and the satisficing they can create (i.e., “good enough” but not optimal decisions) can have unintended and often adverse effects on both organizations and their stakeholders. The upshot is recognition in EBM of the many opportunities available to improve *decision quality* (i.e., the likelihood that the decision process used will attain desirable outcomes). These opportunities for improvement are realized through conscientious attention to the decision

frame, use of quality evidence and systematic development and application of decision supports to help neutralize bias and inform decisions (including but not limited to critical conversations with other people and fit-for-purpose evidence-based decision tools and processes; Gawande, 2009; Heath, Larrick, & Klayman, 1998; Kahneman, 2011; Rousseau, 2018).

One essential principle of EBM is assessment of decision outcomes to improve subsequent decisions. Tracking decision outcomes can generate feedback useful in learning and performance improvement, and in the redesign of decision aids, tools, and organizational processes. In this vein, a realist approach incorporates use of after-action reviews that support subsequent learning (Artinger et al., 2015; Baird, Holland, & Deacon, 1999) when other sources of evidence are limited. In novel situations where prior knowledge may be limited, rapid outcome assessment helps decision makers pivot toward approaches more likely to work. For this reason, many public health officials and governors during the Covid-19 pandemic insisted on expanded testing before re-opening their local economies (Yong, 2020). The greater the uncertainty, the more important is assessment.

Realist rationality is grounded in critical realism, a branch of philosophy that distinguishes between the “real” and the “observable” worlds (Van de Ven, 2007). As developed by Bhaskar (1975), critical realism recognizes that reality cannot be perfectly observed and exists independent of human perceptions and beliefs, including scientific theories. We can understand the world only through what we observe, an imperfect source of understanding requiring that we acknowledge some degree of irreducible uncertainty and the tentative quality of our inferences (Barends & Rousseau, 2018; Rousseau, 2018). Taking a critical realist perspective, we recognize that knowledge is provisional and likely requires updating and change over time. Nonetheless we can seek to act based upon our best available understanding of reality, that is, informed by multiple sources of evidence vetted for quality.

“Taking a critical realist perspective, we recognize that knowledge is provisional and likely requires updating and change over time.”

Realist rationality also acknowledges the biases inherent in the ways that organizational goals are framed and acted on. Organizations are multipurpose and may develop, revise, and adapt an array of

goals predicated on external forces and the motives of owners, members, and other stakeholders. Realist rationality recognizes that tradition and authority tend to emphasize certain goals (e.g., economic), or the interests of certain stakeholders (e.g., stockholders and executives). However, attention to broader goals (e.g., sustainability, social welfare), and more stakeholders, including those who implement decisions and those affected by them, can optimize outcomes for organizations and society (Mintzberg, 2015; Raworth, 2017). Organizational goals are real in their consequences and cannot be abstracted out from discussions about organizations and their practices. For this reason, realist rationality calls attention to the need to develop, use, and refine processes that broaden the decision frames used in organizations. EBM advocates asking several questions at the outset of decision making (Barends & Rousseau, 2018) including, “What problem are we trying to solve? What’s the evidence this is the problem? What do different stakeholders believe about this problem?” Raising such questions regularly promotes better recognition of relevant evidence and how decisions can be framed to reduce bias and improve outcomes.

Realist rationality provides a lens to view recent responses to the global pandemic. In the contemporary USA, state governors in red (conservative-leaning) states tended to focus on how to keep businesses open during the 2020 pandemic, while governors in blue states (liberal-leaning) focused more on managing the healthcare system’s capacity. By creating regional alliances among Western states and those in the Northeast, some governors began expanding the frame to address how to re-open the economy while continuing infection containment. Expanded decision frames allow attention to multiple goals, sometimes through integrative approaches (infection control plus a partially open economy) and other times through sequential attention to issues (starting with infection control and shifting over time to a phased re-opening of the economy after testing for infections and immunity becomes available). The processes for expanding the decision frame make use of several kinds of evidence from scientific findings (e.g., vaccine and immunity development) to local data (contact tracing, infection and hospitalization rates) and stakeholder concerns (needs for work, transportation, and childcare) to address the various sub-decisions made along the way.

We can see realist rationality manifest in decision makers such as Republican Governor Mike DeWine

of Ohio who began taking action early in the pandemic to shut down bars, restaurants, and large gatherings (Senior, 2020): “I’ve spent over 40 years in public office,” says DeWine. . . . “When I’ve made mistakes, it’s usually because I didn’t have enough information. I didn’t ask enough questions, I didn’t ask the right people, I didn’t drill down deep enough into the facts. That experience was helpful in regard to this.” In her interview with Governor DeWine, Jenifer Senior of the *New York Times* notes,

“What became clear, in talking to DeWine, is that he cast a very wide net to get his facts. He spoke daily to the mayors of the state’s biggest cities, all Democrats. He spoke regularly with his health director and an informal council of 14 doctors from around the state. . . . This wide range of sources was key. . . . It also helps to have viewpoint diversity in your brain trust. If you spend time with people who think only like you do, your biases harden—and move even further to the extreme.”

So how does a realist approach deal with the two chronic concerns in this age of *alt-facts*: the preference of many managers to make decisions based on intuition or gut feeling and the willingness to ignore even high-quality evidence when acting on it is inconvenient (Highhouse, 2008)? People in powerful positions can become used to acting on their personal intuitions without careful attention to data or information provided by lower level employees or the public (Keltner, Gruenfeld, & Anderson, 2003). This “evidence resistance” has a number of antidotes, some targeted to personal communications with powerful people, others built into on-going decision processes that specify the steps and conditions required for authorizing a decision. “Giving the mind a way out” is a persuasion tactic (Barends & Rousseau, 2018; Cialdini, 2008) where a body of evidence is presented *after* a person has stated his or her opinion: “I can see why you might have thought that before you learned of these facts. How do you think of things now?” Witness how this process plays out in contemporary news conferences where Dr. Anthony Fauci, head of the U.S. Center for Infectious Disease Control, threads recommendations based on science into President Trump’s Covid-19-related pronouncements a few minutes before. It shows respect for the person who offered an opinion (and the office they hold), while at the same time clearly stating how evidence refutes it. Evidence resistance can also be overcome by submitting competing approaches to experimental tests, thus taking into account differences in opinion, expertise, organizational data, or scientific

findings to create a way forward that reduces uncertainty.

Mitigating human biases necessitates use of decision practices that provide repair for our cognitive limitations and promote more effective use of relevant evidence, in effect decision practices that work to support and inform human judgment (Heath, Larrick, & Klayman, 1998). Recognition of the limits of unaided human decision making, a hallmark of Herbert Simon's work, today forms the basis of professional practices that make use of decision aids in evidence-based professions including medicine and aviation, the latter the origin of perhaps the most common form of decision tool, the checklist (Gawande, 2009). One challenge in applying these cognitive repairs is moving from our knowledge of the biases and limitations of individuals to implement practices that help inform and structure the decision processes of organizations (Jones, 2002; Rousseau & Gunia, 2016).

Attention to stakeholders in decision making is core to EBM and evidence-based practice generally. It partly reflects concern for the ethics of professional decisions, particularly with respect to human well-being (Barends & Rousseau, 2018; Straus et al., 2005). It also reflects a concern for stakeholders who are not "at the table" when decisions are made. A hallmark of human cognitive limits is the phenomenon Kahneman (2011) refers to as WYSIATI ("What you see is all there is"). Explicit attention by way of evidence-based supports to a decision's potential stakeholders can reduce the tendency to downplay or ignore those less salient or visible people who are nonetheless important to the decision's implementation and/or its consequences (Barends & Rousseau, 2018). Consideration of the interests of stakeholders has been shown to improve decision outcomes in organizations (Nutt, 1984, 1999): This effect occurs through the role stakeholder evidence plays in identifying an appropriate decision frame, implementing a decision effectively, and more fully identifying its potential outcomes (Barends & Rousseau, 2018; Nutt, 1999; Rousseau, 2018). A classic example of differential attention to stakeholders is Wayne Cascio's (2002) work contrasting downsizing and responsible restructuring: Downsizing's focus on cost containment makes employees the passive victims of unilateral cuts, while in the face of similar economic challenges responsible restructuring partners with workers in solution development to enhance performance and decision benefits. I believe decision makers in organizations are often afraid to engage stakeholders, fearful of conflict and complexity—instead wanting to avoid all but the most cursory

interaction. Nonetheless, benefits grow out of stakeholder engagement—including improved capability for dealing with stakeholders in the first place, a point that applies in politics as well as organizations. Representative Alexandria Ocasio-Cortez, a progressive member of the U.S. House of Representatives, says "the process of coming together should be uncomfortable for everyone involved" (Herndon, 2020), so that important issues aren't swept under the rug. How uncomfortable the process of stakeholder engagement is likely to be probably depends on whether it is the first time or a well-honed practice. The fact that stakeholder engagement is a facet of the ISO 26000 standards for corporate social responsibility suggests that it is a competency that organizations and their members can develop.

A LIBERATION MOVEMENT

The liberation aspect of EBM has three facets. The first is the questioning of tradition and authority inherent in EBM's emphasis on use of multiple sources of evidence and attention to their quality. Contemporary organizations abound with beliefs and practices reflecting taken-for-granted traditions and unquestioned assumptions—from how workers get hired to the actions expected of workers or their bosses. Consider the dramatic move by Yahoo's Marissa Mayer to rescind its policy of flexible working and instead require employees to work together face-to-face (Pepitone, 2013). With the stated goal of improving communication and coordination to enhance Yahoo's lagging company innovation, this executive fiat yielded little improvement. (I note that for the last 5 years, several of my EBM students elected to seek scientific evidence pertaining to Mayer's decision—consistently finding little in support for it and plenty of research indicating that face-to-face working is not necessary for innovation as long as other processes are in place).

Tradition has its place as a reflection of human experience. But it is not a perfect teacher, particularly in the context of dynamic and pluralistic environments. Authority based on position power (e.g., exerted by an organization's C-suite) can lead to poor decision outcomes. When powerful managers undercut use of relevant evidence and effective decision processes, they erode the trust both members and the public attribute to the organization. In contrast, when decisions are supported by attention to evidence, employee trust in managers can be enhanced (Jepsen & Rousseau, 2016).

The second aspect of EBM is its contribution to the development and expression of free will. It is rational for people to pursue the development and expression of the self and their own personal identities (Korsgaard, 2009). EBM is a reflective professional practice that engages the practitioner in a more mindful and critical approach to action in organizations. It requires commitment, competence, and access to information because EBM is a project of lifelong learning, “a career and not a course” (Barends & Rousseau, 2018), and one that is most effectively undertaken in an environment providing support and collaboration (Rousseau & Gunia, 2016; Tucker, Nembhard, & Edmondson, 2007).

Elsewhere, I have talked about the importance of free will in the formation of commitment and realization of collective benefits from cooperation and contracting (Rousseau, 2012b). *Free will* is the individual’s capacity to make choices without physical, personal, or social constraints. Constraints such as imprisonment, mental illness, or threats undermine individual accountability (Atiyah, 1981), which in turn limits individuals’ ability to enter into (psychological or formal) contracts with others that they feel bound to perform. When people are unable to freely commit to a contract, poor outcomes result from it. The exercise of free will, and the formation of effective contracts that results, requires that individuals have access to accurate information that has not been distorted or filtered to manipulate them to behave in a certain way. J. D. Maddox (2020) describes his experience of being deployed to Iraq to help find Saddam Hussein’s purported cache of weapons of mass destruction. After he realized that the rationale offered for the invasion was based on false information, Maddox said:

“It became impossible for me to square my American sense of free will—our image of ourselves as empowered citizens participating in informed choices—with the reality of the way that we were hoodwinked into going along with the invasion of Iraq.”

The experience of free will can increase attention to the choices made and personal commitment to actions undertaken; its erosion can be toxic and disruptive.

The concept of free will might seem to be undermined by certain theories in modern science. Physicists Hawkins and Mlodinow (2010) argue that the universe’s processes are bounded by random formation, making free will a myth. Instead they claim the choices people make are in no way freer than the instinctual responses of dogs and amoeba. Hawkins and Mlodinow assert that the biological structure of

the human brain shapes experience, and thus, there is no human agency.

“When powerful managers undercut use of relevant evidence and effective decision processes, they erode the trust both members and the public attribute to the organization. In contrast, when decisions are supported by attention to evidence, employee trust in managers can be enhanced (Jepsen & Rousseau, 2016).”

Yet, an individual’s brain processes and cognitive structures can be significantly changed by how that person acts or feels and the ways he or she interacts with the environment (Edelman, 2006). For this reason, the fine structures of each human brain are unique, a function of what Edelman (p. 57) refers as the “brain speaking to itself.” Because human beings can learn higher order concepts, such as roles and responsibilities, an individual can modify the values ascribed to them (p. 95). Personal narratives that value the future over the present enable individuals to resist both internal temptation and situational pressure (Bachlin, 2000). The formation of intent prior to making a choice also impacts mental functioning. The impact of freely formed intention prior to making a choice is linked to the ability to think abstractly about one’s behavior over time (Bachlin, 2000: 184), an example of how higher order concepts affect human decision making and behavior. In effect, how people think is the basis of human agency (Rousseau, 2012b). In the context of EBM, becoming a competent practitioner involves deep reflection and learning regarding how one thinks and behaves in organizational settings.

Some environments make it more likely that an individual will be reflective and able to make well-informed decisions. The exercise of reflective choice is enabled by arrangements that complement the way people think. For example, how food is displayed or placed (e.g., placing junk food on the highest shelf) can help “nudge” individuals toward more reflective choices (Thaler & Sustein, 2011). Reflective choice is also enabled when people take the time to pause from doing and think about the situations they face (Gosling & Mintzberg, 2003).

Free will is thus both an individual and a social practice, born out of how the brain talks to itself, the expectations and opportunities human communities convey to their members, and what we as individuals do to develop ourselves. In his book *Enlightenment Now* Steven Pinker (2018) draws an intrinsic

connection between science and human progress and notes the rise of human freedom as science and an understanding of the world have advanced. Note, many human activities in which advancements have been made were once thought of as an art, not rational or accessible to systematic understanding. Andrew Carnegie (Carnegie, 1920: 174) had thought steelmaking was an art until he began to hire professional engineers who applied more scientific methods. In this regard, evidence suggests that training entrepreneurs in the scientific method of hypothesis testing and information gathering can improve their organization's outcomes over reliance on entrepreneurial intuition (Camuffo et al., 2019).

The third liberation aspect of EBM is its promotion of broader attention to the interests and concerns of an organization's stakeholders—a key facet of realist rationality with its emphasis on developing decision frames that enhance intended outcomes and reduce unintended consequences. I once facilitated a strategic retreat for an oncology practice. The group struggled with specifying its goals and guiding principles, with the doctors talking about quality of care, patient well-being, and their desire for a standout local reputation. After a pause, one doctor broke the silence with a goal left unspoken by the group: “Can we really say that we need to make money too?” Incorporating stakeholder evidence, that is, information regarding the interests and concerns of those affected by the decision, enhances rationality by broadening the consideration of the issues a decision addresses, raising more critical assumptions that can be subject to scrutiny and evidence gathering. Obviously in that oncology practice, the doctors, and (the survival of) their practice, constitute stakeholders too.

Scholars have long recognized the downside of prioritizing a single easily available goal (e.g., short-term profits or cost reduction) over multiple goals (Unsworth, Yeo, & Beck, 2014). At the same time, setting goals in organizations without careful attention to the interests they reflect risks adverse consequences (cf., Locke & Latham, 2009; Ordóñez et al., 2009). Attention to stakeholders—from employees to the planet—broadens thinking about the problems a decision should address, the solutions considered, and the outcomes to be pursued (Raworth, 2017)—particularly important when dealing with commensurate outcomes people cannot rank clearly. A study of the history of the AIDS epidemic in the US suggests that involvement of patients and the gay community in formulating drug trials and treatment programs sped up identification and use of effective

treatment (France, 2017). On the other hand, excluding stakeholders can be a powerplay to avoid addressing their concerns (a vivid example of this is the 1927 decision by the city fathers of New Orleans to protect that city by diverting Mississippi flood waters to two other parishes, without their knowledge or consultation; Barry, 1997: 239).

In a similar vein with broad repercussions for public policy and well-being, consider a recent *New York Times* article (Slater, 2020) showcasing the stories of inmates in California prisons serving life sentences, some of whom were granted the opportunity to apply for parole. In California as elsewhere in the United States, one condition of parole is that inmates convince a parole board that they have truly repented of their crime. I note that if the goal is to reduce the prison population without releasing people who will reoffend, it is unclear what evidence supports a connection between expressed repentance and reoffending. However, the real goal may be to make the parole decision legitimate in the eyes of the public, particularly families of the offenders' victims. I note that at present there is little evidence on a connection of repentance with either re-offense or legitimacy. Perhaps a better approach might be to frame the parole decision explicitly around the multiple goals of avoiding re-offense, legitimating the felon's release in the public's eyes, and reducing the expense of incarceration (and whatever other goals there be) and then giving more systematic attention to the evidence relevant to each. Otherwise, acting on taken-for-granted assumptions unsupported by quality evidence can harm both individuals and society.

IMPLICATIONS FOR MANAGEMENT EDUCATION

The goal of evidence-based practice and its management scion EBM is to improve the quality of decisions and in doing so further human progress. Business schools when first formed were intended by founders like Joseph Wharton to improve the ethics of business by educating managers to be responsible professionals (Khurana, 2007). Understanding rationality as a realist enterprise calls attention to how we can improve the education would-be managers receive—and the expectations formed in our professional schools regarding their continued learning and practice after graduation. I have written elsewhere about the implications of EBM for management education (Rousseau, 2012a; Rousseau & McCarthy, 2007). Given the present essay's focus,

I briefly highlight three approaches to management education in line with realist rationality: Push, Pull, and Process.

The Push Approach refers to the domain or content knowledge management education offers. Both organizational behavior (Rousseau, 2012c) and business strategy (Madhavan & Mahoney, 2012) have been criticized for over-reliance on single studies in making conclusions about each field's findings. At the same time, some popularly taught theories have little empirical basis. In organizational behavior, Herzberg's 2-factor theory persists in popular textbooks despite having been refuted over 50 years ago (e.g., see Ewen et al., 1966; House & Wigdor, 1967; Hinrichs & Mischkind, 1967; Hulin & Smith, 1967). Relatedly, as noted by Jarzabkowski and Kaplan (2015), business school faculty who teach strategy introduce students to strategy tools such as Porter's (1980) Five Forces framework. However, they point out there is little systematic empirical evidence for the validity of the Five Forces or many other models applied in strategic management, and perhaps even less empirical evidence for their value as decision tools (cf., Madhavan & Mahoney, 2012). Others (e.g., March 2006; Mintzberg, 2004) have raised concerns about the excessive trust managers place in such tools. Jarzabkowski and Kaplan (2015) suggest these tools may serve as "props," rather than instruments of rational decision making.

In contrast, the Pull approach EBM advocates means carefully vetting the ideas covered in our management courses, providing learners with the best available evidence on fundamentals in OB, Marketing, Strategy, or whatever field we are teaching. Sources of such evidence would be convergent, well-supported findings from meta-analyses and systematic reviews (Rousseau, Manning, & Denyer, 2008) and accumulated bodies of evidence the instructor has reviewed. To practice what I preach, my course, *Organizational Change*, is designed around a review colleagues and I undertook of the research and practice literatures (Stouten, Rousseau, & deCremer, 2019). The heart of the Pull approach is to teach the best available evidence vetted for quality—while advising students that the scientific literature on the topic is large and growing—and thus, is likely to change over time. It perhaps bears saying that the kinds of scientific evidence pertinent to our teaching take many forms. No single methodology suffices to inform us regarding the questions of practice. Studies using focus groups and interviews can tell us how employees or customers feel about or experience a practice and suggest improvements as

well as reasons to abandon the practice. In depth-case and qualitative studies can describe how a practice works, who it works for (or doesn't), and what supports might help and how it can run into trouble. Controlled studies can tell us about effects on targeted outcomes. Surveys can help us understand the psychological and social mechanisms a practice evokes. Methodological pluralism is essential to EBM and to evidence-based practice generally.

The Pull approach reflects the dynamic nature of science and the inevitable emergence of new findings, updated syntheses, and meta-analyses over time. Paraphrasing what a medical school's dean once told its graduates: Half of what we have taught you will be replaced by new knowledge in future, we just don't know which half. Graduates seeking to keep up with the science in their areas of practice will need to engage in guided reading over time and seek out research findings relevant to the new questions they face on the job. An important skill for organizational decision makers is the ability to search scientific databases for research findings pertinent to their practice (or have staff trained to do so). This activity is central to the training of physicians and nurses (e.g., Straus et al., 2005). But searching for scientific evidence and asking practice-related questions in a fashion that helps inform decisions are skills that few managers develop unless explicitly trained. In my experience, management students are amazed at what is available to them from scientific databases, but they need to be trained both to search and to extract practice-related information from a scientific article—without reading all of it (Often the title and abstract suffice!). The Pull approach develops skills for asking practice questions and then acquiring, appraising, aggregating, and applying the evidence obtained (Barends & Rousseau, 2018).

The Process approach is the third leg of the stool to support realist rationality through teaching. It involves helping students reflect on how they approach ideas and evidence by helping them think and read critically. This entails helping them slow down when they read or seek out facts and opinions—in effect, to disengage from the usual cognitive shortcuts when they consider information (Brashier & Marsh, 2020). It also involves helping them learn how to manage the decisions they will make in organizations. Contemporary organizations are often weak on decision management, doing little to support practitioners in making good decisions. Teaching the processes for making good decisions—and when to apply them—is critical to promoting

realist rationality by supporting human information processing.

Three distinct evidence-based decision processes can be readily taught. Each is applied predicated on the level of knowledge or uncertainty associated with the decision (Rousseau, 2018). The first involves “known knowns,” that is, familiar and repetitive decisions that are routinizable (where checklists and decision aids can be developed to improve information use; Gawande, 2009). The second involves “known unknowns,” that is, where individuals possess incomplete and somewhat ambiguous information that when shared and processed by a group can yield a quality decision (Yates, 2003). The third involves “unknown unknowns” and requires experimentation and learning by doing because historical information is not likely to be relevant (new markets, some crises; Weick & Sutcliffe, 2011). Foreshadowing to students the kinds of decisions they are likely to face helps them discern decision opportunities, develop and use decision aids, and take the actions needed to implement situation-appropriate decision processes (see Barends & Rousseau, 2018, for details regarding teaching). Note, these three decision processes can be taught generically or in the context of a specific managerial domain (e.g., types of decisions made in human resource management, strategy, marketing, etc.).

CONCLUSION

Realist rationality provides constructive underpinnings for management education and learning. It is grounded in a scientific understanding of human capabilities and a deep appreciation of the need to improve access and use of quality information, to design evidence-based decision aids, and provide supportive environments for evidence-based practice. In providing a basis for EBM, realist rationality offers guidance to business and other professional schools preparing people to work in organizations. It informs learning goals and teaching methods that can promote improved decision quality—and help learners develop valid knowledge and skills throughout their careers.

REFERENCES

- Anderson, C., Brion, S., Moore, D. A., & Kennedy, J. A. 2012. A status-enhancement account of overconfidence. *Journal of Personality and Social Psychology*, 103(4): 718.
- Artinger, F., Petersen, M., Gigerenzer, G., & Weibler, J. 2015. Heuristics as adaptive decision strategies in management. *Journal of Organizational Behavior*, 36(S1): S33–S52.
- Atiyah, P. S. 1981. *Promises, morals and law*. Oxford, UK: Clarendon.
- Bachlin, H. 2000. *The science of self-control*. Cambridge, MA: Harvard.
- Baird, L., Holland, P., & Deacon, S. 1999. Learning from action: Imbedding more learning into the performance fast enough to make a difference. *Organizational Dynamics*, 27(4): 19–32.
- Barends, E. G., & Briner, R. B. 2014. Teaching evidence-based practice: Lessons from the pioneers: An interview with Amanda Burls and Gordon Guyatt. *Academy of Management Learning & Education*, 13(3): 476–483.
- Barends, E., & Rousseau, D. M. 2018. *Evidence-based management: Making better organizational decisions*. London: Kogan Page.
- Barry, J. M. 1997. *Rising tide: The Great Mississippi Flood of 1927 and how it changed America*. New York: Touchstone Books.
- Bhaskar, R. 1975. *A realist theory of science*. London: Verso.
- Brashier, N. M., & Marsh, E. J. 2020. Judging truth. *Annual Review of Psychology*, 71: 499–515.
- Camuffo, A., Cordova, A., Gambardella, A., & Spina, C. 2019. A scientific approach to entrepreneurial decision making: Evidence from a randomized control trial. *Management Science*, 66(2): 564–586.
- Carnegie, A. 1920. *The autobiography of Andrew Carnegie*. Boston: Houghton Mifflin.
- Cascio, W. F. 2002. *Responsible restructuring: Creative and profitable alternatives to layoffs*. San Francisco: Berrett-Koehler Publishers.
- Cialdini, R. B. 2008. *Influence: Science and Practice*, 5th Edn. Boston: Allyn & Bacon.
- Edelman, G. M. 2006. *Brain science and human knowledge: Second nature*. New Haven, CT: Yale University Press.
- Ewen, R. B., Hulin, C. L., Smith, P. C., & Locke, E. A. 1966. An empirical test of the Herzberg two factor theory. *The Journal of Applied Psychology*, 50: 544–550.
- France, D. 2017. *How to survive a plague: The inside story of how citizens and science tamed AIDS*. New York: Vintage Books.
- Gawande, A. 2009. *The checklist manifesto: How to get things right*. New York: Metropolitan Books.
- Gosling, J., & Mintzberg, H. 2003. The five minds of a manager. *Harvard Business Review*, 81(11): 54–63.
- Hamilton, I. A. 2020. “Bill Gates is helping fund new factories for 7 potential coronavirus vaccines, even though it will waste billions of dollars” <https://www.businessinsider.com>.

- com/bill-gates-factories-7-different-vaccines-to-fight-coronavirus-2020-4 Downloaded 17 July 2020.
- Hawkins, S., & Mlodinow, L. 2010. *The grand design*. London: Bantam.
- Heath, C., Larrick, R. P., & Klayman, J. 1998. Cognitive repairs: How organizations compensate for the shortcoming of individual learners. *Research in Organizational Behavior*, 20: 1–37.
- Herndon, A. W. 2020. “Alexandria Ocasio-Cortez has never spoken to Joe Biden. Here’s what she would say.” *New York Times*, April 13.
- Highhouse, S. 2008. Stubborn reliance on intuition and subjectivity in employee selection. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 1(3): 333–342.
- Hinrichs, J. R., & Mischkind, L. A. 1967. Empirical and theoretical limitations of the two-factor hypothesis of job satisfaction. *The Journal of Applied Psychology*, 51: 191–200.
- House, R. J., & Wigdor, L. A. 1967. Herzberg’s dual factor theory of job satisfaction and motivation. *Personnel Psychology*, 20: 369–389.
- Hulin, C. L., & Smith, P. A. 1967. An empirical investigation of two implications of the two-factor theory of job satisfaction. *The Journal of Applied Psychology*, 51: 396–402.
- Jarzabkowski, P., & Kaplan, S. 2015. Strategy tools-in-use: A framework for understanding “technologies of rationality” in practice. *Strategic Management Journal*, 36(4): 537–558.
- Jepsen, D., & Rousseau, D. M. 2016. Uncovering the role of managerial evidence use in the employee experience of leadership and learning. In *2nd HR Division International Conference*.
- Jones, B. D. 2002. Bounded rationality and public policy: Herbert A. Simon and the decisional foundation of collective choice. *Policy Sciences*, 35(3): 269–284.
- Kahneman, D. 2011. *Thinking, fast and slow*. New York: Macmillan.
- Keltner, D., Gruenfeld, D. H., & Anderson, C. 2003. Power, approach, and inhibition. *Psychological Review*, 110(2): 265–284.
- Korsgaard, C. M. 2009. *Self-constitution. Agency, identity, and integrity*. Oxford, UK: Oxford University Press.
- Khurana, R. 2007. *From higher aims to hired hands: The social transformation of American business schools and the unfulfilled promise of management as a profession*. Princeton, NJ: Princeton University Press.
- Locke, E. A., & Latham, G. P. 2009. Has goal setting gone wild, or have its attackers abandoned good scholarship? *The Academy of Management Perspectives*, 23(1): 17–23.
- Maddox, J. D. 2020. The day I realized I would never find weapons of mass destruction in Iraq. *New York Times*, 29 January.
- Madhavan, R., & Mahoney, J. T. 2012. Evidence-Based Management in “macro” areas: The case of strategic management. In D. M. Rousseau (Ed.), *The Oxford handbook of evidence-based management*, 79–91. New York: Oxford University Press.
- March, J. G. 2006. Rationality, foolishness, and adaptive intelligence. *Strategic Management Journal*, 27(3): 201–214.
- Mintzberg, H. 2004. *Managers, not MBAs: A hard look at the soft practice of managing and management development*. Berrett-Koehler: San Francisco, CA.
- Mintzberg, H. 2015. *Rebalancing society: Radical renewal beyond left, right, and center*. Berrett-Koehler.
- Nutt, P. C. 1984. Types of organizational decision process. *Administrative Science Quarterly*, 29(3): 414–450.
- Nutt, P. C. 1999. Surprising but true: Half of all decisions in organizations fail. *The Academy of Management Executive*, 13(4): 75–90.
- Ordóñez, L. D., Schweitzer, M. E., Galinsky, A. D., & Bazerman, M. H. 2009. Goals gone wild: The systematic side effects of overprescribing goal setting. *The Academy of Management Perspectives*, 23(1): 6–16.
- Pepitone, J. 2013. Marissa Mayer: Yahoos can no longer work from home. *CNN Business*. February 25. <https://money.cnn.com/2013/02/25/technology/yahoo-work-from-home/index.html>
- Pinker, S. 2018. *Enlightenment now: The case for reason, science, humanism, and progress*. New York: Penguin.
- Porter, M. 1980. *Competitive strategy*. New York: Free Press.
- Raworth, K. 2017. *Doughnut economics: Seven ways to think like a 21st-century economist*. Chelsea, VT: Chelsea Green Publishing.
- Rousseau, D. M. 2012a. Designing a better business school: Channeling Herbert Simon, addressing the critics, and developing actionable knowledge for professionalizing managers. *Journal of Management Studies*, 49: 600–618.
- Rousseau, D. M. 2012b. Free will and the social and psychological contract. *Business and Society Review*, 7: 8–13.
- Rousseau, D. M. 2012c. Organizational Behavior’s contributions to Evidence-Based Management. In D. M. Rousseau (Ed.), *The Oxford handbook of evidence-based management*, 61–78, New York: Oxford University Press.
- Rousseau, D. M. 2018. Making evidence-based organizational decisions in an uncertain world. *Organizational Dynamics*, 47(3): 135–146.
- Rousseau, D. M., & Gunia, B. 2016. Evidence-based practice: The Psychology of EBP. *Annual Review of Psychology*, 2016: 667–692.

- Rousseau, D., Manning, J., & Denyer, D. 2008. Evidence in Management and Organization Science: Assembling the field's full weight of scientific knowledge through syntheses. *The Academy of Management Annals*, 2: 475–515.
- Rousseau, D., & McCarthy, S. 2007. Educating managers from an evidence-based perspective. *Academy of Management Learning & Education*, 6: 84–101.
- Senior, J. 2020. "Opinion: Trump's Brain: A Guided Tour. Why did it take so long to do the right thing?" *New York Times*, April 16.
- Simon, H. A. 1997. *Administrative behavior: A study of decision-making processes in administrative organization*. New York: Free Press.
- Slater, D. 2020. Can you talk your way out of a life sentence? *New York Times*, January 1.
- Straus, S. E., Richardson, S. E., Glasziou, P., & Haynes, R. B. 2005. *Evidence-based medicine: How to practice and to teach EBM*. Edinburgh: Elsevier Churchill Livingstone.
- Thaler, R., & Sunstein, C. 2011. *Nudge*. New Haven, CT: Yale University Press.
- Tucker, A. L., Nembhard, I. M., & Edmondson, A. C. 2007. Implementing new practices: An empirical study of organizational learning in hospital intensive care units. *Management Science*, 53: 894–907.
- Unsworth, K., Yeo, G., & Beck, J. 2014. Multiple goals: A review and derivation of general principles. *Journal of Organizational Behavior*, 35(8): 1064–1078.
- Van de Ven, A. H. 2007. *Engaged scholarship: A guide for organizational and social research*. New York: Oxford.
- Weick, K. H., & Sutcliffe, K. 2011. *Managing the unexpected: Resilient performance in an age of uncertainty*. New York: Wiley.
- Yates, F. J. 2003. *Decision management: How to assure better decisions in your company*. New York: Wiley.
- Yong, E. 2020. How the pandemic will end. *Atlantic (Boston, Mass.)*, (March): 25.



Denise M. Rousseau is the H. J. Heinz, II University Professor of OB and Public Policy at Carnegie Mellon's Heinz College and Tepper School of Business, and former President of the Academy of Management. An organizational psychologist, her research focuses on change in organizations and employment relationships with a particular focus on worker experiences. She has been honored with AOM's Scholarly Contribution Award, its Distinguished Service Award, two George Terry Book Awards, and scholarly contribution awards from the OB, Careers, and MOC divisions. In 2019, she received the Losey Award for Contributions to Scholarship and Practice from SHRM, and in 2020, the Distinguished Scholarship Career Award from SIOP.

