

## Chapter 2

# At the Potter's Wheel: An Argument *for* Material Agency

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### 1

Consider a potter throwing a vessel on the wheel (Fig. 2.1). Think of the complex ways brain, body, wheel and clay relate and interact with one another throughout the different stages of this activity and try to imagine some of the resources (physical, mental or biological) needed for the enaction of this creative process. Focus, for instance, on the first minutes of action when the potter attempts to centre the lump of clay on the wheel. The hands are grasping the clay. The fingers, bent slightly following the surface curvature, sense the clay and exchange vital tactile information necessary for a number of crucial decisions that are about to follow in the next few seconds. What is it that guides the dextrous positioning of the potter's hands and decides upon the precise amount of forward or downward pressure necessary for centring a lump of clay on the wheel? How do the potter's fingers come to know the precise force of the appropriate grip? What makes these questions even more fascinating is the ease by which the phenomena which they describe are accomplished. Yet underlying the effortless manner in which the potter's hand reaches for and gradually shapes the wet clay lies a whole set of conceptual challenges to some of our most deeply entrenched assumptions about what it means to be a human agent.

There are two obvious ways to proceed in order to meet these challenges and answer these questions: the first is to turn and ask the potter directly. As a great deal of cross-cultural ethnographic observation will testify, confronted with the 'how do you do it?' question, potters would prefer to 'show you' rather than simply 'tell you' their answer. If, however, the question gets very precise, for instance, 'how did you decide the force of the grip?' or 'how did you decide the appropriate speed of the wheel' or 'when and how much water to add on the clay?', they usually have very little to say. They can do it but they do not know how they do it or they simply lack the means to express or communicate this

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**Fig. 2.1** At the potter's wheel

form of tacit knowledge. No one – not even the potter himself – can have access to this type of information because no one – not even the potter himself – can tell the fingers how hard they can press the clay in and up so that the walls of the vessel will not collapse. When it comes to embodied skill, potters are no exception to the rules of action and material engagement. Potters know more than what they can tell or explain and their hands often have reasons of which their mind is not aware and which the clay may resist or accommodate. Verbal description, however detailed, can hardly capture the phenomenological perturbations of real activity and the reciprocity between the crafted and the crafter. This is also why the affordances of the wheel throwing technique need to be discovered each time, in real time and space, within the totality of the interactive parameters.

Let us now turn to the second way of answering our previous questions, namely to look for some 'internal' mental and inaccessible mechanism. From such a perspective, the potter's fingers do nothing but execute the orders of the potter's brain and it is there that we should be looking for an answer. The potter's fingers simply receive information from the clay and transmit it to the appropriate area inside the potter's brain; they have nothing to do with the central 'executive' mechanism responsible for the 'executive processing' and decision making. The

moment you subscribe to the above popular scenario, you have already committed yourself also to a specific agency judgement. That is, you have already implicitly answered another question, what in this chapter I shall be calling the 'agency question', ie, who did it? Who is the author of the act? The paradox is that although the potter may again be totally unaware about how or when his brain is making all these fine small decisions or even about what precisely they consist of, this time, he is, more often than not, going to answer that question, with the ease of a natural-born dualist: 'I' did it. The following example from G. Bateson nicely illustrates this anthropocentric 'I did it-stance' that I shall be calling in this chapter the 'agency problem':

Consider a man felling a tree with an axe. Each stroke of the axe is modified or corrected, according to the shape of the cut face of the tree left by the previous stroke. This self-corrective (i.e., mental) process is brought about by a total system, trees-eyes-brain-muscles-axe-stroke-tree; and it is this total system that has the characteristics of immanent mind. . . But this is *not* how the average Occidental sees the event sequence of tree felling. He says, "I cut down the tree" and he even believes that there is a delimited agent, the "self", which performed a delimited "purposive" action upon a delimited object (Bateson 1973, 318).

But what is this agency problem really about? Subject to the level of analysis (micro-macro), the agency problem can take many different forms. However, what hold those different forms together are two categorical errors that they have in common: The first is an error of *apparent mental causation* and the second and correlated one is that of *agency attribution*. According to Wegner, both errors pertain to the fact that people tend to experience conscious will, and thus agency, quite independently of any actual causal connection between their thoughts and actions (Wegner 2004, 654). The following example can take us to the heart of the issue:

Imagine for a moment that by some magical process, you could always know when a particular tree branch would move in the wind. Just before it moved, you knew it was going to move, in which direction, and just how it would do it. Not only would you know this, but let us assume that the same magic would guarantee that you would happen to be thinking about the branch just before each move. You would look over, and then just as you realized it was going to move, it would do it! In this imaginary situation, you could eventually come to think that you were somehow causing the movement. You would seem to be the source of the distant branch's action, the agent that wills it to move. The feeling that one is moving the tree branch surfaces in the same way that one would get the sense of performing any action at a distance (Wegner 2004, 654).

The above example embodies the crux of Wegner's famous 'illusion of conscious will argument' (Wegner 2003; 2002) which directly relate to the crucial questions about 'what is the origin of an event we need to explain?' (see Law, this volume) and about 'who is the author of an act'? However, I should clarify that despite using Wegner's example as my starting point to the agency problem, my strategy for tackling this problem and my interpretation of the reasons behind it would be rather different and to a large extent contradictory to Wegner's account. In particular, following the Material Engagement approach

(Malafouris 2004), I will suggest that the agency problem is not so much the product of human illusion or some other attribution error of our left hemisphere ‘interpreter’ (Gazzaniga 1998) but of a certain acquired imbalance between mental and physical causality that destabilises the human cognitive equation.

To redress this imbalance at the root of the agency problem in this chapter I shall be introducing the notion of *material agency*. The concept itself, that is, *material agency*, is to some extent a misnomer, yet I believe it serves well my basic hypothesis which can be very simply expressed as follows: If human agency *is* then material agency *is*, there is no way that human and material agency can be disentangled. Or else, *while agency and intentionality may not be properties of things, they are not properties of humans either: they are the properties of material engagement, that is, of the grey zone where brain, body and culture conflate.*

To explore my working hypothesis and develop the argument for material agency, I shall be looking in between, rather than within, persons and things. Specifically, I shall be focusing on the brain-artefact interface (BAI) and using the potter’s wheel as a good illustration of such a bio-interface. Besides my ethnographic and experiential familiarity with the task domain, there is an additional, perhaps even more important, reason behind my choice of the potting process as the focus of my discussion: I consider pottery making as a prototypical exemplar and one of the best and diachronic models of the active mind. Not only do I see the ways of potmaking as ways of thinking but I also believe that one can find few other diachronic and cross-cultural examples where all major ingredients of the human cognitive recipe are brought forth and actualised in such an explicit and to a large extent empirically accessible manner. Specifically, for the Material Engagement approach to the study of mind the potter’s wheel is as the thermostat is to cybernetics or the computer is to computationalism. Moreover, and in addition to seeing at the continuum of potter’s brain-body-clay-wheel what others are seeing in a Turing machine or a centrifugal governor, I also consider clay to be one of the earliest truly neuro-compatible materials in the history of humanity. Neuro-compatible here refers to materials that afford the flow of noetic activity beyond skin and skull thus bridging neural and cultural plasticity (Malafouris in press; Malafouris & Renfrew, in press). It is this flow that enables the hand of the potter, as I will argue below, to navigate upon the surface of clay with a minimal need of storage and internal processing. It is this meeting which, with a little help from ‘active externalism’ (Clark 1997; Clark & Chalmers 1998), can transform a prehistoric potsherd from a mute inert piece of matter to an index and constitutive residual component of the prehistoric mind (Malafouris in press).

## 2

But let me return to our ‘agency problem’ and see how this can be reformulated if thrown on the wheel. Once you look inside the dynamics of mediated action (Wertsch, 1998), a number of interesting questions can be raised about agency

in (pottery-) making. I start with the one I consider the most basic of all: Let us say that the chosen clay was too porous, resulting in a vessel of low quality or causing the pot to crack during drying or explode during firing; who is to blame? Do not think of a scenario where no good quality clay is available but rather think of clay preparation as a 'technical choice'. The term 'technical choice' is used in archaeology and anthropology to describe the activity chain in material procurement and manufacture and by employing the term 'choice', we presume alternatives in this sequence that did not get chosen (Van der Leeuw 1993, 241; Schiffer & Skibo 1997, 29). So, one way to approach our previous question is to ask who or what is responsible for those choices? At first sight, it may appear that it is the potter who made those choices, but a closer look will reveal that, for example, the causal link between the crack, the choice of clay and the potter who made that choice is not as direct and straightforward as we might initially think. And if we accept that agency is essentially about doing and that the problem of agency is essentially about who or what is the cause of the doing, then what we need to try first to understand is the relation between agency and causality.

To this end it is necessary first to clarify an important distinction between the *sense of agency* and the *sense of ownership* (Gallagher 2000, 2005; Tsakiris & Haggard 2005). By *sense of agency* we refer to the potter's feeling that it is he who is moving his hands spreading out, pounding and shaping the clay. By the *sense of ownership* we refer to the potter's feeling that it is his hand that is moving. Two important points need to be underlined here: (a) The first point is that although our sense of agency and ownership are usually closely associated this does not necessarily have to be the case all the time. For example, although an experienced potter immersed in the shaping of a vessel will very often report that the sense of ownership, the sense that it is his hands that touch and move the clay, is experienced throughout the activity, the sense of agency, on the other hand, the feeling that it is he that is causing the movement, is very often disrupted. (b) The second point is that we are speaking about a *sense* and not about agency or ownership per se. That means that we may well have a very real sense of agency or ownership without in reality owning or causing our act whatsoever. It is one thing to say that only humans have a *sense* of agency, that is, the ability to refer to oneself as the author of one's own actions; it is another thing to say that only humans are agents in the sense of being able to initiate casual events with intentional character. I shall be returning to the intentional character of human experience in a later section; for now I want to yours upon the issue of causality. Whatever sense the potter is or is not having the question to be answered remains 'who' or 'what' is causing the act, or more specifically, the making of the pot.

Attempting to answer that by taking agency as a fixed human property it is to take as the starting point of analysis what should have been its end. The only available starting and obligatory point of passage for the emergence and determination of agency is that of material engagement. First the hand grasps the clay in the way the clay affords to be grasped, then the action becomes skill,



**Fig. 2.2** Elsie searching for light (Candles were fixed to the turtles' shells and long exposures were used. The light streaks show the path of the turtle, © Burden Neurological Institute)

skill effects results and from those results that matter agency emerges. As I also discuss elsewhere (Malafouris 2004, see also Knappett 2006) the potter and the task-environment display a dynamic coupling between mind and matter that looks like a dance of agency not dissimilar to the one performed by Walter's 'turtles'<sup>1</sup> (Fig. 2.2).

In fact pushing my "tortoise" analogy further I suggest that it is a similar cybernetic transgression of the mind-body divide, like the one effected by

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<sup>1</sup> I am referring to Walter's (1953) creation of the first autonomous robotic devices (*machina speculatrix*) baptised as Elsie and Elmer (for ElectroMechanical Robot, Light-Sensitive) later nicknamed after an "Alice in Wonderland" character as "tortoise". The devices though primitive from a mechanical and electronic point of view were capable of displaying unusual and unexpected forms of complex behaviour in the absence of any representational content. On the basis of their primitive circuitry, the tortoises were in a way structured to perform only two actions: (a) to avoid obstacles, retreating when they hit one and (b) to seek a light source. However, engaged with the environment, they were capable to produce emergent properties and in some cases what appeared as meaningful behaviour that could not be determined by their system components. Primitive as they might seem in the light of recent developments in the domain of AI the tortoise's managed to effect in practice a cybernetic transgression of the mind-body-world divide, materially exemplifying an embodied, performative cognitive system, one in which the mind-body-world components are continuous and equally necessary, with none hierarchically controlling the others. A premise that resonates well and to some extent anticipates the perspective of embodied and situated cognition as developed the last two decades in the works of Clark (1997), Hutchins (1995), Brooks (1991) and Van Gelder (1995).

Walter's turtles, that we see exemplified in the case of pottery making. Obviously to reduce the potter to some sort of human 'tortoise' in the above analogy is to leave out much. Nonetheless, we should bear in mind that the question that concern us here is not whether what is left out is important for what it means to be human but whether what is left out is of real importance for what it means to be an agent and my answer is that it is not. So far as agency is concerned the important thing to underline, and this is what our analogy does, is that this dance is between equal partners. This equality, symmetry or whatever word one chooses to express the relationship between the potter and the clay does not imply either that there are no important differences between the potter and the clay or that one of the two partners is not at times leading the dance. What it does very simply imply is that trying to separate cause from effect inside the loop of pottery making is like trying to construct a pot keeping your hands clean from the mud.

At the same time, simply to adopt an interactive perspective to action by recognising that actions seem to arise as a consequence of triggering or cueing by the external environment, in our case, the clay is not to say much really. Neither does interaction in itself deny that the actions are driven from within. Although few of us can resist the allure of a good phenomenological description that pull us inside this seamless flow of activity and agency, when we cut the flow and press the question of agency our inner Cartesian self wakes up to take control of the situation. It might well be that a part of the thinking takes place inside the head, a part of it in the body, part of it in the surrounding environment and the affordances of the tool-kit available to the potter, but at the end of the day is not the potter the one who really decides and intends what sort of vessel to produce? When it comes to the 'accountability question', it is the human side that makes the vital choices and takes the important decisions. For sure, many external factors (e.g., the texture of clay and its physical properties and may be even chemical consistency) may be allowed to determine some parts of the action but final responsibility rests with the potter. It is he who is to blame, a price that most people are willing to pay for the sake of free will or the 'illusion' of it (Wegner 2002; 2004).

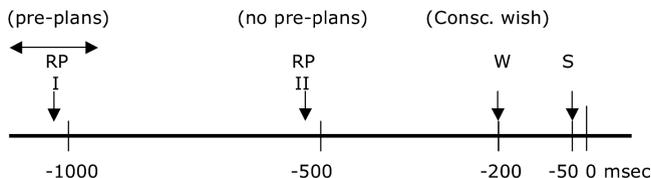
Is there any way out of this? One way to proceed, I suggest, is to try and cut deep across the scales of time. In other words, try to develop a detailed temporal anatomy of the act. What is really important in this context is that our account of the causal hierarchy of events will not trivialise the complexities of the processes engaged in decision-making. To accomplish that, the starting point cannot be agency – the natural property of the human actor – the starting point should be time. More specifically the first condition of agency identification should be to define the portion of time which encapsulates the event you want to describe. Then follows the second criterion, which is deciding whether this portion of time constitutes a meaningful event in the larger enchainment of events that constitute the activity you seek to explain. To treat agency as the natural atemporal property of human beings is to strip the notion of agency of any analytic value and significance.

The importance of the temporal element is crucial here in more than one level that it might be useful to distinguish. First, we have a temporal relation between the enacted elements (biological or cultural). Some of these elements, for example, the hand, the clay, the wheel are in constant, permanent interaction from the beginning to the end of the process. They are the constitutive, one might say ‘universal’ ingredients, of the act of pottery-making. For example, the activities of *squeezing*, *supporting* and *controlling* the shape of the vessel while it is plastic and *turning* the pot in the hands, can be considered as the ‘executive functions’ of pottery making (Van der Leeuw 1994, 137). Other elements or actions, however, are recruited at different points and have a more transient role (e.g., cutting, scraping or smoothing). This does not mean that their role is not important, it simply means that the type of relation (transient or permanent) needs to be clarified if we are to decide which events matter and are meaningful for the act.

Thus, in what follows, I shall attempt to construct a *chrono-architecture* of the act. Such a *chrono-architecture* would be critical for understanding how the agency attribution is made, that is, how an action is attributed to its proper origin and how this origin might not be identical with the subject’s *conscious agency judgement*.

### 3

Let us return to where we started this chapter, the potter throwing the vessel. Think of the moment before the act, the moment where the intention to act is formed. To give our thought experiment a Wittgenstein (1953) twist let us ask the following: When the potter moves his arm reaching towards the clay, what is left after subtracting the fact that his arm is moved? This simple and at the same time immensely complicated question has received recently a very interesting and much contested answer. Some years ago, Benjamin Libet through a series of experimental studies (1983; 1985; 1999) discovered for the first time a possible neural precursor (the so-called ‘readiness potential’, RP) to conscious intent to act (Fig. 2.3). More specifically Libet’s claim was that what



**Fig. 2.3** Libet’s diagram of sequence of events that precedes a self-initiated voluntary act. Time 0 refers to the time the electromyogram (EMG) detects muscle activation, (RP) stands for readiness potential which indicates neural activity. (W) indicates subjective awareness to move which appear at about 200 msec before the act (recorded in EMG) but about 350 msec after the first neuro-physiological indication of pre-planning (RPII) at about -550 msec (from Libet 1983 et al.)

I may call the micro *chrono-architecture* of a given voluntary act can be described in three stages: stage (1) a specific electrical change in the brain (the RP) that begins 550 ms before the act, stage (2) human subjects became aware of the intention to act 350–400 msec after RP starts and finally, stage (3) human subjects became aware of the intention 200 msec before the motor act.

In Libet's words "The brain 'decides' to initiate or, at least, to prepare to initiate the act before there is any reportable subjective awareness that such a decision has taken place" (1985, 536). This means that conscious will cannot be the true agent. Conscious will, according to the recordings of Libet, clearly appears after the RP. The potter's brain prepares to shape the clay before the appearance of a conscious urge or intention to do so. How might this be possible? The conventional neuro-scientific answer would be that the brain anticipates or predicts that act before the potter becomes consciously aware of it. The feeling of being in control of ones bodily movement can be explained in terms of the complex way the brain predicts movement (Howhy & Frith 2004).

But if the will of the potter to move his arm is not what initiates and really causes the act; then what is it? What is that tells the potter's brain to carry out a given activity? Moreover, what about human free will? Are we determined by deeply subconscious physiological process after all? The answer is offered by Libet himself: it might be that the 'readiness potential' (RP) precedes the appearance of the subject's awareness of the conscious wish to act by at least 350 msec but the conscious wish to act also precedes the final motor act by about 150–200 msec (Libet 1985). In other words, conscious will could still block or 'veto' the act; human agency and free will is saved once more. Yet not without a price because if the conscious veto act is itself preceded by some unconscious processes or veto 'readiness potentials' then we are back from where we started.

So, to put it simply, is the potter's brain to blame? And if it is not to be blamed, as I intend to argue in this chapter, then how may one proceed to resolve the agency question and avoid committing some form of the usual homunculus fallacy?

So far in this chapter, I have tried to show that the answer to the above questions may not be as obvious as it might seem. But even if we recognise the potting process as a distributed assembly bound by synchronisation of neurons, fingers and clay, it will only get us so far, at least where agency is concerned. There is still plenty of room left to accommodate all the usual agency-attribution errors and, thus, for ascribing agency solely to the side of the human. Yes, one may well accept that part of the action knowledge is embodied in the affordances of the wheel, but is it not the foot of the potter which set the wheel in motion? Is it not the potter's hand actualising the creative potential of this technology? Is it not because of the potter's intention that all those technical choices that affect vessel shape and size came into being in the first place? Is it not the potter's desires and doings that initiate the chain of events?

Strange as it might seem, *mediation* has it that the answer to the above questions can be both ‘Yes’ and ‘No’. ‘Yes’, as we say ‘hand-made’, because it is certainly the potter’s hand shaping the clay. ‘No’, as we say ‘wheel-made’, because whether we like it or not, introducing the wheel a very powerful ‘dynamic attractor’ shapes the field of action and has a share and saying on our will and intentions.

Clearly more is needed in order to disambiguate the situation. Thus I will now turn my focus to another notion with a crucial bearing on the problem of agency, that is, intentionality.

#### 4

There is no doubt that intentionality, known also as ‘object-directedness’ is very often perceived as the major diagnostic feature of agency and as such presents a significant obstacle for any discussion of material agency in a proper sense. In contemporary philosophy of mind, it is usually seen as a fundamental property of human mental states to be “directed at, or about, or of objects and states of affairs in the world” (Searle 1983, 1; cf. also Dennet 1987). Seen from this ‘internalist’ philosophical perspective, the issue of intentionality appears to be fairly straightforward – no room for active externalism here. Intentional states are essentially projections that aim at, point at and extend toward objects or representations. They are *of* or *about* things, whereas no physical phenomena are in themselves *of* or *about* anything. As such, it appears initially that if we accept a close correlation between intentionality and agency, we have no option but to admit that as long as the former is conceived as being strictly a human property, so it must be the case also for the latter. In other words, if the nature of agency is intentional then it has to be a human property; things cannot exhibit intentional states. Indeed, the orthodox view, as Gell describes it, defines the agent according to the “capacity to initiate causal events in his/her vicinity, which cannot be ascribed to the current state of the physical cosmos, but only to a special category of mental states; that is, intentions” (Gell 1998, 19).

However, we have shown in our previous discussion that none of the above claims necessarily follows – at least not in all cases. Without denying that agency and intentionality are intimately connected, I believe that our understanding of this relation is based on a misunderstanding of the issues involved and as such it needs to be placed on a new footing. Thus in the following, I will attempt to dissociate agency from intentionality. My principal means to do so is by clarifying first the important difference between *prior intention* and *intention in action* drawing upon the work of John Searle.

What is an action? For Searle, the meaning of action is that of “a causal and intentional transaction between mind and the world” (1983, 88). More specifically, he describes activity as being composed of two essential parts: An intentional state in the mind and an external movement in the world. Based on that assumption Searle differentiates between two types of intentional states (Fig. 2.4):

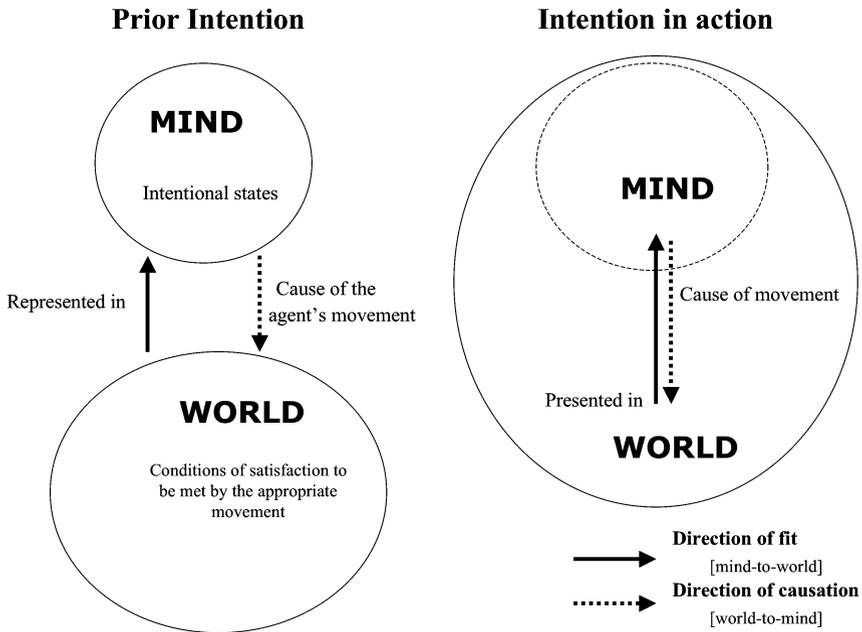


Fig. 2.4 'Prior intention' and 'intention in action'

The first type is called “prior intention” and is referring to premeditated or deliberate action where the intention to act is presumably formed in advance of the action itself. The second type of intentionality is called “intention-in-action” and is referring to non-deliberate everyday activity where no intentional state can be argued as being formed in advance of the action itself.

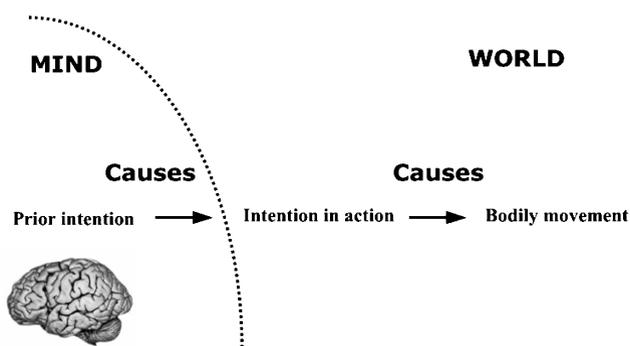
Moreover, Searle analyses intentionality in terms of two basic properties: the first is referred to as “direction of fit” and it is specified as world-to-mind. What Searle means is that for a certain intention to be successful, conditions *in the world* must conform to the conditions specified by the intentional state *in the mind*. The second property is referred to as “direction of causation” and it is this time specified as mind-to-world. By that Searle is mainly expressing the fact that it is the intentional state *in the mind* that causes the movement of the agent *in the world*.

We should note, that despite their differences, for Searle both “prior intention” and “intention in action” are essentially representational phenomena. In both cases the intention – as an internal representational state – causes the agent’s movement – as an external physical state in the world. The difference is that in the case of “intention in action”, the internal intentional state and the external movement become indistinguishable. To highlight this difference, Searle suggests that “intention in action” presents rather than represents its relevant conditions of satisfaction. But this change of terminology from

“representation” to “presentation” does not seem to imply much in essence. Presentations are simply “a special subclass of representations” (ibid. 46).

So coming back to Searle’s account of intentional activity – that, as we show, he conceptualises as a mind-world transaction – the relationship between the “prior intention” and the “intention in action” can be described by the diagram: Fig. 2.5.

My suggestion is the following: Accepting that agency is about causal events in the physical world rather than about representational events in our mental world, it follows that if an association between agency and intentionality can be made, it has to be with the type of intentionality here called “intention-in-action”. In the case of “prior intention”, no such correlation can be made before this intention becomes realised in the world – that is, before it meets its relevant condition of satisfaction. This I argue is because as long as “prior intention” is simply an internal representational state, it has no pragmatic effect in the world. As I will discuss in more detail below, pragmatic effect and as such agency is not a matter of private thought and imagination but of actual practice and being-in-the-world. However, once a “prior intention” is realised in the world and as such acquires pragmatic effects, it is immediately transformed to “intention in action”. One may suggest here that in this case the “prior intention” can be seen as the cause of the “intention in action” but this is not necessarily the case. This I argue for the following reasons: Firstly, because in most cases “intention in action” is not preceded by a “prior intention”. As Searle observes, “[a]ll intentional actions have intentions in action but not all intentional actions have prior intentions” (1983, 85). Secondly, because even when such a “prior intention” exists, it does not necessarily cause or determine the nature and form of a particular activity. For example, an agent may act differently or even in a manner contradictory to his prior intentions or simply fail to meet in action the conditions of satisfaction necessary for such an intentional state to be realised. Finally, even when a prior intention is successfully realised and as such can be argued as



**Fig. 2.5** Causal relationship between ‘prior intention’ and ‘intention in action’ according to Searle

causing the intention in action, it is already itself being shaped by what I will discuss in a moment as the 'Background'.

As such, I want to suggest that the observed association between agency and intentionality makes proper sense only if conceived as being an association between agency and "intention in action". This minor shift in perspective has some important implications for the meaning of agency because in this case, intention no longer comes before action but it is *in the action*. The activity and the intentional state are now inseparable. As I intend to show in the following, in this case the boundary between the mental and the physical collapses. That means that "intention in action" is not an internal property but a component of extended cognition. Consequently, it constitutes and is constituted both by persons and things and as such it cannot be used as a criterion for ascribing agency to the human component of material engagement. To explicate this claim, I will now turn to discuss 'the Background'.

Searle defines the 'Background' as "a set of non-representational mental capacities that enable all representing to take place" (1983, 143). The Background is the reason that intentional states have the conditions of satisfaction that they do and are the states that they are. To illustrate this, think of what is necessary in order for the potter to form the intention to shape a pot. Think about the number of biological and cultural resources, that he or she must bring to bear on this task, simply to form the intention to perform this task. But without these resources the potter could not form the intention at all.

I have argued previously that in order to understand agency we need to understand action and in order to understand action we need to understand its causal antecedents and in order to do that, we need a *chrono-architecture* of action. I suggest that in this attempted temporal stratigraphy of action the Background offers an artificial, yet much needed, functional boundary. More simply, the clay and its physical affordances, as the basic element of the potter's Background, stands before and causes the potter's intention *about* growing a vessel out of it. And to grow a vessel may take a number of activations or 'presentations' but very few, if any, internal representations – in the computational sense.

Indeed as one may also suggest from a developmental perspective, engagement always precedes intentionality. The child will open the door and learn its capabilities before formulating an intention about the opening of the door. In this sense, the opening of a door is not in itself an intentional state but a part of what Searle calls "local Background" and distinguishes from what he calls the "deep Background". However, what the notion of Background precisely implies in terms of the mind-brain-world connection remains unclear. Searle here, being trapped in an essentially internalist–representationalist view of human mind and intentionality, often appears to be puzzled about where exactly to draw the boundary of human cognition in respect to the 'Background' and how exactly to conceptualise the nature of its properties. He finally settles the issue by calling it 'preintentional' meaning, something that is neither truly mental nor physical.

It comprises the various kinds of ‘know-how’ – rather than of ‘knowing that’ – against which intentional states arise:

The Background, therefore, is not a set of things nor a set of mysterious relations between ourselves and things, rather it is simply a set of skills, stances, pre-intentional assumptions and presuppositions, practices and habits. And all of these, as far as we know, are realised in human brains and bodies (1983, 154).

But where should we look in order to discover this know-how of pottery making? Where, for example, is the knowledge about the precise amount of clay needed to construct the intended pot? Where are the visual categories and morphological prototypes that motivate the shape and form of the vessel?

I am asking *where* rather than *what* because, having previously discussed the temporal anatomy of action, it is now the topology or spatial localisation of agency in particular and of mind in general, that needs further thinking. The thing to note is that in terms of cognitive topology – that is, the question of where those cognitive processes reside – no *a priori* hierarchy can be argued between the potter’s brain/body/wheel/clay. For example, the cognitive map of knowledge and memory may well be extended and distributed in the neurons of the potter’s brain, the muscles of the potter’s body, the motion of the sense organs scanning the surrounding environment for relevant information, the affordances of the potter’s wheel – enabling or constraining the discovery of that information – the material properties of the clay, the morphological and typological prototypes of existing vessels as well as the general social context in which the activity occurs. The above components can be broken down further but none of them can be argued as determining the contours of activity in isolation.

Even if one adopts a strictly computationalist view reducing the multifaceted experience of pottery making to a linear, albeit complex, problem solving operation, one would still have to confront the question of boundaries. In fact it would not take too long before realising that important parameters of the problem are enacted outside the potter’s head and largely below the conscious threshold of the potter’s attention. For indeed, the physical resource be that of clay, wheel, water or instrument, is not simply used by the potter’s body following the command of the potter’s brain. The physical resources are fully integrated into the functioning and movement of the agent. Clearly it is now the system, the phenomenological compound of brain, body and resource that articulates the boundaries of this intelligent problem-solving ensemble (see also Hutchins 1995; Kirsh 1995, 1996). Of course problem solving is a very poor concept to describe the complexity of the act; it leaves too much out that are of real significance. Nonetheless, my point here is simply to show that even a computational perspective cannot stand outside the loop.

I believe that a much better understanding of the ‘Background’ can be gained if we view the issue of intentionality from the perspective of the Material Engagement approach. Seen from this angle, the ‘Background’ becomes a part of the mind or what we may call an *extended intentional state*. This implies

that the objects and material structures that constitute this 'Background' can be argued to project towards me as much as I project towards them<sup>2</sup>. In other words, the line between human intention and material affordance becomes all the more difficult to draw. In fact we might even suggest that in certain cases, human intentionality identifies with the physical affordance. The mediational potential of a certain artefact in a quite significant way shapes (both in the positive and negative sense of enabling and constraining) the nature of human intentions.

As is the case with the general issue of human cognition, so it appears to be also in the case of intentionality that "some of our deeply felt assumptions about intentionality, at least as a property of individual minds alone, may be mistaken" (Gibbs 2001, 121). As with many other dimensions of the human mind, intentionality should be understood as a distributed, emergent and interactive phenomenon rather than as a subjective mental state. The artefact should not be construed as the passive content or object of human intentionality but as the concrete substantiating instance that brings forth the intentional state. The world of things elicits and actualises intentionality according to the 'situational affordances' (Gibson 1979; Knappett 2004, 2005) of a given context of engagement.

The 'Background' is where intentionality and the extended mind hypothesis collide. That means that as long as the 'Background' is considered as the *sine qua non* of intentionality, the latter cannot be considered as an internal and purely mental property. But if intentionality is not an internal property, it cannot be used as the criterion for the attribution of agency to humans.<sup>3</sup>

## 5

It is against this conceptual background that the argument *for* material agency is built. The argument is not for an either/or choice between human and material agency nor for extending a human property to the realm of materiality. The argument is that agency is not a property but the emergent product of the 'irreducible tension of mediated activity' (Wertsch 1998). Within this situated dialectic of activity, material or human predications of agency make sense only from the perspective of dynamic spatio-temporal relations. An agent is defined as "any element which bends space around itself, makes other elements dependent upon itself and translates their will into a language of its own" (Callon & Latour 1981, 286). This is a condition that in any given process of material

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<sup>2</sup> "The world is inseparable from the subject, but from a subject which is nothing but a project of the world, and the subject is inseparable from the world, but from a world which the subject itself projects" (Merleau-Ponty 1962, 430).

<sup>3</sup> We are engaged in what Searle (1983) himself recognises as "Networks of Intentional states", but with the requirement that those networks should be better perceived as actor-networks and as such irreducible to any of the constitutive elements in isolation.

engagement can be equally satisfied both by persons and things, the only difference being, that in the latter case – that of things – this process can be sealed in a ‘black box’ and sink below the surface of our conscious horizon.

The shaping of the pot becomes an act of collaboration between the potter and the mass of wet clay rapidly spinning upon the wheel. There is a constant tactile but also clearly visible, dynamic tension in the movement of clay. On the one hand, the centrifugal force imparted to the clay by the movement of the wheel and the hands of the potter; and on the other, the skilful guidance of this force by the potter’s fingers, raising or pressing down the clay to the desired form. It is at the potter’s fingers that the form and shape of the vessel is perceived as it gradually emerges in the interactive tension between the centrifugal force and the texture of the wet clay.

In any given stage of this dynamic operational sequence, the wheel may subsume the plans of the potter and define the contours of activity or at another point serve as a passive instrument for his or her manufacturing purposes. At one moment, movement is effortless and feels like happening to the potter rather than being done by the potter as if totally absorbed into the micro-structure of clay. At another moment, the potter is clearly conscious of moving clay around and shaping it, directing the flow of the clay and struggling to control the act and handle the clay. Another important parameter in this unfolding dance of agency is the modality involved (e.g., touch versus vision). The wheel and the wet clay are not simply enabling but also constraining.

In the dynamic tension that characterises the processes of material engagement, sometimes it is the thing that becomes the extension of the person. At other times, however, it is the person that becomes the extension of the material agent. There are no fixed agentive roles in this game but a constant struggle towards a ‘maximum grip’ (Merleau-Ponty 1962). Agency as an emergent property cannot be reduced to any of the human – nonhuman components of action. It can only be characterised according to that component that at a given moment has the upper hand in the ongoing phenomenological struggle.

With respect to agency there is nothing to be found outside this tension of mediated activity and this is precisely the area to which we should look for its manifestations – human or material. Agency is a property or possession neither of humans nor of nonhumans. Agency is the relational and emergent product of material engagement. It is not something given but something to become realised. In short, as far as the attribution of agency is concerned, what an entity (wheel, sheep or tree see Law & Mol; Jones & Cloke this volume) *is* in itself does not really matter; what does matter is what it becomes and where it stands in the network of material engagement.

Our human sense of agency, useful as an evolutionary or social strategy as it might be, it is to a large extent an illusion. But it is not an illusion in the sense that Wegner (2002; 2003; 2004) describes. Causal agency is not something that you discover by going deeper inside the brain. On the contrary, causal agency is what we may call a ‘surface property’: it dwells at the interface between brains, bodies and things. It cannot be too strongly emphasised that neither brains nor

things in isolation can do much. The constant errors in our agency judgements are simply the price we have to pay for being skillfully immersed in a physical world and at the same time of being able to experience this world from a subjective first-person perspective. It is the price of being human. Agency is in constant flux, an in-between state that constantly violates and transgresses the physical boundaries of the elements that constitute it. Agency is a temporal and interactively emergent property of activity not an innate and fixed attribute of the human condition. The ultimate cause of action in this chain of micro and macro events is none of the supposed agents, humans or non-humans; it is the flow of activity itself.

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