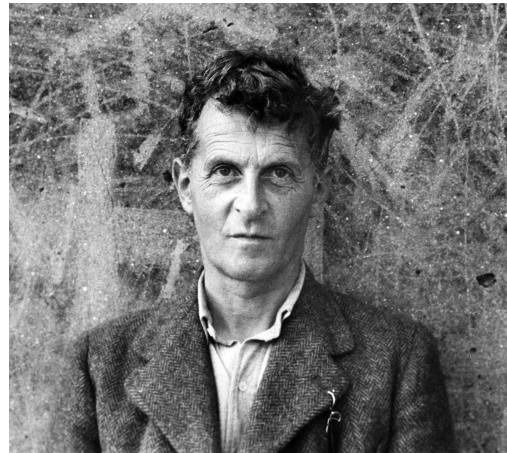


An Introduction to Wittgenstein and AWI

The American Wittgenstein Institute (“AWI”) is an organization devoted to introducing innovative methods of conceptual analysis to solve challenges within the private sector. We intend to build strategic partnerships between financial professionals and philosophers trained in the analytical philosophy developed by the Twentieth Century philosopher Ludwig Wittgenstein.

What was Wittgenstein’s conception of philosophy?

Wittgenstein revolutionized the discipline of philosophy because he challenged the very nature of how philosophers conceive of the subject. For the last millennia, philosophy was conceived as a complementary subject to the sciences. Philosophy was thought of as a contribution to human *knowledge*, just as science was seen as expanding what humans know. But since Plato and Aristotle, what has philosophy contributed to human knowledge? The empirical sciences, such as chemistry, physics, or economics, have libraries filled with confirmed theories--but what about philosophy? Simply put, philosophy has no confirmed theories and no agreed upon discoveries.



Has philosophy therefore failed?

Wittgenstein (right) noticed the above problem and developed an innovative approach to philosophy that revolutionized the subject.

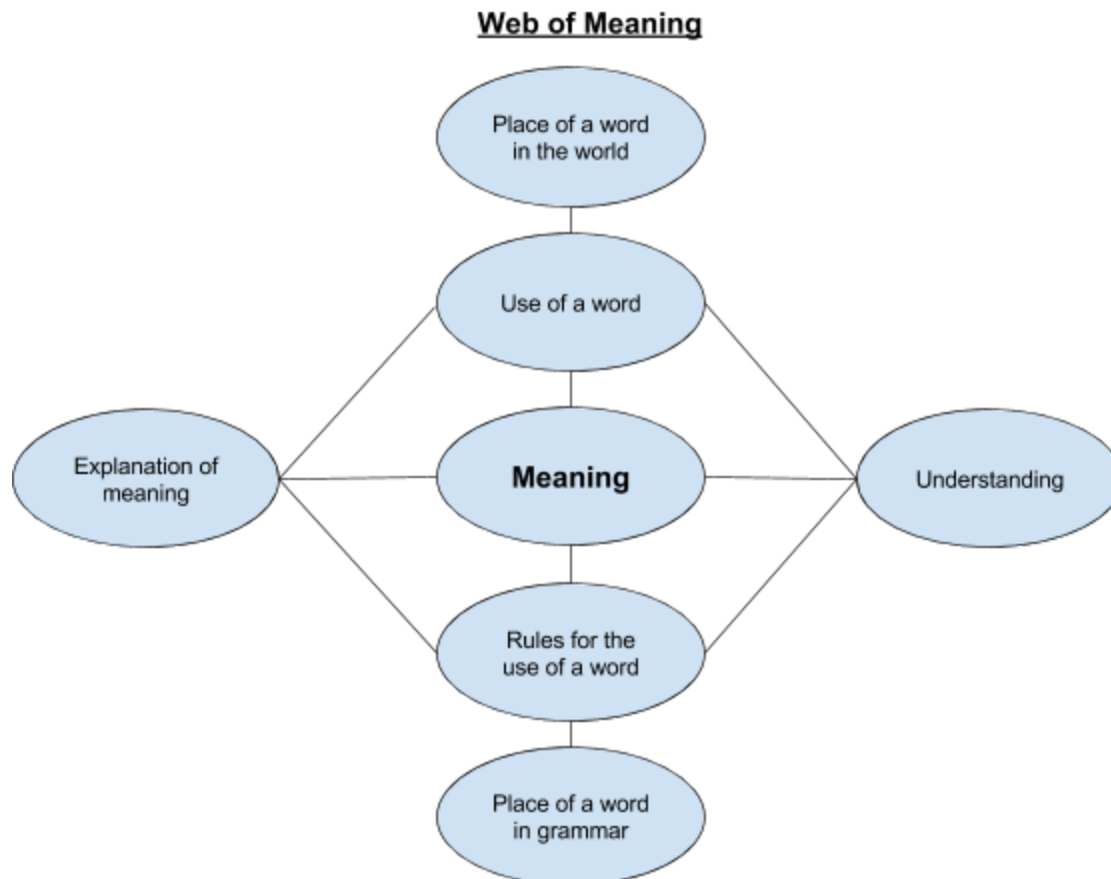
Through his writings and famous lectures at Cambridge, he demonstrated that philosophy should not be thought of as just another science, i.e. as a discipline contributing to human knowledge. Instead, he thought that philosophy should contribute solely to human *understanding*.

Philosophy is the attempt to answer philosophical questions (e.g. Do humans have free-will? Is the good the same as the beautiful? What is a number? What is the meaning of life?) Unlike other philosophers, Wittgenstein did not seek to answer these questions in a straightforward manner. Instead, he sought to dissolve them.

Underlying Wittgenstein's approach to philosophy is the realization that philosophical problems are the result of conceptual confusions arising from the misuse of words in our language. The correct response to a philosophical question is not to answer it positively, but to demonstrate that the question is not a sensical question in the first place.

What were Wittgenstein's techniques?

Wittgenstein's greatest philosophical work, *Philosophical Investigations*, showcases a number of techniques Wittgenstein used to resolve philosophical problems. The techniques consist of analyses of the logico-linguistic structures of language. The first stage in an analysis typically focuses on a painstaking overview of the ways in which particular words are *used*. The meaning of a word, Wittgenstein held, could largely be reduced to the use of a word. In addition to the use of words, Wittgenstein would examine the *rules* surrounding the use of words and the ways in which words are *understood* by ordinary language speakers. Additionally, he would also consider the ways in which the meanings of words are *explained* by competent language users. The relationship between these different aspects of a word is illustrated in the graphic below.



What were the results of Wittgenstein's research?

The aim of Wittgenstein's philosophy is to employ a variety of analytical techniques in order to create perspicuous representations of segments of our language. These representations result in linguistic *surveys* that make it possible to identify the underlying sources of philosophical confusions. The surveys give us a conceptual landscape that allow us to trace the initial source of a philosophical problem. By viewing the landscape, we discover that the source of philosophical problems is rooted in conceptual confusions arising from misuses of the words in our language.

An Example: Voluntary Action

Do human beings have free will? The short answer is: of course we do. But what is indeed an obvious truth to most ordinary people is hardly accepted by many mainstream neuroscientists, who claim to have scientifically proven that free will is impossible given the inability of human beings to engage in *voluntary action*. To this end, prominent neuroscientists have developed experiments intended to prove that humans are incapable of truly voluntary behaviour.

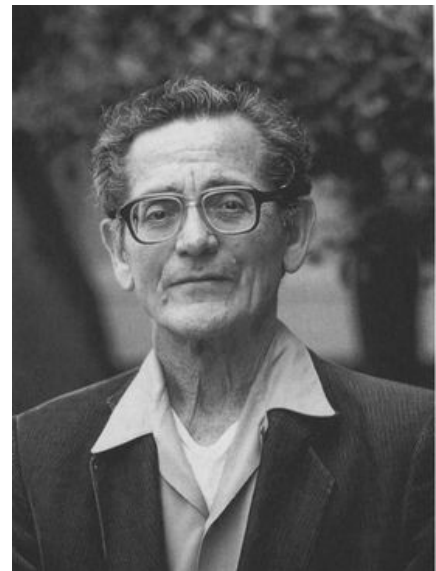
The conclusion that human beings lack the ability to engage in voluntary action is based on conceptual confusions. Neuroscientists who claim to have arrived at this result have performed shoddy science. They have attempted to provide an empirical solution to a question that shouldn't have been asked in the first place.

For example, take the case of the prominent neuroscientist Benjamin Libet (right), who is perhaps the most well-known researcher to conduct experiments involving voluntary action. His work is even frequently cited by the pop-science author Sam Harris in his arguments rejecting the existence of free will.

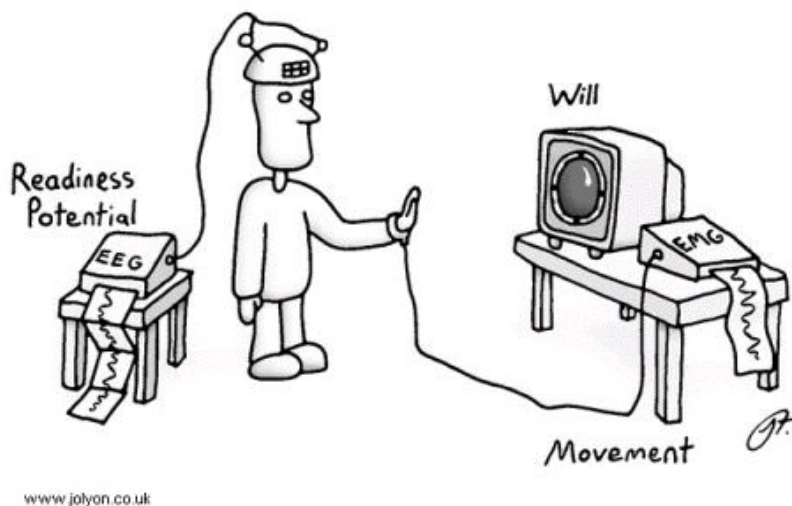
According to Libet, human beings do not engage in voluntary actions because it is the brain, not the person, that makes decisions. He concludes that all actions that we call voluntary are actually initiated by the brain independently of conscious acts of volition.

Libet designed an experiment to demonstrate this view.

The experiment claimed to show that neurons in the



supplementary cortex related to particular physical movement in the human hand start firing 500 ms before the impulses arrive at the muscles involved in making a hand movement. In Libet's experiments, subjects only reported having a "feeling of intention, want or urge" to move their hands 150 ms before the movements occurred. The conclusion drawn is that the neurons in the subjects' brains had prepared to move their hands prior to the subject themselves deciding to move their hands. Libet claimed that "the performance of even a freely voluntary act is initiated unconsciously, some 350 msec before the individual is consciously aware of wanting to move." The conclusion, he argued, is that what we think of as voluntary actions are not in fact voluntary. Sam Harris claims that Libet's experiment demonstrates that we simply have an illusion of free will, because it is really our brains that are responsible for decision making, not us.



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In order to understand where Libet first goes wrong, it is critical to examine the underlying concepts he employs in the design of his experiment. Peter Hacker and Max Bennett do this by first presenting a conceptual survey of the critical concepts employed. The survey is

the product of applying Wittgenstein's analytical techniques. (See the conceptual survey in the appendix.)

By examining the survey, we can see that the real flaw in Libet's experiment, which leads to the disastrous conclusion that human beings lack free agency, is primarily in Libet's understanding of the concept of voluntary action. Libet presupposes that any voluntary act must be preceded by a feeling of intention, want or urge to act. However, as Hacker and Bennett demonstrate in their conceptual survey, this is far from the case:

"It is neither necessary nor sufficient for an act to be voluntary that it be preceded by a feeling of desiring, wishing, wanting or intending to perform it or by an urge to do it...When one moves voluntarily--for example, picks up a one's pen in order to write a note or gets up in order to answer the doorbell--one feels no urges, desires or

intentions, and that is not because one does not notice them! Of course, one can say whether one moved voluntarily or involuntarily, but not on the grounds that one felt an urge, desire, or intention just before moving.”

Hacker and Bennett sketch the conceptual contours of voluntary action to demonstrate just how far Libet’s premises diverge from reality. Libet’s scientific methods may have been state of the art--but the conceptual foundation underlying his entire experiment was flawed. Libet attempted to demonstrate that voluntary action is not truly voluntary, but he based his experiment on a unique definition of voluntary action that bears little resemblance to the concept as it is used by ordinary speakers of our language.

Additional applications of Wittgenstein’s work:

Since his death in 1951, Wittgenstein’s analytical techniques have already been applied to a range of disciplines. As mentioned above, the eminent Oxford philosopher, Peter Hacker, has applied Wittgenstein’s methods to the subject of cognitive neuroscience. His book on the topic, *The Philosophical Foundations of Neuroscience*, was co-written with M.R. Bennett, a prominent neuroscientist in Australia. The work has received significant praise within the scientific community, including a favorable review available on the NIH’s website. Hacker’s work has since been applied to additional areas in neuroscience to better understand a range of mental health disorders.

In addition to neuroscience, Wittgenstein’s ideas have been used to bolster conceptual understanding in the discipline of law. Frank Easterbrook, a prominent U.S. appellate judge, has quoted Wittgenstein a number of times in his judicial opinions to support his own legal reasoning. Also, quite notably, Wittgenstein’s work has found application in the realms of artificial intelligence and computer science.

Introducing Wittgenstein to finance:

Quite conspicuously missing from the list of disciplines that have applied Wittgenstein’s methods of analysis is modern finance, a field that we believe can greatly benefit from enhanced conceptual clarification. Glaring examples of conceptual confusion stand out in modern finance. One of the most salient examples involves the topic of cryptocurrencies. Important decisions such as whether institutional investors should buy or sell these so-called currencies should be subject to intense conceptual scrutiny. Is a cryptocurrency really a currency? How does the use of concepts such as “buying” or “selling” relate to the topic cryptocurrencies? Are cryptocurrencies to be thought of as

commodities or as currencies? These conceptual questions have gone largely unanswered. As more large institutional investors seek to enter the market for cryptocurrencies, we believe it is all the more important to help survey the relationships between the critical concepts being used.

In order to properly apply Wittgenstein's analytical techniques to better understand the concepts surrounding cryptocurrencies, we intend to promote collaboration between philosophers trained in Wittgenstein's techniques and financial professionals, the individuals who actually use the concepts in their daily interactions.

We believe that financial institutions have tremendous potential to gain by partnering with AWI. Institutions will benefit from an increased clarity of complex conceptual problems, which will lead to better investment decisions and enhanced communication with clients or investors. Additionally, by partnering with AWI, financial institutions will demonstrate to investors and clients that they are willing to explore innovative strategies to grow their companies. Partnering with AWI demonstrates a firm's commitment to creative growth opportunities.

Moving forward:

AWI is currently expanding its network of academics trained in Wittgenstein's methods of conceptual analysis. Our network already includes skilled philosophers from prominent institutions in both the United States and the U.K.

AWI is additionally looking to create strategic partnerships with prominent economic think-tanks in the United States. We are in the midst of creating proprietary material for presentations and seminars.

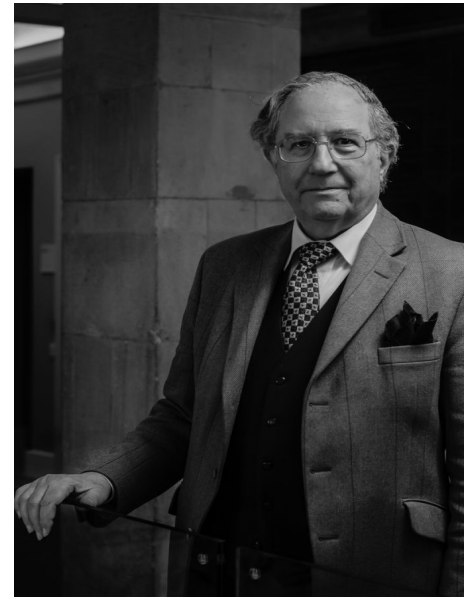
AWI has secured funding for its seed round of financing and will begin a new stage of funding once it has built its core infrastructure.

Appendix

A brief conceptual survey related to voluntary and intentional action:

(The following is an excerpt from *The Philosophical Foundations of Neuroscience*, by Peter Hacker (below to the right) and Max Bennett.)

Among the things that human beings do, we can distinguish the acts we perform (or fail to perform, i.e. our omissions, abstainings and refrainings) from the doings that are not acts, such as slipping or falling, falling asleep or sleeping. Among our acts we can distinguish those that are voluntary from those that are not voluntary. Acts (or omissions) which are not voluntary may in turn be not voluntary because they are involuntary--that is, acts which could be performed voluntarily, but were not, as when one smiles or blinks involuntarily. They may be not voluntary because they were neither voluntary nor involuntary, as when one unknowingly or unintentionally acts--for example, mistakenly takes the wrong glass, unknowingly treads on an insect, or mispronounces a name. And they may be not voluntary because they were done under duress or because one was obliged by circumstances to perform them (e.g. to take a low road because the high road was blocked).



Our voluntary acts may be intentional, unintentional or not intentional. Intentional acts are voluntary, unless they are performed under duress or because one is obliged by circumstances to perform them. Our normal acts and activities, such as eating, drinking, walking and talking, are typically voluntary and intentional. But many of our acts are voluntary without necessarily being intentional: for example, drumming one's hand through one's hair, smiling, frowning, scowling, and the innumerable expressive gestures one makes without one's hands while one talks, as well as many of one's movements when one is engaged in habitual actions, such as dressing or brushing one's hair or teeth. Similarly, the foreseen but unintended consequences of our actions are voluntary without being intentional, as when we knowingly crush the blades of grass when we walk intentionally across the lawn.

Voluntary acts typically involve making physical movements. (Those that do not include the category of mental acts which one can do at will, such as calculating in one's head, and, in certain cases, acts of omission, such as abstaining or refraining from doing something. We shall say no more about these.) In virtue of what features is a human act or movement a voluntary, as opposed to an involuntary, act or movement? Clearly, among the marks of voluntary acts is that they are of a kind that one can *try* to perform, *decide*, or *intend* to perform, can perform *on request* or *to order*, they can be done with or without *care*, and one can often *learn* to perform them (as one may learn to thread a needle). When one performs a voluntary act, one knows and can say what one is doing, and one is not *surprised* at one's doing what one does. For when one acts voluntarily, one exercises a two-way power to do or refrain from doing, knowing that it is within one's choice. By contrast, one's involuntary movements may occur when one does not want them to and may surprise one. How does one prove that one *can* do something voluntarily. But doing it. One says to another, 'Ask me to do so-and-so, and I'll show you that I can.' And how does one *know* that one has done it voluntarily (and not by accident or involuntarily)? *Not* by a special feeling. It is true that raising one's arm voluntarily does not feel the same as one's arm rising by itself (as when one presses one's arm against the wall for a minute and then stands back and let's one's arm rise). But one does not know that one has raised one's arm voluntarily by any special feeling. If it were a special feeling that informed one that one has made a voluntary movement, one might forget *which* feeling was the right feeling to indicate voluntariness, and therefore make a mistake about whether one had acted voluntary or not. But that, in non-pathological cases, would be absurd. Rather, one does not know any *how*; one *can say* that one's act or movement was voluntary, and that it is a mark of voluntariness.

Can one put any order into this welter of detail? A necessary condition for a movement to be voluntary is that it involve the exercise of a two-way power to do or refrain from doing. Behaviour is voluntary if one can engage in it at will. In this sense, it is behaviour which one can *control* directly--that is, not by doing something else that causes it or stops it (hence not as one can control one's heartbeat by jumping up and down to increase it or by lying down to reduce it). A fully voluntary movement is one which the agent controls in its inception, continuation and termination. Hence blinking is only partly voluntary, since one can blink at will, but cannot control its 'continuation' or termination, and sneezing is only partly voluntary, inasmuch as one can inhibit it by not initiate it directly.

A voluntary movement is *not* a movement caused by volition or act of will, or by want, intention or decision, although what we do because we want to do it, intend to do it, or have decided to do it is also something we do voluntarily (unless it is done under duress

or because we are obliged to do it by circumstances). The point is difficult to grasp, and neuroscientists often suppose, as Descartes and the empiricists (e.g. Hobbes, Locke, Hume, and Bentham) did, that voluntary action is movement caused by inner acts of volition. So further explanation is needed.

It is misguided to suppose that voluntary and intentional actions are bodily movements caused by antecedent acts of willing to move. There are such things as acts of will. They are acts performed with great efforts to overcome one's reluctance or difficulties in acting, typically in diverse circumstances. They are not mental acts called 'willing,' which cause bodily movements. There is such a thing as will-power, but it is not a mental equivalent of muscle power. Rather, it is determination and persistence in pursuit of one's goals in the face of difficulties. There is such a thing as strength of will, but it is not a matter of causally efficacious mental acts of willing, but rather a matter of tenacity in stick to one's purpose.

If willing were some mental happening that antecedes and is the cause of voluntary action, then, it seems, it would have to be either a mental act or an event. If it were an act, then it would have to be voluntary. For if willing were an involuntary act, then the consequent behaviour would not be voluntary either. (If one voluntarily knocks over a vase, causing the vase to break, then one does not break the vase voluntarily.) If willing were voluntary, however, it too would have to have been caused by an antecedent volition, for, on this account, that is what it is for an act of any kind to be voluntary. But that leads to vicious regress. On the other hand, if the willing were merely an event that happens when it happens, then the behaviour it causes would not be voluntarily performed at all--any more than if a feeling cause one to sneeze, one would be sneezing voluntarily.

Furthermore, if willing were an antecedent happening of each and every voluntary act, which it causes, then, given that we know whether we acted voluntarily or not, we should have to be able to establish the occurrence of such willings (and be able to describe their character and duration). And we should have to be able to establish that these happenings are the causes of the subsequent behaviour. But:

- (a) We have no idea what these mythical events of willing might be. We have never seen that they cannot be inner acts. Equally obviously, as we just noted, they cannot be feelings either. For were willing a feeling, then it would simply be something that happens when it happens, and its causal consequences would not be voluntary actions at all, but movements caused by feelings.
- (b) We do not know how to identify these acts of willing. But surely, we would have to identify them, to be sure that we did whatever we did voluntarily. And

presumably, we might also misidentify them, and mistakenly think that we did something voluntarily which was actually *not* caused by any act of willing. Yet we do know (i.e. we can say), without any such identifications, let alone misidentifications, when we act voluntarily, and when involuntarily.

- (c) We have certainly not identified such inner acts and established a causal relation between them and subsequent bodily movements, on the basis of which we now confidently assert that voluntary acts are caused by mental occurrences of willing. Rather, we simply have a *picture*, of what free, voluntary action *must* be--a picture which rests on neither evidence nor argument.
- (d) It would surely be absurd to suppose that before such voluntary act there is a separate act of willing. Each of the words of the previous sentence was voluntarily (and intentionally) written down, and each letter in each word was intentionally inscribed. But it is absurd to suppose that in writing them a separate act of willing occurred for each letter and word.
- (e) It is typically easy enough to identify and distinguish the voluntary and involuntary acts of others. But we do not distinguish these by finding out whether their movements were caused by mental acts of willing, which neither we nor they can identify. When we ascribe responsibility for an action to another person, we do not do so on the basis of identifying an act of will which he has performed and which has caused his bodily movement.

Of course, we commonly act *because* we want to, intend to or have decided to act, either for its own sake or for the sake of some further goal. But it is mistake to think that this 'because' is causal. For if it were, then once the want has occurred, the intention has been formed, or the decision taken, then we could remain passive, sit back, and let nature take its course. For the action would occur without our taking any initiative. If I want (have decided, intend) to turn the light on at six o'clock, then when I hear the clock chime 6.00, I should have have to turn the light on in order to fulfil my purpose. I could just let the want (intention or decision) cause my arm to rise and turn the light on. I could say, 'And now it is six o'clock, just look, and see my arm rise!'--but that is precisely what does *not* happen and what one *cannot* say. Moreover, wants and intentions cannot fulfill the role of acts of will, since they are not acts of *any* kind. Willing, if it is anything, must be something we do, not a want or a desire that besets us or that we happen to have. And although making a decision can be termed a 'mental act,' it is not a cause of behaviour, but a terminus to a state of indecision. Once we have decided, we have formed an intention, and we know what we are doing to do. But we have yet to do it--the decision cannot cause us to perform the voluntary action upon which we have resolved.

To say that someone did something because he wanted to does not introduce a causal explanation of his action by reference to a mental act or event. But it may serve to

exclude certain kinds of causal explanation; for example, it excludes involuntary action, so if something was done because the agent wanted to do it, then it was not a mere twitch or an involuntary act. Rather, saying that he did it because he wanted to characterizes his behaviour as action, hence as something for which it *makes sense* to ask for reasons (even though it may not have been done for a reason), as opposed to an involuntary twitch, for which a mere causal explanation is appropriate. Of course, that is perfectly compatible with the existence of a causal explanation of the muscular contractions involved in his action. There are other possibilities too. One may say, 'I am leaving the room because I want to, not because you told me to.' This characterizes my action as voluntary and intentional, while excluding one kind of explanation in terms of the specified reason--that is, that you told me to leave. Again, when one acts with a further intent, then 'Because I wanted to do so-and-so' or 'Because I wanted to bring that about' serves to introduce the goal aimed at (e.g. 'I raised my arm because I wanted (to get) the book'). Here, one could just have said, 'I raised my arm *in order* to get the book.' Specifying what I wanted gives my *reason* for acting, not the cause of the movement of my arm as I raise it voluntarily. If we know what a person wants (aims at) and what his relevant beliefs are, we can often predict his *actions*, but not because his wants (in conjunction with his beliefs) cause the relevant *movements*. Indeed, typically, we cannot predict *how*--that is, by what movements--he will execute his intentions, whereas we can predict his actions. If one knows a chess-player, one can often predict his moves, but what enables one to predict his moves will not enable one to predict his movements.