

On psychology and embodiment: some methodological experiments

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In Latimer, J. & Schillmeier, N. (eds., 2009)

Un-Knowing Bodies

Sociological Review Monographs

London: Wiley-Blackwell

Introduction

The set of discoloured white plastic canisters sit in rows in the grubby box. She selects two in turn and hands them together to her fellow student. Her friend sighs, shifts on the uncomfortable laboratory stool and holds the canister one in each hand, feeling the weight of the lead shot contained inside. He makes an overly elaborated gesture of comparing the two. A short pause ensues, which feels like much longer to both of them. ‘This one is definitely heavier’ he declares, with a distinct tone of weariness in his voice. She jabs at the sheet of paper in front of her with a slightly leaking disposable pen, which, she notes with irritation, has leaked onto her fingers. He hands the canisters back to her, yawning loudly. They both stare at the number of tubes left in the box. So many more left to go.

Generations of psychology students have been bored insensible by this procedure. It involves the repeated presentation of a series of stimuli, typically canisters of varying weight, to the experimental subject. The two test stimuli are presented together and the subject is asked to estimate which is the heavier. Whilst the subject is unaware of their actual differences in weight, the experimenter follows a carefully prescribed schedule, and by amassing a lengthy series of reported differences is able to construct a graphical relation between the actual weight and the subject’s judgement of perceived weight. The smallest unit of this relation is known as ‘just noticeable difference’ (JND) – that is, the minimal judgement of perceived difference that a given subject is able to make. The overall mathematical function in which this relation is explicable is termed ‘Fechner’s Law’. This law states that the recognition of psychological differences proceeds through an arithmetic progression that is correlated to the geometrical progression of physical differences.

Fechner’s law is typically taught in introductory psychology course because it demonstrates

the power of mathematical modelling to render the subjective as measurable, calculable and predictable.

Unsurprisingly, there is more to Fechner's law than is discussed during introductory psychology courses. The law only really seems to hold under limited circumstances, and even then with some degree of statistical tweaking. Its significance for contemporary psychological enquiry is therefore somewhat limited. The JND procedure is considered as an historical artefact and pedagogical tool rather than a 'live' element in current epistemology. It is a way of demonstrating to students that the business of doing psychology is a serious matter of careful experimentation and precise statistical measurement. Hence the not-so-secret reason for its inclusion on many introductory courses is to scare off students whose view of the discipline is forged by 'popular' or 'self-help' psychology, and who are correspondingly thought to be unwilling to submit to the rigors of a statistically driven science. With every canister lift, pen scribble and yawn, scientificity is drilled into the bodies of student psychologists. From the perspective of critical psychology, the JND procedure can be regarded as a symbol of everything that is wrong with the experimental tradition in psychology: the hostility to the arts and humanities, the narrow view of scientificity driven by jealousy of the clear successes of the methods of natural science (or 'physics envy'), the unshakeable tendency toward a 'fallacy of misplaced concreteness' (as Whitehead would put it), and most of all, the oversight of the complexities of lived, felt, embodied experience.

As a method, the JND procedure appears to have very little to offer for a phenomenologically oriented account of experience. Indeed the procedure systematically excludes practically all aspects of how participants engage with it, save for the sole aspect of making and recording a judgement of the difference in weight between the two canisters. The repetitive lifting, the work of monitoring and controlling, the experience of being in the peculiar space of the teaching laboratory, the sheer monotony of taking part in the experiment/demonstration – all this is formally unimportant. And yet it is precisely these aspects of the experience which are critical to the pedagogical goals of the procedure. It is absolutely necessary that students have a physical experience of the arduous nature of the production of scientific psychological knowledge. It is not so much that the body is excluded from the science, rather that that the contemporary application of the procedure recruits the

embodied participant in a very particular way in order to ground its own intelligibility. The literal *meaning* of the JND procedure may well be found in the mathematics of Fechner's law, but the *sense* – what it is to participate, to be exposed to the task – is in the disciplining effect of numbing, creeping, repetitive boredom.

This is unfortunate because Gustav Fechner, the originator of both the law and procedure, had an altogether richer set of concerns. His *Elements of Psychophysics* is an attempt to grapple with Spinoza's philosophy of immanence and becoming, which has proved so influential in recent years for social and cultural studies of the body (e.g. Brown & Stenner, 2009; Hardt & Negri, 2004; Gatens, 1991; Massumi, 2002). Fechner writes at the historical moment when philosophy of mind looked to the advances in physiology and neuroanatomy, and saw in their experimental practices a new and dramatic way of staging metaphysical problems. The key problem for Fechner is finding a way to demonstrate Spinoza's famous reconfiguration of the mind/body problem as the parallelism of the attributes of thought and extension. Mind and body are no longer distinct transcendental domains, but rather two aspect of a single substance which is experienced as either the mental or the physical in the limited causal powers of the human. In order to translate metaphysics into physics, Fechner reasons that if mind and body do exist in parallel rather than hierarchical relations to one another, then the presentation of objects to the subject ought to be jointly registered. The body will physically respond to the perceptual impress of objects in a way which is directly linked to the recognition of the object by consciousness. Fechner then proposes that this linkage can be specified in mathematical terms.

Whether or not it is the case that such a mathematic relationship is plausible between mind and body (a question that has received a great deal of attention since Fechner's time), what is truly astonishing about the JND experiment is that, to use Isabelle Stengers' (2000) phrase, it opens up a 'new mode of accessing reality'. In the experiment mind and body are *pre-posed*, or stood before us, in a unique fashion. She or he who constructs the JND curve is able to make a claim to have made the body and mind of the subject speak in concert to the questions they have asked of it. The Fechner experiment is, in Stengers terms, an 'event'. It is a scene by which the power is conferred upon nature to confer back on the experimenter the right to speak in its name. In the mathematical relation that emerges, Fechner can claim

to have allowed the body to have spoken in a new language, such that it can have told something of what it is and what it can do.

Is this still the case with the contemporary application of the JND experiment? Are bored psychology students also letting the body speak through the medium of canister lifts and pen marks? We do not think so. Because the JND experiment no longer has the sole character of an event. Its methodological innovation has been subsumed into an overarching instrumental concern with fixing the body as a clearly known object of psychological concern. What the body may or may not be saying matters less than the fact that the body can be made to speak. Stam (1998) describes the development of this instrumentality in psychology as following two distinct phases. In the first half of the last century the body was treated by psychologists as an abstract, mechanised entity, which allowed the generalisation of notions of stimulus, response, reflex, habit and drive at the same time as it ‘managed’ subjectivity by reducing it to issues of detailed psychophysical measurement. In the second half of the 20th century this behaviourist psychology declined, to be replaced by a cybernetic systems metaphor where information, signal, noise, difference and feedback predominated. In this new cognitive psychology the body per se became further reduced as the container of mind, its capacities made subordinate to self-regulating control systems. Within this neo-Cartesian conception the body “has evolved into the sexless hull of the robomind” (Stam, 1998 p.4).

The critical response to this treatment of the body is nearly always to reject experimentation per se as an inherently flawed and reductionist procedure (Sampson, 1998; Stam, 1998). Irrespective of Fechner’s particular ambitions of creating new forms of access to the body, the experimental tradition which he helps to inaugurate proves itself unable to handling the lived particularities of embodiment. It makes of the body a mere recording surface for its own theoretical indulgences. In place of experimentation, qualitative methods – in particular discourse analysis – have become the method of choice for critical psychologists (Hepburn, 2006; Hollway, 1989). The attraction of qualitative methods in psychology is that they appear to accord dignity participants by allowing for a wide range of responses, rather than the pre-established minimal options that characterise experiments (e.g. judge which canister is heavier; press the button when the stimuli occurs; recall this string of numbers).

In particular, by focussing on language as the primary medium through which meaning and social interaction is performed, qualitative methods adopt a model of the person as an expressive being capable of reflecting upon and explicating their own conduct (Harré, 1991).

However, this ‘turn to language’ in psychology also has a difficulty in engaging with lived experience. The body and its sensed, felt engagement with the world around it is rarely represented as such in qualitative work in psychology. When it is, it must first be converted into either *talk around the body* or as the *embodied grounds of talk* (see Cromby, 2005; Ellingson, 2006; Johnson, 2007; Morgan, 2005). For example, some recent work in discursive psychology has focused on the transcription of crying during social interaction. Analysts have typically noted that a participant was [crying] during an interaction by inserting the comment into square brackets, and where relevant have inserted a [sob], a [sniff] or a [blows nose]. Hepburn (2006) argues perceptively that this transcription practice is inadequate in the sense that it omits most of the interactional organisation of crying, the ways in which it is regulated, restrained and released in accord with social cues. In order to engage with these interactional dimensions, Hepburn proposes the decomposition of [crying] into one of seven kinds of *sobbing particles*, elements of transcript precisely timed and denotated to stand for each gasp, sob, snuffle and so on. This transcription procedure then facilitates their analysis as interactionally relevant, situated and occasioned moments readable for their communicative import. Hepburn’s points are valid and the strategy yields interesting analytic insights, but the practice she advocates nevertheless remains a formalised, methodologically constrained way of translating embodied experience into language. Since it is precisely a transcriptional strategy, and to this extent purely a refinement of what we do with language in analytic contexts, it leaves the gulf between language and embodied experience intact whilst nevertheless giving the superficial appearance of bridging it (see Del Busso & Reavey, forthcoming; Stephenson & Papadopoulos, 2007)..

The problem of finding ‘new modes of access’ to embodied experience persists across both experimental and qualitative methods in psychology. In this chapter we will describe our own collective experiences working together as a research group exploring the potential of various methodologies to surface embodied experience (see also Gillies, Harden, Johnson, Reavey, Strange & Willig, 2004; 2005; Brown, Cromby, Harper, Johnson & Reavey,

forthcoming). We will focus here on the particular challenges and difficulties that these methodologies present, and on our own particular difficulties as analysts in engaging with the materials which result. We will also demonstrate that in taking embodiment seriously we are forced to reconsider the experimental tradition in psychology and its ongoing legacy for the discipline in a new way.

The methodological process of failing to get to grips with embodiment?

The project began in the autumn of 2005 with three female and three male group members. However, one of the female group members left shortly after due to other commitments. The remaining two women had previously been involved in a women-only group examining issues of embodiment. That group had begun to use Memory Work (Haug, 1987) to investigate the experience of sweating and pain (Gillies et al., 2004) and it had also used visual methods to explore the experience of ageing (Gillies et al, 2005). The three men came to the group with some knowledge of, but no direct experience of the methods. Whilst we shared a background in psychology we were working in a variety of disciplines and institutions.

Given our theoretical preoccupations with the topic of embodiment we were keen to engage an appropriate research method. Memory Work seemed to address our research questions which were to explore embodied experience by delineating key aspects and examining commonalities and differences in our experiences. Willig (2001) notes that Memory Work has allowed:

researchers to focus on the role of the body in the formation of a sense of self and identity because it works with descriptions of scenes or events that are rich in circumstantial detail. The method is designed to access how a situation was *experienced* rather than how it was explained or accounted for by its participants. Such a focus on 'being in' a situation (as opposed to 'thinking about' it) implicates both body and mind. It provides a way of studying what is sometimes referred to as *embodied subjectivity* (Willig, 2001, p.133, emphasis in original)

For the initial task we decided to use memory work methods. Crawford, Kippax, Onyx, Gault & Benton (1992) and Willig (2001) note a number of key stages which we followed. They stress the importance of choosing a 'trigger' which or 'a word or short phrase which is expected to generate memories that are relevant to the topic under investigation' (2001: 128). Since our group was newly formed and we were still developing a way of working together we chose the relatively uncontroversial trigger 'dizziness' and agreed to write one 'positive' memory and one 'negative' memory. The group members wrote memories in the third person and brought them along to a meeting where we discussed each one in turn before engaging in a cross-sectional analysis looking for commonalities and differences. Over subsequent meetings we began to draw out themes from the analytic discussion.

One of the first things we noted was the variety of ways in which (what we thought to be) a relatively discrete experience – 'dizziness' – was interpreted. Some experiences seemed linked to embarrassment or nausea caused by intoxication. Others were either self induced or accidental. It became rapidly unclear whether we were all focusing on the 'same' type of experience. However we were able to settle on clear themes which appeared to cut across the memories. In this sense our approach was fairly traditional, and followed the basic analytic pathway of most forms of discourse analysis. Indeed to a certain extent we treated the memories as 'texts' to be analysed. We set about analysis collectively and tape recorded the session, which was then transcribed such that the materials for analysis comprised both the original memories and the text of the subsequent discussion. One of the first themes we discussed at length that appeared to emerge across the memories was 'control'. Many of the memories seem to involved a sense of 'losing control' whilst dizzy. Take the following:

Dizzy memory (negative)

He is lying on his bed. He is so drunk that he has not got undressed. He has not even got under the covers. He has vomited twice already tonight and he doesn't want to be sick again. He has put a bowl by the bed just in case. As he is lying there the waves of nausea build. I must keep control or I'll throw up he thinks. But the waves keep getting stronger. Is it better with my eyes open or closed he wonders. He tries each but it doesn't seem to matter. With his eyes open the room begins to spin. With his eyes closed he still feels as though he is spinning but there is no visual reference point to judge

this against. He regrets mixing his drinks and not eating enough before the party. He feels embarrassed at having vomited out of the taxi window. He's glad he made it to the bathroom at his friends' house. He hates this feeling, the way it continues to build despite attempts to focus or be still. He feels helpless. I'll get through it, he thinks, I just need to see it through. The room continue to spin. Then he suddenly passes out.

This memory is replete with details of losing control - both of self and body – and of the gamut of feelings that follow, from physical nausea through to helplessness and intense social shame and regret. But loss of control can also be experienced as pleasurable, as in the following:

Dizzy Memory (Positive)

She climbed into the cardboard box and sat down with her legs crossed in front of her, arms clasped around her knees. Her sister closed the flaps down, one by one and clamped them together by tucking them under each other. Inside the box it was dark and stuffy. She shuffled around a little and then called 'ready'. Thump, over the box went. She rested on her back, knees to her face. Thump, over again – onto her shoulders, neck twisted, knees over her head. Thump. Face down, squished in the corner. Thump, over again, and again, moving down the red, carpeted, landing towards the top of the stairs. 'Stop, Stop' she gasped, laughing simultaneously. Thump. 'Please, stop' she called, weakly, hitting the side of the box. She could hear the creaking of cardboard as the lid was pulled open. Light shone in. Her sister stood overhead, laughing at the crumpled, distorted heap that was in the bottom of the box. 'My turn', she said, pulling her out.

This memory depicts a safe environment where a momentary loss of control (the 'stop, stop' and laughter) can be explored. Safety was associated with notions of youth and confidence, the sense that whatever one does everything will be alright in the end. Positive memories also focused on containment (e.g. the box), of being held or accepted, other waiting patiently and attentively for normality to return (e.g. 'my turn'). By contrast, the negative memories were marked with a complete lack of control. Danger or

unpleasantness tended to be marked with implications of social and physical isolation, as with the memory of being physically sick whilst alone. The negative memories also had a common thread where the subject felt themselves becomes the object of the gaze of others, typically depicted as critical or judgemental. Control then acted as a hinge or axis around which positive and negative was distributed. But within this there was some differentiation. We thought there was also an aspect of repetition (the repeated game of rolling in the box, for instance), although across all the memories there was an open question of whether repetition was actively sought or driven by others. Finally, there was an aspect of the pushing boundaries, the deliberate placing of oneself in a situation where something might occur in a particular way, in order to have an experience of a new or unusual kind.

This type of analysis seemed to be fairly coherent, and appeared to summarise many common threads running through the memories. However we found ourselves rapidly dissatisfied. In subsequent discussion we noted that the analysis had mobilised several commonsense notions, which were to some extent predictable in advance. 'Control' is a fairly general purpose notion which can to some extent be used as a descriptor for any form of social interaction. Although we felt that we had surfaced the notion inductively, the notion of control all too readily brings us back to a recognisable grammar of social-psychological descriptions of action that takes us away from the memories themselves. Or to put things another way, we rapidly found ourselves trying to generalise and impose a common framework on the memories, based on commonsense notions, rather than attempt to excavate the specificity and particularity of each memory. In this sense we subsumed the embodied sensations in each memory as instance of generalised recognisable social categories, such as control. We ended up moving away from the very thing we had attempted to study – embodiment – and towards a general framework of social-psychological descriptions.

The difficulty with control reprised in some way an earlier problem encountered by the group. Earlier explorations of memory work and visual methods had aimed avoid reifying divisions between mind and body by focussing on the specificities of embodied experience contained in the memories and painting produced by group members (see Gillies et al., 2004;

Gillies et al., 2005). But during the analysis of the materials, Cartesian assumptions and dualistic modes of explanation appeared to return. Doubtless as with the example of the 'control' theme, the problem was partly with the status of such assumptions as cultural commonplaces. Cartesianism, like 'control', is part of the psychological grammar of Western sense-making practices around the body. It is scarcely surprising to see it emerging in our own analyses as a means of organising a disparate set of materials.

In order to address this problem, we decided that to create a common shared experience. Our reasoning was that although our particular experiences and memories of the event would vary from person to person, we would at least be analysing the 'same' experience, and therefore be have less need to stretch a general theme across diverse events. We settled on a group visit to a luminarium entitled *Amoζozo* --an art installation in Nottingham designed by *Architects of Air* (<http://www.architects-of-air.com>). This was a series of large inter-connected tent-like chambers. It was made out of a fabric which, when seen from the inside and illuminated only by daylight was very brightly illuminated. We spent about an hour moving through the space together with other visitors. Once again, following the experience we later wrote memories of the event. However, at a subsequent meeting where we shared and analysed these memories we were intrigued by how, even though we had been in the same place at the same time, our experiences were so remarkably opposed as to throw doubts on whether this had actually been the case. Sharing the experience did not then seem to either clarify the process of memory work, nor the difficulties in our analysis.

A number of issues visible in the memories themselves illuminated some of the tensions which contributed to the faltering of group cohesion. These included; i) expectations; ii) performance against/with others and iii) the writing of the memories, and iv) engagement with the task. We will briefly consider each in turn.

i) Expectations

Some group members felt anxiety as to the nature of the task and their position with respect to others. This clearly 'arrested' some of us:

He feels a bit ridiculous...aware that he is copying their actions of a few minutes ago and wonder, briefly, if they are monitoring and comparing what he is doing . Has it been enough time yet?

It appears that such embarrassment surrounding the unclear expectations around the object of the exercise led to a degree of passivity in relation to the other group members; a sense that one should focus attempts in performing group cohesion by mirroring the actions of the others:

He isn't sure how to explore it but he sees the others experimenting and follows their lead.

This self-conscious move never fully results in a satisfactory engagement with the activity, and very little of the sense of 'being there' is captured, though there are slight references to colour and flickering. Successful engagement is never fully achieved it seems, though the will to do so is clearly there throughout.

ii) Performance with/ against others

Although we thought that we were clear about our research questions, our differing experiences and written accounts of them led us to wonder whether there had been a lack of clarity over the purpose of the activity. The next set of extracts suggests that this might only be successfully addressed when there is some alignment work between group members:

Some conversation about party possibilities [i.e. possible uses of the luminarium] affirms my own sense of how the place is being experienced. Begin to play...

Engagement, through play, seems to follow when there is a sense of common perception (e.g. on what kinds of activities the space might be suitable for). However, it is not just this ability to affirm one another's comments on the space which helps bring about some sort of cohesion, it is also the sense of mutual physical and spatial orientation, of being together in place. On this occasion, the other visitors to the luminarium acted as a barrier to group cohesion:

Finding some of the other people there annoying and noisy, wishing the group of us just had the place to ourselves...

He notices the other people in it. He wishes they weren't there, that the group had the place to themselves so he didn't feel so self-conscious.

Here it appears as if 'passivity' (an inability to actively participate) is created by an absence, not in group identity, but group movement. The physical, sensuous nature of the task itself and of the felt relations this set up between group members in accomplishing the task clearly impacted on the extent to which group members felt they were adequately contributing.

iii) Writing the memories

Difficulties and uncertainties around the process of writing the luminarium memories emerged in subsequent group discussion. For example, a number of us mentioned how difficult it was to remember exactly what occurred, given the gap between the activity and the writing. Of course, writing is itself an embodied activity and we varied in our stance towards it with some of us taking time over the writing of our memories whilst others wrote up to the deadline of the group meeting. We also varied in what we included in the memories. Willig (2001) notes how memories should aim to be richly descriptive with attention to 'as much circumstantial detail as possible', for example 'sounds, tastes and smells' and with an openness to 'contradiction, conflict and ambiguity' (p.128). However, we found that his invitation could be taken up in different ways with some choosing to focus on describing the colours, shapes and texture of the luminarium, based on the shared (although undiscussed) assumption that this was the purpose of the writing task. Thus, this kind of 'peripheral' information on the context of the activity, though entirely relevant may not be what captures our embodied experiences most fully.

v) Engagement with the task

All of the group engaged with the task on some level. For example, one member's rich description of the luminarium's 'warm and sexy dome of red' and her soaking up of the aroma, and another's description of his widening eyes were clear indications that some shift

in our perceptions had taken place. There were also descriptions of being ‘overwhelmed’ by the colours and sensations evoked by their surroundings, whilst one member vividly described how the colours conjured both ‘good, and less good’ impressions until he was able to adjust and enjoy the different light textures. A group member reported being able to ‘melt into her surroundings’ in such a way that different ‘child-like’ memories of enjoying space freely, and without expectation were evoked and embraced. Another described the sense of physical closeness to the others in the group:

I felt more de-centred...[and] felt overwhelmed by the need to make a connection. Connection to the rest of the group. These are people I had known a long time, but hardly touched, just spoken to...I felt my body opening up, lying down freely without reservation. The colours in the spaces allowed for a certain anonymity, which provided permission for greater physical intimacy with those around me.

By way of summary, we can see that the process of engaging in the task itself was not incidental to its perceived success or failure. The way that group members physically share the space with and orient towards one another fed through into the memories and the subsequent process of memory work analysis.

Reflections: Is embodied research impossible?

In this chapter we have described our own recent experiences as a research collective whose common aim was to explore the possibilities of embodiment research. As we have described, our experiences in this particular case are probably best characterised as ‘mixed’. Why should this be so? As we discussed at length in the preceding section, many of the problems may arise from the difficulty of creating an effective shared context in which experience may be adequately reported. As we saw, members of the group differed considerably in the extent to which they felt that the expectation of success or failure in the task allowed them to fully participate. That is, to engage in the experience properly rather than selectively anticipate which features might be reportable at a later date.

Now in a curious way the surfacing of this problem takes us back to the very origins of modern psychology. As historians such as Kurt Danziger (1990) have described it, the

division of labour in Wilhem Wundt's Leipzig laboratory – one of the founding sites of experimental psychology in the late nineteenth century – was done precisely to manage problems such as we have encountered. The Wundtian paradigm takes as its object the contents of consciousness which are to be reported by the experimental subject. In stark contrast to the experimental psychology which would follow, the subject is the most important part of the research since the subject is the 'authority' on their own consciousness. The experimenter then assumes the role of recorder, in effect acting as the amanuensis of the subject. The writing up of the results is seen as another distinct role altogether. But what is interesting about this set-up, Danziger observes, is that all three roles are seen as complementary and as requiring professional training to be accomplished. Only a trained researcher can act as a suitable experimental subject, for example. Moreover in Wundt's laboratory researchers would regularly shift between the three roles.

Wundt's work deliberately excluded the 'higher mental processes'. It sought essentially to clarify what Wundt saw as the basic mechanics of consciousness – perception, recall, recognition etc. Our research has very different aims, seeking to explore more complex forms of embodied experience. And yet we have perhaps ironically ended up reproducing much of the logic of the Wundtian paradigm. For example, the focus on content rather than process or function is strikingly similar. Like Wundt, we have wanted to say that beginning with the reportable contents of experience (broadly defined) is the place where psychology ought to start. What is also striking is that again, with Wundt, we have concluded that trained researchers – in other words, ourselves – ought to take up this task. We have also made distinct the roles of engaging in the experience from recording and re-organising the experience and finally from assembling the 'data' into a written paper. That we should also have decided that we should all circulate between these roles as the research unfolds retrospectively is hardly surprisingly, given our reproduction of Wundtian logic.

Thus some of the practical problems we have been describing – such as the difficulty of maintaining group cohesion, the dilemma of separating experiencing from reporting, and the collective problem of knowing what (if anything) to publish and how to accomplish a final written text – might be said to be directly emanate from the 'primal scene' of experimental

psychology (i.e. the Wundtian Leipzig set-up). But does that also mean that the conceptual problems we have been grappling with are similarly derived from an experimental tradition?

We want to explore this by considering an example taken from another great early psychologist. William James tells the following invented story: a child reaches curiously towards the flame of a candle. She feels sudden burning in her fingers and snatches her hand back. What has just happened? The most obvious way to grasp this example is to break it into component parts. There is a candle, emitting warmth and light. The child's sensory system picks up these sensations, which attract her conscious attention. She moves her hand forward to explore, but instantly experiences a new sensation – pain – which triggers off an automatic motor response. We might then want to seal this example by adding something in about learning or reflection. Indeed this is what James does in his 'motor theory of consciousness', where he has conscious reflection entering into human action only secondarily, as the means of making sense of our acts post-hoc.

James' logic is strikingly different to that of Wundt. In the Leipzig set-up the body is more or less invisible, since it is merely the 'container' of consciousness. But for James the body is significant because it mediates between the environment and thought. The body drives thought into space, it is what realises our conscious plans and intentions. In this way what is interesting about embodiment is not the body per se, but rather the precise ways in which this shifting surface of bodies and things (i.e. fingers, hands, flame and candle) is 'loaded up' into consciousness. The body is interesting in so far as it realises our goals and plans. It is this broad view of embodiment that we have been seeking to explore.

John Dewey (1896) makes use of the child-candle example in his classic essay 'The reflex arc concept in psychology'. Dewey's statements about psychology are in dialogue with William James, whose *Principles of Psychology* had made cautious experimentation, coupled with a 'functional' approach to human action central. Dewey is no armchair philosopher, but someone interested in descriptions of human action which explicate its organisation (Dewey speaks of 'co-ordination'). In this sense Dewey is writing against Kant and the Kantian tradition of restricting knowledge merely to hypothesising general conditions of experience against a backdrop of things-in-themselves (*noumena*) which elude any complete knowledge.

Like James, Dewey wants to avoid the Kantian dead-end for psychology but, unlike Wundt, he is seeking to do so not by focusing on the contents of consciousness but by emphasising instead the planful, goal-oriented quality of human action, such that the world is knowable with reference to the projects we enact in relation to it.

Dewey's essay begins by taking aim at the 'reflex arc' concept. This is a nineteenth century term which makes sense of the relation between stimulus and response by postulating that environmental objects trigger sensations which give rise to motor responses. The child touches the candles, feels pain and snatches her hand back. Defined in this way, the body is a vehicle for movement in which stimuli are linked to an array of motor responses. The chaining together of these stimulus-response patterns into complex patterns of 'behaviour' would become the basis for operationalism (but crucially Dewey is writing before a general category of 'behaviour' was invented as a way of packaging up – and hence neglecting! – all of the problems which are attendant on understanding the chaining of environment with human action). As Dewey notes:

It is not a question of making the account of the process more complicated, though it is always wise to beware of that false simplicity which is reached by leaving out of account a large part of the problem. It is a question of finding out what stimulus or sensation, what movement and response mean; a question of seeing that they mean distinctions of flexible function only, not of fixed existence; that one and the same occurrence plays either or both parts, according to the shift of interest; and that because of this functional distinction and relationship, the supposed problem of the adjustment of one to the other, whether by superior force in the stimulus or an agency *ad hoc* in the center of the soul, is a purely self-created problem. (Dewey, 1896)

The relationship between stimulus and response outlined in the reflex arc is not sufficient. It is not sufficient because it treats both as entities that are separable in both principle and practice, and then takes the problem to be how to connect them together. But for Dewey neither can be assumed to have an independent existence. What does it mean to say that some entity acts as a 'stimulus'? It can only mean that we are already starting to treat it with respect to the possible forms of stimulation that it might have on the body. In other words,

we have started our analysis from the varieties of sensation that might obtain, not the stimulus itself. Thus the meaning of the stimulus is a matter of ‘distinctions of flexible function’. A given stimulus is relevant in terms of the possible sensations it might engender, which are themselves only understandable in the context of what kinds of actions the body is already engaged in (e.g. the candle flame burns because it is ‘unexpected’ perhaps, but the flame which singes us as we press close to the fire does not burn in the same way because it is already loaded up into a pattern of planful action).

Dewey then goes on to argue that, in a sense, it is the response that defines the stimulus. Because we only encounter the ‘stimulus’ with reference to possible sensations, and these sensations are themselves only understandable with reference to the possible ‘responses’ we are engaged in, it makes sense to say that the flow of our current and anticipated actions (i.e. response) actually determines or lends value to our perceptual acts of engagement with the world (i.e. stimulus). So psychology has a ‘self-made problem’ based on the conceptual muddle of trying to separate and establish a causal link between a single complex of perception-action-engagement where every term is interdependent.

What is interesting here is that Dewey is developing a language that emphasises interdependency. There are no clear-cut distinctions between subject and object, stimulus and response. We should instead be concerned with complexes of action. Contrary to the Kantian position, and all that would follow in cognitive psychology, Dewey is not interested in describing the conditions of possible experience – that is, what sorts of things have to be in place to have any kind of experience, irrespective of context – but rather the conditions for a concrete, given experience. Take the following:

In other words, sensation as stimulus does not mean any particular psychical *existence*. It means simply a function, and will have its value shift according to the special work requiring to be done. At one moment the various activities of reaching and withdrawing will be the sensation, because they are that phase of activity which sets the problem, or creates the demand or, the next act. At the next moment the previous act of seeing will furnish the sensation, being, in turn, that phase of activity which sets the pace upon which depends further action. Generalized, sensation as stimulus, is always that phase of

activity requiring to be defined in order that a coördination may be completed. What the sensation will be in particular at a given time, therefore, will depend entirely upon the way in which an activity is being used. It has no fixed quality of its own. The search for the stimulus is the search for exact conditions of action; that is, for the state of things which decides how a beginning coördination should be completed.

The language that Dewey uses is intended to cut across the usual distinctions we would be tempted to make. In particular it emphasises reversing our usual sense of sequentiality – what comes first (the stimulus) is projected backwards from the sets of activities we are engaged in. We might say that it is only after having been burned by the candle that the child reconstructs the sequence to have been ‘reaching-withdrawing’ from the perspective of the activity that has been interrupted. But, as we take it, Dewey’s point is that this is precisely a reconstruction, it is not the only possible description. The stimulus becomes seen as stimulus only after the action complex has entered into a certain phase (Dewey calls it a shift between two *quale* – only after we have passed the threshold of one to the other can we look back and impose a sequence of causes). If we take this insight back to our own work, we will be forced to conclude that the separation of reporting/recording from experiencing (i.e. the Wundtian set-up) will always create difficulties because it is literally a shift between two different action-complexes, and hence the relationship between experience (crudely ‘response’) and what experience is about (even more crudely ‘stimulus’) will be completely altered. To coin a crude metaphor, a shift between action-complexes completely re-shuffles the deck of values and significance with respect to experience.

Now we also hear in all this the echo of another interesting philosophical position. In a mechanistic universe we can impute effects from causes (hot candle, burning, snatched away hand). But for the worlds that psychology describes we can only impute causes after effects, and then only as provisional descriptions of possible conditions for some action. To go back to the candle again, it is only once we ask ‘what changes have been brought about as a consequence of the child burning their fingers? What activities were interrupted?’ that we can then go back and say that there is some causal chain that brought about this change, this transformation. We can never do so in advance because we have no idea of what would follow. Or to put this in another way there is a difference here between providing

descriptions of the conditions of possible experiences (anyone who touches a candle will follow roughly the same pattern of stimulus-responses) versus providing descriptions of the conditions of actual, concrete experiences. For example, this particular girl, thinking of the time when her mother lit the candles on her brother's birthday cake, found herself reaching towards the flame, feeling first the warmth, then her hand coming too close, a slight pain, snatched her hand away, and wanted to run to her mother, but felt embarrassed in case her brother would hear and tease her, so wrapped her fingers in the palm of the other hand and hoped that no-one would see. The conditions of this would then be a description of the family relationships, the emotions around the brother's birthday and how the family celebrates such events, along with a description of the concrete set-up in the home in which the event takes place. To describe such a chain could potentially lead us into wider questions of gender, childhood, domesticity and so on. But any descriptions of these conditions would be purely provisional and would have to be argued for and against.

Our methodological practice has then most definitely concentrated on the concrete rather than the abstract. But, in Dewey's terms, we have done something odd in our analysis. We have tried, in the dizziness work, to hold 'dizziness' still as something like either a class of stimuli (a set of sensations) or a set of responses (a set of actions). We did this – admittedly in an arbitrary sense – as the means of comparing the memories. But whatever dizziness is (it can jump places as stimuli or response, depending on where we choose to stop the process we are describing), depends entirely on the 'action-complexes' in which it is embedded and the thresholds between them. It is not entirely clear to us how one might go about describing such transitions. But it would have to be done from the perspective of an unfolding process or a 'becoming'. This might include 'becoming anxious', 'becoming intoxicated', 'becoming sisters'.

We might also conclude that one of our errors has been to treat the memories in terms of the conditions of possible experiences (i.e. look for common themes etc), rather than first describing the conditions of these actual, concrete experiences, and only then on that basis look for how these wildly diverse sets of conditions and subsequent experiences might communicate (or not) with each other. Again, we are not clear what form this latter analysis might take other than to say that it all depends on working backwards and trying to elucidate

what is or is not a part of each concrete experience, rather than invoke common terms before having done this (e.g. the word ‘control’ would not be seen as having any particular analytic purchase in advance, but might return as a set of concrete conditions about becoming liberated or becoming restricted).

Third, and finally, specifically with the luminarium task, it seems to us that we tried to hold the ‘stimulus’ still, on the very sound basis that if we all shared the same inputs to experience then we might be in with a chance of understanding how our bodies were recruited into those environmental conditions. But again, following Dewey, we can see that the stimulus and the response aren’t the places to begin, because both are determined, or at least get put into place, according to the projects and ‘action-complexes’ in which they are embedded. To think of researching embodiment in this way then means beginning not with triggers, nor with specific analytic goals in mind, but instead with the action-complex itself. With sisters rolling boxes, moments of shame filled illness, anxious researchers looking to one another for guidance and support. And with bored students comparing canisters.

In a curious way, the history of psychology affirms the relationship between experiment and experience. In French, the phrase ‘faire un experience’ means both to ‘have an experience’ and ‘to conduct an experiment’ (see Lapoujade, 2000). In their work, albeit in very different ways, Fechner, Wundt and James all explore this relationship. Experience, like an experiment, requires a set of specific concrete conditions, a setting up or ‘pre-posing’. We have discovered for ourselves some of the complexities involved in such setting up. But experiments, like experiences, exceed their own conditions. There is always more that occurs in a psychology experiment than is marshalled together in the analysis (think again of the variety of feelings and sensations that the bored students or the researchers desperately seeking a common experience in the luminarium). It seems to us that psychological is to be found precisely in the interplay between these two terms – between the setting up, the conditions, and the elaboration and reworking of these conditions. What we are seeking is not ‘in’ the body, any more than ‘self’ is in the mind or the brain. It is in the way that embodiment acts as a connective, a way making and breaking relations within action-complexes. Fechner was right, but with this crucial corrective: the JND curve is less important than what happens when a participant takes the canisters in both hands.

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