Action and Skill

Chapter Summary

As with many topics in philosophy, the topic of action and agency – our ability to perform actions – as we know it today got its start with the Greeks, particularly with Aristotle. Aristotle tackled some of the most fundamental questions about the nature of our actions and what makes some of our actions voluntary, or intentional. These crucial questions are debated to this day, including what makes an event an action, what makes some actions intentional, how actions are set up at the pre-conscious level, how the body and mind interact in action, and what can be said about joint or collective actions performed by several people.

Keywords
Action: something an agent does or performs; can be voluntary or involuntary (done willingly or not), intentional or un- or non-intentional (done with a purpose or goal in mind or not), and mental (such as a decision) or bodily/overt (such as spilling a drink).
Agency: the agent's capacity to perform actions (the term is usually reserved for the exercise of this capacity).
Sense of agency: the feeling of ownership over the action that tends to accompany the performance of actions, the absence of which may be experienced in a more pronounced way than its presence.
Event v process: roughly, an event is a particular occurrence, while a process is an extended continuant.
Causal theory or the causal approach to action: an action is explained in reference to its causal antecedents.
Teleological approach: an action is explained in reference to the agent's purposes or goals, which are taken to be different from its causes.
Embodiment: significant dependence on the features of the physical body of an agent.
Personal-subpersonal divide: originally reserved for explanations, the divide concerns what people have access to on the one hand (such as sensations) and what science describes on the other (such as brain events).

1. Introduction

1.1 Historical overview and background

Our attempts to understand the nature of action go back to the study of knowledge, or epistemology, which is as old as philosophy itself. However, robust philosophical and scientific interest in understanding the nature of skills developed centuries later.

Over time, different thinkers and researchers have asked a wide range of questions about the nature of action, including:

- What kind of metaphysical things are actions (events, processes, etc.)?
- In virtue of what are some of those metaphysical things actions while others are not?
- What is required to perform an action?

- What differentiates one action from another?
- Which actions are worth performing and why?
- Are we able to resist performing actions that are less worthy of performance, and if so, how to do so?
- Are we always aware of our actions and their qualities?
- Are all actions voluntary and/or intentional?

As we can see, the range of questions about actions is so wide that most thinkers and researchers address only one or two at a time in their work. This makes it difficult to construct an overall theory of action that touches on all aspects of it, and even more difficult to construct a theory of action that feeds into a theory of skills. Nonetheless, such theories are being attempted more and more in recent years, suggesting that we are reaching a level of understanding of action and skill that allows for such high level of theorizing. In particular, Davidson in his causal theory of action, discussed in greater detail in the next section, presents action as crucially involving causal chains between certain mental states or events, which might eventually be linked with certain neural states or events, allowing us to approach to study action both philosophically and neuroscientifically. Moreover, as we discover more about how we can affect certain neural events through repetition and practice, even in elite athletes, we can link our philosophical understanding of skills with related neuroscientific discoveries.

1.2 Historical Development

Aristotle thought of actions as processes, not as events as contemporary action theorists often do. For instance, if a sailor throws some cargo overboard to prevent the ship from capsizing in a storm, the sailor's action is not merely the event of some cargo ending up overboard. For Aristotle, the action is the process that begins with the sailor's choice to throw some cargo overboard and ends with the cargo being in the sea. In addition to being a process, an action for Aristotle is specified in relation to (i) the goal for which it is performed, (ii) the material changes that occur as a result, and (iii) the capacity or skill that makes the action possible. In the sailor's case, the goal is safety in a storm, the change is the location of the cargo, and the capacity is sailor's skill in throwing cargo overboard. As such, sailor's throwing the cargo overboard qualifies as his action on Aristotle's view.

But is the sailor's action voluntary, or intentional? While Aristotle did not make a distinction between a voluntary and an intentional action, this distinction is very useful in understanding some aspects of the contemporary theories of action. An action is voluntary if it was performed freely; an action is intentional if it was meant to be performed. To see the difference, consider a coerced action, such as handing over one's wallet while being mugged. The mugging victim is not handing over their wallet freely, but they nonetheless mean to do so, in order to escape physically unscathed. So the mugging victim's action is not voluntary but it is intentional. The sailor is in a somewhat similar predicament: the cargo needs to go overboard only insofar as it will help weather the storm, so there may be a sense in which the sailor's action is not entirely voluntary; but it is very much intentional.

Precisely because the sailor's action is not entirely voluntary in this sense, the sailor's predicament is highly relatable, in that we often have to balance achieving our goals against the options available to us, compromising in our everyday actions. But even as we compromise, it is we who choose or decide to do so, in light of the circumstances, and in that respect most of our actions are different

from those of a marionette, who has no choice in the matter. One way to capture the difference between us as agents and marionettes is in terms of our autonomy or freedom that the marionette lacks. For Kant, our autonomy is at the core of our agency and ultimately our rationality. To understand autonomy as Kant did, note that the difference between an agent and a marionette is not in the number or the quality of options available to them. The difference is that agents are inherently able to do something the marionette cannot: decide which rules or laws to follow, including their own laws. Our ability to lay down the law – not just literally, but in the sense of deciding what to do from scratch – is precisely what allows us to have authority over ourselves in a way that marionettes cannot. For Kant, this also explains why we are able to act morally – because we are able to hold ourselves accountable as autonomous agents, thus tying our morality to our rationality.

Kant's idealized or rationalist approach to agency contrasts with Hume's naturalistic or empiricist approach. For Hume, it is a mistake to draw a sharp line between us as agents and marionettes, because there is an important sense in which we are very much like them. To see this, all we have to do is take one step back and ask ourselves: why do we perform any action, ever? Simply deeming some action to be the best one in the circumstances is not enough; you also have to will or want to perform some action in the first place. It is in our will that we are like marionettes, Hume thought: even if we are free in our choice of the course of action, we are not free in our choice of desires or "passions". As Hume put it, "Reason is, and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them" (*Treatise* 2.3.3.4). This difference between Kant and Hume in the extent to which they see agents as being under their own rational control is one of the deepest philosophical divides that goes far beyond action theory.

Hume's empiricism also brings with it a greater focus on and a reinterpretation of causation, which has had a profound effect on contemporary action theorists. For Aristotle, causation is a matter of necessary connection between cause and effect, demonstrated by scientific explanations. But Hume thinks that all we really observe are correlations between thing we call "cause" and "effect", such as fire and smoke, and the leap to them being necessarily connected is unjustified. Thus, associating causes with their effects is a matter of human habit rather than law-like necessity on the Humean approach to causation.

At least three features of contemporary action theories can be traced back to the Humean approach to causation and action. First and most significantly, it gave rise to causal theories of action, which some consider to be currently standard (see Velleman 1992). As the commonly considered originator and champion of contemporary causal theory, Davidson (1963) holds that even though we act for reasons, the primary reasons for our actions are in fact their causes. Second, Davidson's causal theory casts actions in terms of events, such as flipping a light switch or spilling a drink, rather than processes, as Aristotle did. And third, thinking of an action as an event that can be identified by its cause makes actions blend in among other events in the natural order. This fact has crystalized what some contemporary causal theorists, such as Mele, consider one of the main questions in action theory, foreshadowed by Wittgenstein (1953): "Let us not forget this: when "I raise my arm", my arm goes up. And the problem arises: what is left over if I subtract the fact that my arm goes up from that fact that I raise my arm?" (*PI* 621)

Even though the causal theory quickly gained traction during the second half of the 20th century, not everyone agrees that thinking about action largely through the lens of causation is necessarily the most fruitful approach. For instance, Anscombe (1957) views action through the lens of intention, which is the purpose of performing an action, becoming the champion of the teleological (i.e.

purpose-oriented) approach. According to Anscombe, intentional actions are particularly interesting, but they cannot be captured purely in causal terms because what makes them interesting is that we can ask why you performed them – and the answer does not have to be about causes. For example, if I am pumping water at a well that supplies water to a town, not knowing that the water has been poisoned, and you ask me why I am doing this, I would respond that I mean to supply the town with water. What I would not say is that I mean to poison a whole town, even if that is what in fact happens from the causal perspective, since I am unaware of the poison in the water. This led Anscombe to distinguish between intended and unintended outcomes of one's actions, with us carrying greater moral responsibility for the intended outcomes (supplying the water to a town) than the unintended ones (poisoning the town). An important variant of this case involves knowing that one's actions will have some unwanted but known outcomes, such as the killing of innocent civilians in a war, which Anscombe raised to illustrate the double effect of our actions, arguing that it can be morally permissible to perform such actions but only if there is no other way to achieve the desired end; actions that exploit the double effect to cause harm are morally forbidden. What emerges from the teleological approach is that one and the same sequence of events can have multiple descriptions, and we intentionally perform actions under some descriptions (e.g. supplying water) but not under others (e.g. poisoning the town). This opens up the door to a fascinating idea – that we know what we are doing "without observation", as Anscombe put it, as long as it refers to our own description or conceptualization of our action (e.g. supplying the water) and not one available to someone with different information (e.g. poisoning the town).

2. Contemporary Issues

Many of the contemporary action theories combine ideas from both the teleological (Anscombian) and the causal (Davidsonian) approaches to action. For instance, Mele and Moser (1994) focus on intentional actions but give them a causal account based in intention: put simply, intentional actions are those that are caused by our intentions, which can express our purpose or end. Indeed, the view on which intentional actions are caused by one or more of our mental states is the most common variety of contemporary causal theory. This brings us to one of the main disagreements among contemporary causal theorists, which is the debate over which mental state (or states) is (or are) the primary cause of our actions. Davidson himself thought that a combination of belief and desire are doing the causal work, whereas Mele and Moser, think that the causal work is done by intention. Others, such as Bratman (1987), think that the causal story is more complicated than either of these options, and that our intentions are distinct mental states that interact with our other mental states, beliefs in particular, before they generate actions.

Given that many contemporary action theorists combine ideas from the teleological and causal approaches, the result has been a greater focus on certain details of our actions, helping us better understand ourselves as agents from both a philosophical and a scientific perspective. For instance, the interaction between our intentions and our beliefs is interesting in its own right because it brings into focus something very significant about our actions: the fact that we (can and often do) deliberate before performing an action. Returning to the sailor example, we can imagine that the sailor took some time to deliberate whether or not to throw the cargo overboard: on the one hand, the point of making the trip might have been precisely to get that cargo, so to throw it overboard would be to render the trip pointless; but on the other hand, neither the cargo nor the sailor might make it through the storm if the cargo remains on the ship, not only rendering the trip pointless but also taking the sailor's life. How we weigh reasons in deliberation may not be a new topic – Kant, among others, was very interested in that too – but revising it with both teleological and causal

approaches in mind, after the emergence of psychology as a recognized science, and later neuroscience, has allowed us to bring new and at times surprising evidence to bear on our understanding of actions and our agency.

A particularly striking example of surprising evidence that shook up contemporary action theory comes from Libet's experiments in the late 1970's and early 1980's. Building on Wilhelm Wundt's methodology from 1880's, Libet asked his subjects simply to move a finger or press a button at will, and take note of the moment when they felt "the desire or urge" to do so. Using EEG to measure brain activity, Libet compared the timing suggested by the subject's own awareness that they wanted to act with their EEG recordings, revealing as much as a 300-millisecond difference between them. The surprise was what came first: the subject's awareness that they wanted to act came after the subject's EEG recorded their "readiness potential" to act. On the face of it, Libet's experiments can be taken to show that there is no free will: by the time we think we have spontaneously or freely decided to act, our brain has 'decided' it for us (though for critiques of Libet's work, see Mele 2009 and Schurger et al. 2016). Indeed, this is along the lines of how Wegner (2002) interpreted Libet's experiments – supplementing them with his own, now famous, polar bear thought suppression experiments (Wegner et al. 1987) – arguing that free will is an illusion. But on further reflection, there are other ways to interpret Libet's findings. After all, Libet compared the timing of our awareness with the timing of brain activity, so the 300-millisecond difference could simply be lag in awareness, indicating nothing about when we actually decided to act. So to many contemporary action theorists, Libet's experiments do not establish the absence of free will, but they certainly reinvigorate that debate, adding new ideas to existing topics.

One new idea being explored is the distinction between our agency (our ability to act) and our sense of agency (what it feels like to act). This brings to light the fact that our sense or experience of agency – experiencing our actions as our own, intentional, voluntary, or free in some sense – is itself a worthy subject of philosophical and neuroscientific inquiry. For example, Haggard et al (2002) found that we experience what we perceive as the effects of our voluntary actions to be temporally closer to the moment of the action than it actually is, an effect that has become known as "intentional binding" (the label suggesting that intentionally or voluntarily performing an action binds its effects to the action in our minds). Whether this says something about our sense of agency or our idea of causation, or something else, is up for debate (for more on the neuroscience of voluntary action, see Fried et al. 2017). Whatever the interpretation, distinguishing between our agency and our sense of agency opens up novel direction of research in action theory, which is just beginning to be explored: understanding our actions as bridging various divides.

There are several divides found in our actions; let us consider three divides currently being explored. One of them is the distinction between the personal and the subpersonal level of explanation (Dennett 1969). Canonically, philosophers have explained actions in reference to a person's mental states, such as beliefs, desires, and intentions. Since these mental states belong to and are consciously knowable by the (whole) person having them and acting on them, this is the personal level of explanation. But now consider someone with anarchic or alien hand syndrome, such as Dr. Strangelove in an eponymous film, who has a hand that sometimes seems to have a will of its own. Dr. Strangelove's mental states seem to have little bearing on explaining what his hand does, so we need to recruit a different level of explanation – the subpersonal level of our operations that we (in most normal circumstances) cannot consciously access, which is also the level that neuroscience usually studies.

While not everyone currently agrees that reaching all the way down to the subpersonal level can help us understand our actions (e.g. Hornsby 2000), many researchers are exploring how combining information from both the personal and the subpersonal levels can help us better understand our agency and how it gives rise to our sense of agency (e.g. Pacherie and Haggard 2010, Levy 2017, Pavese 2019). For example, building on the work of Bach (1978), Searle (1983) and Brand (1984), Pacherie (2008; see fig. 1) proposes that there are different kinds of intentions, working together hierarchically across the personal/subpersonal divide. Another example of integrating information across the personal/subpersonal divide comes from Haggard (2008), whose neuroscientific work to find the neural mechanisms underpinning volitional action is aimed at mapping the crossing of the personal/subpersonal divide. Part of the issue with crossing the personal/subpersonal divide is that information at the personal and the subpersonal levels may be encoded or formatted differently, partly explaining why we cannot consciously access subpersonal information, but also making it mysterious how information could be shared or interfaced across these two levels, giving rise to the "interface challenge" (Butterfill and Sinigalia 2014). The work of Mylopoulos and Pacherie (2017), Ferretti and Zipoli Caiani (2019), and Shepherd (2019) is providing us with clues as to how the interface challenged might be addressed.

The second divide found in our actions currently being explored is the divide between bodily and mental actions. Canonically, the actions of most interest could be classified as bodily actions – throwing cargo overboard, flipping a switch, or pumping water. Decision-making has been of some interest too, but largely in the context reasoning and ensuring that the best decision is made, which is then carried out in action. But with growing scientific interest among philosophers, as exemplified by their willingness to incorporate subpersonal information in action explanation, decisions themselves have recently been explicitly approached as actions by some (e.g. Peacocke 1999, Mele 2003), specifically as mental actions. Whether there are mental actions in the same sense as bodily actions, and if so, whether they should be understood as continuous with each other, or receive different treatment, are emerging topics of debate.

One particularly interesting issue currently being explored that tackles both the bodily/mental divide and the personal/subpersonal divide is to consider what it means for us and our actions to be embodied, that is, what it means for us to act with our bodies and feel ownership over them (e.g. Wong 2018; see also Chapter 26). This inquiry has quickly become very fruitful, yielding a wide range of fascinating neuroscientific research on various aspects of embodied actions. For example, Frith (1992) reports that subjects with schizophrenic hallucinations and delusions resulting in the experience of having thoughts that do not feel one's own are struggling to distinguish between perceptible changes caused by them and external events, which he traced to a specific functional disconnect between the areas in the subject's brain that are concerned with action and perception. Another line of research on embodied action concerns deafferented agents, which is a rare condition in which a person is unable to sense their body from the inside, left only with perception to guide their actions. Cole and Paillard (1995) have studied one such person, dubbed IW, distinguishing between the body image and the body schema, the body image being a person level (and consciously accessible) representation of our body, while the body schema is a subpersonal (and consciously inaccessible) system that underlies our movement and posture (though for a critique of this distinction, see De Vignemont 2018). Cole and Paillard report that only the body schema was damaged in IW, allowing them to regain some control over their movement and posture by offloading some work onto the (person level) body image, with the help of perception. As it turns out, sometimes favoring perception over proprioception to perform actions is not limited to deafferentiated agents – everyday actions of the average agent, such as tracing a line with a pen, are

also susceptible to bias in favor of the visual information when it conflicts with proprioceptive information (Fourneret and Jeannerod 1998; see figs. 2 and 3).

The third divide in our actions currently being explored is the divide between our everyday actions and the highly skilled or expert actions. As the scientific body of research on skills of star performers grows, thinking of their skilled performance as the admirable extreme of human actions can shed new light onto the rest of our actions as well. For instance, what highly skilled agents seem to have in common is greater level of control over the execution of their action (emphasis on control in a more general account of action can be found in Shepherd 2014 and Wu 2016). One surprising aspect of this greater level of control is that the skilled agent performing it is not only often unaware of how they do what they do, but they can also have the wrong idea of how they do what they do. For example, we are often told to keep an eye on the ball (across several sports) and so when we do well, we are likely to cite this fact as part of the explanation as to why we did well, just as star athletes sometimes do. But as it turns out, elite cricket players' gaze tracks the point where the ball will be, not where it actually is (Land and McLeod 2000; see fig. 4). One way to interpret this finding is that skills and expertise, acquired through intense practice and repetition, results in largely automatic reflex-like actions (Papineau 2013). But on closer inspection, just because some elite athletes do not provide accurate description of exactly what they are doing does not mean that what they are doing is in fact fully automatic. Indeed, if we consider how elite athletes are able to do what they do across a variety of contexts and in non-ideal circumstances, one might be more inclined to see expertise as "intelligent all the way down" (Fridland 2017; see also Christensen 2019).

3. Future Directions

Distinguishing between agency and our sense of agency, and the emergence of the interface challenge between the personal and the subpersonal levels has invigorated a crucial area of interdisciplinary inquiry with no shortage of ways of exploring it. Even though the interface challenge concerns intentional action, the sort of challenge it presents – communication of information across the personal/subpersonal divide – has surfaced in other areas of philosophical inquiry, particularly when it comes to the nature of consciousness. Being able to draw on information from both the personal and the subpersonal levels has opened new doors to a greater understanding of our agency, our sense or experience of agency, and how they might be connected. It is therefore likely that the question of how information is transmitted across the personal/subpersonal divide will be of great interest for some time, in philosophy and neuroscience of action and in other related areas.

Philosophical and neuroscientific research on the nature of skills and expertise is also likely to benefit from greater understanding of communication between the personal and the subpersonal levels, and vice versa. Skilled and expert actions provide a unique window into what many of us strive towards, and in that respect, better understanding of such actions at a neural level can shed new light onto the actions we hope to perform as compared to the actions we usually perform, allowing us to learn in more expedient and productive ways.

Since we expect skills and expertise to have something to do with greater control of experts compared with novices, research on control, bodily and mental, is likely to thrive as well. It is particularly interesting how automaticity might be related to control, since there is a sense in which expert actions seem automatic, but are also quite flexible.

One last future direction to mention is the emerging question of who can be an agent. We are most familiar with individual actions, but collective, group, or joint actions – actions of more than one individual with a shared goal – are not only possible but seem to be pervasive (see Bratman 1992, Gilbert 2009, and Sebanz et al 2006 for more on joint actions). Understanding joint actions is crucial for future research, not only for the reasons of being able to identify them, explain them, and knowing how to assign or accept responsibility for them, but also because joint actions present an important methodological challenge for interdisciplinary research: how to study groups without losing sight of the individuals that make them up.

Discussion questions:

- What makes some actions intentional, the presence of a prior intention or something else?
- How and which subpersonal information contributes to action explanation at the personal level?
- How does our embodiment enable and constrain our range of actions?
- Can there be largely mental actions, and if so, what would be an example of one?
- How should we assign responsibility, blame, and/or credit for joint actions?

Further Readings:
Anscombe (1957) *Intention*
Davidson (1980) *Essays on Actions and Events*
Sebanz et a. (2006) "Joint action: bodies and minds moving together"
Pacherie (2008) "The phenomenology of action"
Butterfill & Sinigalia (2014) "Intention and motor representation in purposive action"
Christensen (2019) "Skilled action"

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Ch. 25 Index Terms:
Action
Agency
Anscombe, E.
Aristotle
Causal theory or the causal approach to action
Davidson, D.
Embodiment
Event
Hume, D.
Intentional binding
Interface challenge
Kant, I.
Libet, B.
Personal-subpersonal
Process
Sense of Agency
Teleological approach
Wundt, W.

Figure 1

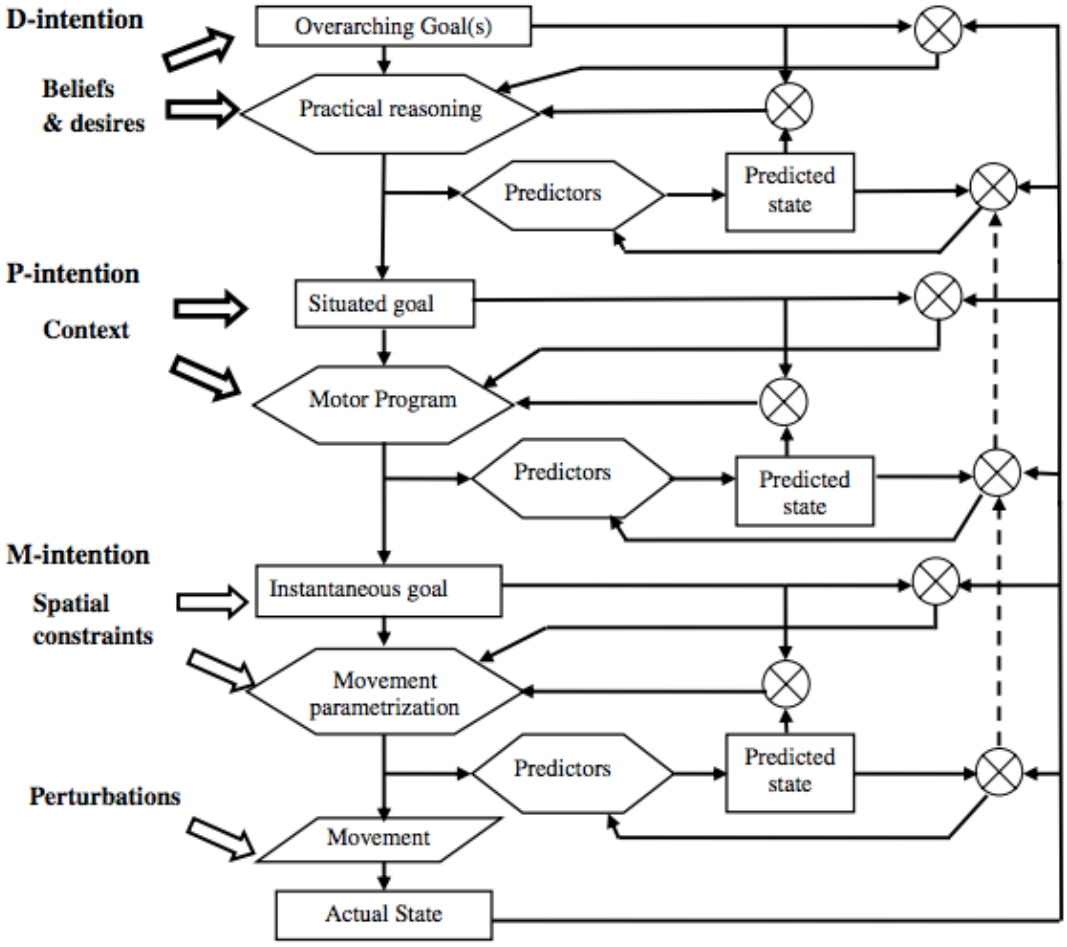


Fig. 3. A hierarchical model of action specification, with three levels of intentions and action control.

Figure 2

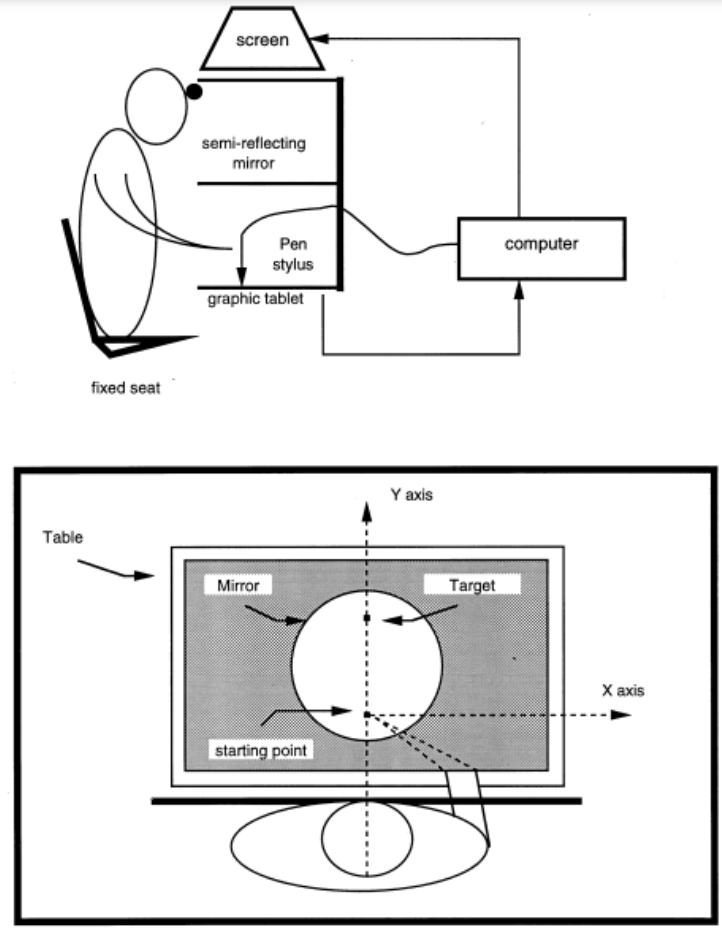


Fig. 1. Experimental setup—upper part: the output of the graphic tablet, displayed on the computer screen, is seen by the subject through the mirror placed above his/her hand; lower part: subject's view of the computer screen seen in the mirror. The subject moves the stylus from the starting point to the target.

Figure 3

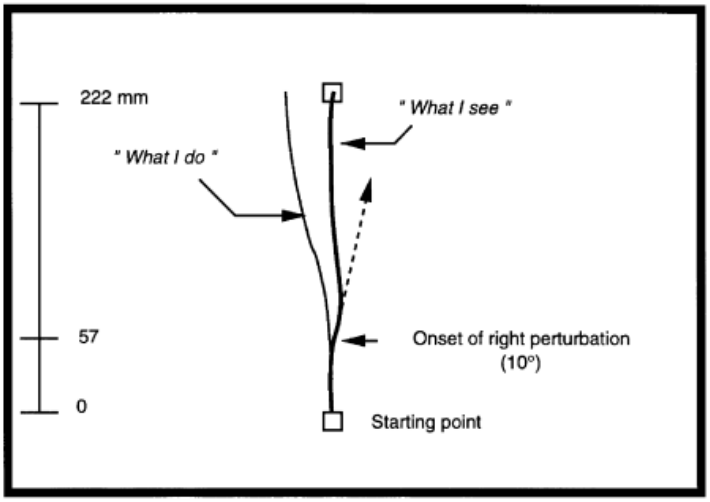
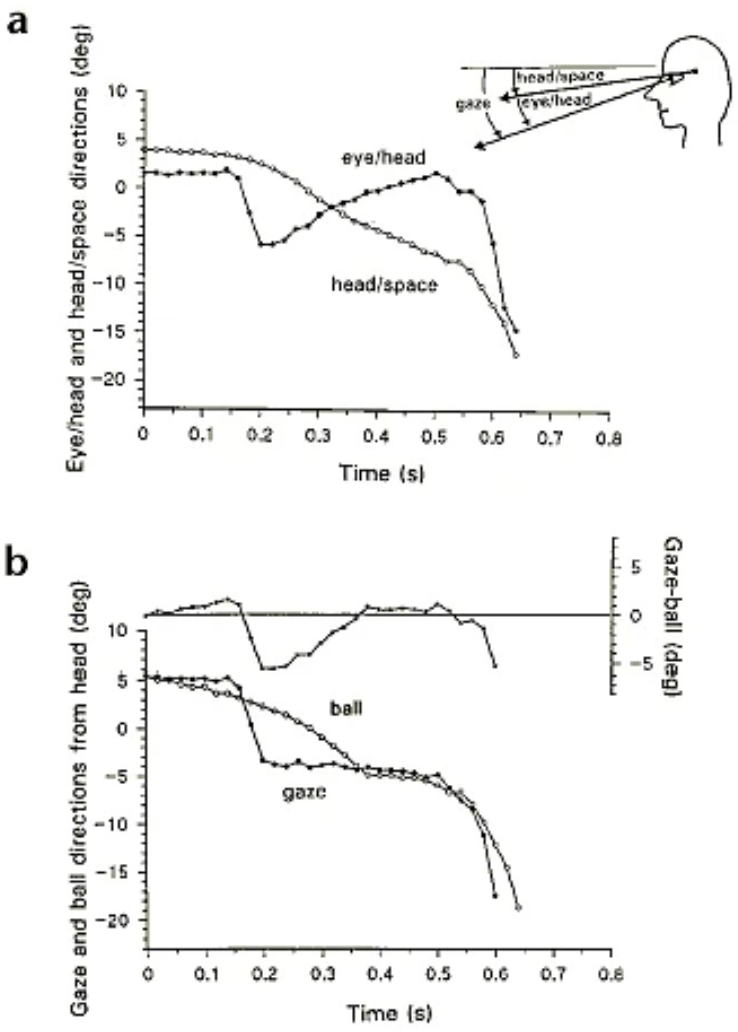


Fig. 2. Graphic representation of one perturbed trial. Heavy line: visual reafference as seen by the subject. Dashed line: direction (right) and amplitude (10°) of bias. Light line: trajectory of the hand-held stylus on the tablet, unseen by the subject. Note direction opposite to the bias. Scale on left shows distance between starting point and target (222 mm) and onset of bias (at 57 mm from starting point).

Figure 4



Direction of the eyes and head (**a**) and the gaze and ball (**b**). Descriptions of angles in inset. Upper record on (**b**) shows gaze error, the difference between ball direction and gaze direction. Error is minimal at the moment of delivery and the bounce point, but is large in between.