Slip-Proof Actions

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Most human actions are complex, but some of them are basic. Which are these? Here, I address the question by invoking slips, a common kind of mistake. The proposal is this: *an action is basic for an agent if and only if the agent cannot slip in performing it*.

The argument presents some well-established results from psycholinguistics. These are generalized in the context of a philosophical theory of action. The guiding hypothesis is that speaking is a paradigmatic form of acting and, hence, thinking about speaking affords insights about human agency. The resulting criterion has the advantage of being easily operationalized: there are observable markers that guide its correct application. Thus, it gives an empirical standpoint for evaluating claims regarding basic actions.

I begin by introducing the topic of basic actions and by briefly sketching the proposal. Then, I present the argument for it. I start with some observations regarding verbal slips, show how these observations extend to the non-verbal domain, and explain why general lessons about the structure of human actions can be inferred from them. With this understanding in hand, I discuss some widespread views on basic actions. First, I address some reasons for scepticism about their existence. Next, I examine the view that basic actions are those whose agents know basically how to do them. Finally, based on the present proposal, I criticize the widely held thesis that all basic actions occur within the limits of the agent's body (i.e., basic actions as bodily movements).

1. Basic actions

Type a word in your computer. You are not God, who supposedly can do everything in one sweep. At the very least, you need to type each of the letters in it. Now compare typing a word with clenching a fist, or raising your arm (Danto 1965; Brand 1968). According to many theorists, the latter are some of your basic actions. You don't need to do other actions *as means* to perform them. But by virtue of cobbling them up you manage to do other things.

In thinking about actions, different senses of "basic" might be at issue. The focus here will be on *teleological basicness* (Hornsby 1980, 84; Ruben 2003, 66). In short, the idea is that because agents have a limited set

of skills and abilities, they normally face the problem of how to pool them together in order to achieve their desired results. Teleologically basic actions are those for which this kind of problem doesn't arise. As an agent, one doesn't have to figure out how, or by which means, to perform them.

Many philosophers have argued that the structure of language parallels the structure of thought.[1] Likewise, the means-end structure of action is a function of the structure of the agent's mind. This is why identifying basic actions matters. To the extent that they are the building blocks of agency, their identification provides a window into the constituents of the psychology that makes human performances count as actions. Basic actions are the behavioural manifestations of the most primitive ways in which agents think about what they do.

To illustrate, many action theorists believe there is a hierarchy of cognitive states that guide and control action. The hierarchy starts, at the top, with high-level representations such as general policies and large-scale intentions, and bottoms out with representations in charge of the fine details of motor control (Mele 1992, 220-223; Bermúdez 2000; Pacherie 2006; Butterfill & Singaglia 2014). Within this scheme, basic actions play an important role. Identifying them serves to distinguish the representations by which agents exert guidance and control from those by which sub-personal mechanisms exercise control for them. Being the simplest kinds of behaviors that the agent *directly* guides, basic actions mark the lower bounds of agency.

Aristotle famously held in this regard that deliberation had to stop somewhere (EN 1113a2). For him, the stopping point was the minor premise of the practical syllogism. The *dictum* is useful because it narrows down where to look for basic actions. But it doesn't settle the matter. You might need to do something as a means to achieve something you intend and yet not deliberate about how to execute your intention. Skilled typists, say, don't deliberate about how to type words or sentences. But typing a word or a sentence seems too "large" to count as basic for them.[2]

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[1] Classic, and very diverse, explanations for this kind of structural parallelism can be found in (Sellars 1956; Chomsky 1965; Davidson 1975; Fodor 1975).

[2] To be fair, Aristotle also recognized that skill can drive out deliberation. And, as discussed below, in some cases acquiring a skill renders some complex actions ultimately basic. But this is not always the case. The acquisition of a "high-level" skill might make it easier for an agent to cobble together basic actions, without changing what's basic for her.

Arthur Danto, who introduced the topic to contemporary action theorists, claimed that every agent intuitively knows which are her basic actions (1965, 145). This was clearly a mistake. Even if agents have privileged knowledge of their actions, this privilege need not extend to the *structure* of their actions. An agent, therefore, might claim that she has the ability to do something basically and be wrong about it. Consider a parallel case. It might turn out that certain epistemologies are right and that some beliefs are basic in the sense of not originating from other beliefs. Yet, given that the origins of one's beliefs are not always transparent, it wouldn't follow that every thinker knows which beliefs are basic for him or her.

Since Danto, various criteria for basic actions have been proposed. But the proposals have proven too controversial. Attempts to arrive at a criterion by induction from "intuitive" cases have been problematic because these intuitions hardly form a unified basis. Attempts to derive a solution from "first principles" quickly revert to long-standing debates about the nature of events, causation, etc., before any significant progress is made (for reviews of this discussion, see Baier 1971 and Sandis 2010).

The criterion advanced here is meant to sidestep these problems. Being grounded on work in psycholinguistics, it offers an empirical standpoint to evaluate intuitions regarding basic actions. In addition, the criterion is neutral regarding the metaphysical positions that dominate the discussion.[3] Metaphysicians, therefore, can adopt it as a naturalistic hypothesis while they make progress on the more abstract aspects of their accounts.

2. The proposal

The *slip* is a familiar kind of mistake. You set out to do something. But what you do by way of doing it is inappropriate, given what you intended and believed then. Think about spoonerisms. When Reverend Spooner spoke, language (not mere garble) came out of his mouth. The problem was that the things he said were usually in the wrong order.

Spoonerisms are just one example. In fact, there are a whole variety of slips. Some of them are lexical, such as calling your partner by the name of your child. Others, as we shall see below, are non-verbal, and even non-

[3] Thus, I remain neutral in the discussion between unifiers (Anscombe 1963; Davidson 1971) and multipliers (Goldman 1970), regarding whether the accordion effect should be interpreted as containing one action under different descriptions or different actions. Thus, the present proposal can be rephrased in terms of actions being slip-proof under a description.

linguistic. All of them, however, exhibit the same general pattern. You mess up by doing (or not doing) some subordinate action in ways that are inappropriate in the light of your beliefs and of the overarching intention with which you act.

Upon casual inspection, it would seem that slips are random malfunctions. But the truth is that they happen in well-defined patterns, shaped by the skills and abilities of each individual agent. One important consequence of this, as we shall see, is that not all actions allow for slips. For each agent there are some slip-proof actions: actions such that she cannot slip in doing them. The actions are slip-proof because the agent doesn't need to do another *action* as means to perform them. Hence, there is no chance to mess up in the way characteristic of slips.

Slip-proof actions are, in this regard, basic. Or so I shall propose. In the slip, the intended action is broken down into its constituents. So, if you cannot slip in doing some action, a reasonable hypothesis is that it has no constituents. It is, therefore, basic for you.

3. Verbal slips

Everyone makes slips. As a competent speaker, you intend to say one thing but wind up saying something else. It happens to Westerners and non-Westerners, in spoken and signed languages, in ancient and modern times. Being a speaker, in short, is being a slipster.[4]

The mistake comes in different guises. Some slips involve substitutions, such as calling someone by somebody else's name. Others involve transpositions, for example, Spooner's memorable, "Queer old Dean" (instead of Dear old Queen). And yet other slips involve omissions, as the Christian who asks God to "lead us into temptation." The possibilities would seem endless.

It would be a mistake, however, to think that verbal slips occur in random patterns. In fact, they are highly regular mistakes. Substitution slips, for instance, have lexical biases: you typically substitute intended words with real words. Further, the substituting words tend to be

[4] In addition to English, slips have been studied in Arabic (Abd-El-Jawad et al. 1987), Dutch (Cohen 1966), French (Rossi et al. 1988), German (Meringer 1908), Mandarin (Chen 1993), and Spanish (Viso et al. 1991). They have been documented in traditional tribes all over the world, including Indochina (Devereux 1957) and North America (Spier 1922), in signed languages (Klima and Bellugi 1979; Hohenberger et al. 2002) and among children and bilinguals (Jaeger 2005; Poulisse 1999).

semantically related and normally belong to the same syntactic category. As a consequence, most slips result in grammatically correct and meaningful utterances.

Importantly, some slips *never* happen. As an English speaker, you might slip and talk about a "Freudian flip," perseverating on the initial *f*. Hesitating whether to use "past" or "by," you might announce that you will "drop py" a friend's house. However, you will never be caught talking about a "Sreudian slip" (anticipating the *s*), or announcing that you will "drop bst" your friend's house (blending the two words). There is a very intuitive explanation for this. Even though anticipations and blends are common, initial /*sr*/ and /*bs*/ are not phonetically permissible in English.[5]

Psycholinguist Victoria Fromkin (1971; 1973) famously capitalized on these observations. Despite its fluent nature, she argued, speech is actually constituted by discrete linguistic units, which are sometimes substituted, transposed, or omitted. Some of them, like syntactic phrases or words, can be broken down, and some of their constituents re-arranged or altogether omitted. Others, in particular phonemic segments, are basic.

At first glance, Fromkin's argument would seem simply to establish the well-known conclusion that language can be *analysed* as having a recursive structure. But it goes deeper. It shows on the basis of behavioural data that speech acts are *produced* recursively from a set of atomic constituents. In speaking, as in language comprehension, there are psychologically real primitives.

4. Speaking is acting

Speaking is acting. Yet, judging by how seldom action theorists talk about speech, this would seem a forgotten truth. Arm raising might be pervasive. But it does not beat speaking in the run for being the paradigmatic case of agency.[6]

Of course, there are differences between verbal and non-verbal action. Speaking, for instance, is regimented by constraints absent in other forms of acting, say, the syntax of the language. Also, although agents differ vastly in the skills they have, there is nothing in the non-linguistic

[5] Philosopher and linguist Rulon Wells III was thus inspired to formulate his *First Law of slips*: "A slip of the tongue is practically always a phonetically possible noise" (1951, 86). For other formulations, see (Shattuck-Hufnagel 1983; Dell 1986; Meyer 1992). Dissenting voices are (Mowrey and McKay 1990) and (Pouplier 2004).

[6] Notable exceptions are (Searle 1983) and (Hornsby 2005).

domain quite like the division of speakers of different languages. Likely, there is no "action organ."

Nevertheless, there are *deep* similarities. In the non-verbal domain there are slips too. You intend to do something and act on that intention. Yet, without changing your mind, you wind up doing something else. It happens to everyone: the young and the old. It happens in all sorts of places. Sometimes, slips occur in unusual circumstances. But, for the most part, they happen in circumstances that have nothing out of the ordinary, where agents otherwise behave impeccably. Nonverbal slips are normal mistakes among competent agents.

Actually, these slips reveal the same kind of structure that can be observed in their verbal counterparts. Some of them involve substitutions. You mess up a check in early January 2016 by dating it with January 2015. Others involve transpositions. Rushing to clear the breakfast table, you store the milk in the cupboard and the cereal in the fridge. Yet other slips involve omissions, as when one jumps into the shower with one's glasses still on.[7]

Like their verbal counterparts, non-verbal slips also show a significant degree of regularity. Obviously, regularity is not measured here by rule compliance, but by compliance with some of the agent's *know how* or *procedural knowledge*. Slips are, in this regard, displays of misdirected competence, not signs of incompetence. They rarely result in clumsy movements; typically they result in actions that are part of the behavioural repertoire of their agents.

Finally, rather than being brute accidents, slips are somewhat reasonable in the light of their over-arching intention. This is evidently true in cases of omissions: you do everything you intended except for one thing. But it also holds when the mistake involves a substitution or a transposition. To wit, writing January 2015 on the check was not completely off the mark. Storing the milk in the cupboard and the cereal in the fridge was one way to clear the breakfast table.

5. Planning mistakes

Consider a version of Wittgenstein's question: What is left over if I subtract the fact that my words are spoken from the fact that I spoke my words? A

[7] For discussion of slips in everyday life and slip corpora, see (Amaya 2013; Jónsdóttir et al. 2007; Norman 1981; Reason and Mycielska 1982; Reason 1984; Sellen 1990).

plausible answer is that after the subtraction at least two things are left: an intention to say something and a plan of how (or by which means) to say it.

The answer is part of a widely accepted view of the nature of action. On it, an action is the execution of an intention guided by a plan (Brand 1984; Mele and Moser 1994).[8] The execution need not be successful. A failed murder attempt might still count as an action. Nor does the plan need to be thought out in advance. Even if many everyday actions are the result of intentions formed ahead of time, the plans to execute them tend to involve a significant amount of improvisation. Think about having a conversation. You might know ahead of time the gist of what you want to say. But in order to engage in real conversation, you will need to improvise along the way.

In general, plans guide the execution of intentions by assembling subordinate actions into larger wholes. Thus, they give actions the *means-ends structure* without which they would be mere sequences of doings (Ferrero 2009; Bratman 2010). In doing so, plans serve as solutions to various practical problems that agents normally face once they have adopted an intention. One of them is the problem of *indeterminacy*; there is often more than one open course of action to achieve a given goal. Another is the problem of *serial ordering*; achieving a goal often involves sequencing and coordinating several actions.

Sometimes agents make mistakes solving these problems. Consequently, not all plans end up being properly aligned with the intentions they sub-serve. This is how slips come into existence. The plan that guides one's execution winds up not being suitable to achieve what one intends, given one's beliefs. It has an incorrect step, it has the right steps but laid out in an incorrect order, or it lacks one of them. Therefore, by acting on it, you wind up substituting, transposing or omitting one of the things you intended to do.

These mistakes happen because, under certain circumstances, execution plans tend to be *cognitively under-specified*. Only a portion of the relevant information possessed by the agent at the time becomes active and is brought to bear (Reason 1992; Stemberger 1991a; Amaya in prep). It is easy to see why this might be the case. If you have too many things in mind or are acting under heavy time constraints, you might not be able to

[8] The notion of plans adopted here comes from (Lashley 1951; Miller et al. 1963). It differs somewhat from Bratman's (1987) view of plans as structures for coordinating future-directed intentions. In the present sense, plans refer to structures for the execution of intentions but these need not concern actions in a distant future (Brand 1984; Pollock 1995).

deliberate about all the details of the intended performance. Instead, you might have to follow certain automatic routines to fill in the details.

In the linguistic case, these routines are shaped by semantic and phonetic associations. This explains why slips involve words in the same semantic neighbourhood and utterances that sound very much alike. Similarly, in the non-linguistic domain, there are habits and well-rehearsed behavioural patterns, which is why slips look like competent performances. In general, both domains instantiate the same architectural feature of the human mind. In intention execution, exhaustive deliberation tends to be the exception. Automatic routines are the default rule.[9]

The downside is that such routines are geared towards efficiency. For the most part, the resulting plans are adequate enough for agents to accomplish what they want to do without having to think too much. Semantic associations are a rough guide for lexical decision; habits a decent stand-in for deliberation. Occasionally, however, the circumstances of action are such that the result of relying on these rough-guides is behaviour that fails to be a good match for one's intentions. Not being able to attend to all the aspects of one's performance, the mistake goes unedited.

6. Slip-proof

Most everyday actions are complex: they are constituted by subordinate actions, orchestrated and assembled by plans. Therefore, their agents are susceptible to slip while performing them. Under the right circumstances, they can substitute, transpose, or omit one of its subordinate actions. This means if an action is planned the agent can slip in performing it. Or, put in the contra-positive, if an agent is not susceptible to slip, the action is not planned.

On the other hand, if an action is not planned, it is basic. Basic actions are those that an agent does directly, not by virtue of doing anything else. So, when it comes to them, there is no difference between intending the action and being settled on how to do it. There is no need to select from various open courses of action, or to sequence subordinate actions. The action, *qua* action, does not have an internal structure.

Thus, the criterion for basic actions follows. If the agent cannot slip, the action is not planned and, therefore, is *basic for her*. To be sure, the action can figure in an agent's larger plan; basic actions are rarely done in

[9] For accounts of slips along these lines, developed independently of questions regarding basic actions, see (Norman and Shallice 1986; Reason 1990; Baars 1992; Sellen and Norman 1992; Amaya in prep).

isolation.[10] And the agent can slip performing some of the over-arching actions of that plan. Yet, in performing something that is basic, there won't be a slip. Basic actions are slip-proof.

Clearly, the parallel argument does not hold for other kinds of planning mistakes, say, those due to ignorance or irrationality. Whereas there are no restrictions on how wrong beliefs can be, or principled limits on the amount of irrationality a mind tolerates, there are observed limitations to the ways human agents slip.[11] This, at least, is what the evidence from psycholinguistics indicates.

Importantly, there is a rationale behind the evidence. One well-known characteristic of cognitively under-specified processes is their tendency to default to *contextually appropriate and well-rehearsed behaviours* (Reason 1990, 1992; Amaya in prep).[12] It is not surprising, then, that slips do not result in phonemically impermissible sounds. Articulating the phonemic segments of one's language is among the most rehearsed actions there is. The rehearsal starts even before one becomes a speaker: around their tenth month, infants start babbling in the language of their community (de Bysson-Bardies et al. 1984; Stoel-Gammon 1985).

Likewise, in the case of non-linguistic action, some action patterns are so well rehearsed that they seem apt candidates for being slip-proof. The adult stride is likely one of them. After years of practice, raising one's foot as soon the other hits the ground becomes an action unit. You do not do it by virtue of doing any other action. Nor do you need to solve the problem of how to do it. Thus, you might slip and walk to the fridge when you intended to walk to the cupboard to fetch a snack. Or you might slip and try to walk, having "forgotten" that your foot is actually immobilized. But you will not slip by not alternating your stride. Walking, in this sense, is likely slip-proof.[13]

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[10] An action can be part of a plan without requiring from the agent *further* planning. This would be the case if the action is a constituent of a larger whole, but its execution does not require guiding and orchestrating further subordinate actions.

[11] Normative principles, such as the principle of charity, might provide some limits. But the limitations apply to patterns of actions or belief systems, not to individual actions or beliefs.

[12] In lexical slips, for instance, more frequent elements are less likely to be affected by error, and less frequent elements tend to be replaced by more frequent ones (Dell 1990; Stemberger 1991b).

[13] Of course, walking for a given distance is not basic; it is a complex action made up of a repetition of tokens of a basic action unit, the alternating

Obviously, there is another (non-technical) sense in which walking is *not* slip-proof. If the floor is wet, or if the last cocktail hit you too hard, you might literally slip and fall. Internal or external conditions might genuinely prevent an agent from exercising her basic competences and skills. Similarly, speakers of a language might come to violate the phonemic constraints of their language, say, if they are extremely tired, having an epileptic attack, or if asked to repeat very quickly a string of nonsense syllables (Mowrey and McKay 1990; Pouplier 2003). But this is as it should be. Under normal conditions, basic actions, like basic beliefs, are protected from certain kinds of mistakes. But they need not be protected against *all* sorts of failures.

What is true of uttering the phonemes of one's language or the alternated stride might also be true about fist clenching and other common examples. Or maybe not. One of the advantages of the criterion is that it can be *operationalized*, which means that both naturalistic and controlled observation can help decide the results of applying it in different cases. Behaviourally speaking, slips are actions that their agents quickly recognize as falling short of what they intended. The recognition is typically accompanied by surprise. And the mistake can easily be corrected upon being noticed (Baars 1992; Poulisse 1999, ch. 2).

7. Scepticism

Given that actions theorists tend to countenance basic actions, an existence proof would seem unnecessary. Yet, Michael Thompson (2008, 107-112) denies their existence on the grounds that every action can be indefinitely divided and that each of its parts, being a means for the more complex action, qualifies as an action in and of itself. Imagine an agent moving from point A to point C. Because the action takes time and occurs in space, Thompson argues, it could be divided into the movement from A to B and

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stride. Experiments with split-belt treadmills provide further evidence that the stride pattern is a non-breakable unit (Reisman et al. 2005; Choi & Bastian 2007). In them, human subjects have been show to adapt to different patterns of locomotion, including moving each of the legs at different speeds and even different directions. Upon returning to normal conditions, subjects tend to show adaptation after-effects: limping, uneven stride times, etc. However, they always maintain the one-to-one stepping pattern (alternating steps with support periods and no airborne periods) characteristic of everyday walking

from B to C, where each of these movings is a means for the larger action and, hence, itself an action. In so far as this kind of process of division can be iterated indefinitely, he concludes, there are no basic actions.

The argument, however, does not go through. It is, perhaps, true that every action can be indefinitely divided in the way in which Thompson envisions. Yet, from the fact that an action can be thus divided, it does *not* follow that it is so divided. Moving from A to B and from B to C *could* each be means for moving from A to C. But they *need not* be. There could be an agent for whom, because of her skills or training, the latter has become an *action unit*. In moving from A to C, she would obviously move through B. But *for her* the latter would not be a means for moving from A to C.

Consider again the case of speech production. Uttering a phoneme in any language is evidently an action with parts: moving one's tongue, letting air out in coordination with the vibration of the chords, etc. In turn, these parts can be subdivided: the tongue is moved, say, beginning far away from the roof of the mouth to the soft palate to pronounce the German name *Bach*. Now, as anyone who has learned a new language late in life knows, one sometimes needs to do some of these things as means to pronounce new phonemes.

The situation of competent speakers, however, is very much unlike this.[14] Although one could take these steps, in fluent speech one does not need to do it. At least, this is what the evidence from psycholinguistics reviewed here would seem to indicate. Speakers do not slip in uttering phonemes of their language, because for them uttering each of them is an action unit. From their perspective as fluent speakers, there are no means by which they utter them.[15]

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[14] Of course, as a competent speaker, one might also break down the uttering of phonemes into smaller actions, say, if one is trying to teach someone else the pronunciation one already masters. But, again, this does not show that uttering phonemes in fluent speech is not basic for the speaker. It just shows that there are alternative (non-basic) ways for her to utter phonemes.

[15] It is hard to say how exactly the proposed criterion would work out in Thompson's example, given how schematic the latter is. But, in rough, the idea would be that if moving from A to C were basic, one would not observe the mover slip, say, by moving from A to B* instead of A to B. Of course, the agent could move through B* out of clumsiness, but that's a different kind of failure.

The point can be put in a slightly different way. If an action is basic then, as far as the agent is concerned, there is no further action she needs to perform as a means. Thompson, however, objects that in the process of dividing the action of moving from A to C no *minimum sensibile* (his terminology) can be found: no point at which the division ceases to reflect how the agent structures her action by means of smaller actions. There is no such point or, if there is one, its location can only be arbitrarily settled. Either way, scepticism about basic actions ensues.

However, as we have seen in the process of dividing speech acts into their constituent parts, there seems to be a natural stopping point, which slips help to mark. Under normal conditions, competent speakers do *not* slip in assembling individual phonemes out of the possible sounds they can otherwise voice. Due to years of intense rehearsal, they do not face the problem of figuring out how to cobble together articulatory movements into those phonemes and, hence, they do not make the corresponding planning mistakes. In contrast, when they face the problem of assembling phonemes into larger wholes, there is the possibility of slipping. At supra-phonemic levels, speakers regularly substitute, transpose, or omit parts of the intended utterance.

8. Practical knowledge

Many theorists appeal to the agent's practical knowledge to determine which parts of her actions can genuinely be regarded as means to perform them. Thus, they count as basic those actions such that their agents' knowledge of how to do them (more precisely, their exercise of that knowledge at the time) is basic. According to this view, knowing how to do an action is basic if it does not depend on the agent's knowing how to do some other action (Goldman 1970; Enc 2003; Hornsby 2005; Smith 2010).

In a way, this is compatible with what I have been arguing so far. Slip-proof actions are normally represented by the agent in a plan for an over-arching action but they are *never* the object of *further* planning. So, if knowing in a basic way how to do an action is knowledge without a further plan, the proposals would seem to agree.

The problem with the knowledge criterion is that it is unclear how to identify when a piece of knowledge is in fact basic and, thus, when the criterion is legitimately applied. To illustrate, consider an argument by Jennifer Hornsby (2005). According to her, and contrary to what I have been urging here, voicing your thoughts in a sentence is normally basic for speakers. To do it, you do not need to exercise knowledge regarding how the vehicles that express those thoughts go together. Instead, once you

know what thoughts you want to voice, sub-personal mechanisms select and assemble the vehicles by which those thoughts are expressed.

To argue for this, Hornsby appeals to what speakers seem to tacitly *know without observation*, as opposed to what they come to know by listening to themselves speak.[16] In fact, her argument is a *modus tollens* on the following conditional: "If the speaker did exercise procedural knowledge of how to voice her thoughts, then, even if the procedure were something of which she was not explicitly aware, she would be in a position to know of it 'without observation' as she spoke (Hornsby 2005, 121)."

According to Hornsby, the phenomenology of everyday speech shows that the consequent of the conditional does not hold. So, she denies the antecedent and concludes that voicing one's thoughts in a sentence is basic. For her, a speaker who becomes aware of the vehicles of her utterances does not do it attending to something already known by her without observation (Hornsby 2005, 122-123). If she does it at all, she does it in the capacity of listener of her own speech, for example, noticing ex-post that she has said the wrong word, that her utterance was ungrammatical, etc.

There is evidence, however, that Hornsby is mistaken about this—more cautiously, that the phenomenological evidence she invokes might be misleading. One recurrent observation in naturalistic and controlled settings is that slips can actually be corrected before they happen, even before there is a motor manifestation of them. In the literature, these are known as micro-slips: slips corrected early enough in their development not to count as mistakes (Reed and Schoenherr 1992). Sometimes speakers report micro-slips: you catch yourself about to say the wrong word, or about to make a Spoonerism. But they too can be inferred from overt corrections that seem to be anticipations of the slip.

Micro-slips are evidence to countenance non-perceptual editing exercises, even at sub-sentential levels, that operate prior to processes involved in phonation and voicing (Laver 1973; Motely et al. 1981; MacKay 1987; Wheeldon and Levelt 1995; Postma 2000). Further, the existence of such exercises is evidence that, contrary to what Hornsby argues, voicing your thoughts in a sentence is not basic, at least not according to the

[16] For the notion of knowledge without observation, I follow Hornsby: "if she (the agent) were to attend to, or to reflect upon, what she is doing, then it is something she could find herself doing, and in finding herself doing it, she would not need to make observations of the sort that a spectator might make." (2005, 121).

criterion proposed here. Awareness of the micro-slip normally involves an exercise of procedural knowledge at the level of the vehicles of those thoughts. Or, in the terms used earlier, it involves a plan in which the agent, and *not merely* some sub-personal mechanism within her, represents the utterings of elements of the sentence as such.

Obviously, Hornsby's is not the only knowledge-based criterion for basic actions. But her proposal illustrates a crucial problem that such accounts are likely to face. If one wishes to sort out which actions are basic by appealing to the criterion that one's knowledge of how to do them is basic, one better have a way of determining when knowledge is basic. Here, as in other cognitive domains, first-person reports and appeals to phenomenology can be highly misleading.

In contrast, because the detection of slips can be operationalized, the present proposal has the resources to accommodate the problem. Slips, it has been argued, mark the joints of plans, in particular, they serve to signal the lower bounds of the agent's planning. Thus, to the extent that basic knowledge and basic planning coincide, the empirical criterion offered here actually serves double duty, helping to identify instances of basic knowledge. In short, basic knowledge is procedural knowledge of how to perform slip-proof actions.

9. Bodily movements

Among action theorists, it is common to suppose that basic actions (except, perhaps, in cases of pure omissions and mental actions) are restricted to bodily movements. Some theorists think that, in so far as exercises of agency involve a person causing an event, actions are those events caused (Davidson 1971; Smith 2010). Others insist that actions, rather than being events, are the causings of those events (Hornsby 1980; Dretske 1988). Accordingly, some claim that basic actions are bodily motions; others claim that they are causings of bodily motions.

Regardless, the essential contrast intended here is between moving one's body and the effects the resulting motions have beyond the surface of one's skin. And the point of the contrast is to isolate the contribution of the agent from the contribution that the world, so to speak, makes. Isolating the former is a way of picking out basic actions. The latter are supposed to occur within the limits of one's skin.

Given what has been said so far, I would seem to agree. Having insisted upon speaking as a paradigmatic case of agency seems to invite one to locate the search for basic actions within the bounds of the skin. For one thing, speaking is done with your body without contributions of the

world other than those that allow for bodily control. For another thing, uttering phonemes in one's language seems to be a good example of what it would be for an action to be just the moving of one's body.

It would be a mistake, however, to restrict slip-proof actions *in general* to bodily movements. Simply put, the generalization is not empirically supported. Whereas the restriction holds in the verbal domain, in some non-verbal instances, the evidence seems to indicate that what is basic (that is, slip-proof) for an agent goes beyond the limits of her body.

To see this, consider skilled typists. As it has been observed, typing slips among experts (typos) always involve the wrong key being struck by a finger appropriate to that key. Most often they involve hitting the key horizontally or vertically adjacent to the intended one: typing mi*a*take or mi*x*take, instead of mistake. Less often, but also common, they consist of homologous finger substitutions: typing *d* instead of *k* (Lessenberry 1928; Rosenbaum 2010, ch.9).

One kind of mistake not observed, however, is finger-to-key confusions. That is, if you are an expert (roughly, if you do not hunt-and-peck) and make a typo by hitting *w* instead of *e*, you would not hit the *w* with your middle finger. You would do it rather with your ring finger. Due to years of practice each key becomes associated with one particular finger. So, having figured out which key to hit, you do not face the additional problem of deciding which finger to use.[17]

These observations show, in the first place, that typos do not occur as common sense has it. It is not as though the finger is moved too far to the left or the right, too high or low. Rather, the mistake occurs at the level of key selection. Yet, more important, the observations provide good evidence that keystrokes are for skilled typists what phonemic segments are for competent speakers. One substitutes, transposes, or omits them, but one doesn't normally err in producing them, say, by confusing which key goes with which finger. The evidence indicates, in other words, that what is basic for skilled typists are not finger movements but keystrokes.

It would be surprising if typing were the exception. It is well known that with repeated use tools become "transparent" to their users--extended

[17] Grudin (1983) was the first to report this observation, which played a major role in re-conceptualizing computational models of typing and validating existing ones (e.g. Rumelhart and Norman 1982) that assume finger movements to be circumscribed by the keys associated with each finger.

cognition theorists have provided various examples.[18] And it might turn out that using the tool, not moving one's body in such-and-such way, is what's basic in some of these cases. Think about moving the cursor in your screen. Or consider people who regularly use prosthetic limbs or other extensions of their body. After a period of adaptation, for instance, leg amputees report having to consciously think about the position of their limbs before getting up, yet once in motion being able to "just walk."[19]

10. Conclusion

In this paper, I've put forward a criterion for identifying basic actions. The criterion generalizes results from psycholinguistics in the context of a philosophical theory of action. In addition, it helps defuse scepticism about basic actions, illuminates discussion of basic knowledge, and shows why it might be a mistake to restrict the search for basic actions within the limits of the agent's body. Overall, the proposal illustrates how much it can be gained by thinking systematically about certain everyday mistakes and by taking seriously the idea that speaking is a paradigmatic way of acting. [20]

References

Abd-El-Jawad, H., & Abu-Salim, I. (1987) Slips of the tongue in arabic and their theoretical implications. Language Sciences Language Sciences, 9(2), 145-171.

Amaya, S. (2013) Slips. Noûs, 47, 559-576.

Amaya, S. (in prep). Without belief.

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[18] The terminology of tools being transparent comes from (Norman 1999). For discussion in relation to extended cognition, see (Clark 2008).

[19] For discussions of adaptations to prosthetic limbs, see (Fraser 1984 and (Murray 2004, 968). For adaptation in laparoscopic interventions by expert surgeons, see (Verwey et al. 2005; Wilson et al. 2010).

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Anscombe, G.E.M. (1963) Intention. Ithaca: Cornell University Press.

Baars, B. (1992) The many uses of error: Twelve steps to a unified framework In B. Baars (Ed.), Experimental slips and human error (pp. 3-37). New York: Plenum Press.

Baier, A. (1971) The search for basic actions. American Philosophical Quarterly, 8(2), 161-170.

Bermúdez, J.L. (2000). Personal and subpersonal: a difference without a distinction. Philosophical Explorations, 3, 63-82.

Butterfill, S., Sinigaglia, C. (2014) Intention and motor representation in purposive action. Philosophy and Phenomenological Research, 88, 119-145.

Brand, M. (1968) Danto on basic actions. Nous, 2, 187-190.

Brand, M. (1984) Intending and acting: Toward a naturalized action theory. Cambridge, MA: MIT Press.

Bratman, M. (2010) Agency, time, and sociality. Proceedings of the American Philosophical Association, 84(2), 7-26.

Bratman, M. (1987) Intention, plans, and practical reason. Cambridge, MA: Harvard University Press.

Chen, J. (1993) A corpus of speech errors in mandarin chinese and their classification. The World of Chinese Language, 69, 26-41.

Chomsky, N. (1965) Aspects of a theory of syntax. Cambridge: MIT Press.

Choi, J. and Bastian, A. (2007) Adaptation reveals independent control networks for walking. Nature Neuroscience, 10, 1055-1062.

Clark. A. (2008) Supersizing the mind: embodiment, action, and cognitive extension. Oxford: Oxford University Press.

Cohen, A. (1966) Errors of speech and their implication for understanding the strategy of language users. Zeitschrift Für Phonetik, 21, 177-181.

Danto, A. C. (1965) Basic Actions. American Philosophical Quarterly, 2(2), 141-148.

Davidson, D. (1971) Agency. Essays on actions and events (pp. 43-61). Oxford: Clarendon Press.

Davidson, D. (1975). Thought and talk. In In S. Guttenplan (ed) Mind and Language, Oxford: Oxford University Press.

De Boysson-Bardies B, Sagart L, & Durand C. (1984) Discernible differences in the babbling of infants according to target language. Journal of Child Language, 11(1), 1-15.

Dell, G. S. (1986) A spreading-activation theory of retrieval in sentence production. Psychological Review, 93(3), 283-321.

Dell. G. S. (1990) Effects on frequency and vocabulary type on phonological speech errors. Language and Cognitive Processes, 5, 313-349

Devereux, G. (1957) A primitive slip of the tongue. Anthropological Quarterly, 30(1), 27-29.

Dretske, F. (1988) Explaining behavior: Reasons in a world of causes. Cambridge, MA: MIT Press.

Dummett, M. (1975) What is a theory of meaning? In S. Guttenplan (ed) Mind and Language, Oxford: Oxford University Press.

Enc, B. (2003) How we act: Causes, reasons, and intentions. Oxford: Clarendon Press.

Evans, G. & McDowell, J. (1976) Introduction. Essays in Semantics. Oxford: Clarendon Press.

Ferrero, L. (2009) What good is a diachronic will? Philosophical Studies, 144(3), 403-430.

Fodor, J. (1975) The language of thought. Cambridge: Harvard University Press.

Fraser, C. (1984) Does an artificial limb become part of the user? The British Journal of Occupational Therapy, 47, 43-45.

Fromkin, V. (1973) Introduction. In V. Fromkin (Ed.), Speech errors as linguistic evidence (pp. 11-45). The Hague: Mouton.

Fromkin, V. (1971) The non-anomalous nature of anomalous utterance. language. Language, 47, 27-52.

Goldman, A. (1970) A theory of human action. Englewood Cliffs, N.J.: Prentice-Hall.

Grudin, J. (1983) Error patterns in novels and skilled typists. In W. E. Cooper (Ed.), Cognitive aspects of skilled typewriting (pp. 121-143). New York: Springer Verlag.

Hohenberger, A., Happ, D., & Leuninger, D. (2002) Modality-dependent aspects of sign language production: Evidence from slips of the hands and their repairs in german sign language. In R. Meier, K. Cormier & D. Quinto-Pozos (Eds.), Modality and structure in signed and spoken languages. (pp. 112-142). Cambridge, MA: Cambridge University Press.

Hornsby, J. (2005) Semantic knowledge and practical knowledge. Proceedings of the Aristotelian Society, 79, 107-130.

Hornsby, J. (1980) Actions. London: Routledge and Kegan.

Jaeger, J. (2005) Kid's slips: What young children's slips of the tongue reveal about language development. Mahwah, NJ: Lawrence Erlbaum.

Jónsdóttir, M., Adólfsdóttir, S., Cortez, R. D., Gunnarsdóttir, M., & Gústafsdóttir, H. (2007). A diary study of action slips in healthy individuals. The Clinical Neuropsychologist, 21(6), 875-883.

Klima, E., & Bellugi, U. (1979) The signs of language. Cambridge, MA: Harvard University Press.

Lashley, K. S. (1951) The problem of serial order in behavior. In. L. Jeffress (ed) Cerebral Mechanisms in Behavior, New York: John Wiley & Sons.

Laver, J. (1973). The detection and correction of slips of the tongue. In V. Fromkin (ed.) Speech errors as linguistic evidence. The Hague: Mouton.

Lessenberry, D. (1928) Analysis of errors. Syracuse, NY: L.C. Smith and Corona Typewriters.

MacKay, D. G. (1987) The organization of perception and action: A theory for language and other cognitive skills. New York: Springer-Verlag.

Mattson, M., & Baars, B. (1992) Laboratoy induction of nonspeech errors. In B. Baars (Ed.), Experimental slips and human error (pp. 151-193). New York: Plenum Press.

Mele, A. (1992) Springs of Action. New York: Oxford University Press.

Mele, A. R., & Moser, P. K. (1994) Intentional action. Nous, 28(1), 39-68.

Meringer, R. (1908) Aus dem Leben der Sprache. Berlin: B. Behr's Verlag.

Meyer AS. (1992) Investigation of phonological encoding through speech error analyses: Achievements, limitations, and alternatives. Cognition, 42(1-3), 1-3.

Miller, G., Galanter, E. & Pribram, K. (1963) Plans and the structure of behavior. New York: Holt, Reinherdt & Winston.

Motley, M., Baars, B., & Camden, T. (1981) Syntactic criteria in prearticulatory editing: Evidence from laboratory induced slips of the tongue. Journal of Psycholinguistic Research, 10, 503-522.

Mowrey, R., & MacKay, I. (1990) Phonological primitives: Electromyographic speech error evidence. The Journal of the Acoustical Society of America, 88(3), 1299-312.

Murray, C. (2004) An interpretative phenomenological analysis of the embodiment of artificial limbs. Disability and Rehabilitation, 26(16), 963-973.

Norman, D., Shallice, T. (1986) Attention to action. In R. Davidson, G. Schwartz and D. Shapiro (Eds.), Consciousness and self-regulation (pp. 1-18). New York: Plenum Press.

Norman, D. (1999) The invisible computer. Cambridge: MIT Press.

Norman, D. (1981) Categorization of action slips. Psychological Review, 88, 1-15.

Pacherie, E. (2006) Towards a dynamic theory of intentions. In S. Pockett, W.P. Banks and S. Gallagher (eds.) Does Consciousness Cause Behavior? Cambridge: MIT Press, pp. 145-167

Pollock, J. L. (1995) Cognitive carpentry a blueprint for how to build a person. Cambridge: MIT Press.

Postma, A. (2000) Detection of errors during speech production: a review of speech monitoring models. Cognition, 77, 97-131.

Poulisse, N. (1999) Slips of the tongue: Speech errors in first and second language production. Amsterdam: Benjamins.

Pouplier, M. (2004) Units of phonological encoding empirical evidence. Thesis (Ph. D), Yale University.

Reason, J. (1984) Lapses of attention in everyday life. In R. Parasuraman, & D. Davies (Eds.), Varieties of attention (pp. 515-549). New York: Academic Press.

Reason, J. (1992) Cognitive underspecification: Its variety and consequences. In B. Baars (Ed.), Experimental slips and human error (pp. 71-91). New York: Plenum Press.

Reason, J., & Mycielska, K. (1982) Absent-minded? the psychology of mental lapses and everyday errors. Englewood Cliffs, N.J.: Prentice-Hall.

Reason, J. (1990) Human error. Cambridge: Cambridge University Press.

Reed, E., & Schoenherr, D. (1992) The neuropathology of everyday life: On the nature and significance of microslips in everyday life. Unpublished Manuscript.

Reisman, D., Block, H., Bastian, A. (2005) Interlimb coordination during locomotion: what can be adapted and stored? Journal of Neurophysiology, 94, 2403-2415.

Rosenbaum, D. A. (2010) Human motor control. Amsterdam; Boston: Elsevier.

Rossi, M., & Peter-Defare, E. (1998) Les lapsus: Ou comment notre fourche a langué. Paris: Presses Universitaires de France.

Ruben, D. H. (2003) *Action and Its Explanation*. Oxford: Oxford University Press.

Rumelhart, D. & Norman, D. (1982) Simulating a skilled typist: a study of skilled cognitive-motor performance. Cognitive Science, 6, 1-36.

Sandis, C. (2010) Basic actions and individuation. In T. O'Connor, & C. Sandis (Eds.), A companion to the philosophy of action (pp. 10-17). Oxford: Wiley-Blackwell.

Searle, J. (1983) Intentionality : An essay in the philosophy of mind. Cambridge: Cambridge University Press.

Sellars, W (1956) Empiricism and the Philosophy of Mind, *Minnesota Studies in the Philosophy of Science*, 1, 253–329.

Sellen, A. J. (1990) Mechanisms of human error and human error detection. Thesis (Ph.D), University of California San Diego.

Sellen, A., & Norman, D. (1992) The psychology of slips. In B. Baars (Ed.), Experimental slips and human error (pp. 317-339). New York: Plenum Press.

Shattuck-Hufnagel, S. (1983) Sublexical units and suprasegmental structure in speech production planning. In P. MacNeilage (Ed.), The production of speech (pp. 109-136). New York: Springer.

Smith, M. (2010) The standard story of action: An exchange (1). In J. Aguilar, & A. Buckareff (Eds.), New perspectives on the causal theory of action (pp. 45-55). Cambridge, MA: MIT Press.

Spier, L. (1922) Havasupai days. In E. Parsons (Ed.), American indian life (). New York: Huebsch.

Stemberger, J. (1991b) Apparent anti-frequency effects in language production: The addition bias and phonological underspecification. Journal of Memory and Language, 30(2), 161-185.

Stemberger, J. (1991a) Radical underspecification in language production. Phonology, 8(1), 73-112.

Stoel-Gammon C. (1985) Phonetic inventories, 15-24 months: A longitudinal study. Journal of Speech and Hearing Research, 28(4), 505-12.

Thompson, M. 2008. Life and Action. Cambridge: Harvard University Press.

Verwey, W., Stroomer, S., Lammens, R., Schulz, S., & Ehrenstein, W. (2005) Comparing endoscopic systems on two simulated tasks. Ergonomics, 48(3), 270-287.

Viso, S., Igoa, J., & García-Albea, J. (1991) On the autonomy of phonological encoding: Evidence from slips of the tongue in spanish. Journal of Psycholinguistic Research, 20(3), 161-185.

Wheeldon, L. & Levelt, W. (1994) Monitoring the time course of phonological encoding. Journal of Memory and Language, 34, 311-334.

Wilson, M., Vine, S., McGrath, J., Brewer, J., Defriend, D., & Masters, R. (2010) Psychomotor control in a virtual laparoscopic surgery training environment: Gaze control parameters differentiate novices from experts. Surgical Endoscopy and Other Interventional Techniques, 24(10), 2458-2464.

Wells, R. (1951) Predicting slips of the tongue. The Yale Scientific Magazine, 26, 9-30.