

## History of the Problem

From its earliest beginnings, the problem of “**free will**” has been intimately connected with the question of **moral responsibility**. Most of the ancient thinkers on the problem were trying to show that we humans have **control** over our decisions, that our actions “depend on us”, and that they are not **pre-determined** by fate, by arbitrary gods, by logical **necessity**, or by a natural causal **determinism**.

Almost everything written about free will to date has been verbal and formal logical debate about the precise meaning of philosophical concepts like **causality**, necessity, and other dogmas of determinism.

The “problem of free will” is often described as a question of **reconciling** “free will” with one or more of the many kinds of determinism. As a result, the “problem of free will” depends on two things, the exact definition of free will and which of the determinisms is being reconciled.

There is also an even more difficult reconciliation for “**libertarian**” free will. How can a morally responsible will be reconciled with **indeterminism** or objective **chance**? The **standard argument** against free will is that it can not possibly be reconciled with either randomness or determinism, and that these two exhaust the logical possibilities.

Before there was anything called philosophy, religious accounts of man’s fate explored the degree of human freedom permitted by superhuman gods. Creation myths often end in adventures of the first humans clearly making choices and being held responsible. But a strong **fatalism** is present in those tales that foretell the future, based on the idea that the gods have **foreknowledge** of future events. Anxious not to annoy the gods, the myth-makers rarely challenge the implausible view that the gods’ foreknowledge is compatible with human freedom. This was an early form of today’s **compatibilism**, the idea that causal determinism and logical necessity are compatible with free will.



The first thinkers to look for causes in natural phenomena (rather than gods controlling events) were the Greek physiologi or cosmologists. The reasons (λόγοι) behind the physical (φύσις) world became the ideal “laws” governing material phenomena. The first cosmologist was ANAXIMANDER, who coined the term physis (φύσις). He also likely combined the words cosmos (κόσμος), as organized nature, and logos (λόγος), as the law behind nature, in cosmology.

The Greeks had a separate word for the laws (or conventions) of society, nomos (νόμος).

## The Presocratics

HERACLITUS, the philosopher of change, agreed that there were laws or rules (the logos) behind all the change. The early cosmologists’ intuition that their laws could produce an ordered cosmos out of chaos was prescient. Our current model of the universe begins with a state of minimal information and maximum disorder. Early cosmologists imagined that the universal laws were all-powerful and must therefore explain the natural causes behind all things, from regular motions of the heavens to the mind (νοῦς) of man.

The physiologi transformed pre-philosophical arguments about gods controlling the human will into arguments about pre-existing causal laws controlling it. The cosmological problem became a psychological problem. Some saw a causal chain of events leading back to a first cause (later taken by many religious thinkers to be God). Other physiologi held that although all physical events are caused, mental events might not be. This is mind/body dualism, the most important of all the great dualisms. If the mind (or soul) is a substance different from matter, it could have its own laws, different from the laws of nature for material bodies.

## Determinism

The materialist philosophers DEMOCRITUS and LEUCIPPUS, again with extraordinary prescience, claimed that all things, including humans, were made of atoms in a void, with individual



atomic motions strictly controlled by causal laws. DEMOCRITUS wanted to wrest control of man's fate from arbitrary gods and make us more responsible for our actions. But ironically, he and LEUCIPPUS originated two of the great dogmas of determinism, physical determinism and logical necessity, which lead directly to the modern problem of free will and determinism. LEUCIPPUS stated the first dogma, an absolute necessity which left no room in the cosmos for chance.

“Nothing occurs at random, but everything for a reason and by necessity.”

οὐδὲν χρῆμα μάτην γίνεται, ἀλλὰ πάντα ἐκ λόγου τε καὶ ὑπ' ἀνάγκης <sup>1</sup>

The consequence is a world with but one possible future, completely determined by its past. Some even argued for a great cycle of events (an idea borrowed from Middle Eastern sources) repeating themselves over thousands of years.

The Pythagoreans, SOCRATES, and PLATO attempted to reconcile human freedom with material determinism and causal law, in order to hold man responsible for his actions.

## Aristotle

The first major philosopher to argue convincingly for some indeterminism was probably ARISTOTLE. First he described a causal chain back to a prime mover or first cause, and he elaborated the four possible causes (material, efficient, formal, and final). Aristotle's word for these causes was αἰτία, which translates as causes in the sense of the multiple factors or explanations behind an event. Aristotle did not subscribe to the simplistic “every event has a (single) cause” idea that was to come later.

Then, in his *Physics* and *Metaphysics*, Aristotle also said there were “accidents” caused by “chance (τύχη).” In his *Physics*, he clearly reckoned chance among the causes. Aristotle might have added chance as a fifth cause - an uncaused or self-caused cause

1 Leucippus, Fragment 569 - from Fr. 2 Actius I, 25, 4



- one he thought happens when two causal chains come together by accident (συμβεβηκός).

He noted that the early physicists had found no place for chance among their causes.

ARISTOTLE opposed his accidental chance to necessity:

“Nor is there any definite cause for an accident, but only chance (τυχόν), namely an indefinite (ἀόριστον) cause.”<sup>2</sup>

“It is obvious that there are principles and causes which are generable and destructible apart from the actual processes of generation and destruction; for if this is not true, everything will be of necessity: that is, if there must necessarily be some cause, other than accidental, of that which is generated and destroyed. Will this be, or not? Yes, if this happens; otherwise not.”<sup>3</sup>

For Aristotle, a break in the causal chain allowed us to feel our actions “depend on us” (ἐφ’ ἡμῖν). He knew that many of our decisions are quite predictable based on habit and character, but they are no less free nor we less responsible if our character itself and predictable habits were developed freely in the past and are changeable in the future.

“If we are unable to trace conduct back to any other origins than those within ourselves, then actions of which the origins are within us (ἐν ἡμῖν), themselves depend upon us (ἐφ’ ἡμῖν), and are voluntary (ekousia - will).”<sup>4</sup>

Some scholars say Aristotle did not see or confront the problem of free will versus determinism. But consider his arguments for some indeterminism, his “Sea-Battle” example against the Megarians claim that future contingency is logically impossible, and his belief that animals are exempt from laws of material determinism.

One generation after Aristotle, EPICURUS argued that as atoms moved through the void, there were occasions when they would “swerve” from their otherwise determined paths, thus initiating new causal chains. Epicurus argued that these swerves would allow us to be more responsible for our actions, something impossible if

2 Aristotle (1935) *Metaphysics*, Book V, 1025a25

3 Aristotle (1935) *Metaphysics*, Book VI, 1027a29

4 Aristotle (1937) *Nicomachean Ethics*, III.v.6



every action was deterministically caused. For Epicurus, the occasional interventions of arbitrary gods would be preferable to strict determinism.

Epicurus did not say the swerve was directly involved in decisions. His critics, ancient and modern, have claimed mistakenly that Epicurus did assume “one swerve - one decision.” Following Aristotle, Epicurus thought human agents have the ability to transcend necessity and chance.

“...some things happen of necessity, others by chance, others through our own agency. ...necessity destroys responsibility and chance is inconstant; whereas our own actions are autonomous, and it is to them that praise and blame naturally attach.”<sup>5</sup>

Parenthetically, we now know that atoms do not occasionally swerve, they move unpredictably whenever they are in close contact with other atoms. Everything in the material universe is made of atoms in unstoppable perpetual motion. Deterministic paths are only the case for very large objects, where the statistical laws of atomic physics average to become nearly certain dynamical laws for billiard balls and planets.

So Epicurus’ intuition of a fundamental randomness was correct. We know Epicurus’ work largely from the Roman Lucretius and his friend CICERO.

LUCRETIUS saw the randomness as enabling free will, even if he could not explain how, beyond the fact that random swerves would break the causal chain of determinism.

“If all motion is always one long chain, and new motion arises out of the old in order invariable, and if first-beginnings do not make by swerving a beginning of motion so as to break the decrees of fate, whence comes this free will [*libera*]?”<sup>6</sup>

CICERO unequivocally denies fate, strict causal determinism, and God’s foreknowledge. Augustine quotes Cicero,

“If there is free will, all things do not happen according to fate; if all things do not happen according to fate, there is not

5 Epicurus, Letter to Menoeceus, §133

6 Lucretius (1982) *De Rerum Natura*, book 2, lines 216-250



a certain order of causes; and if there is not a certain order of causes, neither is there a certain order of things foreknown by God.”<sup>7</sup>

## The Stoics

It was the Stoic school of philosophy that solidified the idea of natural laws controlling all things, including the mind.<sup>8</sup> Their influence persists to this day, in philosophy and religion. Most of the extensive Stoic writings are lost, probably because their doctrine of fate, which identified God with Nature, was considered anathema to the Christian church. The church agreed that the laws of God were the laws of Nature, but that God and Nature were two different entities. In either case strict determinism follows by universal Reason (logos) from an omnipotent and omniscient God.

Stoic virtue called for men to resist futile passions like anger and envy. The fine Stoic morality that all men (including slaves and women) were equal children of God coincided with (or was adopted by) the church. Stoic logic and physics freed those fields from ancient superstitions, but strengthened the dogmas of determinism that dominate modern science and philosophy, especially when they explicitly denied Aristotle’s chance as a cause.<sup>9</sup>

The major founder of Stoicism, CHRYSIPPUS, took the edge off strict determinism. Like Democritus, Aristotle, and Epicurus before him, he wanted to strengthen the argument for moral responsibility, in particular defending it from Aristotle’s and Epicurus’s indeterminate chance causes.

Whereas the past is unchangeable, CHRYSIPPUS argued that some future events that are possible do not occur by necessity from past external factors alone, but might depend on us. We have a choice to assent or not to assent to an action.

Chrysippus said our actions are determined (in part by ourselves as causes) and fated (because of God’s foreknowledge), but he also said correctly that they are not necessitated. Chrysippus would be seen today as a compatibilist, as was the Stoic Epictetus.<sup>10</sup>

7 Augustine (1935) Bk V, Ch. 9, Cf. Cicero, *De Divinatione* Book II, x 25

8 Long (2000), Sorabji (1980) p. 70

9 Sambursky, (1988) p. 73-76.

10 Sharples (1983) p. 8, Long, (1986) p. 101, Sharples (1996) p. 8.





## Hellenistic Thinking

ALEXANDER OF APHRODISIAS, the most famous commentator on Aristotle, wrote 500 years after Aristotle's death, at a time when Aristotle and Plato were rather forgotten minor philosophers in the age of Stoics, Epicureans, and Sceptics. Alexander defended a view of moral responsibility we would call libertarianism today. Greek philosophy had no precise term for "free will" as did Latin (*liberum arbitrium* or *libera voluntas*). The discussion was in terms of responsibility, what "depends on us" (in Greek ἐφ' ἡμῖν).

Alexander believed that Aristotle was not a strict determinist like the Stoics, and Alexander himself argued that some events do not have predetermined causes. In particular, man is responsible for self-caused decisions, and can choose to do or not to do something. Alexander denied the foreknowledge of events that was part of the Stoic identification of God and Nature.<sup>11</sup>

Most of the ancient thinkers recognized the obvious difficulty with chance (or an uncaused cause) as the source of human freedom. Even Aristotle described chance as a "cause obscure to human reason" (ἀιτιάν ἄδελον ἀνθρωπίνῳ λογισμῷ).

Actions caused by chance are simply random and we cannot feel responsible for them. But we do feel responsible. Despite more than twenty-three centuries of philosophizing, most modern thinkers have not moved significantly beyond this core problem of randomness and free will for libertarians - the confused idea that free actions are caused directly by a random event.

Caught between the horns of a dilemma, with determinism on one side and randomness on the other, the standard argument against free will continues to make human freedom an unintelligible mystery. See Chapter 4.

## Early Christians

A couple of centuries after ALEXANDER, a subtle argument for free will was favored by early Christian theologians. They wanted human free will in order to absolve an omnipotent God of

11 Sharples (1983) p. 21





responsibility for evil actions. This is called the problem of evil. Those who held God to be omniscient, AUGUSTINE for example, maintained that God's foreknowledge was compatible with human freedom, an illogical position still held today by most theologians. AUGUSTINE argued for free will, but only as compatible with God

“God must needs have given free will to man. God's foreknowledge is not opposed to our free choice.”<sup>12</sup>

Augustine's more sensible contemporary, the British monk PELAGIUS (Morgan) held, with Cicero, that human freedom prohibited divine foreknowledge. The success of Augustine's ideas led the church to judge Pelagius a heretic.<sup>13</sup>

## Classicists on Free Will in Antiquity

Before we leave the ancients, it will be instructive to see how great classicists have understood what the ancients were saying about free will. Unfortunately, many of them are influenced by our modern ideas of free will, looking for specific modern theories like compatibilism and extreme libertarianism. I will try to point out these biases where they are obvious.

### Carlo Giussani

In his 1896 *Studi lucreziani* (p.126), Giussani put forward the idea that Epicurus' atomic swerves are involved directly in every case of human free action, not just somewhere in the past that breaks the causal chain of determinism. This goes beyond

and leads to the mistaken conclusion that the swerves directly cause actions. This was the Stoics' view of Epicurus.

“The complete conception of the will according to Epicurus comprises two elements, a complex atomic movement which has the characteristic of spontaneity, that is, is withdrawn from the necessity of mechanical causation: and then the sensus, or self-consciousness in virtue of which the will, illuminated by previous movements of sensation, thought, and emotion, profits by the peculiar liberty or spontaneity of the atomic motions,

12 Augustine, On Free Choice of the Will. Book Two, I, 7, Book Three, IV, 38

13 Augustine, On Free Choice of the Will. Book Three, IV, 40



to direct or not to direct these in a direction seen or selected.”<sup>14</sup>  
(Cyril Bailey translation)

### Cyril Bailey

In 1928 Bailey agreed with Giussani that the atoms of the mind-soul provide a break in the continuity of atomic motions, otherwise actions would be necessitated. Bailey imagined complexes of mind-atoms that work together to form a consciousness that is not determined, but also not susceptible to the pure randomness of individual atomic swerves, something that could constitute Epicurus' idea of actions being “up to us” (παρ' ἡμᾶς).

“It is a commonplace to state that Epicurus, like his follower Lucretius, intended primarily to combat the ‘myths’ of the orthodox religion, to show by his demonstration of the unfailing laws of nature the falseness of the old notions of the arbitrary action of the gods and so to relieve humanity from the terrors of superstition. But it is sometimes forgotten that Epicurus viewed with almost greater horror the conception of irresistible ‘destiny’ or ‘necessity’, which is the logical outcome of the notion of natural law pressed to its conclusion. This conclusion had been accepted in its fulness by Democritus, but Epicurus conspicuously broke away from him: ‘it were better to follow the myths about the gods than to become a slave to the “destiny” of the natural philosophers: for the former suggests a hope of placating the gods by worship, whereas the latter involves a necessity which knows no placation.’<sup>15</sup>

“The ‘swerve’ of the atoms is, no doubt, as the critics have always pointed out, a breach of the fundamental laws of cause and effect, for it is the assertion of a force for which no cause can be given and no explanation offered... But it was no slip or oversight on Epicurus' part which a more careful consideration of his principles might have rectified. On the contrary it was a very deliberate breach in the creed of ‘necessity’ and is in a sense the hinge on which the whole of his system turns. He wished to secure ‘freedom’ as an occasional breach of ‘natural law.’<sup>16</sup>

14 Giussani (1896) *Studi lucreziani*, p. 126

15 Bailey (1964) p. 318.

16 Bailey (1964) p. 320



### David Furley

In 1967, Furley examined the ideas of Giussani and Bailey and de-emphasized the importance of the swerve in both EPICURUS and LUCRETIUS so as to defend Epicurus from the extreme view that our actions are caused directly by random swerves. (Bailey had denied this “traditional interpretation” of the swerve.) Furley argues for a strong connection between the ideas of Aristotle and Epicurus on autonomous actions that are “up to us.”

“If we now put together the introduction to Lucretius’ passage on *voluntas* and Aristotle’s theory of the voluntary, we can see how the swerve of atoms was supposed to do its work. Aristotle’s criterion of the voluntary was a negative one: the source of the voluntary action is in the agent himself, in the sense that it cannot be traced back beyond or outside the agent himself. Lucretius says that *voluntas* must be saved from a succession of causes which can be traced back to infinity. All he needs to satisfy the Aristotelian criterion is a break in the succession of causes, so that the source of an action cannot be traced back to something occurring before the birth of the agent. A single swerve of a single atom in the individual’s psyche would be enough for this purpose, if all actions are to be referred to the whole of the psyche.

“But there is no evidence about the number of swerves. One would be enough, and there must not be so many that the psyche exhibits no order at all; between these limits any number would satisfy the requirements of the theory.

“The swerve, then, plays a purely negative part in Epicurean psychology. It saves *voluntas* from necessity, as Lucretius says it does, but it does not feature in every act of *voluntas*. There is no need to scrutinize the psychology of a voluntary action to find an uncaused or spontaneous element in it. The peculiar vulnerability of Epicurean freedom — that it seemed to fit random actions, rather than deliberate and purposive ones — is a myth, if this explanation is correct.”<sup>17</sup>

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17 Furley (1967) p. 232.



## Pamela Huby

In the same year 1967, Huby suggested that EPICURUS was the original discoverer of the “freewill problem.” Huby noted that there had been two main free will problems, corresponding to different determinisms, namely theological determinism (predestination and foreknowledge) and the physical causal determinism of Democritus.

“In spite of the poverty of our evidence, it is quite clear that one main reason Epicurus had for introducing the swerve, or rather the swerve as a random, uncaused event, was as a solution to the problem of freewill. Unlike Aristotle, he fully appreciated that there was a problem. He believed in free will, because it seemed to him manifestly clear that men could originate action, but he could not, like Aristotle, regard this as the end of the matter.

“...the fact remains, on the evidence of Cicero and Lucretius, that Epicurus still ultimately traced the freedom of the will to the swerve of the atoms. How exactly he did this remains a mystery.”<sup>18</sup>

## Richard Sorabji

Sorabji’s 1980 *Necessity, Cause, and Blame* surveyed ARISTOTLE’S positions on causation and necessity, comparing them to his predecessors and successors, especially the Stoics and Epicurus. Sorabji argues that Aristotle was an indeterminist, that real chance and uncaused events exist, but never that human actions are uncaused in the extreme libertarian sense that some commentators mistakenly attribute to Epicurus.

“I shall be representing Aristotle as an indeterminist; but opinions on this issue have been diverse since the earliest times...

“It is not always recognised that Aristotle gave any consideration to causal determinism, that is, to determinism based on causal considerations. But I shall argue that in a little-understood passage he maintains that coincidences lack causes. To understand why he thinks so; we must recall his view that a cause is one of four kinds of explanation. On both counts, I think he is right.

18 Huby (1967) pp. 353-62



His account of cause, I believe, is more promising than any of those current today, and also justifies the denial that coincidences have causes.”<sup>19</sup>

### R. W. Sharples

Sharples’ great translation and commentary *Alexander of Aphrodisias On Fate* appeared in 1983. He described ALEXANDER’S De Fato as perhaps the most comprehensive treatment surviving from classical antiquity of the problem of responsibility (τὸ ἐφ’ ἡμῖν) and determinism. It especially shed a great deal of light on Aristotle’s position on free will and on the Stoic attempt to make responsibility compatible with determinism.

Sharples thinks that the problem of determinism and responsibility was not realized, in the form in which it was eventually passed on to post-classical thinkers, until relatively late in the history of Greek thought - at least not until after Aristotle.

“The mechanistic atomism of Democritus (born 460-457 B.C.) may well seem to us to raise difficulties for human responsibility, and it seemed to do so to Epicurus, but Democritus himself apparently felt no such problem.”<sup>20</sup>

“The Stoic position, given definitive expression by Chrysippus (c. 280-207 B.C.), the third head of the school, represents not the opposite extreme from that of Epicurus but an attempt to compromise, to combine determinism and responsibility.”<sup>21</sup>

### Don Fowler

In his 1983 thesis, “Lucretius on the Clinamen and ‘Free Will,’” Fowler criticized Furley’s limits on the swerve and defended the ancient - but seriously mistaken - claim that Epicurus proposed random swerves as directly causing our actions. This mistaken claim has become common in current interpretations of Epicurus.

“I turn to the overall interpretation. Lucretius is arguing from the existence of voluntas to the existence of the clinamen;

19 Sorabji (1980) p. x.

20 Sharples (2007) p. 4.

21 Sharples (2007) p. 8.



nothing comes to be out of nothing, therefore voluntas must have a cause at the atomic level, viz. the clinamen. The most natural interpretation of this is that every act of voluntas is caused by a swerve in the atoms of the animal's mind."

This is not an interpretation that would have been acceptable to EPICURUS, as Furley had argued. Fowler continues:

"Furley, however, argued that the relationship between voluntas and the clinamen was very different; not every act of volition was accompanied by a swerve in the soul-atoms, but the clinamen was only an occasional event which broke the chain of causation."

### A. A. Long and D. N. Sedley

In their great 1987 work *The Hellenistic Philosophers* (dedicated to David Furley), Long and Sedley discussed Epicurus and the free will problem at length, with references to the principal original Greek and Latin sources.

"Epicurus' problem is this: if it has been necessary all along that we should act as we do, it cannot be up to us, with the result that we would not be morally responsible for our actions at all. Thus posing the problem of determinism he becomes arguably the first philosopher to recognize the philosophical centrality of what we know as the Free Will Question. His strongly libertarian approach to it can be usefully contrasted with the Stoics' acceptance of determinism.

"It is perhaps the most widely known fact about Epicurus that he for this reason modified the deterministic Democritean system by introducing a slight element of indeterminacy to atomic motion, the 'swerve'. But taken in isolation such a solution is notoriously unsatisfactory. It promises to liberate us from rigid necessity only to substitute an alternative human mechanism, perhaps more undependable and eccentric but hardly more autonomous. Epicurus' remarks, where 'that which depends on us' (or 'that which is up to us') is contrasted with unstable fortune as well as with necessity, suggest that he meant to avoid this trap."<sup>22</sup>

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22 Long and Sedley (1987) p. 107.



### Julia Annas

In her 1992 book, *The Hellenistic Philosophy of Mind*, Annas finds it hard to see how random swerves can help to explain free action. But she sees clearly that randomness can provide alternative possibilities for the will to choose from.

“...since swerves are random, it is hard to see how they help to explain free action. We can scarcely expect there to be a random swerve before every free action... The role of swerves is to provide alternative possibilities for volitions to choose between, for there would be no point in having free will if there were no genuinely open possibilities between which to select.”<sup>23</sup>

### Tim O’Keefe

In his 2005 study *Epicurus on Freedom*, O’Keefe concluded that EPICURUS was mostly concerned with defending an open future against fatalism and the logical necessity of statements about future events. If it is true that there will be a sea battle on Monday, the future event is necessitated.

“My own thesis is that Epicurus’ main concern is not with justified praise and blame, but with preserving the rationality and efficacy of deliberating about one’s future actions, although he thinks that determinism is incompatible with both. The reason for this is that a necessary condition on effective deliberation is the openness and contingency of the future, and determinism makes the future necessary.”<sup>24</sup>

### John Dudley

In his 2011 monograph *Aristotle’s Concept of Chance*, Dudley makes it clear that Aristotle rejects determinism. He says that Aristotle offers three causes (αἰτίαι) that are not themselves caused. These are human free choice (ἐφ’ ἡμῖν), accidents (συμβεβηκός), and chance (τύχη for humans, and ταῦτόματον for animals and nature). These uncaused causes break the chain of “necessary” causes (ἀνάγκη), explain future contingency, and make the future inherently unpredictable (p. 268). He says in conclusion,

<sup>23</sup> Annas (1992) p. 186.

<sup>24</sup> O’Keefe (2005) p. 17.





“It may be said, then, that Aristotle not only was not a determinist, but that he provided an epistemological and metaphysical explanation for the inadequacy of determinism. He argued profoundly not only that human free choices are not the only exception in an otherwise determined world, but that all events on earth are in the final analysis contingent, since they can all be traced back to a contingent starting-point. This contingent starting-point can be a free choice or a [sc. unusual] accident or chance, which can be based on both.”<sup>25</sup>

## Scholastics

The Scholastics were medieval theologians who tried to use Reason to establish the Truth of Religion. Because they used Reason, instead of accepting traditional views based on faith and scripture alone, they were called moderns. THOMAS AQUINAS maintained that man was free but also held there was a divine necessity in God’s omniscience, that God himself was ruled by laws of Reason. DUNS SCOTUS took the opposite view, that God’s own freedom demanded that God’s actions not be necessitated, even by Reason. Both argued that human freedom was compatible with divine foreknowledge, using sophisticated arguments originally proposed by Augustine, that God’s knowing was outside of time, arguments used again later in the Renaissance and by Immanuel Kant in the Enlightenment.

Great Jewish thinkers like Maimonides in his *Guide for the Perplexed* and *Chapters on Ethics* argued for human freedom, especially against the idea of omniscience in the Christian God, though in more popular commentaries he embraced a natural law and divine foreknowledge that controlled much human action.<sup>26</sup> Islamic thinkers hotly debated God’s will, with the Sunni generally determinist and the Shia inclined toward freedom. Asian religions like Buddhism, which do not have the paradox of an omniscient God, embrace human freedom in Karma, which includes a person’s character and values that tend to shape one’s behavior, but can always be changed by acts of will.

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25 Dudley (2011) p. 15.

26 Argument from Free Will in Wikipedia, retrieved October 2010



## The Renaissance

Renaissance thinkers like PICO DELLA MIRANDOLA and GIORDANO BRUNO questioned the teachings of the church and asserted a perfectibility of man that required the freedom to improve as well as to fail. LORENZO VALLA and PIETRO POMPOZZI followed the Scholastics and argued that God's foreknowledge of human actions was outside of time. The Dutch humanist ERASMUS and protestant reformer MARTIN LUTHER exchanged diatribes on free will. Luther's was frankly called "The Bondage of the Will." He saw nothing new in Erasmus' work, nor do I.

## The Rationalists

Modern philosophy began with René Descartes and the other continental rationalists, GOTTFRIED LEIBNIZ and BARUCH SPINOZA. Again, they were called modern because they tried to use Reason to establish the certainty of Truth (including Religion). Descartes found the realm of human freedom in the Mind, which he thought was a separate substance from the material Body. He advocated a mind/body dualism in which matter or body is determined and spirit or mind is free and by its nature unconstrainable and indeterminate. Spinoza objected to Descartes's freedom. It involves an uncaused cause, which Spinoza felt was impossible. Spinoza's freedom was compatible with necessity.

THOMAS HOBBS and JOHN BRAMHALL were contemporaries of Descartes living in Europe as expatriates during the English Civil War. They debated Liberty and Necessity circa 1650. Hobbes held that liberty was simply the absence of external impediments to action (the modern "freedom of action"). The "voluntary" actions of a "free will" all have prior necessary causes and are thus determined. He equated necessity to the decree of God. Bramhall saw liberty as a freedom from inevitability and predetermination, but saw it consistent with the prescience of God. Both were compatibilists, Hobbes' freedom was compatible with causal determinism and Bramhall's with religious determinism.



## The Empiricists

The British empiricist philosophers - GEORGE BERKELEY, JOHN LOCKE, and DAVID HUME - all found chance or indeterminism unacceptable. Determinism was obviously required for us to be responsible for our actions.

John Locke liked the idea of Freedom and Liberty but was disturbed by the confusing debates about “free will”. He thought it was inappropriate to describe the will itself as free. The will is a determination. It is the man who is free.

“I think the question is not proper, whether the will be free, but whether a man be free.”

“This way of talking, nevertheless, has prevailed, and, as I guess, produced great confusion.”<sup>27</sup>

The empiricists saw new evidence for strict causality and determinism in natural science. Isaac Newton’s mathematical theory of motion (classical mechanics) could predict the motions of all things based on knowledge of their starting points, their velocities, and the forces between them. Surely the forces that controlled the heavenly bodies controlled everything else, including our minds. Thus the rationale for determinism was shifting from theological or religious determinism back to the physical/causal determinism of the Greek cosmologists and atomists. Leibniz imagined a scientist who could see the events of all times, just as all times are thought to be present to the mind of God.

“Everything proceeds mathematically...if someone could have a sufficient insight into the inner parts of things, and in addition had remembrance and intelligence enough to consider all the circumstances and take them into account, he would be a prophet and see the future in the present as in a mirror.”

PIERRE-SIMON LAPLACE particularized this Leibniz vision as an intelligent being who knows the positions and velocities of all the atoms in the universe and uses Newton’s equations of motion to

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<sup>27</sup> Locke (1959) s. 21



predict the future. Laplace's Demon has become a cliché for physical determinism.

### David Hume

Hume was a modern Skeptic. He doubted the existence of certain knowledge and questioned **causality**, but he thought (correctly, if inconsistently) that our actions proceeded from causes in our character. Free will is at best **compatible** with **determinism** in the sense that our will caused our actions, even though the willed action was the consequence of prior causes. An uncaused cause (the "*causa sui*" or self-cause), or a free action generated randomly with no regard for earlier conditions ("*sui generis*" or self-generated), was considered absurd and unintelligible. Hume said "'tis impossible to admit of any medium betwixt chance and an absolute necessity."<sup>28</sup>

I see Hume as a median between antiquity and the present, perhaps even an Archimedean point, a fulcrum on which the world of freedom pivoted decisively toward physical determinism and the limited freedom of action allowed by Hobbes.

There is no doubt that Hume's reconciliation of freedom and necessity was a great influence on most analytic and logical empiricist philosophers, through JOHN STUART MILL, G. E. MOORE, BERTRAND RUSSELL, A. J. AYER, and MORITZ SCHLICK, as well as physical scientists like ERNST MACH.

So what is it that distinguishes Hume's compatibilism from earlier compatibilists from CHRYSIPPUS to THOMAS HOBBS? The major difference can be traced to the work of empiricist philosophers JOHN LOCKE and GEORGE BERKELEY and of the scientist ISAAC NEWTON between Hobbes and Hume.

Locke's "Theory of Ideas," which limits human knowledge to that gathered through the senses (the mind starts as a blank slate with no innate ideas) was an enormous influence on Hume. Hume is often simply regarded as one of the three British empiricists who put knowledge of the "things themselves" with their "primary" qualities, beyond the reach of our perceptions. It is this standard

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<sup>28</sup> Hume (1978) *A Treatise of Human Nature*, p. 171.



view of Hume, as one denying unknowable concepts, particularly the notion of “causation,” that inspired the positivists to declare such concepts “meaningless” and “metaphysical.”

But Hume is much more complex, as a careful reading of the *Treatise* and especially the *Enquiry concerning Human Understanding* shows. Hume did not deny causation. He embraced it. What he did say is that empirical methods could not *prove* causality, as observations only show a “constant conjunction” of events, a “regular succession” of A followed by B, which leads the mind to the inference of cause and effect.

Thus we cannot “know” causation and “matters of fact” as we can know the “relations of ideas” such as mathematics and logic. But we have a natural belief in causation and in many matters of fact.

A major theme of Hume’s work, perhaps his core contribution, is that “Reason” cannot motivate our Beliefs. Reason is an evaluative tool only. It is “Feeling” and “Passion” that motivates our “natural” beliefs, judgments, and actions.

Most earlier and later philosophers make the feelings and passions subject to reason. Hume turned this around and based his ideas of morality on sentiments and feelings. He denied that one could ever produce reasoned arguments to derive “ought” from “is,” but that we naturally hold many of our moral beliefs simply based on our feelings and moral sentiments. And that only these Passions, not Reason, are capable of motivating us to action. In a most famous observation, he says..

“I cannot forbear adding to these reasonings an observation, which may, perhaps, be found of some importance. In every system of morality, which I have hitherto met with, I have always remark’d, that the author proceeds for some time in the ordinary way of reasoning, and establishes the being of a God, or makes observations concerning human affairs; when of a sudden I am surpriz’d to find, that instead of the usual copulations of propositions, is, and is not, I meet with no proposition that is not connected with an ought, or an ought not. This change is imperceptible; but is, however, of the last consequence. For



as this ought, or ought not, expresses some new relation or affirmation, 'tis necessary that it should be observ'd and explain'd; and at the same time that a reason should be given, for what seems altogether inconceivable, how this new relation can be a deduction from others, which are entirely different from it."<sup>29</sup>

What is true in moral thinking is true in our physical understanding; we have a natural belief in causality, says Hume. Although it is not an empirically justified “idea” and thus not knowledge, we have a natural feeling about how one billiard ball causes a second one to move.

Similarly, we judge a person praiseworthy or blameworthy because we see the causal connection between a person's character, volition, and resulting actions. This agrees with Hobbes, and it will show up later in R. E. HOBART and PETER F. STRAWSON.

Hume's greatest contribution to the free will debates was to “reconcile” freedom and necessity.

“But to proceed in this reconciling project with regard to the question of liberty and necessity; the most contentious question of metaphysics, the most contentious science; it will not require many words to prove, that all mankind have ever agreed in the doctrine of liberty as well as in that of necessity, and that the whole dispute, in this respect also, has been hitherto merely verbal...

“By liberty, then, we can only mean a power of acting or not acting, according to the determinations of the will; this is, if we choose to remain at rest, we may; if we choose to move, we also may. Now this hypothetical liberty is universally allowed to belong to every one who is not a prisoner and in chains. Here, then, is no subject of dispute.”<sup>30</sup>

For Hume, there was no such thing as chance. Human ignorance leads to all our ideas of probability. This was the view of all the great mathematicians who developed the calculus of probabilities - ABRAHAM DE MOIVRE before Hume and PIERRE-SIMON LAPLACE after him. And, following de Moivre, Hume called chance a mere word.

<sup>29</sup> Hume (1978) *Treatise*, p. 469.

<sup>30</sup> Hume (1975) *Enquiry*, p. 95.



“Though there be no such thing as Chance in the world; our ignorance of the real cause of any event has the same influence on the understanding, and begets a like species of belief or opinion.”<sup>31</sup>

Most compatibilists and determinists since Hobbes and Hume never mention the fact that a causal chain of events going back before our birth would not provide the kind of liberty they are looking for. But Hume frankly admits that such a causal chain would be a serious objection to his theory.

“I pretend not to have obviated or removed all objections to this theory, with regard to necessity and liberty. I can foresee other objections, derived from topics which have not here been treated of. It may be said, for instance, that, if voluntary actions be subjected to the same laws of necessity with the operations of matter, there is a continued chain of necessary causes, pre-ordained and pre-determined, reaching from the original cause of all to every single volition, of every human creature. No contingency anywhere in the universe; no indifference; no liberty. While we act, we are, at the same time, acted upon.”<sup>32</sup>

To escape this objection, we must imagine that Hume wanted some kind of agent-causal freedom in voluntarist acts.

Hume knew the ancients better than most, and of the ancients, his favorite was Cicero. His *Dialogues concerning Natural Religion* is on some level largely a paraphrase of Cicero’s *De Natura Deorum*.

## Probabilists

One might naively think that the development of modern probability theory and statistics would have encouraged acceptance of chance in human affairs, but surprisingly, the major theorists of probability were determinists. The mathematical distribution of possible outcomes in games of chance was formally derived independently by a number of great mathematicians in the eighteenth century - ABRAHAM DE MOIVRE (1667-1754), DANIEL BERNOULLI (1700-1782), Laplace (1749-1827), and CARL FRIEDRICH GAUSS (1777-1855). Laplace disliked the disreputable origins of this theory and renamed it the “calculus of probabilities.”

31 Hume (1975) *Enquiry*, p. 56.

32 Hume (1975) *Enquiry*, p. 99.





## Kant

IMMANUEL KANT's reaction to Newtonian determinism, and to DAVID HUME's criticism of obtaining certain knowledge based only on our sense perceptions, was to admit **determinism** as correct in the physical or phenomenal world, but he set limits on this determinism. Kant subsumed causality and determinism under his idea of Pure Reason. Indeed he made determinism a precondition for rational thought. But he set limits on what we can know by pure speculative Reason, in order to make room for belief in a timeless noumenal (or mental) world that includes God, freedom, and immortality.

“I cannot even make the assumption – as the practical interests of morality require – of God, freedom, and immortality, if I do not deprive speculative reason of its pretensions to transcendent insight. For to arrive at these, it must make use of principles which, in fact, extend only to the objects of possible experience, and which cannot be applied to objects beyond this sphere without converting them into phenomena, and thus rendering the practical extension of pure reason impossible. I must therefore, abolish knowledge, to make room for belief.”<sup>33</sup>

Kant's noumenal world is a variation on Plato's concept of Soul, Descartes' mental world, and the Scholastic idea of a world in which all times are present to the eye of God. His idea of free will is a most esoteric form of **compatibilism**. Our decisions are made in our souls outside of time and only appear determined to our senses, which are governed by our built-in a priori categories of understanding, like space and time.

“We then see how it does not involve any contradiction to assert, on the one hand, that the will, in the phenomenal sphere – in visible action – is necessarily obedient to the law of nature, and, in so far, not free; and, on the other hand, that, as belonging to a thing in itself, it is not subject to that law, and, accordingly, is free.”<sup>34</sup>

33 Kant (1952) “The Critique of Pure Reason.” p. 10.

34 Kant (1952) “The Critique of Pure Reason.” p. 9.



If Kant's *Critique of Pure Reason* can be seen as a reaction to David Hume's skeptical attitude toward knowledge that depends on sense data, the parallel between Hume and Kant is even stronger in Kant's *Critique of Practical Reason*.

Hume and Kant both sought a reconciling of freedom and necessity or causality. Where Hume said we could not reason to knowledge of causality, for example, but could have a natural belief in causality because of our moral sentiments and feelings, so Kant claims that his Practical Reason establishes freedom in a noumenal realm whose grounding principle is morality. Freedom is the condition for the moral law.

“Freedom, however, is the only one of all the ideas of the speculative reason of which we know the possibility a priori (without, however, understanding it), because it is the condition of the moral law which we know.”<sup>35</sup>

In an early letter to a friend, Kant described the workings of his mind as involving **chance**, and in terms that sound remarkably like my **Cogito** model, - “The mind must...lie open to any chance suggestion which may present itself.” He described his method...

“In mental labour of so delicate a character nothing is more harmful than preoccupation with extraneous matters. The mind, though not constantly on the stretch, must still, alike in its idle and in its favourable moments, lie uninterruptedly open to any chance suggestion which may present itself. Relaxations and diversions must maintain its powers in freedom and mobility, so that it may be enabled to view the object afresh from every side, and so to enlarge its point of view from a microscopic to a universal outlook that it adopts in turn every conceivable standpoint, verifying the observations of each by means of all the others.”<sup>36</sup>

At the same time that Kant was inventing his most fanciful other-worldly explanation of free will, his contemporary Samuel Johnson uttered this brief analysis of the problem.

“We know our will is free, and there's an end on't.”

35 Kant (1952) “The Critique of Practical Reason.” p. 329.

36 Letter to Marcus Herz, February 21, 1772, Werke, x, p. 127 (cited by Norman Kemp Smith, Commentary to Kant's Critique of Pure Reason, p. xxii)



## Five Post-Kantian Shocks to Determinism

Since the age of Newton and Kant, very few philosophers have offered genuinely new ideas for reconciling our sense of human freedom with physical determinism, which for most thinkers also implies causality, certainty, necessity, and predictability of the one possible future consistent with determinism.

This is despite three great advances in science that critically depend on the existence of real chance in the universe and two developments in logic and mathematics that question the status of philosophical certainty.

The history of the problem of free will cannot be addressed without being aware of these shocking developments in an eighty-year period that eroded the foundations of classical deterministic thinking in five areas of thought.

### Evolution

CHARLES DARWIN'S explanation of biological evolution in 1859 requires chance to create variation in the gene pool. The alternative is a deterministic law controlling such change, which implies that information about all species has existed for all time. Or perhaps the idea that there is no real change. The "Great Chain of Being" from Plato's *Timaeus* to the middle ages maintained that all the species - from the smallest organisms, through man at the pinnacle of the natural world, then up to God through various types of supernatural angels - had existed for all time, at least since the creation. Darwin's work confirmed that *Becoming* was as real and important as *Being* (another great dualism).

### Thermodynamics

LUDWIG BOLTZMANN'S attempts, starting in 1866, to derive the second law of thermodynamics (increasing entropy and irreversibility) from the classical mechanical motions of gas particles (atoms) failed until he introduced probability (chance) and treated



the atoms statistically. He was ridiculed by his physicist colleagues in Germany, who rejected the idea of atoms, let alone real chance in the universe.

After Boltzmann, the presumed certain laws of physics became irreducibly statistical laws.

## Logic

Aristotle's logic was accepted as the paradigm of truth for over 2000 years until Gottlob Frege in 1879 and BERTRAND RUSSELL'S *Principia Mathematica* in 1910 failed to establish a logical basis for mathematics and found the first of the paradoxes that call logic into question.

## Quantum Mechanics

WERNER HEISENBERG'S indeterminacy principle in 1927 is believed by many thinkers to have put an end to the absolute determinism implied by Newton's laws, at least for atoms. Classical mechanics is now seen as simply the limiting case of quantum mechanics for macroscopic (large) systems. Even before Heisenberg, MAX BORN had shown in 1926 that in collisions of atomic particles we could only predict the probabilities for the atomic paths, confirming Boltzmann's requirement for microscopic randomness.

So the original two cases for irreducible randomness, implicit in the work of Darwin in 1859, explicitly made by Boltzmann in the 1870's, and espoused as philosopher CHARLES SANDERS PEIRCE'S *Tychism* and WILLIAM JAMES' answer to determinism, have in the 20th century found an explanation in quantum indeterminacy.

## Mathematics

Kurt Gödel's incompleteness theorem in 1937 proved there would always be true propositions that could not be proved in any consistent mathematical system complex enough to include the integers.



## Determinists

Many modern philosophers admit to being “hard” determinists (as WILLIAM JAMES called them). They maintain that there is just one possible future, primarily because there is a single causal sequence of events from the beginning of time. Some argue that without “strict” causality knowledge would be impossible, since we could not be sure of our reasoning process and deduced truths. Note that there are many arguments for the truth of determinism. See Chapter 9.

## Libertarians

Libertarians argue that free will is incompatible with any and all determinism. Many libertarians still hold a dualist view, with an immaterial Mind able to circumvent causal laws that constrain the physical Body. Critics call the libertarian view incoherent and unintelligible if it denies determinism and causality, which they take to be a basic requirement for modern science - for some it is the basis for logic and reason. And many libertarians admit their unhappiness with chance as the source of human freedom.

## Compatibilists

WILLIAM JAMES’ “soft” determinists claim that free will is compatible with determinism, since if determinism did not hold, they think that their will could not determine their actions, which would be random. Though our will is itself caused, these causes include our own character, and this is enough freedom for them, even if our character was itself determined by prior causes.

Broadly speaking, philosophers after Kant can be divided into four main groups,

- those who continued to accept compatibilism (or even determinism),
- those who simply asserted human freedom (some even admitting chance as a factor),



- those philosophers and scientists who reacted, most of them negatively, to the specific new form of chance and “indeterminism” introduced by quantum mechanics in the 1920’s,
- and those active in recently renewed debates about free will, with lots of philosophical analysis and logic chopping, but virtually nothing new of substance.

## Germans in the 19th century

GEORG WILHELM FRIEDRICH HEGEL’S greatest contribution to philosophy was to stress the importance of time and process over mechanism, with its implicit predictability. Just as Aristotle was more this-worldly than his mentor Plato, so Hegel brings Kantian ideas down from the timeless noumenal realm into an evolving world. He spoke of an absolute freedom of the individual “in itself,” a concept following Kant, the “*an sich*.” But in his dialectical idealism, the individual subject (or being) goes on to see itself in the light of others as objects (the non-being). He calls this the “for itself,” Kant’s “*für sich*.” The final stage of his “*aufhebung*” unites these to become the “in and for itself.” At this point, Hegel’s freedom is a will that is the will of a community (Being). He says, “Freedom and will are for us the unity of subjective and objective.” “Freedom also lies neither in indeterminateness nor in determinateness, but in both.”<sup>37</sup>

Hegel’s idealist colleagues JOHANN FICHTE and FRIEDRICH SCHELLING were very enthusiastic about freedom for the individual, the “I,” which was Kant’s “transcendental subject.” They wanted the I to be “unconditioned,” an undetermined thing in itself (*unbedingtes Ding an sich*). For Schelling, this freedom was freedom from both Nature and God.

“The defenders of Freedom usually only think of showing the independence of man from nature, which is indeed easy. But they leave alone man’s inner independence from God, his Freedom even with respect to God, because this is the most difficult problem.

37 Hegel (1967) Introduction, Sect. 8. Two-stage model or contradiction?



“Thus since man occupies a middle place between the non-being of nature and the absolute Being, God, he is free from both. He is free from God through having an independent root in nature; free from nature through the fact that the divine is awakened in him, that which in the midst of nature is above nature.”<sup>38</sup>

ARTHUR SCHOPENHAUER’S essay “On the Freedom of the Will” won the prize of the Royal Danish Academy of Sciences in 1839. His description of his predecessors’ work (pp. 65-90) is extensive. He defined absolute freedom - the *liberum arbitrium indifferentiae* - as not being determined by prior grounds.

“Under given external conditions, two diametrically opposed actions are possible.”

Schopenhauer found this completely unacceptable.

“If we do not accept the strict necessity of all that happens by means of a causal chain which connects all events without exception, but allow this chain to be broken in countless places by an absolute freedom, then all foreseeing of the future... becomes...absolutely impossible, and so inconceivable.”<sup>39</sup>

## The Rise of Statistical Thinking

In the 1820’s the great French mathematician Joseph Fourier noticed that statistics on the number of births, deaths, marriages, suicides, and various crimes in the city of Paris had remarkably stable averages from year to year. The mean values in a “normal distribution” (one that follows the bell curve or “law of errors”) of statistics took on the prestige of a social law. The Belgian astronomer and statistician ADOLPHE QUÉTELET did more than anyone to claim these statistical regularities were evidence of determinism.

Individuals might think marriage was their decision, but since the number of total marriages was relatively stable from year to year, Quételet claimed the individuals were determined to marry.

<sup>38</sup> Schelling (1936) p. 458

<sup>39</sup> Schopenhauer (1995) p 64.





Quételet used AUGUSTE COMTE's term "social physics" to describe his discovery of "laws of human nature," prompting Comte to rename his theory "sociology."

Quételet's argument for determinism in human events is quite illogical. It appears to go something like this:

- Perfectly random, unpredictable individual events (like the throw of dice in games of chance) show statistical regularities that become more and more certain with more trials (the law of large numbers).
- Human events show statistical regularities.
- Human events are determined.

Quételet might more reasonably have concluded that individual human events are unpredictable and random. Were they determined, they might be expected to show a non-random pattern, perhaps a signature of the Determiner.

In England, HENRY THOMAS BUCKLE developed the ideas of Quételet and also argued that statistical regularities proved that human free will was nonexistent.

A few thinkers questioned the idea that individual random events were actually determined simply because their statistical averages appeared to be determined. BERNARD BOLZANO (1781-1848) and FRANZ EXNER (1802-1880) were both professors at Prague in the 1830's and 40's. They had a famous correspondence in which they discussed the possibility of free will. Bolzano, a Catholic priest, was stripped of his teaching post because his ideas were anathema to the Catholic Austrian government that paid his salary. One outcome of the revolution of 1848 was a reform of Austrian education aimed at diminishing the power of the Catholic religion, especially in education. Exner was the principal architect of this curriculum reform, and a central secular tenet was to teach the concept of probability, to encourage students to take responsibility for their own lives.

In France, two philosophers, CHARLES RENOUVIER (1815-1903) and ALFRED FOUILLÉE (1838-1912), argued for human freedom



and based it on the existence of absolute chance. In his *Essais de Critique Générale*, Renouvier generally followed Kant, but he moved human freedom from Kant's imaginary noumenal realm into the phenomenal world, which for Renouvier included contingent events. In *La Liberté et le Déterminisme*, Fouillée denied necessity and determinism.

Every philosopher after CHARLES DARWIN'S *Origin of Species* was affected by the explanation of evolution as random variation followed by natural selection. A few embraced it, and found that it gave support to their ideas of human freedom, based on the liberating notion of chance. But few offered a convincing idea of how exactly chance as a cause could be made consistent with moral responsibility.

CHARLES SANDERS PEIRCE was deeply impressed by chance as a way to bring diversity and "progress" (in the form of increasingly complex organisms) to the world. Obviously modeling his thinking on the work of Darwin, Peirce was unequivocal that chance was a real property of the world. He named it *Tyche*, and made tychism the basis for the evolutionary growth of variety, of irregular departures from an otherwise mechanical universe, including life and Peirce's own original thoughts. But Peirce did not like Darwin's fortuitous variation and natural selection. He falsely associated it with the Social Darwinist thinking of his time and called it a "greed philosophy." Peirce also rejected the deterministic evolution scheme of HERBERT SPENCER, and proposed his own grand scheme for the evolution of everything including the laws of Nature! He called this synechism, a coined term for continuity, in clear contrast to the random events of his tychism.

Peirce (correctly) reads ARISTOTLE as espousing absolute chance and offering a *tertium quid* beyond chance and necessity. Aristotle, he says, holds that events come to pass in three ways, namely

"(1) by external compulsion, or the action of efficient causes, (2) by virtue of an inward nature, or the influence of final causes, and (3) irregularly without definite cause, but just by absolute chance."<sup>40</sup>

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40 Peirce (1958) Vol. 6, p. 28



Peirce is boastful about his knowledge of early philosophers, and we know he was familiar with the ancient Stoic objection to chance (since at least Chrysippus and Cicero) as the cause of human actions. The Stoics objected that we cannot be responsible for chance actions. Peirce agrees, saying

“To undertake to account for anything by saying baldly that it is due to chance would, indeed, be futile. But this I do not do. I make use of chance chiefly to make room for a principle of generalization, or tendency to form habits, which I hold has produced all regularities.”<sup>41</sup>

WILLIAM JAMES, in *The Will to Believe*, simply asserted that his will was free. As his first act of freedom, he said, he chose to believe his will was free. He was encouraged to do this by reading Charles Renouvier.

James coined the terms “hard determinism” and “soft determinism” in his lecture on “The Dilemma of Determinism.” He described chance as neither of these, but “indeterminism.” He said,

“The stronghold of the determinist argument is the antipathy to the idea of chance...This notion of alternative possibility, this admission that any one of several things may come to pass is, after all, only a roundabout name for chance.”<sup>42</sup>

James was the first thinker to enunciate clearly a two-stage decision process, with chance in a present time of random alternatives, leading to a choice which grants consent to one possibility and transforms an equivocal future into an unalterable and simple past. There are undetermined alternatives followed by adequately determined choices.

“What is meant by saying that my choice of which way to walk home after the lecture is ambiguous and matter of chance?...It means that both Divinity Avenue and Oxford Street are called but only one, and that one either one, shall be chosen.”<sup>43</sup>

James very likely had the model of Darwinian evolution in mind. Unlike his colleague Charles Peirce, from whom he learned

41 *ibid.*

42 James (1956) p. 153

43 James (1956) p. 155



much about chance, James accepted Darwin's explanation of human evolution.

JOHN STUART MILL (1806-1873) did great work on probability in his *System of Logic*, but like the continental mathematicians was a confirmed determinist. His endorsement of Hume's reconciliation of free will with determinism came to be known as the Hume-Mill thesis. Mill accepted Hume's view that human actions would some day be explainable by laws of human nature as sure as Newton's laws of physical nature. If this were not so, he feared for science itself.

“At the threshold of this inquiry we are met by an objection, which, if not removed, would be fatal to the attempt to treat human conduct as a subject of science. Are the actions of human beings, like all other natural events, subject to invariable laws?”

“The question, whether the law of causality applies in the same strict sense to human actions as to other phenomena, is the celebrated controversy concerning the freedom of the will: which, from at least as far back as the time of Pelagius, has divided both the philosophical and the religious world. The affirmative opinion is commonly called the doctrine of a Necessity, as asserting human volitions and actions to be necessary and inevitable. The negative maintains that the will is not determined, like other phenomena, by antecedents, but determines itself; that our volitions are not, properly speaking, the effects of causes, or at least have no causes which they uniformly and implicitly obey.

“I have already made it sufficiently ‘apparent’ that the former of these opinions is that which I consider the true one.”<sup>44</sup>

Mill's godson BERTRAND RUSSELL also had no doubt that causality and determinism were needed to do science. “Where determinism fails, science fails,” he said. Russell could not find in himself “any specific occurrence that I could call ‘will.’”

HENRI BERGSON, in his “Time and Free Will,” argued that time in the mind (he called it *durée* or duration) was different from physical time. In particular, because minds were evolving living

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44 A System of Logic, Bk VI, Ch II, Of Liberty and Necessity



things with memories of all their past experience, they could not be treated as collections of mechanical atoms with no such memories, so minds were not subject to deterministic laws.

FRIEDRICH NIETZSCHE knew Darwin and perhaps knew of the debates in the German universities about probability and irreversibility. He may have been impressed by mechanistic explanations for everything including human affairs. His “eternal return” is consistent with microscopic particles (atoms) following deterministic paths that eventually repeat themselves. His aphoristic and polemical writing style makes his real position on free will hard to fathom. Nietzsche both denied the will and even more strongly claimed that as overmen we must choose to make ourselves. This choice has even greater weight because it would be repeated again and again in his vision of an eternal return.

HENRI POINCARÉ describes a two-stage process in mathematical discoveries, in his lectures to the Paris Société de Psychologie around 1907. The first stage is random combinations, which he likens to Epicurus’ “hooked atoms” ploughing through space in all directions, like a “swarm of gnats.” He apologizes for the crude comparison, but says

“the right combination is to be found by strict calculations [which] demand discipline, will, and consequently consciousness. In the subliminal ego, on the contrary, there reigns what I would call liberty, if one could give this name to the mere absence of discipline and to disorder born of chance.”<sup>45</sup>

In 1937, at the Paris Centre de Synthèse, a week of lectures was delivered on inventions of various kinds, including experimental science, mathematics, and poetry. The mathematician JACQUES HADAMARD described the conference in his book *The Psychology of Invention in the Mathematical Field* (1949) Hadamard’s emphasis was on the discovery or invention of mathematical theories and his main subject was HENRI POINCARÉ.

Hadamard assures us that Poincaré’s observations do not impute discovery directly to pure chance. He says

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45 Poincaré (2003) p. 60



“Indeed, it is obvious that invention or discovery, be it in mathematics or anywhere else, takes place by combining ideas.”

“It cannot be avoided that this first operation takes place, to a certain extent, at random, so that the role of chance is hardly doubtful in this first step of the mental process. But we see that the intervention of chance occurs inside the unconscious.”<sup>46</sup>

The first step is only the beginning of creation, for the following step, says Hadamard,

“Invention is discernment, choice...it is clear that no significant discovery or invention can take place without the will of finding.”<sup>47</sup>

Poincaré is apparently the second thinker, after WILLIAM JAMES, to see random combinations of ideas in the unconscious mind, followed by willful decisions or choices made consciously.

MORITZ SCHLICK (1882-1936) was a founder of the great Vienna Circle of Logical Empiricism, which included LUDWIG WITTGENSTEIN in its early years. Like Wittgenstein, Schlick thought some problems could be dis-solved by logical analysis. They were pseudo-problems, of which “the so-called problem of the freedom of the will” was an old one.

“this pseudo-problem has long since been settled by the efforts of certain sensible persons; and, above all...— with exceptional clarity by Hume. Hence it is really one of the greatest scandals of philosophy that again and again so much paper and printer’s ink is devoted to this matter... I shall, of course, say only what others have already said better; consoling myself with the thought that in this way alone can anything be done to put an end at last to that scandal.”<sup>48</sup>

## Quantum Indeterminacy

In 1925 MAX BORN, WERNER HEISENBERG, and PASCUAL JORDAN, formulated their matrix mechanics version of quantum

46 Hadamard (1945) pp. 29-30.

47 Hadamard (1945) p. 30.

48 Schlick (2008) Ch. VII.



mechanics as a superior formulation of NEILS BOHR's old quantum theory. Matrix mechanics confirmed discrete energy levels and random "quantum jumps" of electrons between the energy levels, with emission or absorption of photons accompanying the jump.

In 1926, ERWIN SCHRÖDINGER developed wave mechanics as an alternative formulation of quantum mechanics. Schrödinger disliked the abrupt jumps. His wave mechanics was a continuous, even deterministic, theory.

Within months of the new wave mechanics, MAX BORN showed that while Schrödinger's wave function evolved over time deterministically, it only predicted the positions and velocities of atomic particles probabilistically.

Heisenberg used Schrödinger's wave functions to calculate the "transition probabilities" for electrons to jump from one energy level to another. Schrödinger's wave mechanics was easier to visualize and much easier to calculate than Heisenberg's own matrix mechanics.

In early 1927, Heisenberg announced his **indeterminacy principle** limiting our knowledge of the simultaneous position and velocity of atomic particles, and declared that the new quantum theory disproved causality.

"We cannot - and here is where the causal law breaks down - explain why a particular atom will decay at one moment and not the next, or what causes it to emit an electron in this direction rather than that."<sup>49</sup>

More popularly known as the Uncertainty Principle in quantum mechanics, it states that the exact position and momentum of an atomic particle can only be known within certain (sic) limits. The product of the position error and the momentum error is greater than or equal to Planck's constant  $h/2\pi$ .

$$\Delta p \Delta x \geq h/2\pi$$

Indeterminacy (*Unbestimmtheit*) was Heisenberg's original name for his principle. It is a better name than the more popular uncertainty, which connotes lack of knowledge. The Heisenberg

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<sup>49</sup> Heisenberg, W (1972) p. 119.





principle is an ontological and real lack of information, not merely an epistemic lack, a result of human ignorance.

Later in 1927, Bohr announced his complementarity principle and the Copenhagen interpretation of quantum mechanics that argued for a dualist combination of wave and particle aspects for atoms and electrons.

Schrödinger argued vociferously against the random quantum jumps of Bohr and Heisenberg and for a return to his easily visualized, deterministic, and continuous physics.

ALBERT EINSTEIN, MAX PLANCK, Schrödinger, and other leading physicists were appalled at Born's assertion that quantum mechanics was probabilistic and Heisenberg's claim that strict causality was no longer tenable. Einstein's famous reaction was "The Lord God does not play dice." Planck said,

"the assumption of absolute chance in inorganic nature is incompatible with the working principle of physical science.

"This means that the postulate of complete determinism is accepted as a necessary condition for the progress of psychological research."<sup>50</sup>

Just a few years earlier, in 1919, Schrödinger and his mentor FRANZ SERAFIN EXNER (son of the 19th-century educator) had been strong disciples of LUDWIG BOLTZMANN. They were convinced that Boltzmann's kinetic theory of gases required a microscopic world of random and chaotic atomic motions.

Why did Schrödinger switch from an indeterminist to a determinist philosophy, then adhere to it the rest of his life? Perhaps because his work now put him in the company of Einstein and Planck? Planck stepped down from his chair of theoretical physics at the University of Berlin and gave it to Schrödinger, who won the Nobel prize in 1933. It took nearly thirty more years and another world war before the Nobel committee gave Max Born the prize for his probabilistic interpretation of the wave function.

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50 Planck (1981) pp. 154-5.



In his Gifford Lectures of 1927, ARTHUR STANLEY EDDINGTON had described himself as unable “to form a satisfactory conception of any kind of law or causal sequence which shall be other than deterministic.”<sup>51</sup>

Eddington had already established himself as the leading interpreter of the new relativity and quantum physics. His astronomical measurements of light bending as it passes the sun had confirmed Einstein’s general relativity theory.

A year later, in response to Heisenberg’s uncertainty principle, Eddington revised his lectures for publication as *The Nature of the Physical World*. There he announced “It is a consequence of the advent of the quantum theory that physics is no longer pledged to a scheme of deterministic law,”<sup>52</sup> and enthusiastically identified indeterminism with freedom of the will.

But Eddington left himself open to the charge since EPICURUS’ time, that chance could not be identified with freedom. He was apparently unaware of the work of WILLIAM JAMES or HENRI POINCARÉ to make deliberation a two-stage process - first random possibilities, then a choice. A decade later, in his 1939 book *The Philosophy of Physical Science*, just a few years before his death, he reluctantly concluded there is no “halfway house” between randomness and determinism,<sup>53</sup> an echo of DAVID HUME’s claim that there is “no medium betwixt chance and an absolute necessity.”<sup>54</sup>

NIELS BOHR mentioned the free will and causality discussions in 1929, but he spoke vaguely, with his vision of complementarity, and likened them to subjective and objective views:

“Just as the freedom of the will is an experiential category of our psychic life, causality may be considered as a mode of perception by which we reduce our sense impressions to order... the feeling of volition and the demand for causality are equally indispensable elements in the relation between subject and object which forms the core of the problem of knowledge.”<sup>55</sup>

51 Eddington (1928) p. 294.

52 Eddington (1928) p.

53 Eddington (1939) p.

54 Hume (1978) p. 171.

55 Bohr (1936) p.



The German philosopher ERNST CASSIRER was close to many of the physicists in this debate and had a profound influence on some of them. Cassirer also influenced the predominantly deterministic views of other philosophers, themselves untrained in physics, who tried to understand the implications of quantum indeterminism for their philosophies. In his 1936 book *Determinism and Indeterminism in Modern Physics*, Cassirer made the case an ethical one, saying

“all truly ethical action must spring from the unity and persistence of a definite ethical character. This in itself shows us that it would be fatal for ethics to tie itself to and, as it were, fling itself into the arms of a limitless indeterminism.”<sup>56</sup>

MAX BORN had been first to see that chance and probability were essential to quantum mechanics, as they had been to the statistical laws of physics since Boltzmann. Unfortunately Born was strongly influenced by Cassirer, the non-scientist philosopher who said “we cannot do away with the guiding concept of determinism.” Born concluded somewhat dialectically that free will was just a subjective phenomenon,

“I think that the philosophical treatment of the problem of free will suffers often from an insufficient distinction between the subjective and objective aspect.”<sup>57</sup>

Born approvingly quotes Cassirer, from the last chapter of *Determinism and Indeterminism in Modern Physics*,

“whether causality in nature is regarded in the form of rigorous ‘dynamical’ laws or of merely statistical laws...In neither way does there remain open that sphere of ‘freedom’ which is claimed by ethics.”<sup>58</sup>

Some biologists quickly objected to the idea of physical uncertainty in the human mind because large amounts of matter ensure adequate regularity of the statistical laws.<sup>59</sup>

56 Cassirer (1956), p. 209.

57 Born (1964) p. 127.

58 Original source, Cassirer (1956), p. 209.(Note: Standard Argument.)

59 C. G. Darwin, *Science*, 73, 653, June 19, 1931.



But physicist ARTHUR HOLLY COMPTON defended the Eddington suggestion, with the idea of an amplifier that would allow microscopic random events to produce macroscopic random events.<sup>60</sup> Four years earlier, the biologist Ralph Lillie had pointed out that natural selection was just such an amplifier of microscopic randomness.<sup>61</sup>

This naive model for free will came to be known as the massive switch amplifier. It was open to the ancient criticism that we can not take responsibility for random actions caused by chance. Compton defended the amplifier in his 1935 book *The Freedom of Man*, but like Eddington, later denied he was trying to show that human freedom was a direct consequence of the uncertainty principle. If physics were the sole source of our information, he said, we should expect men's actions to follow certain (sic) rules of chance.<sup>62</sup>

Much later, in the *Atlantic Monthly* of 1957, Compton saw the two-stage process of chance preceding choice.

“When one exercises freedom, by his act of choice he is himself adding a factor not supplied by the [random] physical conditions and is thus himself determining what will occur.”<sup>63</sup>

JOHN ECCLES, the great neurophysiologist, took Eddington's suggestions seriously and looked for places in the brain where quantum uncertainty might be important. He decided on the synapses, where the axon of one neuron communicates with the dendrite of another neuron across a narrow gap (less than 1000 Angstroms). In his 1953 book *The Neurophysiological Basis of Mind*, Eccles calculated the positional uncertainty of the tiny synaptic knob. He found it to be 20 Angstroms in 1 second, a relatively tiny but perhaps significant fraction of the synaptic gap or cleft.<sup>64</sup>

One other scientist and sometime philosopher, HENRY MARGENAU, saw quantum uncertainty as necessary for free will, but that there were “more steps” needed to explain freedom. In his Wimmer Lecture of 1968, he said,

60 A. H. Compton, *Science*, 74, 1911, August 14, 1931.

61 Ralph Lillie, *Science*, 66, 139, 1927

62 *The Human Meaning of Science*, 1940

63 *Atlantic Monthly*, October, 1957; reprinted in Compton (1967)

64 Eccles (1953) pp. 271-286.



“Freedom cannot appear in the domains of physiology and psychology if it is not already lodged in physics...embracing the belief that freedom is made possible by indeterminacies in nature will not solve the problem of freedom...it permits only one first step towards its solution.”<sup>65</sup>

Instead of ERNST CASSIRER’s view “that it would be fatal for ethics to tie itself to and, as it were, fling itself into the arms of a limitless indeterminism,” Margenau embraced indeterminism as just the first step toward a solution of the problem of human freedom.

Margenau lamented that his position

“forces us to part company with many distinguished moral philosophers who see the autonomy of ethics threatened when a relation of any sort is assumed to exist between that august discipline and science.”

Margenau clearly means his longtime mentor.

“Ethics, says Cassirer, should not be forced to build its nests in the gaps of physical causation, but he fails to tell where else it should build them, if at all.”<sup>66</sup>

Then in his 1982 book *Einstein’s Space and Van Gogh’s Sky*, Margenau condensed his model into a single paragraph, with two components - Compton’s chance and choice.

“Our thesis is that quantum mechanics leaves our body, our brain, at any moment in a state with numerous (because of its complexity we might say innumerable) possible futures, each with a predetermined probability. Freedom involves two components: chance (existence of a genuine set of alternatives) and choice. Quantum mechanics provides the chance, and we shall argue that only the mind can make the choice by selecting (not energetically enforcing) among the possible future courses.”<sup>67</sup>

We note sadly that Margenau does not cite the earlier work of Compton (or the philosopher KARL POPPER’s 1977 adaptation of Compton - see below). Perhaps because free will was not a topic for mainstream scientific journals, he felt no need for rigorous

65 Margenau (1968)

66 Margenau (1968) p. 71.

67 Margenau and Leshan (1982) p. 240.



references and scrupulous priority of ideas. But Margenau pays a price, his own work does not get referred to by later thinkers.

Most other Nobel-prize-winning scientists and their philosophical interpreters could not reconcile quantum mechanics and the uncertainty principle with human freedom, concluding only that strict determinism was certainly not the case for the physical or phenomenal world.

### Quantum Mysteries

We should mention a few bizarre suggestions by scientists on how some of the more mysterious properties of “quantum reality” might help explain consciousness and free will.

ROGER PENROSE claims, in his 1989 book *The Emperor’s New Mind* that non-locality and quantum gravity are involved in the mind. Like Eccles, he speculates that single-quantum sensitive neurons are playing an important role deep inside the brain. But he says he needs large numbers of neurons to cooperate:

“Such co-operation, I am maintaining, must be achieved quantum-mechanically; and the way that this is done is by many different combined arrangements of atoms being ‘tried’ simultaneously in linear superposition perhaps a little like the quantum computer...The selection of an appropriate (though probably not the best) solution to the minimizing problem must be achieved as the one-graviton criterion (or appropriate alternative) is reached - which would presumably only occur when the physical conditions are right”<sup>68</sup>

DAVID HODGSON extended Penrose’s ideas in his 1991 book *Mind Matters*. He claims that

“My discussion of quantum mechanics has confirmed [the mind’s] indeterministic character; and has also suggested that quantum mechanics shows that matter is ultimately ‘non-material’ and non-local, and that perhaps mind and matter are interdependent.”<sup>69</sup>

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68 Penrose (1989) p. 437

69 Hodgson (1991) p. 381



Penrose went further in 1994 in his book *Shadows of the Mind*, calculating that tens of thousands of neurons could exist in a coherent correlated superposition of states for one-fortieth of a second (the fundamental alpha-rhythm rate). He cites the idea of a dualistic “mind-stuff” influencing the “quantum choices” with its “free will.”

“With the possibility that quantum effects might indeed trigger much larger activities within the brain, some people have expressed the hope that, in such circumstances, quantum indeterminacy might be what provides an opening for the mind to influence the physical brain. Here, a dualistic viewpoint would be likely to be adopted, either explicitly or implicitly. Perhaps the ‘free will’ of an ‘external mind’ might be able to influence the quantum choices that actually result from such non-deterministic processes. On this view, it is presumably through the action of quantum theory’s R-process that the dualist’s ‘mind-stuff’ would have its influence on the behaviour of the brain.”<sup>70</sup> (p. 349)

The idea that mental processes or even just macroscopic entities can “influence” quantum events (e.g., by changing probabilities) is called **downward causation**. JOHN ECCLES argued that wave functions might be influenced because they are neither matter nor energy and are thus an ideal vehicle for the interaction between non-physical mind and physical matter. Eccles thought this idea was first suggested by HENRY MARGENAU.

Penrose provides considerable evidence for correlated states in the microtubules within the cell’s cytoskeleton, then describes chemical evidence for connecting the microtubules and consciousness in anaesthesia.<sup>71</sup>

HENRY STAPP is another physicist employing quantum strangeness. In his 2003 *Mind, Matter, and Quantum Mechanics*, Stapp argues that mental intentions and strong “mental efforts” can influence quantum wave functions and produce correlated behaviors over large regions of the brain. Resembling Penrose’s arguments (without any reference), Stapp says:

<sup>70</sup> *Shadows of the Mind*, p. 349.

<sup>71</sup> *Shadows of the Mind*, p. 357-370.



“It should be mentioned here that the actions P are nonlocal: they must act over extended regions, which can, and are expected to, cover large regions of the brain. Each conscious act is associated with a Process I action [collapse of the wave function] that coordinates and integrates activities in diverse parts of the brain. A conscious thought, as represented by the von Neumann Process I, effectively grasps as a whole an entire quasi-stable macroscopic brain activity.”<sup>72</sup>

## Behavioral Freedom

In 2009, the neurobiologist and geneticist MARTIN HEISENBERG, son of quantum physicist WERNER HEISENBERG, found evidence for a combination of random and lawful behavior in animals and unicellular bacteria. They can originate actions, so are not simply Cartesian stimulus-response mechanisms.

Evidence of randomly generated action — action that is distinct from reaction because it does not depend upon external stimuli — can be found in unicellular organisms. Take the way the bacterium *Escherichia coli* moves. It has a flagellum that can rotate around its longitudinal axis in either direction: one way drives the bacterium forward, the other causes it to tumble at random so that it ends up facing in a new direction ready for the next phase of forward motion. This ‘random walk’ can be modulated by sensory receptors, enabling the bacterium to find food and the right temperature.

In higher organisms, Heisenberg finds that the brain still may include elements that do a random walk among options for action.

As with a bacterium’s locomotion, the activation of behavioural modules is based on the interplay between chance and lawfulness in the brain. Insufficiently equipped, insufficiently informed and short of time, animals have to find a module that is adaptive. Their brains, in a kind of random walk, continuously preactivate, discard and reconfigure their options, and evaluate their possible short-term and long-term consequences.<sup>73</sup>

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72 Mind, Matter, and Quantum Mechanics, p. 252.

73 Nature, 14 May 2009, p. 165





## Philosophers Specializing in Free Will

### Mortimer Adler

In the late 1950's, MORTIMER ADLER compiled a massive two-volume history of *The Idea of Freedom*. It covers at great length ideas of political freedom and freedom from external constraints, as well as the central freedom of the individual will to choose from among possibilities that are not necessary or predictable.

In an attempt to classify types of freedom, Adler invents three categories that he hopes are “dialectically neutral” - the *circumstantial* freedom of **self-realization** (freedom from coercion, political and economic freedom, etc.), the *acquired* freedom of **self-perfection** (making decisions for moral reasons rather than desires and passions), and the *natural* freedom of **self-determination** (the normal freedom of the will).

Self-perfection is the idea from Plato to Kant that we are only free when our decisions are for reasons and we are not slaves to our passions. Adler also includes many theologically minded philosophers who argue that man is only free when following a divine moral law, which may have led to Hegel's freedom of a stone “falling freely” according to Newton's law of gravity.

Sinners, they say, do not have this free will, presumably to make sinners responsible for evil in the world despite an omniscient and omnipotent God.

Self-determination covers the classic problem of free will. Do our choices determine our will, or are they part of a causal chain?

Most of Adler's freedoms are actually compatible with classical physics. In his over 1400 pages, Adler devotes only six pages to brief comments on quantum mechanical indeterminism.<sup>74</sup> Adler depends heavily on the thoughts of MAX PLANCK and ERWIN SCHRÖDINGER, who along with major thinkers like Einstein, Louis de Broglie, and DAVID BOHM, rejected indeterminism.

### Karl Popper

The philosopher KARL POPPER had a famous collaboration over some decades with the neuroscientist JOHN ECCLES. The two were

<sup>74</sup> The Idea of Freedom, v. 1, p. 461-466.



mind/body or mind/brain dualists who hoped to discover the mind to be more than a mere “epiphenomenon” of the material brain. They considered quantum effects, initially to dismiss them, and later to reconsider them.

In their dialogue X, Eccles said, “It is not possible I think to utilize quantum indeterminacy.” Popper replied,

“I do of course agree that quantum theoretical indeterminacy in a sense cannot help, because this leads merely to probabilistic laws, and we do not wish to say that such things as free decisions are just probabilistic affairs. The trouble with quantum mechanical indeterminacy is twofold. First, it is probabilistic, and this doesn’t help much with the free-will problem, which is not just a chance affair. Second, it gives us only indeterminism.”<sup>75</sup>

To this point, Popper reflects the overall negative reaction of the scientific and philosophical communities to indeterminism. But in his 1965 Arthur Holly Compton memorial lecture *Of Clouds and Clocks*, Popper celebrated Compton’s contributions to the question of human freedom, including the insufficient idea of the quantum uncertainty amplifier. But then he goes on to describe a two-stage decision process modeled on Darwinian natural selection. Can we doubt these were directly inspired by Compton’s later remarks and Compton’s 1931 references to Ralph Lillie and evolution?

Any intelligible explanation for free will must include both indeterminism and adequate determinism, resembling biological evolution, Popper says,

“New ideas have a striking similarity to genetic mutations,” “Mutations are, it seems, brought about by quantum theoretical indeterminacy (including radiation effects). On them there subsequently operates natural selection which eliminates inappropriate mutations. Now we could conceive of a similar process with respect to new ideas and to free-will decisions. That is to say, a range of possibilities is brought about by a probabilistic and quantum mechanically characterized set of proposals, as it were - of possibilities brought forward by the brain. On these there operates a kind of selective procedure which eliminates

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75 Popper and Eccles, 1977,



those proposals and those probabilities which are not acceptable to the mind.”<sup>76</sup>

In 1977 Popper gave the first Darwin Lecture, at Darwin College, Cambridge. He called it *Natural Selection and the Emergence of Mind*. In it he said he had changed his mind (a rare admission by a philosopher) about two things. First he now thought that natural selection was not a “tautology” that made it an unfalsifiable theory. Second, he had come to accept the random variation and selection of ideas as a model of free will.

“The selection of a kind of behavior out of a randomly offered repertoire may be an act of indeterminism; and in discussing indeterminism I have often regretfully pointed out that quantum indeterminacy does not seem to help us; for the amplification of something like, say, radioactive disintegration processes would not lead to human action or even animal action, but only to random movements.”

This is the randomness objection of the standard argument..

“I have changed my mind on this issue. A choice process may be a selection process, and the selection may be from some repertoire of random events, without being random in its turn. This seems to me to offer a promising solution to one of our most vexing problems, and one by downward causation.”<sup>77</sup>

Karl Popper is thus the third thinker (or fourth, if we liberally interpret Compton) to describe a two-stage mental process, after William James and Henri Poincaré. He also solves the problem of indeterminism directly causing our decisions. Note Popper’s not so subtle shift of the realm of chance to the material body (his “World 1”) and the realm of determination to the mind (his “World 2”). The traditional dualism from the ancients to Kant made the material body the realm of phenomenal determinism and the mind or spirit the noumenal realm of freedom, God, and immortality.

<sup>76</sup> Popper and Eccles, 1977, pp. 539-540

<sup>77</sup> Darwin College Lecture, (1977) Parts of this lecture are available online as a rare audio recording of Popper.

[http://www.spokenword.ac.uk/record\\_view.php?pbd=gcu-a0a0r2-b](http://www.spokenword.ac.uk/record_view.php?pbd=gcu-a0a0r2-b)



## Elizabeth Anscombe

The physicist RICHARD FEYNMAN also proposed a Compton-style Geiger-counter event followed by a bomb explosion. This caught the attention of Wittgenstein scholar ELIZABETH ANSCOMBE in her inaugural lecture at Cambridge University, where she said

It has taken the inventions of indeterministic physics to shake the rather common dogmatic conviction that determinism is a presupposition or perhaps a conclusion, of scientific knowledge. Feynman's example of the bomb and Geiger counter smashes this conception; but as far as I can judge it takes time for the lesson to be learned. I find deterministic assumptions more common now among people at large, and among philosophers, than when I was an undergraduate.<sup>78</sup>

## P. F. Strawson

In his 1962 landmark essay *Freedom and Resentment*, PETER F. STRAWSON changed the subject from free will itself to the question of moral responsibility.<sup>79</sup> Strawson said he could make no sense of the truth or falsity of determinism, indeterminism, or free will. But even if determinism were true, he argued, we would continue to act as if persons were morally responsible and deserving of praise and blame, gratitude and resentment.

Strawson was following DAVID HUME's naturalist arguments that our moral sentiments are simply given facts beyond the skepticism of logic and critical thought. Hume the Naturalist had no problem deriving Ought from Is - something shown logically impossible by Hume the Skeptic. See p. 86.

Strawson himself was optimistic that compatibilism could reconcile determinism with moral obligation and responsibility. He accepted the facts of determinism. He felt that determinism was true. But he was concerned to salvage the reality of our attitudes even for libertarians, whom he described as pessimists about determinism.

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<sup>78</sup> Anscombe (1971) p. 24.

<sup>79</sup> Strawson, P.F. (1962) A pupil of H. P. Grice, Strawson belonged to the so-called "School of Ordinary Language Philosophy" under the leadership of J. L. Austin in post-war Oxford.



“What I have called the participant reactive attitudes are essentially natural human reactions to the good or ill will or indifference of others towards us, as displayed in their attitudes and actions. The question we have to ask is: What effect would, or should, the acceptance of the truth of a general thesis of determinism have upon these reactive attitudes? More specifically, would, or should, the acceptance of the truth of the thesis lead to the decay or the repudiation of all such attitudes? Would, or should, it mean the end of gratitude, resentment, and forgiveness; of all reciprocated adult loves; of all the essentially personal antagonisms?”

“But how can I answer, or even pose, this question without knowing exactly what the thesis of determinism is? Well, there is one thing we do know; that if there is a coherent thesis of determinism, then there must be a sense of ‘determined’ such that, if that thesis is true, then all behaviour whatever is determined in that sense. Remembering this, we can consider at least what possibilities lie formally open; and then perhaps we shall see that the question can be answered without knowing exactly what the thesis of determinism is.”<sup>80</sup>

Strawson felt that the truth of determinism would in no way repudiate such attitudes, even the feeling of resentment, unless what he called “participant” attitudes were universally replaced by “objective” attitudes.

### Harry Frankfurt

In 1969 HARRY FRANKFURT changed the debate on free will and moral responsibility with a famous thought experiment that challenged the existence of **alternative possibilities** for action. The traditional argument for free will requires alternative possibilities so that an agent could have **done otherwise**, without which there is no moral responsibility.

Frankfurt posited a counterfactual demon who can intervene in an agent’s decisions if the agent is about to do something different from what the demon wants the agent to do. Frankfurt’s demon will block any alternative possibilities, but leave the agent to “freely choose” to do the one possibility desired by the demon.

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80 Strawson (1962) p. 10



Frankfurt claimed the existence of the hypothetical control mechanisms blocking alternative possibilities would be irrelevant to the agent's free choice. This is true when the agent's choice agrees with the demon, but obviously false should the agent disagree. In that case, the demon would have to block the agent's will and the agent would surely notice.

Compatibilists had long been bothered by alternative possibilities, needed in order that agents "could have done otherwise." They knew that **determinism** allows only a single future - just one **actual** causal chain of events - and were delighted to get behind Frankfurt's examples as *proofs* that alternative possibilities, perhaps generated in part by random events, did not exist. Frankfurt, like Strawson, argued for **moral responsibility** without libertarian free will.

Note, however, that Frankfurt actually assumes that genuine alternative possibilities do exist. If not, there is nothing for his counterfactual intervening demon to block. JOHN MARTIN FISCHER called these alternative possibilities "flickers of freedom." Without these virtual alternatives, Frankfurt would have to admit that there is only one "actual sequence" of events leading to one possible future. "Alternative sequences" would be ruled out. Since Frankfurt's demon, much like Laplace's demon, has no way of knowing the actual information about future events - such as an agent's decisions - until that information comes into existence, such demons are not possible and Frankfurt-style thought experiments, entertaining as they are, cannot establish the compatibilist version of free will.

### Richard Taylor's Fatalism

In 1962, the agent-causalist libertarian philosopher Taylor wrote a tongue-in-cheek article in the *Philosophical Review* entitled "Fatalism." It was not about fatalism exactly, but about the logical determinism that results from the truth conditions of certain propositions. It was the **Master Argument** of DIODORUS CRONUS that denies **future contingency**, also discussed by ARISTOTLE in terms of a future "sea-battle."



Taylor had five years earlier explained correctly that Aristotle did not deny future contingency. Statements about future events occurring are neither true nor false. The word is indeterminate about the open future.

Determinist philosophy being so popular, Taylor's Fatalism article was widely anthologized, and taken by many to be a *proof* of determinism. One of those taken in was the young DAVID FOSTER WALLACE, who wrote an undergraduate philosophy thesis in 1985 attempting to disprove Taylor's argument, with an elaborate symbolic logical argument developed with one of his professors.<sup>81</sup>

Wallace was arguably deeply discouraged by the deterministic fatalism promoted by academic philosophers. This view had driven the young WILLIAM JAMES near suicide in 1869, and may have contributed to the young Wallace's tragic death in 2008.

### Daniel Dennett

DANIEL DENNETT, perhaps the leading spokesman for Compatibilism, is a strong critic of any genuine **indeterminism** in free will. Yet in his 1978 book *Brainstorms*, he proposed an influential "model of decision making" with a two-stage account of free will. In his chapter "On Giving Libertarians What They Say They Want," Dennett clearly separates random possibilities from determined choices.

But does Dennett, following James, Poincaré, and Popper, see that this solves the problem of indeterminism in free will that has plagued philosophy since EPICURUS' "swerve" of the atoms? He says, a bit sarcastically, that his model

"puts indeterminism in the right place for the libertarian, *if there is a right place* at all [my emphasis]."<sup>82</sup>

And after giving six excellent reasons why his suggestion is what libertarians are looking for, Dennett then suggests that the randomness generator might as well have been a computer-generated pseudo-random number generator. He says

81 Wallace (2011)

82 Dennett (1978) p. 295.



“Isn’t it the case that the new improved proposed model for human deliberation can do as well with a random-but-deterministic generation process as with a causally undetermined process?”<sup>83</sup>

This completely misses the libertarian’s point, which needs randomness that breaks the causal chain of pre-determinism back to the universe origin! But then Dennett’s argument for libertarianism may just be a compatibilist’s straw man. He does not pursue it in his later works, such as *Elbow Room*, *The Varieties of Free Will Worth Wanting* (Dennett, 1984) or the more recent *Freedom Evolves* (2003).

Dennett’s model was inspired by many sources. One was DAVID WIGGINS’ *Towards a Reasonable Libertarianism*, which cited BERTRAND RUSSELL and ARTHUR STANLEY EDDINGTON as suggesting quantum indeterminism. Another was HERBERT SIMON’S 1969 two-stage “generate and test” model for a creating problem-solving computer.<sup>84</sup> Simon’s model is itself a computer version of Darwin’s random variation and natural selection model for biological evolution. Another source was JACQUES HADAMARD’S book. Dennett quotes the poet Paul Valéry (as Hadamard quoted), who imagines two agents (in one mind?)

“It takes two to invent anything. The one makes up combinations; the other one chooses.”<sup>85</sup>

But as we have seen, this was Poincaré’s idea which Valéry picked up at the 1937 Synthèse conference. Some evidence now exists that Poincaré’s work was in fact inspired by WILLIAM JAMES. They both say that **alternative possibilities** “present themselves.”

Nevertheless, Dennett’s article is so influential in the philosophical community that two-stage models for free will are sometimes called “Valerian.” See Chapter 25 for more on Dennett.

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83 Dennett (1978) p. 298.

84 Simon (1981)

85 Dennett (1978) p. 293, Hadamard (1945), p. 30.





### Peter van Inwagen

In his 1983 “An Essay on Free Will,” PETER VAN INWAGEN changed the taxonomy of free will positions. For the previous century, there were basically three positions - **determinist**, **libertarian**, and **compatibilist** (James’s name for this was “soft” determinist). The compatibilists were usually described as following a traditional view handed down from Hobbes to Hume to Mill to Schlick.

Van Inwagen caused a stir by arguing that compatibilism is demonstrably false, even admitting Frankfurt’s denial of alternative possibilities (which implies only one “actual sequence” of events), in what has come to be called his **Consequence Argument**.

In short, if compatibilism traces the causes of our actions, in the “actual sequence” of events, back to events before we existed, then our actions are simply the consequences of those earlier events and are “not up to us.” Speaking as a logical philosopher, he concludes that

“the free-will thesis and determinism are incompatible. That is, **incompatibilism** is true.”

“To deny the free-will thesis is to deny the existence of moral responsibility, which is absurd...Therefore, we should reject determinism.”<sup>86</sup>

This has been obvious to libertarians since EPICURUS. It is the first half of the **standard argument against free will**. Van Inwagen called the second half his Mind Argument.

Van Inwagen called for a new position in the free will debates he called “Incompatibilism.” It is more than just saying determinism is false. It is the assumed interdependence of free will and determinism that he claims is false. Unfortunately, there are two ways to be incompatibilist, the libertarian and the hard determinist. Incompatibilism lumps these opposites together.

Van Inwagen replaced the traditional dichotomy determinism-libertarian (with the reconciliation position compatibilism). His new scheme was compatibilism - incompatibilism, with incom-

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86 Van Inwagen (1983) p. 223.



patibilism a messy category that lumps together hard determinism and libertarians - strange bedfellows indeed. See p. 60.

## Robert Kane

ROBERT KANE is the leading spokesman for Libertarianism. Before Kane, in the late twentieth century, Anglo-American philosophers had largely dismissed libertarian free will as a “pseudo-problem.” Most philosophers and scientists thought free will was compatible with determinism, or perhaps impossible because of determinism.

In his 1985 book *Free Will and Values*, aware of earlier proposals by Eccles, Popper, and Dennett, but working independently, Kane proposed an ambitious amplifier model for a quantum randomizer in the brain - a spinning wheel of fortune with probability bubbles corresponding to **alternative possibilities**, in the massive switch amplifier tradition of Compton and Gomes. Kane says:

“neurological processes must exist corresponding to the randomizing activity of the spinning wheel and the partitioning of the wheel into equiprobable segments (red, blue, etc.) corresponding to the relevant R-alternatives.”<sup>87</sup>

Kane was not satisfied with this early model. He explains that the main reason for failure is

“locating the master switch and the mechanism of amplification... We do not know if something similar goes on in the brains of cortically developed creatures like ourselves, but I suspect it must if libertarian theories are to succeed.”<sup>88</sup>

Unlike DANIEL DENNETT, who put randomness in the first stage of a two-stage model, Kane locates indeterminism in the final moment of choice, in the decision itself.

Kane’s major accomplishment is to show that an agent can still claim moral responsibility for “torn” decisions that were made at indeterministically, provided there exist equally good reasons whichever way the decisions go. Critics who say that indeterminism necessarily destroys the kind of control needed for moral responsibility have been shown wrong by Kane.

87 Kane (1985) p. 147.

88 Kane (1985) p. 168.



Kane claims that the major criticism of all indeterminist libertarian models is explaining the power to **choose or do otherwise** in “exactly the same conditions,” something he calls “dual rational self-control.” Given that A is the rational choice, how can one defend doing B under exactly the **same circumstances**?<sup>89</sup> Kane’s critics say that such a “dual power” is arbitrary, capricious, and irrational. But he disagrees

Apart from the fact that information-rich systems with a history are *never* in the exact same conditions, and ignoring the fact that random alternative possibilities are very unlikely to repeat, an adequately determined will might very likely make the same choice, for the same reasons, from the same set of **alternative possibilities**.

But this was not Kane’s main interest. He says it is the agent’s effort that is the main cause in cases of moral and prudential choices where the agent is “torn” between a moral and a self-interested alternative. Kane says that indeterminism might tip the scales against one option, making it fail, and in favor of another, making it succeed. But the main cause for the successful choice should not be the indeterminism, says Kane. It is the agent’s effort that is the main cause, since the successful choice is brought about by that effort, for the reasons and desires that motivated the effort.

In 2005, Kane published *A Contemporary Introduction to Free Will*, a comprehensive survey of the recent positions on free will, perhaps the most comprehensive since MORTIMER ADLER. Kane adds two more freedom classifications to Adler’s three categories.

Self-control is a variation on Adler’s acquired freedom of **Self-perfection** to include the arguments of the many “New Compatibilists” who are more concerned about moral responsibility than free will, such as HARRY FRANKFURT and JOHN MARTIN FISCHER.

Self-formation is a variation of Adler’s natural freedom of **Self-determination** to include Kane’s own “self-forming actions” (SFA) that are a subset of self-determining actions.<sup>90</sup> Kane requires that an SFA is an indeterministic “will-setting action” that helps form

89 Kane (1985) p. 59.

90 Adler (1961) p. 122. **Self-realization** is Adler’s third freedom.



our character. Later, other actions can be determined by our character, but we can still assert “ultimate responsibility” (UR) for those actions, to the extent they can be traced back to earlier SFAs.

Kane cites ELIZABETH ANSCOMBE’s remark that determinism is becoming more common, and insightfully notes that

“One may legitimately wonder why worries about determinism persist at all in the twenty-first century, when the physical sciences - once the stronghold of determinist thinking - seem to have turned away from determinism.”<sup>91</sup>

Indeed, today it is determinism that is “metaphysical.”

We shall see in Chapter 24 that Kane remains an ardent supporter of quantum indeterminism playing a major role in the solution to the free will problem. It is no longer a quantum event amplified by chaos that triggers a decision, but the general low-level noise in the brain that adds enough indeterminacy.

### Richard Double

RICHARD DOUBLE, in his 1991 book *The Non-Reality of Free Will*, agrees with Kane that libertarian free will must have the “dual ability” to choose otherwise with rational control. But he says this is impossible:

“My conclusion is that the deep reason why no libertarian view can satisfy all three conditions [ability-to-choose-otherwise, control, and rationality] is that the conditions are logically incompatible. Hence, libertarianism, despite its intuitive appeal, turns out to be incoherent.”<sup>92</sup>

### Two Classicists on Doing Otherwise

There is a rich history of linguistic and logical quibbles among compatibilists over the ability to **do otherwise**. G. E. MOORE and A. J. AYER said that one could have done otherwise, *if one had chosen to do so*, i.e., if things in the past had been different. But since the “fixed past” could never be different (in retrospect) one could not have so chosen, according to compatibilists (and determinists).

91 Kane (2002) p. 7.

92 Double (1991) p. 222.



In 1987 two classicists, ANTHONY LONG and DAVID SEDLEY, speculated that EPICURUS' swerve of the atoms might be limited to providing undetermined **alternative possibilities** for action, from which the mind's power of volition could choose in a way that reflects character and values, desires and feelings.

"It does so, we may speculate, not by overriding the laws of physics, but by choosing between the alternative possibilities which the laws of physics leave open."<sup>93</sup>

Long and Sedley assume a non-physical (metaphysical) ability of the volition to affect the atoms, which is implausible. But the idea that a physical volition chooses - (consistent with and adequately determined by its character and values and its desires and feelings) from among **alternative possibilities** provided randomly by atomic indeterminacy - is plausible to Long and Sedley.

### Ted Honderich

TED HONDERICH, the major spokesman for "Hard Determinism," in 1988 published his 750-page *The Theory of Determinism*, with excursions into quantum mechanics, neuroscience, and consciousness.

Unlike most of his colleagues specializing in free will, Honderich did not succumb to the easy path of **compatibilism**, by simply declaring that the free will we have (and should want, says Dennett) is completely consistent with **determinism**, namely a "voluntarism" in which our will is completely caused by prior events.

Nor does Honderich go down the path of **incompatibilism**, looking for non-physical substances, dualist forms of agency, or simply identifying freedom with Epicurean chance, as have many scientists with ideas of brain mechanisms amplifying quantum mechanical indeterminism to help with the uncaused "origination" of actions and decisions.

Honderich does not claim to have found a solution to the problem of free will or determinism, but he does claim to have confronted the problem of the consequences of determinism. He is "dismayed" because the truth of determinism requires that we give up "origination" with its promise of an open future, restricting - though not eliminating - our "life hopes."

93 Long and Sedley (1987) p. 111.



Though he is determinism's foremost champion, Honderich characterizes it as a "black thing." He passionately feels the real loss, when he follows his reason to accept the truth of determinism.

Honderich faults both Compatibilists and Incompatibilists on three counts. First, he says that moral responsibility is not all that is at stake, there are personal feelings, reactive attitudes, problems of knowledge, and rationalizing punishment with ideas of limited responsibility. Second, these problems can not be resolved by logical "proofs" nor by linguistic analyses of propositions designed to show "free" and "determined" are logically compatible. And third, he faults their simplistic idea that one or the other of them must be right. Although he does not call it a scandal, Honderich is describing the scandal in philosophy.

And unlike some of his colleagues, Honderich does not completely dismiss indeterminism and considers the suggestion of "near-determinism." He says,

"Maybe it should have been called determinism-where-it-matters. It allows that there is or may be some indeterminism but only at what is called the micro-level of our existence, the level of the small particles of our bodies."<sup>94</sup>

### Alfred Mele

ALFRED MELE, in his 1995 book *Autonomous Agents*, argued, mostly following Dennett, that libertarians should admit that the final stages of deliberation are (adequately) determined and only allow indeterminism in the early stages of the decision process. While he himself has made no commitment to such indeterminism, and wonders how it could be physically possible, he offers the idea to others as a "modest libertarianism."<sup>95</sup> Mele's model satisfies the temporal sequence requirements for libertarian free will (see Chapter 5), even if he does not see the possible location of indeterminism in the brain.

"Where compatibilists have no good reason to insist on determinism in the deliberative process as a requirement for autonomy, where internal indeterminism is, for all we know, a reality, and

94 Honderich (2002) p. 5.

95 Mele (1995) pp. 211-220



where such indeterminism would not diminish the nonultimate control that real agents exert over their deliberation even on the assumption that real agents are internally deterministic — that is, at the intersection of these three locations — libertarians may plump for ultimacy-promoting indeterminism. Modest libertarians try to stake out their view at this intersection.”<sup>96</sup>

### Paul Russell

PAUL RUSSELL, also in 1995, suggested that the location of the break in the causal chain might be put between willings, which might be uncaused, and actions, which would be determined. This goes against the common sense use of the word “will,” but Russell correctly puts something “free” before a final “will.”

### Randolph Clarke

In his 2003 book *Libertarian Accounts of Free Will*, RANDOLPH CLARKE assessed suggestions of DANIEL DENNETT and ALFRED MELE. He found them inadequate. His work, he says, was carried out by thinking alone and required no specialized knowledge of natural science. At best, he concludes, indeterminism in processes leading to our actions is superfluous, adding nothing of value and possibly detracting from what we want. In a 2000 article called “Modest Libertarianism,” he ignores Mele’s suggestion of early-stage indeterminism and “places indeterminism in the direct production of the decision,” as does ROBERT KANE and other “event-causal” libertarians, such as LAURA WADDELL EKSTROM and MARK BALAGUER.

As we saw in Chapter 4, recent libertarian philosophers defend “incompatibilism” (note that they usually mean libertarianism)<sup>97</sup> but have not reached general agreement on an “intelligible” account of how, when, and perhaps most importantly, where indeterminism enters the picture - without making our actions purely random.

They include RANDOLPH CLARKE, LAURA WADDELL EKSTROM, CARL GINET, TIMOTHY O’CONNOR, PETER VAN INWAGEN, and DAVID WIGGINS. DAVID WIDERKER independently developed Kane’s strong 1985 criticism of Frankfurt-style examples, in defense of incompatibilist (libertarian) free will.

<sup>96</sup> Mele (1995), p. 235

<sup>97</sup> Cf., Randolph Clarke’s SEP article, awkwardly entitled “Incompatibilist (Nonderministic) Theories of Free Will”



Unfortunately, their works are full of a dense jargon defining (sometimes obscuring) subtle differences in their views - agent causation, event causation, non-occurrent causation, reasons as causes, intentions, undefeated authorization of preferences as causes, non-causal accounts, dual control, plurality conditions, origination, actual sequences and alternative sequences, source and leeway compatibilism, revisionism, restrictivism, semicompatibilism, and narrow and broad incompatibilism. (See our Glossary of Terms in the appendix for some clarification of this dense terminology.)

Not a few compatibilist/determinist philosophers have, following PETER F. STRAWSON, turned the conversation away from the “unintelligible” free will problem to the problem of moral responsibility. Peter’s son, GALEN STRAWSON, is one. He accepts determinism outright on the grounds that a *causa sui* is simply impossible. Where Sir Peter says that the truth of determinism would not change our attitudes about **moral responsibility**, his son Galen says it makes moral responsibility impossible.

### John Martin Fischer

JOHN MARTIN FISCHER calls his position **semicompatibilism**. Fischer says free will may or may not be incompatible with determinism, but his main interest, **moral responsibility**, is not incompatible. Fischer recently edited a four-volume, 46-contributor, 1300+ pages compendium of articles on moral responsibility - entitled *Free Will*, a reference work in the *Critical Concepts in Philosophy* series (Routledge 2005).

In it, Fischer explains that his colleagues are setting aside the “unintelligible” problem of free will.

Some philosophers do not distinguish between freedom and moral responsibility. Put a bit more carefully, they tend to begin with the notion of moral responsibility, and “work back” to a notion of freedom; this notion of freedom is not given independent content (separate from the analysis of moral responsibility). For such philosophers, “freedom” refers to whatever conditions are involved in choosing or acting in such a way as to be morally responsible.<sup>98</sup>

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98 Fischer (2005), Vol.1, p. xxiii.





DERK PEREBOOM, SAUL SMILANSKY, and the psychologist DANIEL WEGNER follow many earlier thinkers and say that libertarian free will is incoherent and an illusion. Pereboom agrees with GALEN STRAWSON that moral responsibility is impossible.

Smilansky may share the “dismay” that Ted Honderich sees in the apparent loss of control implicit in determinism. But unlike the others who find it uplifting and therapeutic to disabuse the public of illusions about free will, Smilansky thinks that we need to maintain the public illusion of free will, as did the 18th-century Lord Kames, because the illusion of libertarian free will is arguably positive, and probably even morally necessary.

### The Garden of Forking Paths

JORGE LUIS BORGES’ stories have proved fertile ground for philosophical metaphors. ROBERT KANE describes the “free will labyrinth” and JOHN MARTIN FISCHER and his colleagues created a popular blog on free will called the “Garden of Forking Paths.”<sup>99</sup> I was a contributor to the GFP blog until it was closed in early 2010. Some of the bloggers created a new blog, with a more restricted membership. It too has a Fischer-inspired name - “Flickers of Freedom.”<sup>100</sup> The new blog focuses on moral responsibility and the philosophy of action.

### Experimental Philosophy

Experimental philosophy consists of opinion polls on common philosophical questions, intended to quantify the positions of the philosophically naive or untrained public, the so-called “folk” of “folk psychology.” Experimental philosophers have a blog.<sup>101</sup>

One of the X-PHI surveys attempted to establish the “folk” intuitions on the classic philosophical question of **free will** and **determinism**. Unfortunately, experimental philosophers follow JOHN MARTIN FISCHER and define free will as the “control condition” for **moral responsibility**. So their questions are really about the moral responsibility of two kinds of agents, those completely determined and others assumed to have libertarian free will.

99 gfp.typepad.com

100 agencyandresponsibility.typepad.com/flickers-of-freedom

101 experimentalphilosophy.typepad.com



The earliest surveys, by SHAUN NICHOLS,<sup>102</sup> tended to show that participants believed in agent causality, that “incompatibilism was true.” Later surveys, notably by EDDY NAHMIA,<sup>103</sup> tend to show the opposite, that the folk have compatibilist intuitions.

Note the convoluted, post van Inwagen, titles like that of Nahmias et al., “Is Incompatibilism Intuitive?”

The experimental philosophers established that many of those interviewed want to hold even the determined agents responsible for their crimes, especially when the crime raises emotions, either because it is a particularly heinous crime or because it harms someone close to the person being interviewed.

In relatively abstract situations, the idea that the agent was determined (by any number of determining factors) was enough to provide mitigating circumstances. But as the crime stirred up strong emotions in the person judging the action, the agent was more likely to be held morally responsible, even if the agent was clearly determined.

Sadly, experimental philosophers describe their results using PETER VAN INWAGEN’s distinction between “incompatibilist” or “compatibilist” intuitions, which makes interpretations difficult.

The results say very little about free will, but a lot about what PETER F. STRAWSON knew, that we would not easily give up natural feelings about praise and blame, gratitude and resentment.

What X-PHI has shown is that when their emotions rise up, those judging an action are more likely to react with an attitude of blame and seek punishment for the action. Holding an agent morally responsible is a function of how hurtful their action is to the one judging the action. This result is quite believable for normal persons. It is the reason jurors are selected from persons with no connections to the accused or the plaintiff.

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102 Nichols (2004) *Folk Psychology of Free Will Mind & Language*, 19, 473-502.

103 Eddy Nahmias et al. (2006). Is Incompatibilism Intuitive? *Philosophy and Phenomenological Research* 73(1): 28-53.



### Major Forks in the Garden Paths

We conclude our historical review with a diagram identifying some major turning points in the history of the free will problem. It is disappointing to see that many philosophers have turned away from liberty, from freedom, more particularly away from indeterminism and chance, away from alternative possibilities in an open future, to questions not about freedom directly, but about moral responsibility in the one possible actual future.

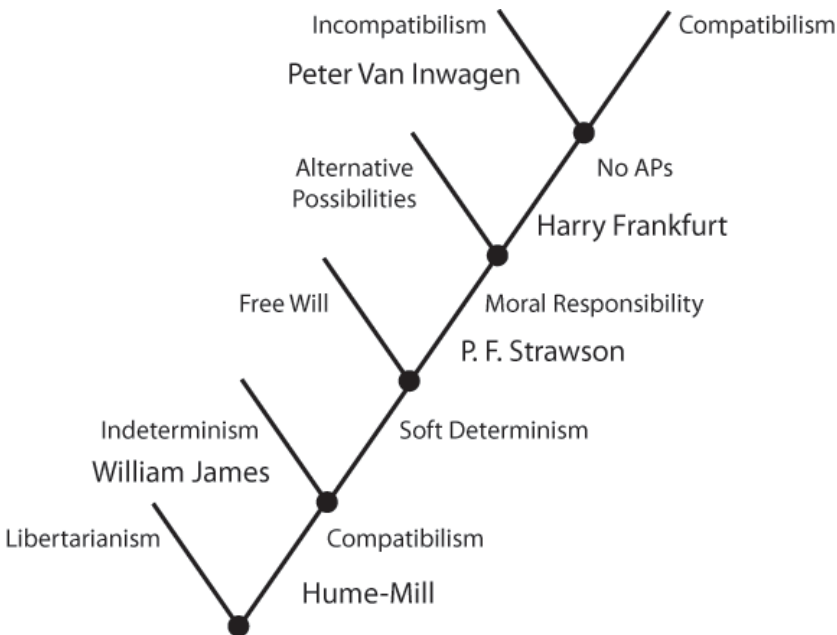


Figure 7-1. Forking paths in the free will debates.

### The Scandal Today

The view of most philosophers over the history of philosophy seems to be something like this...

“Science can never prove that indeterminism exists. Quantum physics may be wrong. So scientists cannot logically deny determinism. Objective chance would make us random. Therefore, compatibilists can teach students that we are determined, yet still morally responsible (or not, for hard determinists).”



As we noted in Chapter 2, JOHN SEARLE recently wrote in his 2007 book *Freedom and Neurobiology*, “The persistence of the free will problem in philosophy seems to me something of a scandal.” And in a breakthrough of sorts, Searle admits that he could never see, until now, the point of introducing quantum mechanics into discussions of consciousness and free will.

Now he says we know two things,

“First we know that our experiences of free action contain both indeterminism and rationality...Second we know that quantum indeterminacy is the only form of indeterminism that is indisputably established as a fact of nature...it follows that quantum mechanics must enter into the explanation of consciousness.”<sup>104</sup>

Indeed it does. Despite a century of failed attempts, can we convince Searle and other philosophers that quantum indeterminism followed by an adequate if not strict determinism is the most plausible and practical two-stage model for free will?

In the next few chapters we look more closely at determinism (actually many determinisms), libertarianism, and compatibilism.

Then in Chapter 12, we will look at a number of suggestions for two-stage models of free will, combinations of some limited indeterminism and limited determinism.

- aye, chance, free will, and necessity - no wise incompatible - all interweavingly working together. The straight warp of necessity, not to be swerved from its ultimate course - its every alternating vibration, indeed, only tending to that; free will still free to ply her shuttle between given threads; and chance, though restrained in its play within the right lines of necessity, and sideways in its motions directed by free will, though thus prescribed to by both, chance by turns rules either, and has the last featuring blow at events.

Herman Melville, *Moby-Dick*, Ch. 47, p. 213. Melville knew his ARISTOTLE.<sup>105</sup>

104 Searle (2007) p. 74-75

105 Thanks to Robert Kane for this 1850 insight into the will as a *tertium quid*.

