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DETERMINISM AND FREE WILL

Why should a book on human motivation be concerned with determinism and free will?

I have already described Archy and Bella's habit of entering every cupboard they can and, not infrequently, getting trapped inside. They have other near-mechanical habits as well. If I open a bottle of mineral water – sssss! – they quickly run off. When Bella stalks a pigeon, she crouches low, with her belly almost on the ground. No one taught her to do that – she left her mother at the age of 3 months – and she does it in the middle of an open lawn – she has not yet learned the advantages of cover or of dappled shade to a white and tabby cat. When she catches a bird, she brings it into the dining room to eat. The bird is promptly confiscated, so, when she next catches a bird, she brings it into the dining room to eat . . . It is not surprising that we usually think of animals as responding mechanically to stimuli and events around them and being thereby devoid of responsibility. But we do not speak about human behavior like that!

As a cultural matter, we have one way of speaking about animal behavior, why an animal does what it does – animal behavior is generally seen as determinate, though some people do anthropomorphize their pets – and quite another way of speaking about human behavior – people have free will. Why the difference? It is generally agreed that what people do and why they do it is controlled by events in the brain and central nervous system, and examination of the brains of humans and of most mammals shows them, in the first instance, to be morphologically alike. Is the organization and direction of human behavior, on the one hand, and of animal behavior, on the other, really so different?

This problem arises because we are, at one and the same time, scientists asking questions about what people do and also people about whom those questions might be asked. We can observe other people with complete objectivity and notice that they do things that we might easily be doing ourselves. At the same time, we experience our own actions from a distinctly subjective viewpoint. There are, therefore, two quite distinct viewpoints from which *our* behavior might be observed. There is

the viewpoint (*personal view*) from which we experience our own actions, and that other viewpoint (*camera view*) from which every one else observes us. We typically look at what animals do in camera view, but interpret other people's behavior from a personal-view standpoint.

If we decide, on careful examination, that people and animals are motivated in much the same way, then we have to choose between these two different viewpoints. Each of us has a lifetime's experience of feeling, thinking, planning, and doing, and we view all that in terms of intention. We assume that other people have a similar fund of experience and that what they do can be understood in the same way. This is characteristic of the personal viewpoint from which we experience our own actions and all our internal thoughts, feelings, and desires.

But we do not know what it is like to be a cat and therefore take an objective camera view of what cats do. Cats are seen as somehow mechanical, their behavior as determinate. But we can also look at our fellow men and women in camera view – though, curiously, not ourselves. There are, then, these two ways of looking at what people do. Which of these is the more appropriate to a scientific study of motivation? That question has to be resolved before we can even get started. The apparent antithesis between determinism and free will is truly "Question No. 1" for the study of human motivation.

It will help to have a peek at the solution in advance. What each of us does is, at one and the same time, *both* determinate and *also* characterized by free will. If we observe someone else's behavior in camera view, their behavior appears determinate; but our own behavior in personal view is characterized by free will. Someone else looking at what we are doing will see our actions as determinate, but see themselves as having free will. The difference between determinism and free will lies not in the behavior but *in the viewpoint from which that behavior is observed*. That is the central issue in this chapter.

DETERMINISM

Philosophically, free will is "the power or capacity to choose amongst alternatives or to act . . . independently of natural, social or divine restraints" (*Encyclopaedia Britannica*, 1989b), while determinism is the "theory that all events, including moral choices, are completely determined by previously existing causes" (*Encyclopaedia Britannica*, 1989a). The philosophical idea of determinism is particularly associated with Laplace in the eighteenth century, but it has an ancient theological history as the doctrine of predestination. However, while it might appear that the theologians have been arguing some real difference of opinion, though one very difficult to resolve, the arguments to follow here will show that determinism and free will are not antitheses – they are simply the characteristics of two different ways of looking at what people do. So, in their theological incarnation, they are no more than shibboleths, serving only to distinguish between different religious societies.

Psychological Theory Treats Behavior as Determinate

In the sixteenth century astronomers discovered the motions of the planets to be precisely determinate. Could that physical determinism be extended to the sphere of human action? Could it be that human behavior is also determinate? That question led to the science of experimental psychology that emerged in the middle of the nineteenth century. "Every man has will power and is a free agent to do as he likes, but what he likes is based on causes operating within him" (Gruenberg, 1967, p. 810). Experimental psychology is the study of those causes, and treats human behavior as determinate.

The constant-ratio rule

As one example, Clarke (1957) asked four participants to listen to a sequence of consonant-vowel morphemes, selected at random from a set of six, in a background of noise. The noise was set at a level that permitted about 50 percent correct identifications. The participants then listened to further sequences of morphemes selected, again at random, from a subset of three of the original six. Could the probabilities of identification from the subset of three be predicted from the corresponding probabilities for the master set of six? An answer based on the constant-ratio rule is set out graphically in figure 1.1. The constant-ratio rule says that the probabilities of identification from a subset of three are proportional to the corresponding probabilities within that subset when it is a part of the master set of six. The filled circles compare predictions and outturns for single cells in the 3×3 confusion matrices. The open circles compare articulation scores for complete subsets of three morphemes. What this result means is that while the participants are pondering "Is it */pa/* or */ta/* or */ka/*?" with no feeling whatsoever of constraint or coercion, the experimenter can predict what they will say, at the least in the long run.

As another example, manufacturers of foods and drinks maintain panels of tasters to sample new recipes and say which they prefer. It is assumed that the preferences expressed by the panel extrapolate to consumers in general, and that extrapolation presupposes that the preferences are somehow determinate, at least in aggregate. There has been a very extensive investment in statistical theory, how best to analyze data from tasting panels and from similar sources (e.g., Böckenholt, 1992). Such work raises an obvious problem.

One can rarely predict a single individual's choice reliably, predictions only work for the proportions of choices by large numbers of people. This is characteristic of much of psychological theory and one might well ask if the indeterminacy implicit in psychological prediction reflects the operation of free will on the part of the participants. In practice, it is assumed that each individual choice is entirely determinate – it is just that we do not know all the causal factors. Provided those unknown causal factors are none of them individually significant, their aggregate

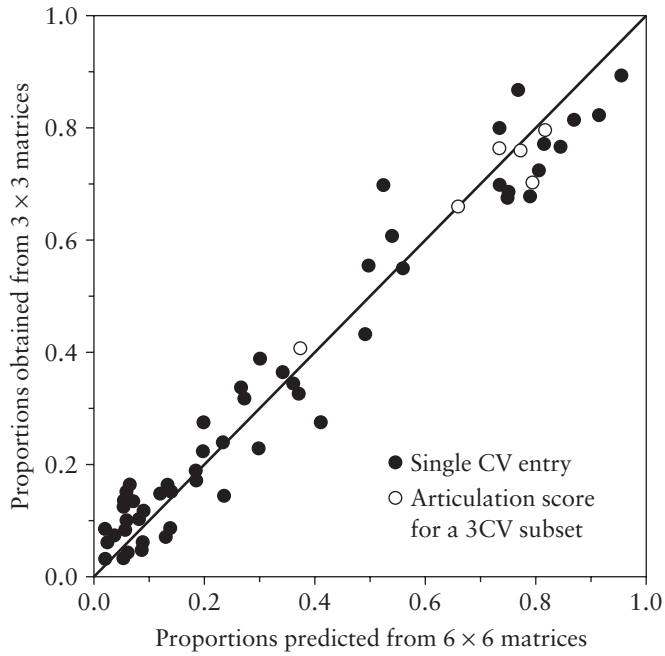

Figure 1.1 Articulation scores for morphemes in a background of noise. The ordinate shows the score obtained when the morpheme was selected at random from a subset of three, and the abscissa the score predicted from identifications when the same morpheme was selected from the master set of six. Reproduced with permission from Clarke (1957, p. 718). © 1957 American Institute of Physics.

effect can be summarized by a normal distribution in a manner that is justified by well-established mathematical theory. There is no such thing in psychological theory even remotely resembling free will.

FREE WILL

The distinction between determinism and free will is properly a distinction between the (subjective) personal view and the (objective) camera view. In the classroom, I bring that relationship out with three demonstrations.

"Paper, Scissors, Stone"

"Paper, Scissors, Stone" is a traditional children's game. It is illustrated in figure 1.2. There are three alternative configurations of the hand which the two children

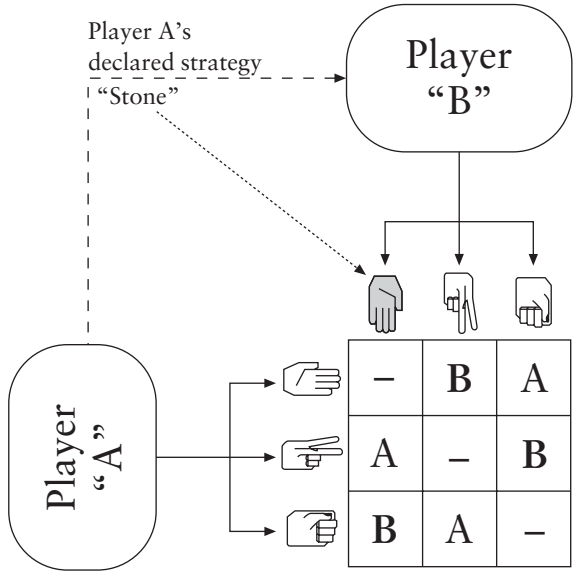

Figure 1.2 Feedforward between players in "Paper, Scissors, Stone."

produce simultaneously from behind their backs. Paper loses to Scissors (because scissors can cut paper), but wins over Stone (because paper can wrap round a stone); and Stone wins over Scissors (because scissors will blunt on a stone). If both players produce the same configuration, it is a "washout."

In my classroom demonstration, Player "B" is a student volunteer from the class, but Player "A" is a confederate who has been instructed what to do. I explain that the game is all about choice of strategy. So, after three rounds to make sure that everyone knows how the game is played, I ask my confederate what strategy she will employ next time. Knowing what configuration "A" is going to produce enables "B," of course, to win every time. If "A" says "Stone," then "B" chooses Paper.[1] Once "B" has got into this way of playing, "A" takes advantage of her foreknowledge of what "B" is going to do and wins with Scissors.

The point of my classroom demonstration is brought out by two questions. First, I ask the student volunteer whether she had a free choice of configuration or whether she felt that her choice of play was forced. Of course, the student says that she could have produced any of the three hand configurations she wished; she simply *chose* to

[1] Alas, students at Cambridge University are sometimes too sophisticated. As Player "B" they will typically say to themselves: "If 'A' says she is going to produce Stone, she will expect me to choose Paper; in which case 'A' will win by choosing Scissors. But I shall outsmart her by choosing Stone." If "A" does indeed produce Stone, the result is a "washout."

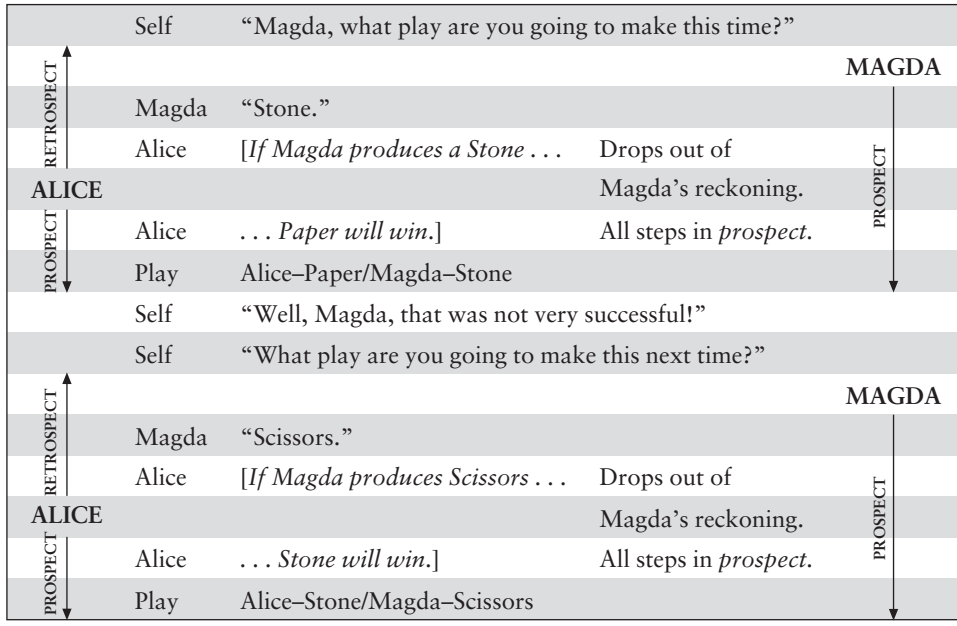

Figure 1.3 Prospect and retrospect in "Paper, Scissors, Stone."

produce Paper. The second question is to my confederate: Was she able to predict the hand configuration her opponent subsequently chose? And the answer, of course, is that once, as Player "A," she had announced what she was going to do, her opponent's choice was predictable. Those two answers pose this further question: How is it that behavior by Player "B" that "A" can predict in advance is subsequently described as "free"?

The answer is elementary. The two players view the game from different points of view. Each player has an entirely unfettered choice of play but is, at the same time, influenced by her opponent's declared (or presumed) choice. A choice which is unfettered from the player's (personal) point of view is seen as constrained from the opponent's (camera) view. Behavior which is predictable from the viewpoint of Player "A" is experienced as *free* from the viewpoint of Player "B." It is the same behavior; and the predictability attaches to the point of view, not to the behavior. This relationship, as it emerged on one occasion, is set out in figure 1.3.

The italic type indicates Alice's presumed internal thoughts which are not available to Magda and so cannot form part of Magda's basis for prediction. But those internal thoughts are entirely in Magda's *prospect* and could not, in any case, enter into her reckoning. Magda predicts Alice's play directly on the basis of her own announcement. But Alice can choose her play (in *prospect*) simultaneously with

those internal thoughts (in *italic*) and with Magda's declared play in *retrospect*. This gives Alice a different basis for her choice of play and with respect to that different basis her choice is *free*.

So *free will* is characteristic of one's own behavior experienced in personal view, observed from the personal viewpoint of the actor. One cannot view other people's behavior from the vantage point of the actor and for that reason other people cannot be perceived to have free will. Of course, we commonly attribute to other people the same freedom of will that characterizes our own personal experience; but that is assumption, not perception.

Chess

The game of chess provides another demonstration. Figure 1.4 shows the position after Black's twenty-fifth move in the game between Sämisch and Nimzowitch at

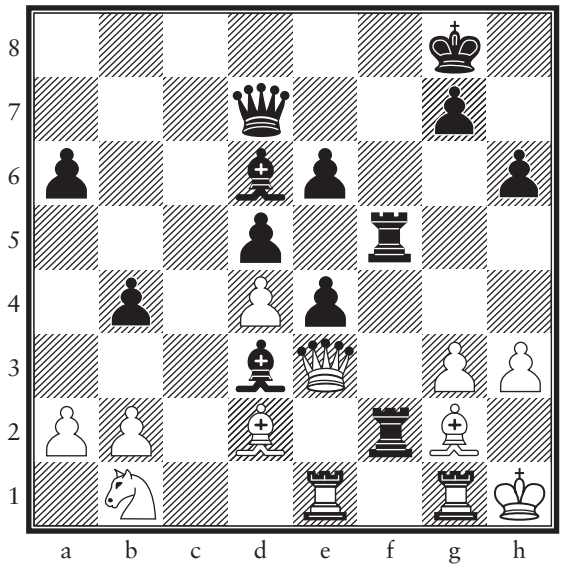

Figure 1.4 Sämisch vs. Nimzowitch, Copenhagen, 1923. Position after Black's twenty-fifth move.

- 26. Kh2, R(5)f3 wins the White Queen.
- 26. B(d2)c1 permits B(d3) × b1.
- 26. R(either)f1 or Bf1 loses a piece after R × f1ch; 27. R × f1, B × f1; 28. B × f1, R × f1ch.
- 26. Rd1, Re2; loses Queen for Rook; while
- 26. g4, R(5)f3; 27. B × R, Rh2 is mate.
- If 26. a3, then 26. . . . , a5, and the position is essentially unchanged.
- Likewise 26. h4 followed by 27. h5 is met by noncommittal moves by Black (e.g., Kh8; Kg8), again leaving the position unchanged. White quickly runs out of such moves.

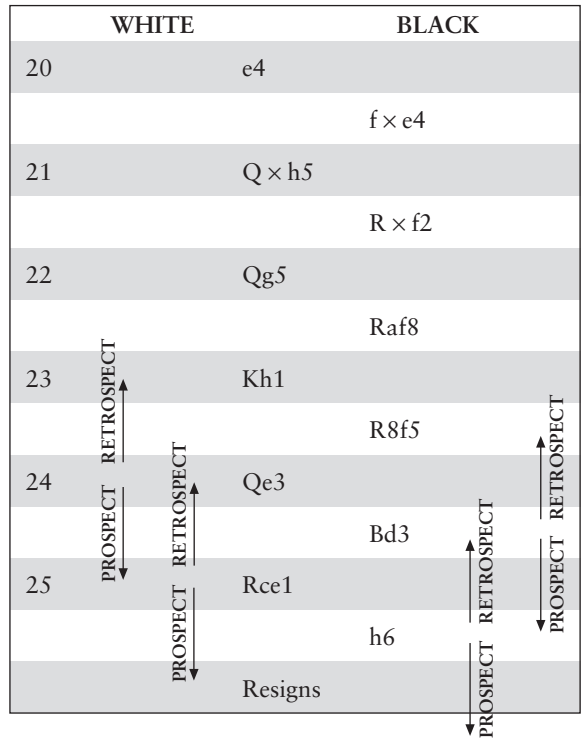

Figure 1.5 Sämisch vs. Nimzowitch, Copenhagen, 1923 – prospect and retrospect.

Copenhagen in 1923. This is, perhaps, the most famous of all examples of *Zugzwang* from actual tournament play. Sämisch (White) had a free choice of several different moves, "free" in the sense that all these moves were permitted by the rules of chess. However, moving the King leads to loss of the Queen; likewise any move of the Queen or Knight leads to immediate capture. The available moves of both Rooks and both Bishops are similarly constrained. In each case Black's reply is predictable and, in the event, Sämisch resigned. Figure 1.5 shows the different prospects and retrospects of the two players interleaved. The two sets of prospects and retrospects correspond, of course, to the two sides of the board – the two points of view from which the game might be observed.

Games provide clear illustrations of the way in which free will depends on the point of observation, first, because the rules of a game constrain what each player may do to the point that the opponent's reply is quite often predictable and, second, because one can always move round to the other side of the board to see how things look from there. Chess exemplifies this possibly better than any other game. Each player chooses his move (action) after consideration of what his opponent might do

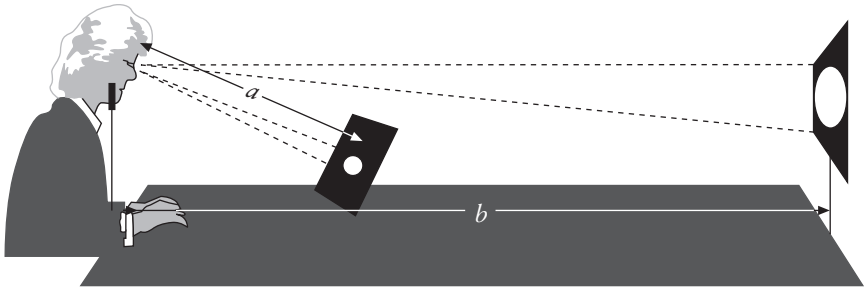

Figure 1.6 Experimental setup for the measurement of phenomenal regression to real size.

next (reaction). The game looks different according to the side from which it is viewed; if the vantage point be changed, action and reaction interchange.

Phenomenal regression to real size

A third example is provided by the measurement of phenomenal regression to real size (Thouless, 1931a, b). The experimental setup is shown in figure 1.6. The participant chooses a disc placed normal to her line of sight at a distance *a* to match as accurately as possible the *angular size* of the disc at the rather greater distance *b*. People invariably choose too large a disc, a bias toward matching the *physical* size.

In the experiment matches are obtained to discs of different sizes. After a few matches have been made, the experimenter is able to predict what match the participant will choose for other sizes of disc because the match chosen tends to be a constant fraction of the physical size of the target (though not, of course, so small a fraction as that needed to match its angular size). But, if questioned, the participant still reports having a free choice of match. The difference between the experimenter's and the participant's view of the procedure is summarized in table 1.1.

So, free will does not imply arbitrary behavior; it is simply a property of the personal point of view. The opponent's free will cannot be observed in camera

Table 1.1 Two views of phenomenal regression to real size

Experimenter's (camera) view	*Participant's (personal) view*
• Present stimulus card	• Examine stimulus card
• Record participant's choice of match	• Choose matching stimulus
• Can predict participant's choice . . .	• "Should it be this circle or that?"
• i.e., determinate	• i.e., free will

view; every play by the opponent is seen as a *reaction* to the player's prior *action* and therefore not free. All that the experimental psychologist might be aware of as observer is a limited ability to predict a participant's response.

There is, however, one qualification. A person's behavior is certainly determinate if it can be predicted accurately in advance. But if that prediction be signaled to the individual, he or she can then (if so minded) choose some different behavior; and it might appear that free will, or at least indeterminacy, is introduced into the objective record thereby. This is illusory. A participant receiving feedforward of the experimenter's prediction is a (slightly) different participant to the one who remains incommunicado, and behaves differently in consequence. The experimenter's prediction relates to the uninformed participant; it does not apply to the participant receiving feedforward. But one might, of course, develop a second prediction for a participant who has received a specific feedforward, and this is the basis of the bluff in "Paper, Scissors, Stone." It has its real-world applications.

If one counts the cards played in blackjack with sufficient accuracy, it is possible to gain an edge over the casino and casinos will bar players who demonstrate too much skill. Black (1993, pp. 67–75) recounts the success of a "little dark-haired guy from California" who challenged certain Nevada casinos in the 1960s to a private "no-limits" game of blackjack. For the first few evenings the advantage appeared to fluctuate between the player and the house. But once the casino had got accustomed to the swings of this particular gambler's play, "the little dark-haired guy from California" turned on the heat and the casino was stung before it realized what was happening. Since a casino does not willingly reveal that it has been stung, the coup was repeated in different Nevada casinos to yield a total profit estimated at $250,000.

The important conclusion for this chapter is that a scientific study of motivation must proceed in camera view, from a wholly objective vantage point. But perhaps that conclusion is not yet sufficiently obvious. So, imagine a situation in which people find themselves doing things without choosing to do them – doing things whether they wish to or not. That kind of compulsion would sit uneasily with free will and show a study conducted in personal view to be inadequate for our purposes. The most compelling circumstance of that kind is terror, to which I turn next.

QUESTIONS FOR DISCUSSION

1 How can you choose what you will do if a psychologist can, at the same time, predict what you will choose?

2 Why do we attribute free will to other people while regarding subhuman animals as (more or less) stimulus-response machines?