

## PHIL 5983: Rationality Seminar

University of Arkansas, Fall 2004

**Topic:** Simple Heuristics I: Recognition and One-Reason Decision Making

**Readings:** *Simple Heuristics* (Chapters 2-4)

“The Recognition Heuristic: How Ignorance Makes Us Smart”

\*The opening paragraphs distinguish recognition from recall. Recognition is simply the (binary) feeling of having experienced something before—e.g., faces, voices, and names. Recall is the ability to provide information about an object, apparently due to previous exposure. (Q: Can one have recall *without* recognition?) The availability heuristic is a type of recall.

--After a brief discussion of some experimental studies of recognition, we are presented with the following conjecture:

“We conjecture that the limits of recognition memory cannot be exceeded in a laboratory experiment, and perhaps not in the lifetime of a human being.” (40)

\*The, perhaps counter-intuitive, line of thought that G&G push in this article is that there are situations in which we systematically can make better inferences from a state of relative ignorance. This is called the “less-is-more effect”.

G&G’s Recognition Heuristic: “*If one of two objects is recognized and the other is not, then infer that the recognized object has the higher value [on some criterion].*” (41)

--This criterion works only when one object is recognized and the other is not—so it requires partial ignorance.

--Important caveat: “Note that where recognition correlates negatively with the criterion, “higher” would be replaced with “lower” in the definition.” (41)

\*We use the recognition heuristic to make a judgment regarding a criterion that is inaccessible to us. However some features of the environment are accessible to us, mediators, that correlate with the criterion. The mediators are related to our minds/recognition (surrogate correlation); the mediator correlates with the criterion (ecological correlation); and from the recognition (or lack thereof) we infer a value for the criterion (recognition validity). (42)

--Note how this heuristic accords with the standard of ecological rationality, as discussed last week:

“Both studies [U.S. cities and English soccer teams] illustrate the ecological rationality of the recognition heuristic. The recognition heuristic is ecologically rational in the sense that it exploits the structure of information in natural environments: Lack of recognition in these environments is systematic and not random.” (44)

\*How realistic is the “three brothers” example on pp. 45-46, especially the knowledge validity value?

--Critically, the “less-is-more effect” occurs when the recognition validity exceeds the knowledge validity. (46)

\*Q: Do real people actually reason in accord with the recognition heuristic?

--The figure on p. 51, representing answers to the German cities question, shows that at least in that example the subjects did seem to follow the recognition heuristic. More interestingly, the recognition heuristic was still followed when conflicting information (about soccer teams) was presented (which would suggest abandoning the strategy).

--Another experiment tested American university students’ ability to pick the larger from a pair of American cities (drawn from a pool of the 22 largest) as compared to their ability to pick the larger from a pair of German cities (again drawn from a pool of the 22 largest). Given that most of us know at least the 3 largest American cities (in order), and know quite a bit about the other cities, one would expect us to perform better on American cities. But, this was not the case.

\*Check out the (implicit) practical advice regarding name recognition, p. 56.

\*G&G note that the binary nature of the recognition heuristic makes it easier to model and rigorously test than the intuitive and vague notions of availability and familiarity that Tversky and Kahneman, and others, invoke. Recall this criticism from last week: “As intuitive as notions such as availability and familiarity may be, there is a need to bring them from one-word explanations to precise models for heuristics (Gigerenzer, 1996). If this is done, then one could hope for a deeper, detailed understanding that can lead to unexpected consequences including the less-is-more effect.” (57)

\*Recall the formulation of the recognition heuristic in terms of search, search-stopping, and decision-making components, and the essential role of ignorance in this procedure. (57)

“Can Ignorance Beat the Stock Market?”

\*In this article the recognition heuristic is used to make investments in the stock market based on company name recognition. Theory meets practice.

\*The stock market is a special case in which significant knowledge does not seem to significantly improve investment performance.

\*Their particular experiment involved creating investment portfolios according to the recognition of companies by: U.S. lay people, U.S. experts, German lay people, and

German experts. From the domestic and companies recognized by each group, 8 portfolios were generated. These portfolios were then tested against other market strategies. The portfolios generated by foreign-recognition were most profitable.

“The predictive power of the recognition heuristic corroborates the notion that a lack of recognition can contain implicit knowledge as powerful as explicit knowledge. The superiority of international over domestic recognition and the superiority of laypeople over experts in stock picking supports the notion that a certain degree of ignorance can be a virtue.” (71)

“Betting on One Good Reason: The Take the Best Heuristic”

\*Q: How should we make a judgment under uncertainty, when there are numerous imperfect cues?

--One answer is to use Franklin’s rule, or Franklin’s moral algebra (a predecessor of multiple linear regression). This involves a weighting, and then addition, of cue values. This procedure is part of the Standard Picture of Rationality:

“Franklin’s method is a variant of the classical view of rationality which emerged in the Enlightenment (see chapter 1), a view that is not bound to linear combinations of reasons. Classical rationality assumes that the laws of probability are the laws of human minds, at least of the educated ones.” (76)

--G&G consider 3 alternative procedures that utilize very simple searching-stopping and decision-making procedures, differing only in their searching methods: the Minimalist, Take the Last, and Take the Best heuristics.

--The Minimalist: Cues are not ranked, so they are considered in random order. The first (randomly selected) cue according to which the alternatives differ will be used to select the alternative with the positive value.

--Take the Last: Cues are selected randomly at first. However, on succeeding problems start with the tie-breaking cue from the previous problem. If this doesn’t work, try the cue that broke the tie from the problem before this, and so on.

--Take the Best: The cues are ranked according to their validity, and considered in this order. A decision is made as soon as there is a cue-value difference between the alternatives.

--For each of these 3 heuristics, the recognition test is the first step.

--Also note that for each of these 3 procedures, the decision is made on the basis of only one cue value (i.e., it is “one-reason decision making”). These procedures are non-compensatory. (81)

\*Recall, from last week, how ecological rationality is supposed to differ from the standard picture of rationality. Here's another reminder:  
"Heuristics are often evaluated by principles of internal coherence, rather than by criteria that measure their performance in the external world: accuracy, frugality, and speed, among others." (82)

--Note, in particular, the "two commandments" of rational decision making: complete search and compensation. (83)

\*These 3 heuristics are put to the test in a computer simulation against 3 "sophisticated", compensatory, linear, statistical procedures. Actually, many tests were performed using varying recognition and cue values. Surprisingly, the heuristics performed just as well as the other 3 strategies while utilizing (or possessing) only a third of the information! Their decision-making rules, therefore, seem to be quite effective. The surprising results are depicted on p. 87.

\*Conclusion: "The single most important result in this chapter is: Fast and frugal heuristics that embody simple psychological mechanisms can yield inferences about a real-world environment that are at least as accurate as standard linear statistical strategies embodying classical properties of rational judgment." (95)

\*\*Here are some links of relevance to this material, or to Gigerenzer's research in general:

--Here's a link to Gerd's homepage: [http://ntfm.mpib-berlin.mpg.de/mpib/FMPro?-db=MPIB\\_Mitarbeiter.FP5&-lay=L1&-format=MPIB\\_Mit.htm&-op=eq&ID\\_Name=gigerenzer&-find](http://ntfm.mpib-berlin.mpg.de/mpib/FMPro?-db=MPIB_Mitarbeiter.FP5&-lay=L1&-format=MPIB_Mit.htm&-op=eq&ID_Name=gigerenzer&-find)

--BBS target article (precis of *Simple Heuristics*):  
<http://bbsonline.cup.cam.ac.uk/Preprints/OldArchive/bbs.todd.html>

-- José Luis Bermúdez's commentary:  
<http://www.philosophy.stir.ac.uk/cnw/webpapers/jose10.htm>

-- Link to another article by G&G on the recognition heuristic (this overlaps with Chapter 2 material): <http://www.cebiz.org/cds/RecognitionPsychReview.pdf>

--A response to G&G on the recognition heuristic:  
[www.cognitivesciencesociety.org/confproc/gmu02/final\\_member\\_abstrs/oppenheimer.pdf](http://www.cognitivesciencesociety.org/confproc/gmu02/final_member_abstrs/oppenheimer.pdf)

-- A book review of another Gigerenzer book:  
<http://human-nature.com/nibbs/02/thinking.html>