

# Is Balancing Emblematic of Action? Two or Three Pointers from Reid and Peirce

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## ABSTRACT

Defining actions in contradistinction to mere happenings runs into the problem of specifying the role of the agent and separating what the agent does from what they exploit or suffer. Traditionally these problems have been approached by starting with a simple act, such as an incidental movement, and considering causality, or by seeking to elucidate the connection between the act and the agent's intentions or reasons. It is suggested here that a promising approach is to shift attention from 'simple' movements and start instead by exploring the general character of acquired skills. Balancing the body is one such skill and serves here as an exemplar. Some remarks made by Reid on balance are used in a Peircean framework for perception to suggest that, at least for humans, an action is always the performance of an acquired skill. Also, while action is constitutive of perception, bodily perception is the basis of action, providing in a feeling of ownership direct knowledge of an asymmetric opposition between the agent and the world.

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## ACTION, INTENTION, FREEDOM

Attempts to understand human action have often been framed in the context of the problem of free will. This relies on an analysis of some behaviors of agents, particularly those thought to require the kinds of motivation informed by reason, custom and moral purpose. Distinguishing which aspects of these behaviors qualify them as acts – in contrast to those behaviors which lie beyond the agent's control or influence – runs into diverse difficulties, particularly if the explanatory efforts also take up the task of naturalizing agency and the agent's intentions and purposes.

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Many problems may be thought of as arising from difficulties in separating the agent, with their incidental motivation and *arbitrating and arbitrary* judgment, from the presumably orderly processes which underlie the expression of the agent's intentions.

The object of an act may well be to cause some change in the external world, something like the shifting of a stone, which is well described by elementary physics. But it may also be to move a part of the agent's body, and this is only partially described in physiological models of moving organisms.<sup>1</sup> The object may even be to suppress an unwelcome memory, and this type of act is even less well understood. In each case the difficulties turn on the role of the individual agent, and drawing a boundary line between the agent and the realm of effects at the skin, or perhaps the periphery of the central nervous system, is rarely satisfactory.

In preference to exploring how this difficulty in defining agency and action operates in previous analyses of action, such as those of Davidson or Frankfurt, the present paper seeks to identify a kind of behavior which might be taken as emblematic of action. Examining this behavior may not escape all the traditional difficulties of analyzing action, but it may lead to some insight into how these difficulties arise and which directions of inquiry seem promising for their resolution.

The approach taken is to consider balance, which underlies human perceptual and bodily orientation as well as the active maintenance of posture, and through that the performance of every movement, including locomotion. I draw on some ideas from Thomas Reid<sup>2</sup> and Charles Peirce in order to do justice to balancing and its characteristic phenomenology.<sup>3</sup>

<sup>1</sup> The notion that muscular motion is now well understood by analogy with cybernetically sophisticated robots is quickly dispelled if one considers historically the issue of the operation of the heart, as done by Thomas Fuchs (2001).

<sup>2</sup> Particularly the remarks in the 1795 essay called *Of Muscular Motion in the Human Body*, published in Wood 1995.

<sup>3</sup> The sense in which 'phenomenology' is intended here is not the phenomenology of modern philosophical schools, but the kind of Baconian bringing together of sundry but relevant facts and characteristics which enables systematic inquiry by making the first steps towards a general description possible. Cf. Peirce 5.37; in common with the secondary literature, the Collected Papers of Peirce are cited by volume and paragraph number.

## SKILLED ACTION

Recent work on the explanation of action is largely confined to the tradition of treating actions as events and exploring how causes and reasons might play into these events as well as the complications introduced into the conception of agency by morality, determinism and the specification of intention (Sandis 2009). Human intentions might be described in terms of goals and aims, or purposes, and evaluated in connection with reasons and expectations. Perceptual knowledge, direct and mediated, plays a central part in all such descriptions, but the kind of knowledge amenable to declarative expression as objective fact is insufficient. The self-reflective awareness of some striving, the apprehension that it is I who is acting in at least a subjectively voluntary and deliberate way also appears to be necessary. We do not have to insist that this awareness actually dominates the agent's concerns, only that if the relevant action is suitably attended to, these aspects of its character are evident to the agent. In this sense, the signature of action can be said to be the agent's ownership of it.

Focusing on the awareness of what the agent feels to be doing in acting shifts the inquiry away from an examination of the reasons which the agent may cite in justifying or explaining their actions. While this may seem to make an analysis of the agent's reasons more, not less, difficult – and it may be protested that intention without reasons is no intention – it may actually help to clarify important matters. It helps by bringing into sharper relief the factors more immediate to the agent's act. These are best considered first, leaving conceptual re-descriptions of the act waiting until the primary characteristics of an act are agreed upon.

The contrast here is not a difference between the how and why of an action. It is more a matter of neglecting, at least initially, elaborated narratives justifying what happened or even constructing *post hoc* explanations of it. These narratives and explanations have a more theoretical character, and their development must logically follow from an appraisal of those data which ultimately validate these theories. These data are initially given in how the agent perceives their own doing.

It is a truism that an individual agent rarely understands much of what constitutes their act. Not only do chains of Why? questions retreat unstoppably in manifold directions, the consequences of even trivial acts can hardly be followed out fully, so in large part they remain obscure and unheeded.

Intention and result also usually match in only a rough-and-ready manner. Furthermore, in performing even the most routine movements (or, if we insist on separating them out, mental acts) the agent's body and brain are implicated in exquisitely complex processes, most of which the agent has no inkling of. Even now our most advanced scientific inferences regarding these processes are sketchy at best, and demonstrably incomplete. But such knowledge is not needed to make the agent feel empowered. Finally, even the stories that agents tell themselves and others about the reasons for their own behavior are subject to the limitations of self-knowledge and the knowledge of the context in which an act arises.

Given all this, it would seem best to begin with the direct perception of what we are doing when we act, rather than trying to impose a conceptual system on inherently complex acts, whose available justification is schematic.

Doubts concerning a correct identification of the intentions informing an act, and an appreciation of its full complexity, point quite precisely in the direction where we should seek the kind of actions most suitable for an initial attack on the general problem. Confidence that we are acting successfully in accord with our intention and purpose is characteristic of skills which we learn and finesse through patient repetition and practice.<sup>4</sup>

Rather than considering isolated acts such as an incidental movement of an arm (which can be justified by an endless list of unrelated intentions) it is better to start with routines which have a constant character. The movements used for walking and running are not always or even often precisely the same, but walking is easily distinguished from running or standing still, and whatever additional reasons may apply in specific cases, the immediate intention informing those movements is to walk or run, and success or failure are relatively easy to judge. It is of no concern if the penultimate reason for our skilful movement just now is rarely (if ever) successful performance of the movement itself. What matters is that our ownership of the movements as agents or actors is uncontroversial, the immediate reasons for them are well defined, and criteria for success are clear.

<sup>4</sup> Skills have recently been considered in the context of causal theories of action by Clarke 2010, who seeks to quell worries that skills undermine causal accounts by trying to extend these to cover skills such as shaving and dancing. The present work differs not only in leaving causality aside until some of the basic phenomenology of skilled behavior is clear, but also in attempting to dispel the notion that «skilled activity differs in important ways from many of the stock examples that are employed in action theory, such as raising one's arm» (Clarke 2010, p. 523).

## BALANCE IN THE HUMAN ANIMAL

What has just been said about walking and running points to the fundamental importance of balance and orientation in routine human actions. Humans are unusual animals in that it takes them an inordinately long time to acquire the habits needed for even minimal locomotion. The high degree of plasticity and incomplete development of the human brain at birth are important factors in explaining why humans are so slow at first. The usual posture they finally adopt is also precarious, requiring constant monitoring and feedback for its maintenance. The bipedal stance may be useful in minimizing the moment of inertia around the vertical axis – facilitating a quick turnaround – but it comes at a price.

An understanding of orientation and balance and how these are exploited in holding posture and getting about is quite recent. We might even speculate that before it could be developed, Newtonian physics had to displace Aristotelian paradigms. Its development was also hampered by the fact that the sensory part of the story is complex and well hidden.

Information on the dynamical variables needed to maintain balance is obtained through the use of several groups of organs, among which the most important is the vestibular apparatus of the inner ear. The semicircular canals and utricles which are parts of these organs contain mechanoreceptors which are used to detect rotational and linear accelerations, and these are instrumental in orienting and stabilizing the head in relation to the reference frame of the earth. It is easy to see how important this information is for the perception of the location and motions of physical objects.<sup>5</sup>

The significance and functioning of the vestibular apparatus has been clarified only recently.<sup>6</sup> However, even before the role of vestibular functioning in providing the basic dynamical information needed for orientation and movement became known, the Scottish philosopher Thomas Reid said some remarkable things about balance.

<sup>5</sup> These comments should not be misconstrued as a suggestion that fully functioning vestibular organs are necessary for balance. These organs are grossly impaired in some deaf individuals who can nevertheless attain balance by means of other organs, using various receptors in the muscles and joints, particularly in the neck.

<sup>6</sup> See Howard and Templeton 1966. Early research focused on vertigo, motion sickness and nystagmus. Wade 2000 presents the early history. Recent developments have been reviewed by Angelaki and Cullen 2008.

Reid was led to consider bodily sensations by his epistemological scheme, in which subjective sensations function as signs for the real qualities of bodies.<sup>7</sup> Since we are manifestly able to move our bodies in space, we must be able to *feel*/bodily motions and exertions in order to control our limbs effectively, and we perceive the direction of the gravitational force, or whichever resultant force acts when we are accelerated bodily through space. Reid spoke about our balancing not only in a way which appeals to common sense, but noticed some characteristics which we should never lose sight of.

The first of these is that Reid prioritises perception in action, noting that:

There are however many voluntary Motions in which some previous Perception of the Understanding is necessary to direct us to the Motion which the occasion requires. (Wood 1995, p. 110)

Reid is primarily concerned with how active agents use the muscles, but he does not make the problematic move in insisting that we must at each moment be conscious of the muscular movement, strain, position and whatever else is required to specify the initial conditions for and the performance of a particular act. He recognizes that much of this may be subliminal or unattended, and by his epistemological scheme is led to search for sensations which in the normal course of action are «absolutely unheeded», as he puts it in a related context (Reid 2000, p. 82).

The second important characteristic of maintaining our posture is that it requires unceasing effort:

Although all voluntary Motion is performed by the Contraction of Muscles, we must not from that conclude that when no Motion is willed, the Muscles are inactive. *The Exertion of Muscles is no less necessary to rest than to Motion. In every position of the Body excepting perhaps that of lying prone.* (Wood 1995, p. 112, *emphasis in original*)

The third important characteristic is that balance is not something that we learn once and for all. It must be continuously cultivated and can even be improved:

When we observe with what ease, and Grace those Motions are performed by those who are expert, and compare them with the Laws of Motion, we must be convinced that this Sense by which we perceive the least deviation of the Body

<sup>7</sup> A valuable introductory account is provided by Wolterstorff 2001.

from its Balance, may by Use be brought to a degree of Accuracy which is hardly to be observed in any of our other Senses. (Wood 1995, p. 110)

Finally, the fourth important point is that the actions underlying balance do not require explicitly formulated purposes to be meaningful – we might say that verbally or conceptually elaborated explanations and justifications can in some sense remain only implicit in actions. Reid does not say this explicitly, but he focuses on sensations and feelings in perception, and notes that balancing is of immediate concern to the pre-verbal infant:

This sense of Balance may be seen in a Child of two or three Months old. If sitting upon ones knee he begins to tumble, he immediately starts & endeavours to recover himself; But it is greatly improved by Use, in every Employment that requires its exercise; [...] This sense of our Balance is produced not onely by the impression made by the power of gravity but by any other Force which endangers the Balance. (Wood 1995, p. 111, spelling original)

As already stated, Reid thought about balancing well before the functioning of the vestibular apparatus was clarified. Modern research has revealed that this set of organs does have the most significant position among the organs we use to perceive the downward direction and rotational motions of the head. Not only are these dynamic data crucial for orderly movement, they play a fundamental role in perceptual development, and it is not too much to say that our ability to see objects located in and moving through space is founded on the integration of information on dynamical variables mainly from vestibular receptors with light signals detected by the retina. The vestibular organs mature early – even before brain structure develops fully – and the chief perceptual learning tasks for the infant appear to be to integrate visual and vestibular signals so that they can see like an adult, while separating their sensations into visual, auditory, olfactory and other streams.<sup>8</sup>

It is remarkable that even here Reid, who was keenly interested in medicine and surgery and a careful observer of children, has something interesting to say. Although he felt obliged to maintain that our perceptions of primary qualities such as extension and hardness were original and unlearned, he left room in his epistemology for acquired perceptions. He does insist, against Berkeley, that we see depth immediately, yet he notes that:

<sup>8</sup> Empirical work on infant development supporting these assertions is presented by Maurer and Maurer 1988.

From the time that children begin to use their hands, nature directs them to handle every thing over and over, to look at it while they handle it, and to put it in various positions, and at various distances from the eye. [...] It is this childish employment that enables them to make the proper use of their eyes. They are thereby every day acquiring habits of perception, which are of greater importance than any thing we can teach them. (Reid 2000, p. 201)

Balancing bodily members is the first step in the control of movement, developing even before the upright stance is achieved. Lifting and turning the head are important in the infant's first efforts. Once control of movement is adequate, control not only determines the character of all our movements, it is also fundamental for not moving. Keeping still and maintaining a particular orientation or attitude is the basic requirement for seeing remote objects, indeed for all visual perceptions, which we control instrumentally by turning the head, directing the eyes and then *keeping the gaze directed*. The link between the eyes and the vestibular apparatus is so strong that compensatory eye movements which preserve clear vision while the head is moving exhibit the character of reflexes. In humans, however, this vestibulo-ocular 'reflex' is learned, plastic, and adaptive when the apparent motion of visible objects is artificially manipulated (Benson 1982).

It would seem that a problem of the genesis of agency arises here. There are two reasons why we should not get distracted by it in considering action. The first is that understanding agency and understanding the genesis of agency can, at least to some extent, be separated. An analogous situation exists in the domain of language. This too is a problem of agency since the question being asked is when we first decided to associate arbitrary signifiers with reasonably constant meanings. The origin of language is a formidable puzzle, but the structure and continuing development of languages can be studied profitably without solving it. It is just so with action.

The second reason why the question of origins is not as acute as it may appear is that habits do not get started from scratch. The awakening infant is not faced with a perceptual nothingness, a kind of blank screen in a stationary void. Their body is already structured and their field of experience is pregnant with possibilities of action. The development of agency is not the initiation of movements from a dead stillness. It is the gradual bringing of order and expectation into the operations of an animated body, and taking control of pre-existing motions and adapting them creatively for invented purposes. How

adults do this can be considered without fully understanding how infants get started, although mimesis is evidently a key ingredient for both.

To sum up, the actions we perform depend on balancing the body and making efforts and as such are combinations of learned skilled acts. Action has a recursive structure. We do not assemble any movement ‘from scratch’, but try to adapt previously performed actions to the problem at hand, and develop these adaptations by comparing our intentions and expectations to the effects of the action. Perception, memory and imagination are the three cognitive pillars of this process, and balancing is the central activity which allows the agent to pursue their particular goals – both perceptual and operational – as a physically effective participant in the real world. Instead of now leaving this central activity aside in favor of considering abstract notions of causality or the conceptual structure of how specific acts are justified, it is better to remain with balancing in order to explore how we perceive our own effectiveness in acting. Peirce is a valuable guide in these matters.

#### PERCEPTION IN DOUBT, EFFORT, HABIT AND SKILL

Reid’s epistemology was based on a dualism of mind and body, and while he was an enthusiastic proponent of science and of efforts to naturalise the mind, he resolved the problem of relating subjective experience to objective reality by an appeal to an order preordained by God. This explanation carries little weight now, and dualism is seen to underlie some difficult problems in naturalizing subjective states.

A fresh approach to these problems can be found in the ideas of Charles Sanders Peirce. Not only is Peirce one of the foremost authorities on the methodology of modern science, he was also thoroughly anti-Cartesian in his epistemology and in his metaphysical speculations. However, his opposition to dualism did not turn him towards materialism. On the contrary, he felt it necessary to formulate new categories which could support a unified theoretical framework not just for psychology, but also for language and logic.

It is not necessary to enter into the technical details of Peirce’s theory of signs in order to describe action from his perspective. It will be sufficient to consider his categories of firstness, secondness and thirdness – which he never

tired of describing and explaining – and how they relate to subjective experience.<sup>9</sup>

Action is at the heart of Peirce's version of pragmatism and only a sketch of how he explained its characteristics is attempted here.<sup>10</sup> For Peirce, pervasive doubt in the style of Descartes is a methodological hoax, a pretense at best. Actual doubting is a felt irritation at the failure of expectation, present mainly when our habitual actions do not adequately meet their imagined ends. Actions are informed by beliefs, and the «essence of belief is the establishment of a habit; and different beliefs are distinguished by the different modes of action to which they give rise» (Peirce 5.398).

To dispel any impression that this may be related to behaviorism, we only need to turn to the primacy of thinking in what Peirce calls belief and action. «The soul and meaning of thought [...] can never be made to direct itself toward anything but the production of belief» (Peirce 5.396).

As it appeases the irritation of doubt, which is the motive for thinking, thought relaxes, and comes to rest for a moment when belief is reached. But, since belief is a rule for action, the application of which involves further doubt and further thought, at the same time that it is a stopping-place, it is also a new starting-place for thought. (Peirce 5.397)

Thinking (and in general all inference and cognition) is a process which takes time. If we wish to comprehend what it is, we must examine what we can become aware of when we are actually thinking.

Peirce analyzes this self-reflective awareness into three subjectively distinguishable categories of conscious experience which, while they are always all present when suitably attended to, modify the character of our awareness as one or another predominates. These categories can most briefly be characterized as a pure quality (e.g., redness) for firstness, a dual opposition or relation for secondness, and a threefold relation for thirdness. The last has the general nature of the sign and it informs our awareness when we find some symbol or experience meaningful. For Peirce these categories are not invented descriptions of subjective episodes but «modes of being» which he sought to

<sup>9</sup> Peirce brings particular expertise to this topic too, since he made a seminal contribution to the development of psychophysics by developing measurement techniques and introducing statistical methods.

<sup>10</sup> A fuller treatment can be found in Potter 1997, where what I wish to call action is more often called habit, and the role of the classical normative sciences of esthetics, ethics and logic (as Peirce understood these) is explained.

validate and apply through scientific, logical and philosophical explorations (Peirce 8.328-332). The most important category to consider first in connection with balance is secondness.

Among varied illustrations of secondness, the one relevant for us is physical effort:

Standing on the outside of a door that is slightly ajar, you put your hand upon the knob to open and enter it. You experience an unseen, silent resistance. You put your shoulder against the door and, gathering your forces, put forth a tremendous effort. Effort supposes resistance. Where there is no effort there is no resistance, where there is no resistance there is no effort either in this world or any of the worlds of possibility. (Peirce 1.320)

What is explained here applies precisely to balancing. The sensory and motor aspects are inseparable. This does not mean that we immediately lose orientation and perspective if we lie down and relax, since perceptual and cognitive habits can persist against neglect for some time, but it does mean that prolonged isolation from opportunities to refresh dynamical perceptions through active efforts must be expected to lead to such loss. In balancing we are participants in a supra-individual order, but this order has to be actively – i.e., voluntarily – explored by the participant. As embodied knowers we are not spectators, but actors. Now Peirce insists that secondness is irreducible:

You have a sense of resistance and at the same time a sense of effort. There can be no resistance without effort; there can be no effort without resistance. They are only two ways of describing the same experience. It is a double consciousness. We become aware of ourself in becoming aware of the not-self. The waking state is a consciousness of reaction; and as the consciousness *itself* is two-sided, so it has also two varieties; namely, action, where our modification of other things is more prominent than their reaction on us, and perception, where their effect on us is overwhelmingly greater than our effect on them. (Peirce 1.324)

The notion of cause expresses secondness, as does any constraint. The flow of time, in how the past is expressed in the present, does also. The contrast between sensing (feeling) and will is in how we trace the antecedents. If these are internal we are agents, while:

In sense, the antecedent events are not within us; and besides, the object of which we form a perception [...] remains unaffected. Consequently, we say that we are patients, not agents. In the idea of reality, Secondness is predominant;

for the real is that which insists upon forcing its way to recognition as something *other* than the mind's creation. (Peirce 1.325)

What we normally call sensing is thus for Peirce secondness as much as doing is. Even in the simplest perceptions, such as the awareness of a color, secondness intrudes. Not necessarily, to be sure, through the awareness of any effort, but through the externality of the quality itself. This is sometimes expressed by calling the color 'given', but Peirce also emphasizes the fact that color is not perceived as color *simpliciter*, in a kind of anosis, but as located and spread out (Peirce 1.313n1).

We have noted that balancing is the foundation of perspective and orientation. It is also, through the vestibular and other organs, the basis of the *directed spatiality* which we call spatial awareness. Objects are not merely in space, they lie in a particular direction and occupy a definite location. Sense impressions are not simply extended, or distant, they arise *from* a specific somewhere relative to the perceiver's viewpoint.

The complexity of our direct experience in the course of the development of skills, indeed in any *doing*, has been noticed, and much can be gained in realizing that our awareness is mischaracterized if it is thought to consist simply of attention directed sequentially to this or that thing or feeling.<sup>11</sup> But it is not enough to admit that awareness is rarely if ever unitary, and to convert the passive perceiver into an actor by making it dual. What is still missing is thirddness, which expresses the fact that the objects of our consciousness are *all*, at least to some extent, meaningful. This is to say that in recognizing something, we comprehend at least minimally *what kind* it is or, equivalently, what might or might not be done about it.

#### THINKING IN ACTION

In common with other philosophers, Thomas Reid's theory of perception was a sign theory (Clark 2007, ch. 10). Simple unitary experiences, such as the impression of a vivid color or the sound of a bell, act as signs. These signs coupled with certain judgments inform us about objects and events in a way analogous to how we grasp the meaning of words. The knowledge acquired this way is superior to the mere enjoyment of sensations, and Reid distinguished

<sup>11</sup> See Polanyi 1969 and Sennett 2008.

sensation from perception, claiming that when we perceive we not only understand the significance of particular sensations, but we are assured of the relevant object's independent existence.

Reid did not go into much detail on how a sign acquires meaning and how it is understood. The use of the analogy between perception and comprehension takes for granted our familiarity with language in order to illuminate perception. If one wishes to go further than naïve views on language, what is needed is a theory of signs.

In his attempts to formulate a general theory and classification of signs, Peirce came to believe that for something to be a sign three elements had to come into relation. This threefold unity could not be reduced to a set of dual relations and still keep its functionality. The simplest illustration of this interdependence may be gathered by considering that a symbol cannot have a meaning until it is properly embedded in a system: a group of letters cannot be a word until it has a place in a language. A dual association, such as between a written symbol and a sound, is only a code, not a symbolism.

Peirce presents a barrage of explanations and arguments to make himself understood, but rehearsing any of these would divert us too far from action. Suffice to say that the development of the idea of thirdness may come directly from logical considerations, from an examination of inference, and anyone wishing to argue that thirdness is reducible needs to do so by (irreducibly) bringing three terms together – hence the would-be reductionist cannot practise what they preach.<sup>12</sup>

While the theory of signs developed by Peirce is complex and the terminology he used to classify signs mind-boggling in its unfamiliarity, the motivation for developing it can readily be understood when we consider routine actions such as balancing and keeping still. Just as the human awareness rarely if ever rests in firstness, so the experience of secondness is not a simple feeling of dual consciousness in which efforts strive blindly against opposition. Our efforts are directed and we attach at least a minimal significance to them (Peirce 1.532). Without this significance or meaning we may fail to identify the feelings and sensations experienced, and tend not to even perceive them.

<sup>12</sup> Cf., «When people ask me to prove a proposition in philosophy I am often obliged to reply that it is a corollary from the logic of relatives» (Peirce 1.629).

Our intelligence is an intelligence that deals with signs. In striving to do anything, what is present to our reflection is not a bare feeling, but an effort which has this (rather than some other, or no) direction, as well as some significance and expectation indissolubly bound to it.

In characterizing an intelligence which deals with signs, it is important not to restrict the meaning of ‘sign’ to lexical constructs. Signs are available to the human intelligence even before the mastery of language, and anything at all can serve as a sign to this intelligence. We are primarily not language users, but thinkers, and while using language is perhaps the most efficient form of thinking for some purposes, it is not exclusive.

Peirce described our intelligence in a telling manner as «a “scientific” intelligence, that is to say, [...] an intelligence capable of learning by experience» (Peirce 2.227). Not only is this directly relevant to the exercise of skills and to experiencing «genuine doubt» (Peirce 5.443) – which to Peirce is a truly affective state – it also allows a ‘scientific’ intelligence to be pre-verbal.<sup>13</sup> The only prerequisite is that this intelligence is an active, thinking one, i.e., one judging expectation against result and modifying its future actions and expectations in the process. As is evident from the quotation on page 260 above, for Peirce this process is the essence of thinking.

Understanding thinking in this way advises the adoption of a very inclusive conception of inference and indeed:

When Peirce speaks of an “inference,” he means *any* cognitive activity whatever, not merely conscious abstract thought. Specifically, he includes perceptual knowledge and even subconscious mental activity. (Davis 1972, p. 9)

There is on this account no fundamental difference between a syllogism expressing clear conceptual relations and worked through explicitly from premises to conclusion, and the routines implicit in perceptual habits or in acting generally. Perceiving and acting are subsumed into forms of inference, and a categorical difference between knowing how and knowing that becomes untenable. As Peirce puts it: «To act intelligently and to see intelligently become at bottom one» (Peirce 7.562).

This all inclusive nature of what are taken to be thinking and inference might provoke the worry that the generality of this theory makes an account of action unusably vague. If we cannot even keep practical skills separate from book knowledge – two accomplishments which are clearly not interchangeable

<sup>13</sup> Cf. Peirce 5.227-235.

– how can we hope to formulate a clear difference between action and mere behavior? Some brief comments can be offered to suggest that this worry is unfounded.

If the difference between action and behavior is sought in the explicability of actions in terms of the agent's reasons, the recursive complexity of reasons advises that we are not in any position to simply match actions (classified perhaps as various movements) with reasons. It must be sufficient that suitable reasons *can* be given and that we are convinced, on investigating the concrete case, that the agent performed the act. The role of the agent presupposes effort, but for the agent to be appropriately involved in the act any effort must be directed and as such grounded in those skills which underlie orientation and balance. This is why balancing can serve as exemplary of the 'simplest' kind of act.

It is not essential for the agent to attend to any particular aspect of their performance – they are usually captivated by the goal anyway. However, it is important that the skills relevant to the act have been acquired by the individual in question in the inferential cycle starting from expectation and going through doubting, thinking, and settling on belief, as Peirce explained it. It is only the adequate repetition of this cycle which can furnish a movement with a felt significance, and it should come as no surprise that two of the earliest verbal expressions of infants are those of satisfaction with something well done and disapproval at some action whose result did not meet expectation (Gopnik *et al.* 1999).

The only kind of action we can perform is one which is constituted from a combination of learned skilled acts. While the underlying skill is the signature of action, it is still quite possible that there is no rule which can be formally applied to differentiate between action and behavior in any specific instance. It is even likely that the distinction may need to be drawn differently for various acts or for different agents. Much depends on what the individual agent has acquired some measure of control over. This imperative to remain in the concrete might be an impediment to formal theory, but it is not an impasse in practical life where common sense counsels that the most effective agents learn by doing.

The distinction between behavior and action need not be abandoned, but a spectrum is revealed ranging from bodily processes which we have never thought to influence or master, all the way to what Peirce called conduct, which is «action that is self-controlled, i.e., controlled by adequate deliberation»

(Peirce 8.322). Although we judge children differently from adults, and also subject the unintended consequences of adult actions to the arbitration of judgment, wherever we recognize that some skill or mastery has been acquired by the individual, there we accept that the individual is acting.

### BROKEN SYMMETRIES

The perspective arising from the participation in a dynamical order by balancing makes all our actions necessarily directed. This directedness is part of the meaning of all our movements, and even those acts which are normally spoken of as if no movements were involved – mental acts such as imagining and thinking – turn out on close inspection to be closely related to physical movement.<sup>14</sup>

The directionality of our movements as well as the spatial content of our perceptual states presupposes an asymmetry between a here and a there. It makes all the difference in the world if something moves from here to there or vice versa. There are also such differences between what it takes to move upwards voluntarily – as in standing up, jumping or climbing – and downwards – as in falling or crouching – that it would take very peculiar circumstances for us to confuse them.<sup>15</sup>

The particular perspective of our experience is evidently consistent with the spatial order in which our physical body exists, and we cannot literally move in a direction orthogonal to the three axes defining up-down, left-right, and forward-back. However, there would seem to be no logical necessity in a universe to have a certain spatial or temporal order, so the embodiment we enjoy as biological organisms on earth can be at least speculatively taken as contingent. This raises the question of what may be the minimal requirements for an intelligence to be active.

The idea that perceiving is possible without embodiment in three dimensions was already considered by Reid (2000, pp. 108-112). Elaborating on a hint from Berkeley, Reid imagined a race of spirits who see but cannot

<sup>14</sup> For the intimate relation of thinking to what may seem trivial or superfluous movements see McNeill 2005, who explores the deep connections between gestures and verbal expression. Reid believed that we share the language of gesture with the animals.

<sup>15</sup> This is in contrast with the perfect symmetry of the action and reaction pair in Newtonian physics.

touch. These Idomenians lack the notion of a third dimension and to them objects occluded by nearer bodies are theorized to be ‘overcome’, but both objects must occupy the same space since those occluded have nowhere to hide.<sup>16</sup> Reid used this fable in developing a non-Euclidean spherical geometry for visible (depthless) objects (Grandi 2005). However, even for these hypothetical beings a perspective enabling rotations is necessary so the symmetry between here and there is (dynamically) broken.

The dynamical asymmetries just mentioned arise from embodiment, which allows us to participate in the physical world. Still, the asymmetry inherent in the directional perspectivity of this participation is neither the same nor likely to be sufficient for us to feel that it is we who are acting. There would seem to be an experiential difference between perceiving that our body is moving in a particular direction and the knowledge that we are striving in that direction. It is this asymmetry between effort and resistance that Peirce pointed to in describing the dual consciousness, and the duality comes not from a simple opposition, or even from the opposition of two directions, but from the fact that we feel ourselves to be the owners of one side of the opposition of forces, of the balance.

There are thus at least two asymmetries operating in physical action, and if one asks about the necessity of embodiment for action, what is being asked includes asking how dynamical participation relates to the ownership felt when we act. It may be true that, as a matter of fact, these asymmetries are inseparable in our course of life. But it is difficult to decide on this basis alone whether they must be inseparable. If they can be separated then it would seem that it is the apprehension of ownership that is necessary, while how this ownership is exercised, be it through directed movement or through some other perhaps difficult to imagine process, is unessential.

Saying that a *feeling* of ownership is essential in acting is not the same as claiming that we must be aware of our body or in any particular affective state while performing an act. It is often said that in acting it is precisely these bodily feelings and states which we neglect, and when we balance we generally do so unthinkingly.<sup>17</sup> When action is considered as a skilled performance, however,

<sup>16</sup> It is interesting that the ontological persistence of occluded or hidden objects is a kind of discovery for infants, and this relates to the popularity of ‘peek-a-boo’ games. See Gopnik *et al.* 1999.

<sup>17</sup> An argument against the necessity of explicit bodily knowing (performative or affective) in some specific acts has been given by Young 2004. It is based on pathological cases, so its impact on a description of action in general is limited.

what we are momentarily aware of in acting proves to be consistent with the phenomenology of craftsmanship.<sup>18</sup> In exercising a skill we are intent on the end result and, having mastered the skill, can afford to neglect attending to what the performance requires of us. Yet, just as reasons can be supplied after the fact, we can rehearse our movements and choose to pay closer attention to them and our ownership of them whenever the need arises.

### CONCLUSION

In seeking to understand action, the first task is to identify those actions which are typical and can serve as exemplars of human agency. The next important step is to trace how these are developed and cultured, since human actions are best characterized as performances of acquired skills. In examining how we *perceive ourselves to be acting*, the asymmetry which Peirce defined as dual consciousness would seem to be a fundamental requirement, but moving becomes acting only when an intelligence which deals with signs thinks through its actions and modifies them to meet expectations.

Following Reid's indications, I have suggested that balancing is emblematic of action. Not only is it a cultured skill, it serves as the basis for the whole variety of human actions, including those highly cultivated acts which follow from deliberation and are explicitly justified by causal explanations and reasons. We do not have to be fully aware of our contribution for something to count as an act, or be able to justify it rationally, but we must be able to adapt our efforts to the momentary situation which we perceive ourselves to be in, so that our expectations have some hope of being met.

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<sup>18</sup> Craftsmanship is considered in detail by Richard Sennett (2008). Michael Polanyi has also made valuable remarks on these topics, even explaining how active doing informs book knowledge in the acquisition of expertise, and formulating the idea of 'tacit knowing' to characterize how bodily knowledge underlies meaningful activity in Polanyi 1969, part 3.

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