

Inter/Experiments

Des Fitzgerald

The first time I participated in a psychological experiment on mind-wandering, I was so bored that I actually can't remember it all that well. This might not say much for my skills as an empirical social scientist, but in my defense I will say that: (1) when I participated it was not actually *as* a social scientist; I was just helping someone out; but more importantly (2) I *can* at least recall my dominant affective state – which is to say: boredom, annoyance, frustration – even if the details of what I actually did, the substantive content of the experiment, remain vague. I remember that I was sat in front of a laptop for an hour (?) and I had to look at some kind of shape, appearing and disappearing on the screen, with an instruction to click when one shape was slightly different from the previous – something like that, but in truth, it's all a bit fuzzy. I just remember it being intensely boring, really excessively boring – as if someone had gone out of their way to design an experiment so mind-crushingly tedious that your thoughts *inevitably* began to wander elsewhere, and yet requiring, at irregular intervals, just enough of your attention, calling you back with *just* that little occasional tap of the finger, that some part of you always remained, somehow, present.

Historically, being an experimental subject in psychology has generally meant attending to some object or task. It is precisely the transformation of experimental relations into “relations between stimulus and consciousness” that make an experimental psychology thinkable in the first place (Mandler 60). That transformation has been widely successful: still today, as Jill Morawski points out, the experiment enjoys a “status [that] surpasses all other contenders for the production of scientific knowledge about the psyche” (78). And yet there are issues. Not least, as Kurt Danziger argued some years ago, there is the human factor, i.e. “the interaction of experimenters with the human sources of their data,” which often belies the neat traffic between stimulus, subject, and researcher (9). But the question of how a human subject can, in fact, unproblematically produce reliable data on a cognitive phenomenon, in relation to a pre-defined stimulus or task, is posed in a particular way, and with special acuteness, when researchers address that psychological state we know as mind-wandering. Because mind-wandering is about mental life in the absence of stimulation: it is about being distracted, or wandering off, without conscious intention, from whatever it is you were supposed to be doing in the first place; it is the experience, as Smallwood and Schooler put it in a foundational psychological paper, of a mind “drifting away from a task toward unrelated inner thoughts, fantasies, feelings, and other musings” (946). Thus, as Felicity Callard and her colleagues have pointed out, does the stimulus- and task-based history of the psychological experiment make trouble for an experimental psychology of mind-wandering. How could the phenomenon of inattention be *other* than consigned to opacity, after all, given its entanglement in an experimental procedure constructed precisely around an individual subject’s capacity to *attend*?

In this short article, I want to take that trouble, and use it as a vantage-point for thinking about the experiment, as a genre, in interdisciplinary times. I am especially interested in what it might mean to inhabit – and make sense of – experimental space, while grounded in an intellectual practice (literature, sociology, human geography) that is usually excluded from (indeed, *defined by* its exclusion from) precisely that space. I do not wish to fetishize this term – but I do want to lean on a suggestion that Felicity

Callard and I have made elsewhere, which is that the experiment may yet offer surprisingly fertile territory for interdisciplinary thought and practice. In a moment of conservative retrenchment towards discipline in literary studies and elsewhere (see e.g. Kramnick), I extend that gambit to ask: can an attention to mind-wandering experiments, and interdisciplinary interventions into those experiments, help us now to think in more speculative, capacious ways about how we might re-map the ground across interdisciplinarity and collaboration?

Designing experiments

Today, most mind-wandering experiments take place at the intersection of the psychological and brain sciences, and under the aegis of a cognitive neuroscience (see Bennett and Hacker). Within these sciences, the landscape of experiment is recounted and produced in very particular ways. Take pedagogical texts, for example: in their instructional account of fMRI experimental design (fMRI, or functional Magnetic Resonance Imaging, is the most widely used brain-imaging method in cognitive neuroscience), Matt Carter and Jennifer C. Shieh take the student through the steps of selecting dependent and independent variables, designing an appropriate task paradigm, recruiting human subjects, collecting and analyzing data, and so on – to argue that, in fMRI brain-imaging, an investigator designs an experiment “to answer a specific question or test a specific hypothesis”; that she “designs a proper task paradigm and tests efficacy of the stimuli so that the results are appropriate and accurate” (24). Similarly, and dating – as convention dictates – the emergence of experimental psychology to Wilhelm Wundt’s laboratory in Leipzig in the 1870s, Alice Healy and Robert Proctor argue that psychology’s experimental inheritance is grounded in the manipulation and control of variables for the discovery of causal relations: “the primary methodological goal of most research in psychology has been the exertion of as much control as possible,” they argue, “so that the general idea of the experiment as the ideal research tool is still widely accepted in psychology” (xiii). I am struck, here, by the expression of very clear ideas about neuroscience as an experimental science, about science itself as a necessarily experimental practice, and about the logics of propriety, certainty, and control that hold these two together. As Mary Harrington puts it in her textbook, *The Design of Experiments in Neuroscience*: “science consists of ideas that change based on observations or experiments. Whereas pseudoscience lacks organized skepticism, and the mechanisms for acquiring new knowledge are vague, the basis of science is organized skepticism through replicable experiments and observations” (6).

Roger Smith once argued that the production of psychology (and now neuroscience) as an academic and scientific pursuit has been the self-conscious labour of such texts at least since Edwin Boring’s canonical *History* in the 1920s. As someone working tentatively to collaborate with neuroscientists in experimental spaces focused on mind-wandering, my concern is with how, and to what effect, the student of neuroscience is given to imagine her experiment as the seamless and linear progress of logic, observation, and control. My interest is not in the design of these experiments as such (which, in practice, obviously deviates from these pedagogical certainties) nor is it in the philosophy or the history of science. My interest, more prosaically sociological, has to do with what this image of the experiment *does*. I am interested in what affordances it offers and what horizons it curtails. I am especially interested in the forms of subjectivity, experience, and authority that it demands of the experimenter herself.

Making experiments

Since the early 1970s, the Science and Technology Studies scholar, Harry Collins, has been concerned with experiments on the detection of gravitational waves – waves produced by ripples of space-time, predicted by Einstein's general theory of relativity, and in fact detected by the LIGO Scientific Collaboration, to great international acclaim in 2016 (the LIGO Scientific Collaboration [LSC] is a large international collaboration of physicists working to detect gravitational waves). For Collins, experiments on gravitational waves have long raised important questions of communication and replication *vis-à-vis* novel phenomena. An experiment is replicated when tacit knowledge is transferred, and the outcome demonstrated once more. But when someone attempts to repeat the detection of a *new* phenomenon, it is no longer clear what to make of failed replication. The dispute comes to be decided not on the results themselves, but on a negotiation of what counts as a well-done experiment ("Seven Sexes" 216). In this negotiation, apparatus and outcome are tied together in a loop: you can only detect the object if you have built the right experimental apparatus; you only know you have built the right experimental apparatus if you detect the object, and so on (*Changing Order* 84). What is key for Collins is that this loop is managed by conventions that are cultural and political in nature – that they are not (only) scientific, as such. And the attention of the sociologist interested in experiments is turned not to scientific results or practices but rather (Collins here quotes Peter McHugh's *On the Failure of Positivism*) "linguistic, conceptual, and social behaviour" ("Seven Sexes" 220; see also "Son of Seven Sexes").

This view of the experiment has been highly influential in science studies. But I do not know how well such an explicitly socio-logical account of experimentation can help us to intervene in the neuroscience of mind-wandering. The historian of science, Hans-Jörg Rheinberger, offers two alternative proposals in his account of experimental systems: first, Rheinberger rejects the idea that what is at stake in experiments is hypothesis-testing. For Rheinberger, delineation between question and answer, input and result, is much more open, and much more emergent, than is often admitted (*Epistemic Things* 65). Indeed, experimental cultures are aimed precisely *at* emergence ("Cultures of Experimentation" 292). Second, Rheinberger shifts our focus from concepts to materials, from concept-work to the "material units" that bench-scientists are in relation with (*Epistemic Things* 225). The action of the experiment is then in the interplay between what Rheinberger calls "epistemic things" (the actual objects of inquiry, still unresolved) and "technical objects," which form the background instruments and techniques (*Epistemic Things* 28-29). For Collins, we could say, and to be simplistic about it, the search for novelty is caught in a socio-logical arrangement of apparatus and object; for Rheinberger, it is in the more-than-social interplay of epistemic thing and technical object that novelty *actually happens*. It is in the dance of instrument and thing that something new comes into the world.

Writing experiments

Let me come at this from another direction: some years ago, showing the unerring sympathy for middle-class habit that he has since spun into a substantial fortune, the novelist Jonathan Franzen entered a critique of experimental (or "difficult") literature. The trouble with experimentation, says Franzen, is that it breaks the implicit contract with the "bourgeois reader not to overtax her." Fiction, in fact, is "storytelling, and our reality arguably consists of the stories we tell about ourselves." Rather than offering anything unexpected or new, the novel is imagined as something inherently "conservative and conventional." In response to these remarkable claims, Ben Marcus

suggested that Franzen, having been drawn into the mass market by his own blind ambition, has become chained to its conventions – that he can only now live with himself by erasing any sense of an alternative; that the aggressively conventional realism of which he appoints himself spokesperson becomes sustainable only by obliterating any account of how things might be otherwise (43). What especially catches my attention about Marcus's response, though, is that he wraps his own account of experimental literature in a vision of – of all things – the brain, and especially of Wernicke's area, a part of the brain associated with language comprehension. For Marcus, reading is work, and specifically the working-out of a cerebral muscle: "a writer labouring intensely to produce art from words," says Marcus, "would almost certainly hope for an active Wernicke's area, rather than an atrophied one, on the part of his [sic.] reader" (40).

One of the central contrasts Marcus draws in his criticism of Franzen is that between a realist corpus invested in reproduction, and an experimental approach seeking novelty. But this does not seem quite adequate. In the midst of a conversation with the cognitive neuroscientist, Sophie Scott, the poet James Wilkes diffracts the same distinction in another direction: taking the desire for replication as a contrast between his own experiments in poetry and Scott's neuroscientific experiments, Wilkes asks: "I mean, why would you want to replicate a poem?" (334). But then he chides himself for such "complacent ignorance" and notes that there may, in fact, be good reasons for such an act. Replication, Wilkes argues, might be a sign of possibility too – an indication that there is "never an end" of experimental practice (335). Here is then a very different view of the cerebral muscle working itself out – always repeating the same actions, and yet becoming slightly remade every time. Wilkes reminds us, following Joan Retallack, not to rely on a simple fortuitousness in the use of the same word, experiment, across the arts and sciences, nor to use that same term only to invoke a sophomoric political desire for the avant-garde (see Hong). He reminds the would-be experimenter to avoid both a glib identity and an unearned distinction – to remain fixed on the very real and always-incomplete interlacing of experimental thought and practice, across very different epistemological and disciplinary trajectories.

Inter/Experiments

What does it mean to be a sociologist, or an historian, or a cultural geographer, in experimental space? Is there room, within all I have considered here, to conjure a new kind of experimental situation across these practices and the brain sciences? In which case, what would it mean to enact such experiments, not for their own sake, but because one is committed to the view that there are dense webs of mental, corporeal and social experience – mind-wandering, but not only mind-wandering – that are amenable to forms of cross-disciplinary experimentation in which the material and conceptual apparatus of the experiment (task; control; stimulation; replication; language) are not simply abandoned, but are rather diffracted in unexpected directions? Might such experiments then offer a more compelling and generative register for working across disciplines than that now dead and deadening term, "interdisciplinarity"?

As I write, my colleagues, Hazel Morrison, Felicity Callard and I, with our neuroscientific and psychological interlocutors, have been thinking about mind-wandering experiments in more-or-less these terms. Nothing of what we are doing is earth-shattering. One of our first interventions was to say that we could not simply rely on getting people distracted in the laboratory, but would try to find some way to engage their own heterogeneous accounts of what it was like for them to mind-wander at specific moments. This meant training them as participants to record their episodes,

conducting long semi-structured interviews, and beginning the hard work of interpretation needed to make sense of these. Lately, we have been aided by a suggestion in a pre-print from the psychologist Paul Seli and his colleagues that mind-wandering might not be a unitary thing at all, but rather a “family of experiences,” which are nonetheless “held together by overlapping subsets of similarities” (24). For Seli and his colleagues, this much more open concept could still be constrained by – in their terms, “tethered” to – an experimental practice, by identifying “prototypical” cases of mind-wandering, i.e. experiences of mind-wandering featuring thoughts that are: “(a) not focused on an internal or external task (b) unguided, (c) and not closely tied to an immediate external stimulus” (25, 27). We are now coding our unconstrained qualitative data, to isolate prototypical cases so defined, hoping that this work might form a bridge between Seli’s experimental proposal and our own interventions – which may in turn help us to tether our unconstrained interview data to neuropsychological studies of mind-wandering, thereby, potentially, both expanding and clarifying the set of experiences that those studies are able to make visible.

Again: I make no claims to astonishing novelty here. But the logic of an inter/experiment is that it uses the epistemological trajectories of different disciplines not as ways of thinking *about* experiments but as methods for expanding what might be possible *within* experiments – and doing so not in the self-congratulatory mode of experimental play, but as the serious work of producing and reproducing epistemic things. Obviously, this is far from sufficient; not least, it leaves open the question, recently posed by Will Viney, of what form of science we prefer, exactly, “when we enshrine the ‘experiment’ as a primary collaborative task/performance” (“1Q”). I take this questioning of the “experimental imperative” very seriously (Viney, “Not long now”). And yet still, “the chaotic interconnectedness of all things,” Joan Retallack reminds us (2007), sometimes “leads to the pragmatic necessity of ingenious experimentation as wager on the possibility of a viable, even pleasurable future together in this world.” What I have described here is perhaps too ordinary for such an emplotment. But it points at least to some attempt in that direction – some conviction that, on the other side of interdisciplinary and collaborative abrasion, there might still be experimental futures that we could learn to make together.

Acknowledgments

Work for this paper was funded by the Volkswagen Foundation project, “Wandering Minds: Interdisciplinary Experiments on Self-Generated Thought” (AZ 89 438). I am grateful to James Wilkes for helping me to look mildly less ignorant about experimental literature.

Works Cited

- Bennett, Max R., and Peter M. S. Hacker. *History of Cognitive Neuroscience*, Wiley, 2012.
- Boring, Edwin. *A History of Experimental Psychology*, Century Co, 1929.
- Callard, Felicity, Jonathan Smallwood, and Daniel Margulies. "Default Positions: How Neuroscience's Historical Legacy has Hampered Investigation of the Resting Mind." *Frontiers in Psychology*, vol. 3, 10 Sep. 2012, p 321. www.frontiersin.org/articles/10.3389/fpsyg.2012.00321/full. Accessed 19 Sep. 2017.
- Carter, Matt and Jennifer C. Shieh. *Guide to Research Techniques in Neurosciences*. Academic Press, 2010.
- Collins, Harry M. "The Seven Sexes: A Study in the Sociology of a Phenomenon, Or the Replication of Experiments in Physics." *Sociology*, vol. 9, no. 2, 1975, pp. 205-24.
- . "Son of Seven Sexes: The Social Destruction of a Physical Phenomenon." *Social Studies of Science*, vol. 11, no. 1, 1981, pp. 33-62.
- . *Changing Order: Replication and Induction in Scientific Practice*. U of Chicago P, 1985.
- Danziger, Kurt. *Constructing the Subject: Historical Origins of Psychological Research*. Cambridge UP, 1990.
- Fitzgerald, Des and Felicity Callard. "Social Science and Neuroscience Beyond Interdisciplinarity: Experimental Entanglements." *Theory, Culture & Society*, vol. 32, no.1, 2015, pp. 3-32.
- Franzen, Jonathan. "Mr. Difficult: William Gaddis and the Problem of Hard-to-Read Books." *The New Yorker*, 30 Sep. 2002. adilegian.com/FranzenGaddis.htm. Accessed 19 Sep. 2017.
- Harrington, Mary. *The Design of Experiments in Neuroscience*. Sage, 2011.
- Healy, Alice F., and Robert W. Proctor. *Handbook of Psychology, Vol. 4: Experimental Psychology*. Wiley, 2012.
- Hong, Cathy Park. "Delusions of Whiteness ion the Avant-Garde." *Lana Turner*, no. 9, 2014. www.lanaturnerjournal.com/7/delusions-of-whiteness-in-the-avant-garde. Accessed 19 Sep. 2017.
- Kramnick, Jonathan. "The Interdisciplinary Fallacy." *Representations*, vol. 140, no.1, 2017, pp. 67-83.
- Mandler, George. *A History of Modern Experimental Psychology*. MIT Press, 2007.
- Marcus, Ben. "Why Experimental Fiction Threatens to Destroy Publishing, Jonathan Franzen, and Life as We Know It." *Harper's Magazine*, Oct. 2005. www.williamgaddis.org/marcus.pdf. Accessed 19 Sep. 2017.
- Morawski, Jill. "Reflexivity and the Psychologist." *History of The Human Sciences*, vol. 18, no. 4, 2005, pp. 77-105.
- Retallack, Joan. "What is Experimental Poetry & Why Do We Need It?" *Jacket*, vol. 32, Apr. 2007. jacketmagazine.com/32/p-retallack.shtml. Accessed 19 Sep. 2017.
- Rheinberger, Hans-Jörg. *Towards a History of Epistemic Things: Synthesizing Proteins in the Test Tube*. Stanford UP, 1997.
- . "Cultures of Experimentation." *Cultures Without Culturalism: The Making of Scientific Knowledge*, edited by Karine Chemla and Evelyn Fox Keller, Duke UP, 2017, pp. 278-95.
- Seli, Paul, et al. "What Does (and Should) 'Mind Wandering' Mean?" PsyArXiv, 29 Mar. 2017. psyarxiv.com/q7s8u. Accessed 25 Nov. 2017.

- Smallwood, Jonathan, and Jonathan Schooler. “The Restless Mind.” *Psychological Bulletin*, vol. 132, no. 6, 2006, pp. 946-58.
- Smith, Roger. “Does the History of Psychology Have a Subject?” *History of the Human Sciences*, vol. 1, no. 2, pp. 147-77.
- Viney, Will, @WillViney. “1Q: what version of bioscience is being preferred when we enshrine the “experiment” as a primary collaborative task/performance? #CollabCMH.” *Twitter*, 5 Sep. 2017, twitter.com/WillViney/status/905004527866310656. Accessed September 19, 2017.
- . “Not long now before #CollabCMH Would love to discuss the experimental imperative w/ #medhums colleagues – why do we desire “experiments”?” *Twitter*, 5 Sep. 2017, twitter.com/WillViney/status/905002453854298112. Accessed 19 Sep. 2017.
- Wilkes, James, and Sophie K. Scott. “Poetry and Neuroscience: An Interdisciplinary Conversation.” *Configurations*, vol. 24, no. 3, pp. 331-50.