

Research Statement

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Mind-wandering—roughly, unconstrained thinking that meanders from topic to topic—is a central facet of the stream of consciousness. This mental activity has emerged as a leading topic in cognitive science, shedding light on traditional philosophical questions about consciousness that date back to the British Empiricists. Surprisingly, contemporary philosophers of mind and action have only just begun to discuss the wandering mind. My dissertation and publications develop one of the first systematic philosophical theories of mind-wandering, which I define as unguided attention.

My postdoctoral research at UC Berkeley extends this project in three related directions. One project further explores the significance of mind-wandering for mental action. Another develops philosophical foundations for the cognitive neuroscience of mind-wandering. A final project uses mind-wandering to gain traction on philosophical questions about imagination, epistemic rationality, and the nature of cognition in childhood.

I argue that philosophers of mind-wandering must account for its characteristic dynamics (*Philosophical Studies*, 2016; *Oxford Handbook on Spontaneous Thought and Creativity*, forthcoming). Mind-wandering is antithetical to dynamically stable forms of cognition such as goal-directed thinking and rumination. I explain these dynamics by defining mind-wandering as unguided attention, expanding upon ideas from Thomas Hobbes. Roughly speaking, an individual's attention is guided when she would feel pulled back, were she distracted from her current focus. In contrast, a wandering attention drifts from topic to topic unchecked. Mind-wandering is less stable than goal-directed forms of thinking, because it is not guided to remain on topic. At the heart of my theory is a distinction between two features of agency—motivation and guidance—that often conflates. I therefore use mind-wandering as a case study to pull these features apart.

My first postdoctoral project extends my dissertation research on mind-wandering and mental action. Specifically, I use mind-wandering to distinguish between two ways in which thinking can be “directed”. A train of thought can be *directed towards* a goal, in the sense that it is moving towards some endpoint (e.g. the solution to a problem). A train of thought can also be *directed by* a goal, in the sense it is guided to remain on topic as it unfolds over time (e.g. when you follow the thread of a conversation). I then use this pair of categories to advance two debates in the philosophical literature on mind-wandering and attention. First, I argue that Thomas Metzinger's critique of mind-wandering research rests on the assumption that mind-wandering is directed towards a goal, which it is not. Second, I contend that Philipp Koralus' influential theory of attention captures only those cases where attention is directed *towards* a goal, not cases where attention is directed *by* a goal.

My other postdoctoral projects are deeply informed by cognitive neuroscience and developmental psychology. One project articulates philosophical foundations for the cognitive

neuroscience of mind-wandering and spontaneous thought, which I have developed in collaboration with leading mind-wandering researcher Kalina Christoff. Our work on this topic is forthcoming in *Nature Reviews Neuroscience*, the highest impact journal in cognitive science. Drawing on my philosophical work, we critique current theories that define mind-wandering in terms of the contents of a wandering mental state, rather than the dynamic instability of a wandering stream of thoughts. We then build on my philosophical theory that guidance is what stabilizes the stream of consciousness, curtailing its tendency to wander. We argue that guidance arises due to interactions between large-scale neural networks and that the mind wanders during periods when these interactions subside. Finally, we use our philosophical and neural model to explain the distinction between clinical disorders characterized by streams of thought that are excessively stable (e.g. depressive rumination) versus excessively variable (e.g. ADHD).

My work under philosopher and developmental psychologist Alison Gopnik explores the connection between mind-wandering and imagination in childhood. Many of our wandering thoughts are imaginative: for example, the wanderer might imagine how a conversation with her boss will unfold. Yet mind-wandering contrasts with the types of directed imagination that philosophers typically discuss: e.g. a mover mentally picturing how to fit a couch up a narrow staircase. Similarly, directed imagination seems to contrast with the free-wheeling imagination of children. I argue that the difference arises because directed imagination is guided, whereas the spontaneous imagination of mind-wanderers and children is not.

The distinction between directed and spontaneous imagination has implications for imagination's rational role. In general, imagination provides us with counterfactual knowledge about what would be the case if the world were to change in specific ways. I hold that directed and spontaneous imagination are complementary sources of counterfactual knowledge, each serving to offset the other's limitations. Directed imagination is guided toward counterfactuals that seem relevant to one's goals and realistic given one's background moral and epistemic beliefs. One example of this sort of guidance is "imaginative resistance", which occurs when subjects find it difficult to imagine deviant scenarios such as worlds where murder is a minor transgression. Such constraints are often valuable insofar as they direct one's imagination away from counterfactual scenarios that seem unlikely to be of practical or epistemic import. However, counterfactuals that initially seem irrelevant are not always so; imaginative resistance may guide you to ignore a counterfactual that appears outlandish, but is actually important. Spontaneous imagination may help us attend to such outlandish scenarios. This would explain empirical evidence that children and mind-wanderers (a) often think more flexibly than goal-directed adults and (b) freely imagine the sorts of bizarre scenarios that imaginative resistance guides us to ignore. It's through the balance between guided and unguided imagination that imaginers avoid the dual threats of irrelevance and myopia.

In collaboration with Professor Gopnik, I am testing empirical predictions that flow from my philosophical work on mind-wandering and imagination. To investigate whether children's imagination is less guided than that of adults, we have developed novel methods to compare the dynamic stability of stories imagined by children and goal-directed adults. We are also testing the hypothesis that adults who "wake" from mind-wandering think in a child-like manner,

and thus perform as well as children on tasks where adults are typically inflexible. I am committed to doing philosophy that is not only empirically informed, but empirically informing, working with scientists to guide the research that I discuss.

My work in mind-wandering is connected with a broader interest in epistemology (especially formal epistemology) and moral psychology. Specifically, I attempt to reconcile the contingent nature of human psychology with norms of belief and action. In one paper (*Philosophy of Science*, 2011), I object to Nelson Goodman's purely formal account of scientific visual representations. I argue that an appreciation of the human visual system is necessary to account for the epistemic significance of visual representations. Michael Arsenault and I co-authored a paper (*Thought*, 2013) that presents a family of counter-examples to David Christensen's Independence Criterion, which is central to the epistemology of disagreement. Our examples are inspired by the psychological phenomenon of insight, which I discuss in my work on mind-wandering and imagination. Another paper in preparation, which I presented at the *Formal Epistemology Festival* and *Formal Epistemology Workshop*, investigates a core component of practical rationality: risk aversion. Standard philosophical treatments of risk aversion aim to be either descriptively adequate or normatively rational, but not both. I expand on Lara Buchak's work to reconcile descriptive and rational theories of choice. Yet doing so requires that we expand the orthodox picture of rational psychology, allowing that *venturesomeness* is a sui generis mental state.