

Jon Elster

**Strong
Feelings**

**Emotion,
Addiction,
and Human**

Behavior

Strong Feelings

The Jean Nicod Lectures

François Recanati, editor

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The 1997 Jean Nicod
Lectures

Strong Feelings
Emotion, Addiction, and
Human Behavior

Jon Elster

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For George and George

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Series Foreword

The Jean Nicod Lectures are delivered annually in Paris by a leading philosopher of mind or philosophically oriented cognitive scientist. The 1993 inaugural lectures marked the centenary of the birth of the French philosopher and logician Jean Nicod (1893–1931). The lectures are sponsored by the Centre National de la Recherche Scientifique (CNRS) and are organized in cooperation with the Fondation Maison des Sciences de l'Homme (MSH Foundation). The series hosts the texts of the lectures or the monographs they inspire.

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Preface and Acknowledgments

The present book is a revised and expanded version of the Jean Nicod Lectures that I gave in Paris in June 1997. It draws on two main sources. The first is work on the emotions that I began in 1985 and continued through the 1990s, resulting in the publication of *Alchemies of the Mind* in 1998. The discussion of emotions in chapter 2 and sections 4.2 and 5.2 below draws extensively on that treatment, while also refocusing it for the specific aims I pursue here. The second is work on addiction that I began in 1992. Although I have already published some articles on this topic, chapter 3 and sections 4.3 and 5.3 below provide a fuller and more general discussion.

For the idea of treating emotions and addiction as cases of “strong feelings” I am indebted to George Loewenstein’s research program on “visceral factors” in behavior. The book also owes much to our collaboration in the Working Group on Intertemporal Choice, supported by the Russell Sage Foundation. My thinking about addiction, and about choice more generally, is greatly inspired by the path-breaking work of George Ainslie and by many discussions with him over the

years. This book is dedicated, therefore, to George and George.

My thinking about addiction has also developed through discussions in a working group on addiction consisting of George Ainslie, Eliot Gardner, Olav Gjelsvik, Aanund Hylland, George Loewenstein, Karl Ove Moene, Jørg Mørland, Thomas Schelling, Ole-Jørgen Skog, and Helge Waal. The work of the group has been funded by the Norwegian Research Council, the Norwegian Institute for Alcohol and Drug Research, the Norwegian Directorate for the Prevention of Alcohol and Drug Problems, and the Russell Sage Foundation.

I received written comments on an earlier version of chapter 3 from George Ainslie, James Fearon, Avram Goldstein, Olav Gjelsvik, David Laibson, Jørg Mørland, Wiktor Osiatynski, and Ole-Jørgen Skog. Finally, I want to thank my research assistant, Joshua Rosenstein, as well as Cheryl Seleski and the marvelously efficient library staff at the Russell Sage Foundation, which provided me with a fellowship to finish this book.

Strong Feelings

1

Introduction

In this study of emotion and addiction I set myself a methodological task and a theoretical one. On the one hand, I shall explore the relation between causal and conceptual analysis in the study of human behavior. What is the relation between the *definition* of emotion or addiction and the *explanation* of the same phenomenon? That is, to what extent do the emotions or the addictions form *natural kinds*? On the other hand, I shall discuss the relation between three explanatory approaches to behavior: neurobiology, culture, and choice, including the special case of rational choice. Intuitively, it seems clear that because of their peculiar physiological strength, emotions and addictive cravings can short-circuit choice or at least distort the rationality of choice. Yet like all preanalytical intuitions, this one needs to be carefully scrutinized. I also ask to what extent emotions and cravings are physiologically hardwired and to what extent they are cultural constructions.

Emotions and the various states induced by addictive substances are special cases of what George Loewenstein has called *visceral factors* in behavior.¹ This more general category also includes drives such as hunger,

thirst, and sexual desire; urges to urinate, defecate, or sleep; as well as organic disturbances such as pain, fatigue, vertigo, and nausea. In their extreme forms, these states go together with strong physiological changes that can interfere with the capacity for making choices, or at least rational choices. Negotiators, for instance, are advised to abstain from drinking coffee because its diuretic effects distract attention from the matter at hand. At the same time, they may crave coffee to resist drowsiness.

These visceral states differ from emotions and addiction-related states in that they are less closely linked to cognition and culture. By and large, emotions are triggered by beliefs. Addictive cravings too can be triggered by the belief that a drug is available and be extinguished by the belief that it is unavailable. Also, emotions and cravings are powerfully shaped by the fact that they are culturally defined *as* emotions and cravings. By contrast, the acute thirst of the person who has been in the desert for a long time without water, the need to urinate of a person who has gone for a long time without doing so, and the overwhelming drowsiness of a person who has gone without sleep for several days are essentially independent of cognition and culture.

More generally, we may distinguish three ways in which cognition may be involved in these visceral factors. First, a visceral state may be triggered by a belief. Second, once triggered, a visceral motivation can be further shaped by the belief that it is that particular kind of motivation. To illustrate, a person may feel envy at the sight of a more successful friend and then shame once he recognizes that he is feeling envious. A heavy

drinker may change his self-image and his behavior once he begins to believe that he is an alcoholic. Third, the motivation may have an intentional object: it may be *about* something. Some visceral factors, such as pain or vertigo, have none of these cognitive aspects. Others, such as thirst and sexual desire, have intentional objects but are not triggered or shaped by beliefs. Cravings have intentional objects (they are cravings *for* drugs). They are also susceptible of being triggered and shaped by beliefs, although to a lesser degree than emotions. Emotions stand out among the visceral motivations because they typically, or at least frequently, involve cognition in all three ways.

These are rough characterizations, which allow for nuances and exceptions. People are often turned on sexually by the belief that their partner is turned on. A driver may be aware that he is about to fall asleep and fight against his drowsiness. Emotions such as fear can be triggered by perceptions as well as by cognitions. Yet I believe that in standard cases these various motivational factors can be uncontroversially located on a continuum. At one extreme we have the noncognitive or purely visceral states of pain, drowsiness, etc. Next are the states that have intentional objects but are not otherwise shaped by cognition, such as hunger, thirst, and sexual desire. Further, there are cravings that have intentional objects and that can also involve cognitions in other ways. Then there are emotions, which often involve cognition in all three ways. At the other extreme of the continuum, there are motivational states that do not imply any arousal or viscerality at all, as in my calm decision to take an umbrella because I believe it will rain and I don't want to get wet.

The states at either extreme of the continuum have opposite implications for choice. Although the behaviors induced by drowsiness, fatigue, and pain are more complicated than simple reflex actions, they often have a similar involuntary quality. A car driver may fight off drowsiness and a mountain climber resist muscle fatigue, but not indefinitely. To fall asleep or to lose one's grip on the rope is not to *do* anything: it's merely an event, something that happens. At the other extreme, rational decision making undisturbed by arousal is the paradigm of free, voluntary choice. In between these extremes are the cases that interest me here, those in which behavior is affected by arousal as well as by choice. Among these cases, I exclude the physiological drives from my concern, mainly because they are culturally invariant. I study emotion and addiction because they allow me to examine the triangular contrast of *neurobiology*, *culture*, and *choice*, rather than any simple dichotomy.

Before I proceed, I should clarify two points that should be obvious but may not be. First, when I contrast neurobiology with culture and choice, I do not imply that the latter phenomena have no neurobiological substrate. I take it for granted that *all* human behavior and all mental states have a neurobiological foundation; in fact, the denial of this view is not so much false as incomprehensible. I use "neurobiology" simply as a shorthand for the neural mechanisms that generate the arousal as well as the euphoria or dysphoria that characterize most emotions and cravings. Although beliefs too must rely on similar mechanisms, we know so little about the neurobiology of the complex beliefs that enter into cravings and emotions that it would be pointless to insist on their underlying substrate.

To illustrate, let me draw on a suggestion by Michael Liebowitz that “the chemistry of love” is like that of the amphetamines.² We know a great deal about the neurophysiology of amphetamines and how they produce the characteristic effects of acute awareness, heightened energy, reduced need for sleep and food, feelings of euphoria, etc. These effects run a predictable course, lasting for several hours and then turning into depression. The symptoms are strikingly similar to those of love, in the sense of acute infatuation, or what Dorothy Tennov calls “limerence,”³ and it is entirely possible that love and amphetamines recruit some of the same neural circuits. Yet there is also a striking difference. The high from an amphetamine is produced by the intake of a chemical *substance*. The euphoria of love can be produced by a *belief* that the other person loves oneself and may turn into dysphoria when the belief is disconfirmed.⁴ The euphoria and dysphoria can arise virtually instantly, whereas the effects of an amphetamine are produced and wear off more gradually. Whereas the neural pathway by which the chemical substance produces its effects is now being elucidated, the chemistry of the belief that one’s love is requited and the effect of that belief on the reward system in the brain are likely to be vastly more complicated. For the foreseeable future, and perhaps forever, we will only be able to describe that belief in terms of its content (“She loves me”), and not in terms of its molecular substrate.

Second, any reference to “culture” is also a shorthand. It is not intended to deny the principle of methodological individualism, the denial of which, once again, is not so much false as incomprehensible. When I say

that a culture or a society “induces” specific concepts and beliefs, or that it “condemns” or “approves” certain practices, I mean *only* (i) that individuals in that culture share the concepts, beliefs, values, or norms, and know that they share them, and (ii) that individuals in some other cultures lack the concepts, beliefs, or norms in question. By assumption (ii), the concepts, beliefs, and norms shared by individuals must be due to their upbringing and socialization within a particular society, rather than to universal features of the human condition. Every culture must have the concept of a sunset, but not all cultures have the concept of guilt. In this sense, the *concept* of guilt is “socially constructed.” As we shall see in section 4.2, however, this does not imply that the *emotion* of guilt is a social construction.

The book is organized around parallel analyses of emotion and addiction, to bring out similarities as well as differences. In addition to their comparison, we may also consider how emotion and addiction may interact with one another. On the one hand, it has been claimed that one can become *addicted to emotion*. These include claims that it is possible to be addicted to the emotion of hubris or pridefulness, induced by the belief that one is superior to others;⁵ also that one can become addicted to love, either to love in general⁶ or to love for a specific person.⁷ I shall not pursue these suggestions, which seem too speculative or metaphorical to warrant further discussion. On the other hand, there is the more plausible idea, discussed in chapter 4 below, that *emotion can have a causal role in addiction*, because many addicts are prone to feelings of guilt and shame that may perpetuate their addiction or, on the contrary, induce them to break it.

Both emotion and addiction are elusive categories. It is not easy to know which specific feelings or cravings to include under these headings. Is surprise an emotion? Is compulsive gambling an addiction? Given an uncontroversial instance of emotion or addiction, such as fear or alcoholism, one might define a given phenomenon as emotional or addictive if it is analogous in some respects to these core cases. But since everything is a little bit like everything else, analogy is a weak tool for analysis.⁸

For scientific purposes, homology is a much more powerful instrument than analogy. On the basis of analogy, it is tempting to classify whales and sharks together as one group (animals that live in water) and birds and bats as another group (animals that fly). On the basis of homology, that is, a common causal history, whales and bats have much more in common than any other pair among these four animals (figure 1.1). Knowledge of the reproductive system or metabolism of whales enables us to formulate hypotheses for bats, and vice versa. By contrast, animals that are related only by analogy are unlikely to have much more in common than the features that define the analogy *and other features that flow causally from those features*.

The italicized expression points to a useful, if limited, role of analogy in scientific reasoning. If we want to explore the metabolism of sharks, there is no reason to privilege hypotheses derived from the metabolism of whales. If, however, we want to examine the hydrodynamic properties of one animal that lives in water, knowing the features of other aquatic animals is probably going to be useful. Even more obviously, if we want to understand how bats manage to stay in the air, know-

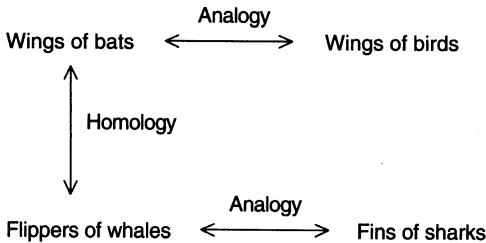


Figure 1.1

Homology is a much more powerful instrument than analogy.

ing how birds do it is likely to be of help. In his classic study *On Growth and Form*, D'Arcy Wentworth Thompson writes, for instance, "We know . . . how in strict accord with theory . . . the wing, whether of bird or insect, stands stiff along its 'leading edge,' like the mast before the sail; and how, conversely, it thins out exquisitely fine along its rear or 'trailing edge,' where sharp discontinuity favours the formation of uplifting eddies."⁹

The features underlying a homology owe their existence to a *common causal history*. The features underlying an analogy may have entirely different causal histories but nevertheless generate *similar causal effects*. I shall refer to the features that define an analogy as *primary features*, and to those that are causally implicated by the primary ones as *secondary features*. Thus the primary feature of the analogy between birds and bats is that they can maintain themselves in the air without relying on an initial impetus, being in that respect similar to airplanes but different from both flying fish and rockets. The secondary features are those that follow from the aerodynamic constraints on any heavy body that is to maintain itself in the air.

Let me anticipate chapter 3 and use some examples from addiction to show the relevance of these concepts to the problem at hand. Students of addiction now agree that most chemical addictions are homologous, in the sense that their euphoric and dysphoric effects derive from very similar (but not identical) mechanisms in the dopaminergic reward systems of the brain. By contrast, chemical addictions and behavioral phenomena such as compulsive gambling or overeating may be no more than analogous, in the sense, say, of being characterized by strong urges to engage in activities with harmful long-term consequences. These urges constitute the primary features of these analogous phenomena. If the urge to drink and the urge to gamble rely on entirely different neural mechanisms, we cannot rely on one of these putative addictions to make predictions about the extent of withdrawal, tolerance, or sensitization that will be observed in the other. Yet if the urge induces self-destructive behavior, we can predict that it will come to be resisted. We can predict, moreover, that regardless of the origin of the urge, its coexistence with a strong desire to resist it will generate shame, denial, rationalization, the development of self-control strategies, and other phenomena with clear behavioral implications. These consequences are secondary features of many addictions.

These secondary features arise because human addicts are capable of being aware of their addiction, deploring it, and trying to overcome it. The animals used in experimental studies of addiction, notably rats and monkeys, do not have these cognitive and moral capacities. Because the neurophysiology of chemical addiction is essentially the same in humans and other

animals ("animals" for short), many of the behavioral patterns are quite similar, especially in the earlier stages of addiction. Cravings for cocaine, for instance, will induce similar extreme drug-seeking behavior in rats and humans.¹⁰ Yet in later stages of addiction, when the long-term adverse consequences begin to appear, human addicts display quite different responses. It is often said, I believe correctly, that ambivalence is the hallmark of addiction in humans. Animals, by contrast, rarely show behavioral signs of ambivalence.¹¹

A similar contrast between human and animal behavior exists in the case of the emotions. Animals are incapable of holding the kind of complex beliefs that enter into many human emotions. In particular, they are incapable (as far as we know) of holding beliefs about their own emotions. Whereas the behavioral expressions of the human emotions of anger, fear, or love can be strongly modulated by the agent's awareness of them, in animals the link between emotion and behavior is not mediated by cognition. Human beings can feel shame at being afraid, for instance, and try to hide their fear or present it as mere prudence. To my knowledge, no animals are capable of being ashamed of their fear.

We see, therefore, how cognition, including moral beliefs, plays a dual role in the study of emotion and addiction. On the one hand, it serves to differentiate the specifically human forms of these phenomena from those observed in animals. On the other hand, it helps us to understand why emotion and addiction may take different forms in different cultures, depending on their specific cognitive and moral tenets. Because of the importance of cognition, one must go beyond animal

studies to study the behavioral expressions of emotion and addiction. Because cognition varies across cultures, one cannot assume that these expressions in humans are universal and hardwired. Nor, however, should one assume that the expressions are endlessly malleable. Although culture may modulate and shape emotions and cravings, that very statement presupposes that there exist precultural or transcultural tendencies to be modified and shaped in the first place.

The strategy of the rest of the book is as follows. Chapters 2 and 3 study emotion and addiction according to a common scheme, which progresses from empirical survey through phenomenological description to causal analysis. First, I enumerate a number of feelings and cravings that are frequently subsumed under the headings of emotion and addiction. This step in the procedure is entirely preanalytical and serves only to give a rough idea of the range of phenomena to be discussed. Next, for each of the two classes of phenomena, I enumerate a number of observable features often used to characterize or define them. This step is conceptual or phenomenological. Ideally, it would offer necessary and sufficient conditions for something to be an emotion or an addiction. Third, I try to summarize our knowledge about the causal mechanisms that generate emotions and addictive cravings. Once we have identified these mechanisms, we may go back and revise the set of phenomenological features that characterize emotions and addiction, as well as the set of behaviors that fall under these headings. Thus phenomena that seem analogous at the phenomenological level may turn out to lack homology at the causal level, or vice versa. Until

we understand the causal mechanisms of emotion and addiction, we cannot know what emotions and addictions are, nor can we know what emotions and addictions there are. It turns out that we know much more about the neurophysiology of addiction than we do about emotion. On the basis of what is known about the causal mechanisms involved, it seems safe to say that the chemical addictions do form a natural kind. Whether the emotions do remains an unresolved issue.

In chapters 4 and 5, I focus on *culture* and *choice* as determinants of emotional and addictive behavior. As noted earlier, culture is a specifically human phenomenon—a fact that helps us both to distinguish between animal and human behavior and to compare the varieties of emotion and addiction in different societies. Choice, by contrast, is not a uniquely human phenomenon. Animals too are capable of weighing alternatives against one another and choosing between them on the basis of their consequences or rewards. Yet the fact that only humans are capable of making *rational* choices has important implications for emotions and addictive cravings. Even for humans, however, we can ask whether emotions and cravings might sometimes be so strong as to short-circuit rational choice, or even choice altogether. At their strongest, these urges seem to have an overpowering quality that leaves little room for comparison and choice.

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