

Heuristics all the way up?

Review of Gerd Gigerenzer and others *Simple Heuristics that Make Us Smart*

Adam Morton

Department of Philosophy, University of Bristol

9 Woodland Road, Bristol BS8 1TB, UK

adam.morton@bristol.ac.uk

<http://mail.bristol.ac.uk/~plam>

Abstract: I investigate whether heuristics similar to those studied by Gigerenzer and his co-authors can apply to the problem of finding a suitable heuristic for a given problem. I argue that heuristics of a very similar kind not only can apply but have the added advantage that they need not incorporate specific trade-off parameters for balancing the different desiderata of a good decision-procedure.

Assume that most of the claims made by Gigerenzer and his colleagues are true, and that each person possesses a toolbox of relatively naive procedures which, when used in suitable environments, give results almost as good as sophisticated statistical reasoning, for a fraction of the psychological cost. These procedures will give extremely bad results when used in the wrong environments. The simplest example of a bad environment is one where the values of a quantity to be estimated by the recognition heuristic are inversely correlated with the familiarity of the cues. There is thus a very non-trivial problem of matching heuristics to problems. How do we know which tool to

take from the box?

The matching could be done by some approximation to the statistical considerations of chapters 6 and 8. Or it could itself use some simple heuristics, which in suitable environments gave good results. Or it could work in some entirely different way. Let us explore the second possibility. (The first seems unattractive, given the general ethos of the project, and while the third might well be true we can only explore it once we see the limitations of the second.) We must thus see how given a problem of decision or estimation we can choose from among a set of available simple procedures one which will give an accurate-enough and efficient-enough solution. People do seem to adapt their decision-making procedures to the circumstances of the problem at hand, as remarked in chapter 6, referring to Payne, Bettman, and Johnson (p 140). But the core theory of frugal heuristics is itself neutral on the procedures by which the right heuristic for the problem at hand is chosen, as chapter 26 (p 364) explicitly accepts.

When we pose the meta-choice problem we are immediately faced with a question of incomparability. The choice procedure is asked simultaneously to optimize accuracy and frugality, without being given a trade-off function between them. This might be taken to be another dimension of difficulty, and indeed recent philosophical literature on decision-making often treats incomparability as a basic conceptual problem of decision, along with risk and cooperation (see Morton 1990, Chang 1997). But the simple heuristics point of view has a very significant card to play. Frugal heuristics often manage incomparability as a matter of course.

Suppose for example that we are faced with the problem of choosing a restaurant, where both quality and price are desiderata. If we apply a heuristic with a simple stopping rule, such as 'take the best' we can find that we do not need to decide how to balance the desiderata. We must phrase the stopping rule neutrally: stop when you find a characteristic that correlates with either of the targets. But then we can simply stop searching when we find a candidate and a characteristic that is linked either to good price or good quality. In a series of such choices a balance of quality and price will be struck, but the form of the balance will depend on the environment to which the heuristic is applied and not on any parameter of its definition.

The same can apply with a meta-choice. Suppose we have a toolbox of heuristics and a database of cases, which would specify the categorization of a problem, whether one of the heuristics was applied, and whether it gave a result that was acceptable in terms of time or accuracy. Then given a new problem falling into some category a person can apply a meta-heuristic which involves a stopping rule as described above, to select one that is acceptable either on the one criterion or the other. The result of applying this heuristic to this problem then expands the database to make it a more effective basis for subsequent meta-choices.

The choice of heuristics is unlikely to be made by any rule that is exactly parallel to any first order heuristic. But some features of first order heuristics are very attractive as attributes of meta-choice, in particular the use of a simple stopping rule and the determination of some basic parameters by the environment. This suggests to me that there is another break to make with a traditional conception of rationality. We must not

only be wary of an ideal of unlimited cognitive capacity; we must also be suspicious of ideals of self-containment, according to which all the parameters of a choice procedure are fixed by internal features of cognition.

References:

Morton, Adam 1990 *Disasters and Dilemmas*. Oxford, Blackwell

Chang, Ruth, ed. 1997 *Incommensurability, incomparability, and practical reason*. Cambridge, Mass., Harvard University Press.