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How do narratives relate to heuristics?

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Abstract

Narratives and heuristics are both tools for dealing with uncertainty, intractability, and incommensurability, that is, for all real-world situations outside the domain of Bayesian decision theory. But how do narratives and heuristics relate? I suggest two links: Heuristics select narratives to explain events, and “big” narratives select the heuristics that people live by, to execute their values and moral principles.

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The tools of Bayesian decision theory – the consistency axioms, maximization of expected utility, and Bayesian probability updating – are tailored for situations of risk, not

uncertainty. In Savage's (1972/1954) terms, a situation of risk means a *small world* (S, C) in which all possible future states S , all possible consequences C , and all probabilities are known. A game of roulette is an example. If the state space (S, C) is not fully known, as in most real-world decisions, the situation is one of (radical) uncertainty, also called a *large world*. Examples include finding the right partner, raising one's children, and running the Bank of England. Savage emphasized that applying Bayesian decision theory to situations of uncertainty "is utterly ridiculous".

Dealing successfully with uncertainty, intractability, and incommensurability – all situations beyond the reach of Bayesian decision theory – requires different tools. Narratives are one tool (target article; Tuckett, 2011), heuristics are another (Gigerenzer, Hertwig, & Pachur, 2011). A narrative provides a story while a heuristic provides a concrete sequence of actions, such as what information to search, when to stop, and how to decide. People use heuristics to find a partner, raise their children, run large institutions, and make investment decisions. As Johnson et al. note, developing a repertoire of heuristics and learning to select these in an adaptive way is often the best one can do in the real world.

How do heuristics and narratives relate to each other? One possibility might be that heuristics select narratives, a second one that narratives select heuristics.

Johnson et al.'s burglar-versus-cat narrative illustrates the first link: An observation is made (hearing a noise at night) and, in the absence of probabilities, heuristics are used to

evaluate and select one of the two narratives. Here, Johnson et al. see the role of heuristics akin to hypotheses testing. To me, the burglar-versus-cat story is not the best example to highlight radical uncertainty, while the references to investors, banks, and central banks clearly are. In the burglar-versus-cat narrative, all uncertainty appears to be limited to the probabilities, akin to a form of a small world known as *ambiguity*, and the set of possible states of the world (burglar versus cat) is known. In contrast, the “big” narratives on which religion, politics, and science are based are rarely selected on a daily basis. Rather, these narratives select what we believe and how we behave until a revolution in thought occurs. In other words, big narratives select heuristics.

Consider what Max Weber (2001/1904) called the *Protestant ethic*. Work hard and accumulate capital. Don't waste one's earnings on pleasure, power, or material comfort. Instead, live frugally and reinvest them to accumulate more capital. It is based on the teachings of various Puritan religions, including Calvinism, Methodism, Pietism, and Baptism. According to Weber, the underpinning is the doctrine of predestination: God has already chosen who will be saved from damnation or not. All one can do is to look for cues to find out whether one is among the chosen. Working hard and not wasting time on worldly pleasures is such a clue. Wasting time playing billiards, by contrast, is a sign of being doomed. Benjamin Franklin, a proponent of the Protestant work ethic, coined the term “time is money.” To the present day, many people have internalized the heuristics for accumulating capital and not wasting time, including the associated feelings of guilt, without necessarily being aware of the underlying

narrative. Narratives can be unconscious, while the associated heuristics actively guide life and moral judgments.

Weber contrasts this ethic with a traditional Catholic narrative, where individual fates are not predetermined and forgiveness is possible. People living by this narrative can play billiards, eat well, and enjoy their life without feeling guilty. Weber tells the story of employers who increased the hourly wages of their workers to make them work longer for a limited time, such as at harvest time. Yet to their surprise, many workers did not work more, but fewer hours. Their narrative selected a satisficing heuristic with an amount of money as the aspiration level. When they had earned enough, they stopped working, went home, and spent their earnings and free time together with their family. To make them work longer would have meant reducing, not increasing, their hourly wages. The Protestant work ethic, in contrast, selects a heuristic that tries to boost capital: Work hard, accumulate as much capital as possible, and do not spend it on pleasure. In both cases, the narrative is first, and it selects the heuristics to execute the narrative.

Narratives can select heuristics, and heuristics can select narratives. These are probably not the only links. Another possibility is that the heuristics we live by are learned by imitation, and a narrative is constructed around these to create a consistent story after the fact, or make sense of what one does. A final possibility is that narratives and heuristics co-evolve; changing one changes the other. Further thinking is needed.

All in all, I congratulate Johnson et al. for having the courage to write about the importance of narratives in the context of decision-making. That stands in stark contrast to the widespread belief that all decisions in the real world can be reduced to small worlds where Bayesian decision-making can find the optimal answer. Savage, known as the father of modern decision theory, warned about this misconception. It renders pointless all of psychology, from causal stories to trust and emotion. The belief that we live in a small world is itself a powerful narrative that selects the research questions asked and the experimental tasks studied. We should make our theories more relevant for large worlds, and to do so, we need to take uncertainty seriously, along with the narratives and heuristics by which we live.



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Competing interest

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