

Lecture 1: Investment behavior and perceptual error

1. Contrast two styles of decision-making:

(i) Explicit and deliberate derivation of a conclusion – e.g., “I should buy  $x$  units of asset  $Y$ ” – from a combination of general principles and particular facts. In this case, an example of a general principle might be “companies that have never taken dividend holidays, even when their share value seriously fell, are probably good businesses.” An example of a (relevant) particular fact might be “There has been steadily rising consumption of company  $Y$ ’s products in China.”

(ii) Acting on a sudden feeling of conviction that a decision is right.

It’s obvious enough why (i) can be a useful way to make decisions, though of course it’s far from perfectly reliable. But why do people ever use decision-making style (ii)? Indeed, why do they use it far *more* often than style (i)? Why does decision-making style (ii) even *exist*?

2. A single human brain is the largest kind of physically discrete computing device in the world. Its individual processing units – synapses – are, however, very slow by contrast with those of electronic computers. This means that it *must* process tasks along parallel tracks. A person can’t be conscious of most of this information processing. The ‘flash of intuition’ is simply the experience of several tracks of processing resolving together, roughly simultaneously, and reinforcing one another in underwriting a global decision.

3. Why can't we be conscious of parallel tracks? Is consciousness like a CRT screen that can open only one window at a time? No. 'Consciousness' is our name for the following kind of perspective-taking: observe your own behavior and *categorize and label* it, using words and concepts from your culture and your language. Consciousness is not a form of direct 'reading' of your own brain processes.

4. Therefore, decision-making style (i) amounts to interpreting your own situation as if you were another person looking on and evaluating. Decision-making style (ii) is the standard sort of decision-making that governs the behavior of the overwhelming majority of non-human animals – indeed, is the only style of decision-making of which most are capable. (Other *possible* exceptions are animals that *might* have language: elephants, toothed whales, parrots, corvids, some monkeys.)

5. So the question flips around: what neural equipment enables humans to sometimes employ the strange decision-making style (i)?

6. Answer: huge, densely connected, frontal cortical tissue that allows us to simulate alternative perspectives and then attend to the simulations as if they were occurring externally.

7. So why don't people usually use decision-making style (i)? Answer: it's extremely energy-intensive – this is why you experience solving a difficult math problem as *hard work* – and it's slow.

8. Because decision-making style (i) is slow, it's badly designed for information processing that must resolve faster than external processes in a dangerous world – e.g. “That’s a cobra and it’s much too close! Jump backwards!”. For decisions about situations our ancestors encountered – like cobras – our older, pre-frontal brains have evolved biases that lead them to consider only hypotheses that have worked out well in the past, e.g., ‘Long thin moving things on the ground are snakes’ and ‘Snakes are dangerous.’ Note that neither of these hypotheses are statistically *true* in most environments.

9. In light of all this, we would expect evolution to have favored the following meta-bias: when the brain is excited – so, when decisions may matter the most but are under strong time pressure – use decision-making style (ii). There is much evidence that this meta-bias prevails in people.

10. We popularly refer to the experiences of such excited states as ‘emotions’. It’s thus appropriate that we refer to decisions made using style (ii) as ‘emotional’. This is typically contrasted with ‘cognitive’ decisions – decisions made using style (i).

11. The above background suggests a type of domain where we might be especially prone to errors. Suppose there was a domain of decision that was (a) important to our basic welfare, and therefore exciting, (b) strongly time-sensitive, and (c) *not* a domain encountered by our ancestors, and therefore *not* a domain for which helpful specific biases evolved. We would expect decisions in such a domain to tend to be made using style (ii), but *badly*.

12. Zweig’s main purpose in his book is to present evidence that personal financial investment is such a domain. Then he stresses two main practical points:

(I) Though financial decisions are time-*sensitive*, they don't in fact have to be made very quickly. They are in this respect *not* like the problem of deciding how to react to a snake. Therefore, decision-making style (i) is, contrary to appearances, generally available to us in principle.

(II) Because we are excited by financial threats and opportunities, and because we know that time matters for them (which we tend to misperceive as 'very short timescales matter for them'), our natural default is to use decision-making style (ii) in this domain. It takes deliberate preparation, practice and *effort to learn* to overcome our natural default here. Most of the practical advice in Zweig's book consists of simple rules of thumb designed to remind us that we exaggerate the time-sensitivity of financial decisions, and should stop doing so. If we succeed at this, it becomes possible for us to roll out decision-making style (i), which in this domain is (far) superior.

13. Zweig's book is thus not an attack on 'rationalistic' economics from the point of view of 'squishy' psychology of emotion – it's quite the opposite.

14. Note that style-(i) decision-making partly depends on style-(ii) decision-making, but not vice-versa. We require style-(ii) decision-making to select basic goals to care about – fundamental motivations. This explains the results reported by Zweig in ch. 2, according to which people with damage to pre-frontal systems struggle to make *any* decisions, even though their cognitive capacities may be unimpaired. Thus, as Zweig says, this is not simply a tale of Spock vs. McCoy, in which McCoy keeps being allowed a level of influence that *should* be granted to Spock.

15. The first six chapters of Zweig's book are concerned with *perceptual* errors that the older, pre-frontal brain tends to make when it's operating in domains unknown to our ancestors. This reflects its biases. You've studied the behavioral effects of most of these perceptual biases in Dr. Angner's course. Let's list, in order, the main ones reviewed by Zweig as especially significant for people's misadventures in personal financial investment:

(A) We tend to perceive past successes as having been due to our skill, and past failures as having occurred despite our skill.

(Consider the astonishing report on the Seattle drivers on pp. 85-86.) Thus we exaggerate our prospects for success in novel circumstances.

(B) We tend to remember happy experiences and forget or downweight the significance of disappointments.

(C) We tend to perceive reliable causal patterns in all data, including data that are in fact generated randomly or pseudo-randomly.

(D) We perceive proportions as independent of base rates.

(E) We perceive people who score occasional, statistically unimpressive but high-impact successes as geniuses – and then over-rely on and over-reward them.

(F) We perceive the familiar as being safer than the unfamiliar merely *because* of familiarity. This causes people to concentrate their investments 'too close to home.'

(G) We tend to perceive our domains of ignorance as small and unimportant, whereas most people know very little about most things. This perceptual bias encourages people to fail to notice their own tendency to hold opinions of a strength that is wildly out of proportion to the strength of the evidence they have.

(H) We tend to perceive ourselves as having standing attitudes to risk, when in fact these attitudes are highly situation-sensitive. (This is one popular error that economists have often replicated in their modeling.)

(I) We tend to perceive descriptions of situations that emphasize downsides as descriptions of bad situations, and perceptions of identical situations that emphasize upsides as descriptions of good situations.

(J) We perceive small frequencies as larger than identical percentages, and large frequencies as smaller than identical percentages. (The bias appears to lie in the way percentages are perceived, with small percentages being underweighted and large ones being overweighted.)

(K) We tend to perceive ourselves as being far less disposed than we really are to copy the behavior of others.

13. I want to correct an error made by Zweig. On p. 151 he says “Economists used to say that ‘rational’ people should pay the same amount for a chance to win \$100 or to avoid losing \$100.” Then he claims that behavioral experiments convinced them otherwise. This is false. This view attributed to economists would imply a belief that utility is linear in money, which they have never held. It has been assumed by economists since the dawn of the modern discipline that there is nothing rational or irrational about any particular ‘taste for risk’; this is just an exogenous preference like any other.