THE WANDERING MIND

A Philosophical Study of Thinking

by

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Graduate Department of Philosophy
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Abstract

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Although mind-wandering occupies up to half of our waking thoughts, it is seldom discussed within philosophy. My dissertation proposes a new theory of mind-wandering as unguided attention, then uses mind-wandering to illuminate three general philosophical topics: mental action/activity, attention, and thinking.

Chapter one identifies two core tasks for the philosophy of mind-wandering, which current theories cannot accomplish. First, we must resolve a puzzle: mind-wandering seems essentially passive, yet it is under the influence of our goals in a way that seems active. Second, we must distinguish mind-wandering from two antithetical forms of cognition: rumination (e.g. fixation on one’s distress) and absorption (e.g. engrossment in a line of reasoning).

Chapter two proposes that mind-wandering is unguided attention. Roughly speaking, an individual’s attention is guided when she would feel pulled back, were she distracted. In contrast, a wandering attention drifts from topic to topic unchecked. I argue that mind-wandering is active in one way—it can be motivated—but passive in another—it is never guided. Furthermore, mind-wandering differs from rumination and absorption because the latter two are guided.

Chapter three addresses a methodological problem about how to individuate mind-wandering. I argue that we needn’t individuate mind-wandering, because it is atelic.
Because I distinguish telic from atelic attention, I elucidate core cases of attention and undermine Koralus’ recent theory of attention.

Chapter four argues that mind-wandering is a rare choice point between agency-based and consciousness-based theories of attention, which should classify mind-wandering as attentive and as inattentive, respectively. I contend that each view contains part of the truth. Drawing on White (1964), I distinguish between spectator attention (focused consciousness), which becomes agent or patient attention when it is guided. Mind-wandering is a choice point because it is pure spectator attention.

My final chapter argues that mind-wandering does not fit cleanly into dual process theory, since it is neither unconscious and automatic (Type 1) nor conscious and analytic (Type 2). To accommodate mind-wandering, we must enrich dual process theory in a novel way: we must distinguish Type 2 processes that are guided (e.g. reasoning, planning) from those that are unguided (e.g. mind-wandering, brainstorming).
Dedication

To my family, with love and thanks.
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It takes a village to raise a cognitive scientist. Over the past six years, an extraordinary group of people has helped me to develop this dissertation and—what feels like the same thing—myself.

Two people deserve the largest thanks: my co-supervisors, Diana Raffman and Evan Thompson. In many ways, I thank them for the same reasons. Both were unconditionally supportive of a strange project, at a time when others were skeptical. Both were attuned to how I should write my dissertation, not how they would write it in my shoes. Both shaped my conduct as a professional academic. Through their feedback, mentorship, and professional support, both steered me to become a full-blooded cognitive scientist; to an extent I did not appreciate (but they did), I desired to be one all along.

In other respects, I’ve accrued special debts to one or the other supervisor. Diana ushered a sea change into my writing. She filled my margins with red ink. She sat with me for hours, reconstructing paragraphs until they expressed what I intended, and did so with an elegance worthy of the Raffman brand. For me, her work had personal significance. Six years ago, when I chose to pursue philosophy above creative writing, I felt a side of myself fade. Diana was a model of how craft can be alive in the philosophical pen. Diana’s firm hand also led me from my lifelong struggles with procrastination. Without her, time would still be my enemy.

Evan has been a mentor since I was a cocky brat in his undergraduate courses. Over our eight year relationship, Evan has always pushed me to be more like myself, never a mere copy of him. When I entered the graduate program half-obsessed with Enactivism, Evan insisted that I broaden my education. Two years later, he precipitated the moment I found my thesis topic. In Evan’s living room, his Philosophy of Neuroscience group met to discuss the Default Network. Tipsy and enthralled, I called my partner afterward
and told her that I found a topic on which I could write a dissertation (apparently, I was right!). If anything, Evan has been a more generous supporter after leaving UofT for UBC. Evan offered to co-instruct a UBC graduate course with me on mind-wandering and attention. Running that seminar had a formative influence on my research.

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more there is to life than academics. Knowing this, I was somehow more focused when I
turned to research. My Grandfather Al and Uncle Gord showed me what it is to have an
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Introduction

I am reading a dry article or walking a familiar path to campus. While my eyes scan the page or my feet navigate the sidewalk, my mind is elsewhere. I compose a few incomplete lines of a lecture. Then? Remember, with a touch of guilt, my brash style as an undergraduate, “Was I one of the problem students teachers commiserate about?” Then? Muse that it’s sunny in California today, wondering whether my boots will survive the winter. Reminisce about that snowy February they shut down elementary school...

Mind-wandering—the mental activity illustrated in this vignette—occupies up to half of our waking thoughts (Killingsworth and Gilbert 2010; Kane et al. 2007). Although this mental activity is increasingly well-studied in cognitive science (e.g. Smallwood and Schooler 2006; Callard et al. 2013), philosophers seldom discuss the wandering mind. When I wrote this dissertation’s first words, no contemporary philosopher had published a theory of mind-wandering (now there are four of us: Metzinger 2013a, Dorsch 2014, Carruthers 2015, and Irving 2015).

The fledgling status of my topic makes for colourful introductions. When I answer “what do you work on?” with “mind-wandering”, I’m met with blank faces. Then dawning recognition gives way either to excitement or to skepticism, “why is this philosophy?” There are two simple answers to the skeptic. First, any philosophy of mind that neglects half our thoughts is incomplete. Second, since philosophy is one of the classic sub-disciplines of cognitive science, any topic in cognitive science is a topic of ours. But in their simplicity, these answers dodge two questions that I should be prepared to answer:
what specifically can philosophers add to the cognitive science of mind-wandering? And what does the cognitive science of mind-wandering offer philosophy?

Let’s begin with the first question. Though growing fast, the cognitive science of mind-wandering is still a young field. As such, many of its open questions are properly philosophical. There’s no consensus on how to define mind-wandering, and those definitions we have suffer from major defects (Christoff 2012). Furthermore, there’s been little systematic discussion of what a theory of mind-wandering should explain. Philosophers are poised to address such foundational topics; I do just that.

Chapter 1 identifies two core explananda for theories of mind-wandering. First, we must resolve a puzzle: mind-wandering seems essentially passive, yet it is under the influence of our goals in a way that seems active (§ 1.1). Second, theories of mind-wandering should account for its characteristic dynamics (§ 1.2). When someone’s mind wanders, her attention is unstable: her focus drifts from one topic to the next. Mind-wandering is thus antithetical to dynamically stable forms of cognition such as rumination (e.g. being fixated on one’s distress) and absorption (e.g. being engrossed in an intellectual idea). The only current theories that explain these features of mind-wandering are Carruthers’ (2015) and my own (2015). Yet Carruthers’ theory has a different limitation: in § 2.3.6, I argue that he provides no principled way to determine whether someone’s mind is wandering. Hence, there is room for a new theory.

Chapter 2 proposes a definition that improves upon previous attempts: mind-wandering is unguided attention. Roughly speaking, an individual’s attention is guided if she would feel pulled back, were she distracted from her current focus. In contrast, a wandering attention drifts from topic to topic unchecked. I resolve the aforementioned puzzle by distinguishing between two features of agency: motivation and guidance (§ 2.2). Mind-wandering is active in one way—it can be motivated—but passive in another—it is never guided. I also differentiate mind-wandering from rumination and absorption: the latter two are guided; mind-wandering is not. My theory explains the dynamic difference
between these forms of thought: rumination and absorption are stable because they are guided to remain focused, whereas mind-wandering is unstable because it is free to drift. I also provide a principled criterion to identify mind-wandering: someone’s mind is wandering if and only if her attention is unguided.

Philosophers can also make methodological contributions to mind-wandering research. Cognitive scientists typically study mind-wandering through thought sampling, where subjects are asked to classify their thoughts on dimensions specified by the experimenter (see Smallwood and Schooler 2006 for a review). For example, a subject might be randomly interrupted as she goes about her everyday life and asked whether her “…mind had wandered to something other than what [she] was doing” (Kane et al. 2007). Such methods require that scientific descriptions of thought a) carve the mind at explanatorily fruitful joints, b) are precise, and c) can be understood by ordinary people. Philosophical analysis can help to refine these descriptions. For example, current thought sampling methods cannot distinguish mind-wandering from rumination. Scientists could use my definition—and my discussion of the dynamics of thought—to draw more fine-grained distinctions between types of thinking (indeed, I’m collaborating on this sort of empirical research).

Philosophical tools can also help determine how (if at all) we can individuate distinct episodes of mind-wandering. Cognitive scientists have worried that current thought sampling methods are inadequate to individuate mind-wandering (Smallwood 2013; Franklin et al. 2013; Metzinger 2013a; § 3.1). Chapter 3 dissolves this problem, using the metaphysics of action to vindicate current methodology. Specifically, I propose that mind-wandering needn’t be carved into episodes because it is a type of atelic mental activity, in the sense explicated by metaphysicians including Vendler (1957), Crowther (2011), and Hornsby (2012) (§ 3.2).

Philosophers can lend much to the cognitive science of mind-wandering; the latter offers handsome returns. Mind-wandering is a powerful lens on philosophical topics
including mental agency, attention, and thinking. Two of the fundamental features of mental agency—guidance and motivation—come apart when the mind wanders (§ 2.2). By way of contrast, mind-wandering can also help us understand a core form of mental agency: goal-directed thinking. For example, I offer a novel proposal—goals can have more or less hierarchical structure—to explain why some cases of goal-directed thinking (e.g. creative brainstorming) seem more similar to mind-wandering than others (e.g. algebra problem solving) (§ 2.3.1). By analyzing these and other forms of thinking, I distinguish between three forms of subjectivity: that of the agent, the patient, and the spectator (§ 4.2).

Chapter 4 outlines the importance of mind-wandering for the philosophy of attention. Mind-wandering is a rare choice-point between philosophers who define attention in terms of consciousness (e.g. Smithies 2011 and Watzl 2011a) versus agency (e.g. Mole 2011, Wu 2014a, and Koralus 2014c). These philosophers should classify mind-wandering as a form of attention and inattention, respectively (§ 4.1). Drawing on White’s monograph Attention (1964), I propose a novel way to reconcile these competing pictures of mind-wandering—and by extension, of attention (§ 4.2). On my view, each picture illuminates a distinct notion of attention: spectator attention is focused consciousness, which becomes agent or patient attention when it is guided. Mind-wandering is pure (i.e. unguided) spectator attention (§ 4.2).

Chapter 5 argues that mind-wandering undermines dual process theorists who classify thinking either as unconscious and automatic (Type 1) or conscious and analytic (Type 2). Here’s the rough problem: our wandering thoughts are neither unconscious nor automatic; yet standard cases of Type 2 thought (e.g. arithmetical reasoning) are controlled in a way that mind-wandering is not (5.2). To accommodate mind-wandering, we must enrich dual process theory in a novel way: among Type 2 processes, we must distinguish between guided “algorithmic” processes (e.g. reasoning, planning) and unguided “reflective” processes (e.g. mind-wandering, brainstorming; § 5.4). The study of mind-
wandering leaves us with a more comprehensive model of thinking “in the wild”.

The cognitive science of mind-wandering serves to profit from philosophical analysis. The time is ripe and the methods open for collaboration. The profits will flow both ways. Philosophers of mind, in our neglect of mind-wandering, have ignored between one third and one half of our waking thoughts. We will learn much about the mind, if we bring these neglected thoughts into focus.
Chapter 1

The Philosophy of Mind-Wandering: Terms of the Debate

Prior to the 21st century, research on the wandering mind was “...relegated to the backwaters of mainstream psychology” (Smallwood and Schooler 2006). And the philosophy of mind-wandering is still in its infancy. At this early stage, one pivotal philosophical task is to clarify the terms of the debate. What must a theory of mind-wandering explain? Clarity here will guide and constrain us as we propose theories of mind-wandering. And clear explananda will help us adjudicate disagreements, separating disputes that are superficial or merely linguistic from objections motivated by core features of the wandering mind.

This chapter introduces two core explananda for the philosophy of mind-wandering. First, we should resolve what I call the “Puzzle of the Purposeful Wanderer” (§ 1.1). From the viewpoint of common sense psychology, mind-wandering seems essentially purposeless: almost by definition, it contrasts with goal-directed forms of cognition like reasoning, planning, or watching. Yet empirical evidence suggests that our minds frequently wander to personal goals. How can mind-wandering be at once purposeless and goal-related?
Second, theories of mind-wandering should account for its characteristic dynamics—in particular, how a wandering attention evolves over time (§ 1.2). When someone’s mind wanders, her attention is unstable: her focus drifts from one topic to the next. Mind-wandering is thus antithetical to dynamically stable forms of cognition such as rumination (e.g. being fixated on one’s distress) and absorption (e.g. being engrossed in an intellectual idea).

Current theories fail to meet these explanatory demands. Most cognitive scientists define mind-wandering as thought that is unrelated to one’s current task (see Christoff 2012 for a review). I will argue that this definition cannot overcome the Puzzle of the Purposeful Wanderer. And neither can Fabian Dorsch (2014), who characterizes mind-wandering as an unintentional process of association. Thomas Metzinger’s (2013a) theory of mind-wandering fares better against this puzzle. However, Metzinger cannot account for the dynamics of mind-wandering, and thus cannot distinguish mind-wandering from absorption or rumination. Furthermore, he cannot allow for cases where we watch our mind wander. Only two extant theories satisfy these explananda: Peter Carruthers’ and my own. I’ll discuss these in Chapter 2.

1.1 The Puzzle of the Purposeful Wanderer

The Puzzle of the Purposeful Wanderer reflects an apparent conflict between the common sense and scientific conceptions of mind-wandering. According to our common sense picture, it seems essential that mind-wandering is purposeless\(^1\): almost by definition, it contrasts with goal-directed forms of cognition like planning a trip or solving a crossword. Consider the term ‘mind-wandering’ itself. Wandering is purposeless movement. At the risk of violating a rule we lay down for undergraduates, let me cite the Oxford English Dictionary: “to wander” means “[t]o move hither and thither without fixed course or

\(^1\)When I say that mind-wandering is purposeless, I do not mean that mind-wandering serves no purpose—that is, has no function—in cognitive life.
certain aim” or “to be (in motion) without control or direction” (2008). To say that someone’s mind is wandering, then, implies that her thinking is purposeless; it is not directed or controlled. To this extent, mind-wandering is unlike solving a crossword.

Relatedly, mind-wandering seems non-agentive—something that happens to us, not something we do. Consider that when we refer to mind-wandering, we use what I call “non-agentive” stylistic constructions, in which the grammatical subject is a not a human agent. For example, we would say “my mind was wandering” or “Luke’s mind wandered” rather than “I was mind-wandering” or “Luke mind-wandered”. In fact, we frequently use constructions in which a human agent and his wandering mind are distinct grammatical subjects: for example, “he let his mind wander” or “letting his mind wander, Juan Pablo lay amongst the petunias”. These stylistic constructions point to a deep-seated intuition: when our minds wander, we don’t feel responsible for our thoughts; our minds are what wanders, not us. Contrast talk about mind-wandering with talk of goal-directed mental agency like watching, listening, planning, or reasoning. Rather than say, “Julie’s mind was watching” or “my mind reasoned”, we would say “Julie is watching” or “I reasoned”.

Thomas Aquinas captures the common sense view that mind-wandering is purposeless, insofar as he describes a “tendency to wander” that “reside[s] in the mind…that is desirous of rushing after various things without rhyme or reason” (Aquinas 1273/2002, IIa IIae q.35 a.4). Thomas Hobbes’ chapter on the “Trayne of Thoughts” captures even more of our common sense picture of mind-wandering:

By...Trayne of Thoughts, I understand that succession of one thought after another...This...is of two sorts.

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2 Interestingly, as far as I am aware, contemporary psychologists are the only English-speaking population to use “mind-wandering” as a verb: for example, “people of lower WMC [working memory capacity] mind-wandered more than people of higher WMC” (Kane et al. 2007). I believe this neologism should be avoided, since it obscures an important feature of the folk concept.

3 I thank Ronnie de Sousa for suggesting that I draw on Hobbes.
Chapter 1. The Philosophy of Mind-Wandering: Terms of the Debate

Trayne of Thoughts Unguided

The first is *Unguided, without Designe*, and inconstant; Wherein there is no Passionate Thought, to govern and direct those that follow, to it self, as the end and scope of some desire, or other passion: In which case the thoughts are said to wander, and seem impertinent one to another, as in a Dream. Such are Commonly the thoughts of men, that are not only without company, but also without care of any thing; though even then their Thoughts are as busie as at other times, but without harmony. ...

Trayne of Thoughts Regulated

The second is more constant; as being *regulated* by some desire, and designe. For the impression made by such things as wee desire, or feare, is strong and permanent, or, (if it cease for a time,) of quick return: so strong it is sometimes, as to hinder and break our sleep. From Desire, ariseth the Thought of some means we have seen produce the like of that which we ayme at; and from the thought of that, the thought of means to that mean; and so continually, till we come to some beginning within our own power. And because the End, by the greatness of the impression, comes often to mind, in case our thoughts begin to wander, they are quickly again reduced into the way (Hobbes 1651/1928, 20-21; original emphasis).

Hobbes’ rich discussion of mind-wandering (i.e. unguided trains of thoughts that “are said to wander”) contains many ideas to which I will return. For now, note how closely Hobbes’ characterization mirrors our current folk picture. According to Hobbes, mind-wandering is “unguided, without design”; in other words, it is purposeless. And he defines mind-wandering in opposition to trains of thought that are “regulated by some desire, and design”; in other words, it contrasts with goal-directed thinking.

The intuitive contrast between mind-wandering and goal-directed thinking is also reflected in Branch’s *Thoughts on Dreaming* (1738), which may be the first Western treatise on daydreaming:

We very often find ourselves, whilst Awake, and in an indolent and musing condition [i.e. daydreaming or mind-wandering], in new and very busy [imagined] Scenes; and are no more conscious of the Design of the Soul to form them [the scenes], either by instantaneous act or a continued Series of Production, than in sleep...[in contrast] when the imagination is exercised
for any particular purpose, the Soul confines it, and rectifies or selects the Forms it brings before it; those which are approved are...preserved in Memory or...committed to writing; the others are rejected and discarded...; and then the imagination is sent in search of more; and so on. This is certainly a work of Fatigue. But, on the contrary, when we control not the imagination, but let it fly...and pursue its own Game, this costs us no pains (Branch 1738, pp. 65-66).

Like Hobbes, Branch defines mind-wandering in contrast to goal-directed forms of cognition. Specifically, he contrasts effortful, goal-directed imagination with effortlessly letting one's mind wander. Furthermore, Branch isolates two phenomenological differences that remain in our present-day folk picture. Suppose you deploy your imagination for some purpose: for example, to anticipate ways a difficult conversation could unfold. Branch contends that your imagination will be subject to various kinds of control: you can call thoughts to mind, strengthen, correct, and redirect thoughts, etc. When you let your mind wander, such control is absent. And your wandering imagination is not deployed for a purpose; rather, your imagination “fl[i]es...and pursue[s] its own Game”.

On the face of it, the common sense view conflicts with empirical evidence that our minds frequently wander to unfulfilled goals (Klinger 1971). For example, Baird et al. (2011) interrupted (i.e. “probed”) subjects at random while they performed an easy and monotonous task, and asked them to “describe anything in your stream of consciousness in the moments prior to the probe” (Baird, Smallwood, and Schooler 2011). Independent judges rated the thoughts in terms of their task-relatedness (on-task/off-task), temporal focus (about the past, present, or future), and goal-directedness. Thoughts were “classified as goal-directed if they included an indication of a specific goal (defined as an objective or desired result that an individual endeavours to achieve)” (Baird, Smallwood, and

4I will typically use the term ‘goal’ to refer to a type of motivational state (e.g. “my goal of losing weight guides me to ignore the cookies”). On this usage, goals are mental states that motivate us to bring about or maintain states of affairs. For convenience, I will occasionally use ‘goal’ to talk about the state of affairs that an agent aims to achieve (e.g. “my goal is to loose 20 pounds”). At present, I take no stand on how to define goals qua motivational states. There are difficult questions for the philosophy of action here, which I should not resolve by fiat. Throughout this dissertation, however, I will elucidate the notion of a goal; specifically, I will have much to say about how goals structure attention.
Baird et al’s results are striking. Roughly half of the subjects’ off-task thoughts were about the future. And of those, 55% were related to a subject’s goals.

Morsella et al. (2010) found similar results with an experimentally induced goal. Subjects in the experimental condition were told that, later in the study, they would be asked to recall the names of the fifty U.S. states. Before the quiz, they performed a “concentration exercise”: they followed taped instructions on how to focus attention on their breath. During this exercise, they were instructed to record their wandering thoughts: “every time you catch yourself being distracted...jot that thought down in the space provided...and...then bring back your attention to the exercise” (Morsella et al. 2010, p. 644). Independent judges found that, when subjects believed they were going to take the quiz, approximately 70% of their wandering thoughts were about geography (especially state names). In contrast, subjects in control conditions wandered to geography less than 10% of the time. Importantly, subjects in one control condition were told that they would later be asked to count the letters in U.S. state names. Like the experimental condition, this task is about the names of U.S. States. But unlike the experimental condition (which was a quiz), advance preparation is unlikely to make one count letters faster. One interpretation of this result is that someone’s mind will wander to a goal more frequently if she believes (on some level) that doing so will help to accomplish that goal.

We can now bring the Puzzle of the Purposeful Wanderer into view. On the one hand, a core intuition about mind-wandering is that it is purposeless; it is not directed toward a goal or end-point. This intuition is reflected in the contrast we have drawn between mind-wandering and goal-directed cognition since at least the work of Hobbes and Branch. On the other hand, empirical research suggests that our wandering thoughts frequently advance our goals: for example, to prepare for an upcoming geography quiz. Perhaps, then, the dichotomy between mind-wandering and goal-directed cognition (or at least the usual way of drawing it) is ill-founded.
Another face of the puzzle concerns agency. Mind-wandering seems non-agentive—something that happens to us, not something we do. But empirical evidence suggests that our wandering thoughts (often) have the right kind of causal antecedents to count as actions in a relatively strong sense. Davidson famously holds that intentional actions—in contrast to mere behaviours—are caused by beliefs and desires. For example, Winnie’s action of reaching into the honey pot is caused by his belief that there’s honey in the pot and his desire for honey. Because Morsella et al. (2010) used an experimental intervention to give subjects a goal, their results support causal inferences. Specifically, we can infer that having a goal and believing that thinking is a means to achieve the goal causes one’s mind to wander to that goal. This is the precisely the sort of belief/desire cause characteristic of Davidsonian actions. Perhaps, then, mind-wandering is (often) a full-blooded form of agency after all.

The Puzzle of the Purposeful Wanderer is not an idle philosophical curiosity. Indeed, I will argue that the puzzle unthrones the orthodox view of mind-wandering in cognitive science and well as Fabian Dorsch’s (2014) philosophical account of mind-wandering.

1.1.1 Mind-Wandering as Task-Unrelated Thought

Many cognitive scientists define mind-wandering as task-unrelated thought: someone’s mind wanders when her thoughts drift away from what she is currently doing (e.g. walking to campus or reading an article). More precisely, an agent’s mental state is mind-wandering if and only if that mental state is not related to any task she is currently performing. As an operational definition, this account is widely accepted (e.g. see Christoff 2012; McVay and Kane 2009). Consider the method of ‘thought sampling’ (see Smallwood and Schooler 2006 for a methodological review). While a subject performs a laboratory task or goes about her everyday life, she might be interrupted at random intervals and asked whether her “...mind had wandered to something other than what [she] was doing” (Kane et al. 2007). Here, any thought that is unrelated to what one is currently
doing (i.e. task-unrelated) is classified as mind-wandering. Ultimately, I will reject this definition; but first I need to clarify it in several ways.

Obviously, task-unrelatedness is not a sufficient condition for mind-wandering. Most non-occurrent mental states (e.g. one’s standing belief that Paris is the capital of France) are unrelated to one’s current task(s), but don’t count as mind-wandering. Psychologists avoid this problem by adding further restrictions. To begin with, mind-wandering is conscious. This is intuitive: when a person’s mind wanders, the lights don’t go out. Rather, she experiences a stream of memories, imaginings, inner speech, etc. Moreover, the accessibility of mind-wandering is what makes it possible to study using thought sampling, where a subject verbally reports whether his thoughts are on-task or off-task. Thus, one could argue that mind-wandering is at least “access conscious”, that is, available for use in reasoning and the rational control of action and speech (Block 1996; cf. Smallwood 2010 for a similar argument). Two further restrictions are prevalent, although I am committed to neither. Many assume that perception cannot count as mind-wandering (Schooler et al. 2011; though see Christoff 2012). This restriction, too, has intuitive pull: when an individual’s mind wanders, she seems to become less aware of her perceptible environment. Think of the stereotypical mind-wandering professor who walks headlong into a pole, for example. Others hold that our minds wander only when we are fully awake, even if there are similarities between mind-wandering and dreaming or hypnagogic thought (the state of awareness immediately before sleep; Christoff, Gordon, and Smith 2011 Metzinger 2013b; though see Fox et al. 2013 for an account of dreaming as mind-wandering).

One might also question why mind-wandering must be unrelated to every task one is currently performing. Alternatively, we could say that mind-wandering is unrelated to some task that one is currently performing. This existential definition has two problems. First, it rules out the intuitive possibility that someone’s mind can wander while he is at rest (i.e. in the absence of a task). Consider someone who isn’t performing a task: for example, Juan as he lies languidly amongst the petunias. Surely, Juan’s mind may wander.
Second, this definition classifies most multi-tasking thoughts as mind-wandering. Consider Elizabeth, who purposefully solves a math problem while knitting. Elizabeth’s goal-directed mathematical reasoning will count as mind-wandering, since these thoughts are unrelated to knitting.

Finally, proponents of this definition should say what it means to be related to a task. Although the account of task-relatedness will be fraught with difficulties, we can set those aside for two reasons. First, the methodological success of thought sampling suggests that people have an intuitive grip on whether or not thoughts are task-related. Second, I will provide a precise and clear account of task/goal-directed attention (§ 2.2.1), which one could leverage to define task-relatedness.

It is initially plausible that mind-wandering is task-unrelated thought. Indeed, this definition seems to explain the common sense intuition that mind-wandering is less purposeful than goal-directed thought. Goal-directed thought is related to some task that we are currently working on (e.g. solving a crossword). Mind-wandering is not. However, the fact that our minds frequently wander to goals raises decisive problems for this view.

1.1.2 Task-Unrelated Thought and the Puzzle

The Puzzle of the Purposeful Wanderer creates problems for those who define mind-wandering as task-unrelated thought. Here’s a first pass at the problem: Our minds frequently wander to goals like writing a chapter or taking a geography quiz (§ 5.2). But our ongoing tasks arguably include working toward such goals. Thus, mind-wandering is frequently related to ongoing tasks.

The notion of an ongoing task requires elucidation. Ongoing tasks are metaphysically gappy: we can begin them at one time, take breaks from them, and continue to perform them at later times. In contrast, some tasks (arguably) must be performed in one continuous stream of behaviour and/or thoughts (e.g. swinging a bat or tracking a
ball through the air). Tenenbaum’s (2010) notion of long-term projects (e.g. writing a book) are paradigm examples of ongoing tasks, in my sense. Moreover, many ordinary actions (e.g. baking a cake) may also qualify as ongoing tasks (Tenenbaum 2010, pp. 131-132; Thompson 2008, Part II). While Martha bakes a cake, for example, she might take a break while her oven heats up to check the latest stock prices. Here’s the key move, for my argument: even though ongoing tasks contain gaps, there’s a sense in which we perform such tasks from the moment we begin them to the moment we complete or abandon them. When you ask Martha what she’s been doing over the past month, she might coherently answer, ‘writing a cookbook’. But if one of Martha’s tasks is to write her cookbook, then every time her mind wanders to her cookbook (which it frequently will), her mind-wandering will count as task-related.

In reply, one could distinguish between ongoing and occurrent tasks. Ordinary language permits Martha to say she’s been writing a cookbook for the past month. Arguably, however, she’s not occurrently writing the cookbook that whole time. Sometimes her occurrent task is to manage her stock portfolio. On this basis, one could clarify our definition: mind-wandering is thought that is unrelated to any of the subject’s occurrent tasks. When Martha’s occurrent task is to manage her stock portfolio and her mind drifts to her cookbook, she thereby counts as mind-wandering (in the task-unrelated sense).

Yet even this modified definition is vulnerable to two objections, both powerful. To begin with, one could object that when Martha's mind wanders to her cookbook, her task switches from managing her stock portfolio to planning her cookbook. Thus, although Martha's wandering thoughts are unrelated to her former task (managing her stocks), they are obviously related to her new task (planning her cookbook).\(^5\) Admittedly, there is room to resist: in particular, I argue that mind-wandering isn’t guided in the right way

\(^5\)Alternatively, one might propose that Martha begins to split her attention between two tasks when her mind wanders: managing her stocks and planning her cookbook. On this analysis, again, Martha’s wandering thoughts are related to one of her occurrent tasks. I thank Dominic Alford Duguid and Cliff Saron for helping me to formulate this objection.
to count as performing a task like planning a cookbook (§ 2.2). But we cannot make this move with resources internal to the view that mind-wandering is task-unrelated thought. We instead have to invoke a substantial assumption: mind-wandering is unguided. Why not then define mind-wandering as unguided thinking?

Furthermore, the assumption that mind-wandering is unguided does not help against the second objection. Wandering thoughts are sometimes related to the (occurrent) task one’s mind wanders from. Suppose that my mind is wandering as I walk to campus. At some point, I recall that there’s a disguised rock in the grass I’m walking through. Rather than stop my mind from wandering, this recollection changes the course of my wandering thoughts: I muse that it’s lucky I remembered the rock, recall the many times I’ve tripped over it, imagine myself sprawled face-first on the grass, etc. Fortified by these thoughts, I successfully remember the rock when I reach it, and hop over it unscathed. Here, my wandering thoughts seem related to the occurrent task I perform while my mind wanders: namely, walking to campus. Thus, mind-wandering is sometimes related to one’s occurrent task.

The most common definition of mind-wandering in cognitive science cannot solve the Puzzle of the Purposeful Wanderer. One might worry that these problems undermine extant empirical results on the wandering mind. After all, most thought sampling studies operationally define mind-wandering as task-unrelated thought (§ 1.1.1). I think this worry is unfounded. For starters, the pragmatic context is sufficient to clarify thought sampling questions. Most people who are asked whether “[a]t the time of the beep, my mind had wandered to something other than what I was doing” (Kane et al. 2007) will ignore the philosophical worries discussed here. The average subject won’t respond, “well, my mind wandered away from reading…but at that point, my task also switched to planning my essay...so at the time of the beep, I guess I was on-task after all”. Furthermore, my definition implies that mind-wandering is unguided (Chapter 2), which undermines the task-switching objection (see above). So although we cannot define mind-wandering as
task-unrelated thought, many (but not all) of our wandering thoughts are task-unrelated after all.

1.1.3 Associationists and the Puzzle

The Puzzle of the Purposeful Wanderer also puts pressure on those who define mind-wandering as associational, and thus unintentional. One such theorist is philosopher Fabian Dorsch, who argues that the contents of our wandering thoughts are not caused by an “...underlying intention to form or have mental representations with a certain content. Rather, what is operative and responsible for the constituents and progress of the sequence [of mind-wandering] is the force of association” (Dorsch 2014, § 2.2).

Hobbes may have been the first to characterize mind-wandering as associational (cf. Dorsch 2014, § 2.1). After Hobbes says that mind-wandering is “Unguided, without Designe, and inconstant” (Hobbes 1651/1928, 20; emphasis omitted; see § 1.1), he goes on to clarify that “…in this wild ranging of the mind, a man may oft-times perceive the way of it, and the dependance of one thought upon another” (Hobbes 1651/1928, omitted). Hobbes’ subsequent example of mind-wandering suggests that the dependence between our wandering thoughts is associational:

[I]n a Discourse of our present civil warre...the Thought of the warre, introduced the Thought of the deliveringe up the King to his Enemies; The Thought of that, brought in the Thought of the deliveringe up of Christ; and that again the Thought of the 30 pence, which was the price of that treason: and thence easily followed that malicious question...what was the value of a Roman Penny?” (Hobbes 1651/1928, p. 21)

Associationist theories of mind-wandering have intuitive pull. Yet problems arise because associationism is contrastive (at least according to Dorsch and Hobbes): our wandering thoughts are caused by associations, *rather than intentions or designs*. But empirical evidence suggests that intentions—in a Davidsonian sense—often cause our wandering thoughts to have certain contents. For example, my mind might wander to
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a quiz because I want to ace it and believe that thinking about the quiz will improve my performance (§ 1.1). Prima facie, that is precisely the kind of intentional cause that associationism rules out.

Dorsch’s characterization of mental agency further undermines his theory. He contrasts mind-wandering with “mental projects”: that is, cases of mental agency such as “mentally calculating a sum” or “drawing an inference” (Dorsch 2014, p. 1.1). Whether a thought is part of a mental project depends on

...whether...[the thought] contributes (or is taken by us to contribute) to the furtherance of...the mental project. For example, pursuing the project of recalling some past holiday involves reminiscing about certain events...and the resulting [memories]...become constituents of our project because they contribute to the desired recollection of those holidays (Dorsch 2014, p. 1.2).

But our wandering thoughts often contribute to mental projects such as planning dinner or taking a quiz (§ 1.1.2). So it’s unclear whether Dorsch can distinguish mind-wandering from mental projects. In response, Dorsch could deny that mind-wandering is ever “taken by us to contribute...to...mental projects”. But this move seems unmotivated. Suppose someone’s mind wanders to an upcoming quiz and I ask, “did your thoughts help you prepare?” Surely it would not be absurd (or even unusual) for her to answer, “yes”.

Dorsch could (more plausibly) reply that mind-wandering is non-agentive because its contributions to mental projects are of the wrong sort. Dorsch holds that thoughts are part of a project only if there is an intelligible and “...not merely causal...connection between the purpose of the project and...the [thoughts] in question” (Dorsch 2014, p. 1.2). Paradigm cases of intelligible connections include “rational links (like instrumental ones)” (Dorsch 2014, p. 1.2). For example, it might be intelligible for an Olympian to visualize her bobsled run because doing so is a means to improve her time.

Dorsch could likewise object that mind-wandering is non-agentive because its contribution to mental projects is merely causal (rather than rational). Dorsch makes a similar claim about a “random thought” that happens to help him plan a holiday:
When I am engaged in the project of deciding where to go during my summer holidays, a random thought about my friend may give me the idea to visit Rome—for instance, because I know that it is my friend's favourite city.... But...the random thought about my friend...[is not] part of my mental project of deciding where to spend my summer holidays, despite...being causally...related to this project” (Dorsch 2014, p. 1.2).

Yet the Puzzle of the Purposeful Wanderer highlights dis-analogies between mind-wandering and random thoughts. Goals (e.g. to prepare for a quiz) frequently cause one’s mind to wander to goal-relevant information.⁶ Hence, one’s mind does not always wander at random; sometimes, its wandering is made intelligible by our goals.

Dorsch could object that the effects of goals on mind-wandering are merely causal (rather than rational). For example, he could hypothesize that goals (e.g. a geography quiz) prime certain concepts (e.g. U.S. states), which increases the probability that our mind will wander to those concepts. But Morsella et al. (2010; § 1.1) provide empirical evidence against this hypothesis. Subjects in their experimental condition believed they would take a quiz on U.S. state names. Subjects in their control condition believed they would have to count the letters in U.S. state names. Both the quiz and letter counting task are associated with (and thus should prime) state names. But only the experimental condition raised the probability that subjects’ minds wandered to geography (or state names). Thus, Morsella et al.’s results are probably not due to arational influences such as priming effects. Rather, what matters are the rational links between goals and mind-wandering: mental preparation (through mind-wandering) is a means to improve on a quiz, but not a letter counting task. Dorsch’s account of mental agency therefore entails that mind-wandering is sometimes rationally connected to (and thus a part of) mental projects.

Dorsch could try to stipulate these objections away: perhaps cases where our mind

⁶ Information in my sense need not be factive or have anything anything analogous to a subject-predicate structure. I therefore allow that one’s mind can wander to objects (e.g. Dominic), properties (e.g. unshavenness), or states of affairs (e.g. that Dominic is unshaven). However, nothing in my view hangs on this liberal conception of information. For example, if there is good reason to think that our minds always wander to states of affairs, I could restrict my theory accordingly.
wanders to goals do not count as mind-wandering. But such cases are pervasive (§ 1.1). Indeed, Dorsch’s paradigm example of mind-wandering is goal-related:

> From recalling some of the things that we did in our last holidays, we may switch to visualizing how it would be like to sit now at the beach, before thinking about our friend who is in Paris right now, which may then lead us to entertain the possibility of eating out tonight, after which we may imagine how the dinner conversation with our potential date might go, and so on (Dorsch 2014).

Various projects—deciding what to eat for dinner, having a good date—likely cause us to have these wandering thoughts. Thus, even Dorsch’s core case of mind-wandering is not (wholly) associational. Although associations may help determine what our minds wander to, so do goals.

### 1.1.4 Explaining Our Intuitions Away?

The Puzzle of the Purposeful Wanderer is Janus faced: mind-wandering seems purposeless; and yet our minds frequently wander to goals. Those who define mind-wandering as task-unrelated thought or as associational avoid the first face by vindicating our naïve picture of mind-wandering as purposeless. But they cannot escape the second.

Another strategy would be to deny the intuition that mind-wandering is purposeless. This would make room for definitions that collapse the distinction between mind-wandering and goal-directed forms of thinking such as autobiographical planning (e.g. Smallwood et al. 2012). For example, Smallwood, Ruby, and Singer argue that mind-wandering is purposeful, in that when the mind wanders, “consciousness becomes decoupled from perception, providing an opportunity to guide behavior using internally-represented plans and goals” (2013, my emphasis).

One way to deny an intuition is foot-stomping; perhaps common sense is simply not to be trusted. But views that necessitate unprincipled error theories have a strike against them, since common sense is a (defeasible) source of evidence about the mind. Alterna-
tively, one could explain away the intuition that mind-wandering is purposeless; that is, one could explain why mind-wandering seems purposeless, even though it is not. Theorists have tried to explain away this intuition by arguing that it is the product of a) the limitations of introspection (Carruthers 2015) or b) a contingent methodological tradition in cognitive science (Callard et al. 2013). I will argue that neither explanation is successful, and thus that we should continue to take the puzzle seriously.

Peter Carruthers argues that much of the stream of consciousness—even mind-wandering—is active in a roughly Davidsonian sense. Carruthers concedes that mind-wandering is an apparent counter-example to his theory because it does not seem, introspectively, to be active in nature. Sometimes one’s thoughts change direction for no apparent reason (especially when one’s mind is wandering)....It seems to us in such cases that we are passive receivers of our own thoughts, rather than agents who actively produce or control them. Indeed, it seems to us that the stream of consciousness when we mind wander flows according to some unknown set of forces and influences, rather than being actively produced (Carruthers 2015, p. 166).

Yet Carruthers maintains that our wandering thoughts are goal-directed, and thus are active (2015, pp. 166–168; cf. § 1.1). Roughly, he posits an unconscious and subpersonal mechanism that “decides” what our mind will wander to by comparing the relevance of various potential thoughts. Each wandering thought is thus “action-like” (Carruthers 2015, p. 168) because it is caused by the goal of having relevant thoughts. However, Carruthers explains that mind-wandering still seems passive because this goal is unconscious. We are not aware of any goal that motivates the wandering mind, so we assume that our “thoughts change direction for no reason”. The difference between cases where our thoughts seem to us to be actively controlled and those where they do not is just the differ-

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7 Carruthers (2015, p. 167) suggests that at any given time, many representations are partially active but not yet broadcast to consciousness. Some of these representations (those that could become mind-wandering) are realized in the default network. His mechanism (which is at least partially realized in the anterior cingulate cortex) computes the expected value of broadcasting each representation to consciousness. The highest expected value representation is then broadcast to consciousness through a causal pathway that involves the dorsal attentional network.
ence between cases where we think we immediately know why we entertain the thoughts that we do, and cases where we take ourselves to be ignorant of those reasons.

I have at least two concerns about Carruthers’ proposal. First, it is unclear whether we can attribute person-level mental states like goals to sub-personal neural mechanisms (Bennett and Hacker 2003; see Drayson 2012 for a review). And even if we can, it is unclear whether every behaviour that is caused by a sub-personal goal is “action-like”. Consider that action and responsibility are intimately connected: we are responsible for our actions in a way that we are not responsible for mere behaviours. Despite this, mere behaviours like digestion may be caused by sub-personal goals (e.g. goals of the metabolic system). Caruthers therefore shows that mind-wandering is active only in a etiolated sense.

Some cases of mind-wandering seem active in a stricter sense. Indeed, mind-wandering is puzzling precisely because it is frequently caused by person-level goals like studying for a quiz (§ 1.1). However, these cases pose a second problem. According to Carruthers, our wandering thoughts seems passive only because we are unaware of the goals that motivate them. But agents are (usually) aware of person-level goals like studying for a quiz. Likewise, an agent whose mind wandered to such a goal would likely be aware of why this occurred. If asked why his mind wandered to the word ‘Nebraska’, for example, someone might respond “I’m about to take a quiz on the names of U.S. States”. But even these cases of goal-related mind-wandering seem purposeless. For example, after someone admits that he understands why his mind wandered to Nebraska, he might add, “but this doesn’t mean I had a hand on the reins. My drifting thoughts weren’t random, but I wasn’t controlling them either”. Therefore, Carruthers has not accounted for our intuitions about the cases of mind-wandering that are most puzzling.8

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8Carruthers presents another explanation that I will consider in § 2.3.6. Roughly, he says that mind-wandering seems purposeless because there are no overarching goals that regulate whole sequences of wandering thoughts (Carruthers 2015, p. 5.1). Dorsch makes a similar proposal to account for cases of mind-wandering that are partly goal-directed (Dorsch 2014, p. 2.1). I leave these suggestions for now, since they will be more fruitful to discuss after we have my view (and the attendant conceptual distinctions) on the
Callard et al. (2011) invoke historical considerations to explain away the assumption that mind-wandering is purposeless.\footnote{Callard et al.’s proximate target is the view that the default network, which is activated while the mind wanders, supports only cognition that is not goal-directed. But their objection could also apply to the view that mind-wandering is not goal-directed. I defend only the later view, not the former. So Callard et al.’s initial objection may remain in tact.} Specifically, they argue that two methodological traditions—task-based experimental designs and subtractive neuroimaging—have led cognitive scientists to draw a false dichotomy between mind-wandering and goal-directed thought.

Most experiments in cognitive science are structured around an external task (2011, p. 2). The experimenter instructs subjects to perform some task and their responses are measured through observable behaviour (e.g. button presses) rather than introspective reports. But mind-wandering is not a task that experimenters do (or perhaps even could) instruct participants to perform. Instead, mind-wandering researchers use thought sampling methods, where subjects are asked to introspect on and classify their thoughts as they perform tasks in the laboratory. As we’ve seen, such studies typically define mind-wandering as thought that is unrelated to tasks the subject is currently performing. Such methods led cognitive scientists to think of mind-wandering contrastively: as that which is opposed to cognitive processes that support task performance.

This contrastive understanding of mind-wandering was reinforced by the discovery of the default network (2011, pp. 2–4). Neuroscientists (usually) define neural activation by investigating task-related increases (or decreases) in activation, relative to some baseline (e.g. the subject resting prone in an fMRI scanner). Neuroscientists frequently assumed that rest was a useful baseline because activations at rest would be so diverse that they would cancel out, resulting in a kind of neural noise. Just before the turn of the 21st century, however, neuroscientists began to discover consistent patterns of activation (and de-activation) when subjects were at rest (see Buckner, Andrews-Hanna, and Schacter 2008 for a review); specifically, neuroscientists discovered what became
called the “default network”, which is more active at rest than during externally-defined tasks. The default network is also active during mind-wandering (for a meta-analysis, see Fox et al. 2015). Due to this discovery, the default network—and by extension mind-wandering—were again conceptualized in contrast to the cognitive processes that support experimental tasks.

Both methods suggested that mind-wandering—by its very nature—differs from the type of cognition that supports external task performance. So it was natural to assume that the difference is that when our mind wanders, we perform no task. That is, mind-wandering is not goal-directed. But this could be false: for example, perhaps the difference is that when our mind wanders, we pursue internally-generated goals rather than goals set by the experimenter (Callard, Smallwood, and Margulies 2011, p. 3). Callard et al. (2011) provide an elegant explanation of why the methods of cognitive science would lead to the mistaken assumption that mind-wandering is not goal-directed. We were led to this view by an historical tradition of research, not by the evidence.

However, their argument makes an implicit historical prediction: hard thinkers without these historical legacies would not contrast mind-wandering with to goal-directed thinking. But there is evidence against this historical prediction. Hobbes and Branch define mind-wandering in contrast to goal-directed thought (§ 1.1); and they wrote hundreds of years before the advent of psychology. Théodule Ribot draws a similar distinction in his Psychology of Attention (1890; cf. § 1.2.2). William James contrasts mind-wandering with the kind of goal-directed attention he takes to be indicative of “judgment, character, and will” (1890/1981, p. 424). But both psychologists came from an introspectionist tradition that pre-dates task-based cognitive science, reliant as they were upon introspection in addition to experimental tasks and observable behaviour. Indeed, even Thomas Aquinas (1273/2002, IIa IIae q.35 a.4) holds that mind-wandering is purposeless! It is striking that so many thinkers—none influenced by the legacies of cognitive science—would come to the same conclusion: mind-wandering is less purposeful than
goal-directed thought. This is a core intuition that we cannot explain away. The question is thus how to accommodate it.

1.2 Metzinger and the Dynamics of Mind-Wandering

Metzinger’s theory of mind-wandering avoids the central difficulties facing definitions of mind-wandering as task-unrelated or associational. Metzinger argues that when someone’s mind wanders, she lacks meta-awareness of and thus veto control over her ongoing thoughts. His theory solves the Puzzle of the Purposeful Wanderer, coheres with (some of) our intuitive picture of mind-wandering, and enjoys empirical support (§1.2.1). That said, Metzinger’s theory is too broad in one way (§1.2.2) and too narrow in another (§1.2.3). The first problem—originally noted by Théodule Ribot (1890)—also affects those who define mind-wandering as task-unrelated thought.

Drawing on Ribot and Hobbes, I will argue that both problems arise because Metzinger abstracts from the dynamics of mind-wandering: how it unfolds over time. Mind-wandering is characterized by a kind of dynamic instability: our thoughts drift from topic to topic while they wander. My discussion of Metzinger thus hits upon a second core explanandum: the characteristic instability of mind-wandering.

1.2.1 Metzinger: Mind-Wandering Lacks Metacognition and (Thus) Veto Control

Metzinger carves out a middle ground between the common sense and scientific pictures of mind-wandering. Although he concedes that mind-wandering can be goal-directed (2013a, p. 13), Metzinger maintains the common sense distinction between mind-wandering and forms of mental agency like reasoning or watching. In fact, he argues that mind-wandering is philosophically significant precisely because it puts pressure on the “Myth
of Cognitive Agency”, according to which “the paradigmatic case of conscious cognition is one of autonomous, self-controlled rational thought. Hard-thinking philosophers, in particular, have perpetuated this myth like a phenomenologically self-fulfilling prophecy” (Metzinger 2013a, p. 7).

Metzinger argues that, when someone’s mind wanders, she lacks mental agency\(^{10}\) over her thoughts. According to Metzinger, mental agency has at least two necessary conditions: goal-directedness and veto control. Metzinger focuses on the latter, which he argues is lacking when our minds wander. Veto control is a notion from cognitive science: the (person-level) functional ability to “withhold a...[behaviour]\(^{11}\) whose preparation and path towards execution has already begun” (Filevich, Kühn, and Haggard 2012, p. 1108).

Here is an example of exercising veto control:

*You’ve Got Mail...Not!:* You are posting a letter, and are just about to release your grip on it and let it fall into the post box, when you suddenly get the feeling that you should check whether you put a stamp on the envelope. You tighten your grip and inspect the letter (Filevich, Kühn, and Haggard 2012, p. 1108).

Note that you would have possessed veto control even if you had released the letter, because veto control requires only that you are *able*—and know that you are able— to suspend the relevant behaviour (Metzinger 2013a, p. 4).

Contrast *You’ve Got Mail* with a case where you lack veto control over an ongoing behaviour:

*Dropping the (Bowling) Ball:* You are about to bowl a ball down the lane

\(^{10}\)Metzinger uses the term “mental autonomy” rather than “mental agency”. I use the latter term to keep my terminology and his consistent.

\(^{11}\)Filevich et al. (2012) originally define veto control as the ability to “withhold an action”. I have altered their definition, because veto control is (arguably) necessary for action. In that case, Filevich’s definition (trivially) implies that one never lacks veto control. My definition also departs from Metzinger’s, in one respect. Metzinger’s notion of veto control is all or nothing: either “all currently ongoing processes can in principle be suspended or terminated” (Metzinger 2013a, p. 4) or a person lacks veto control entirely. This condition is too demanding. Surely, one can possess veto control over one cognitive process (e.g. attending to the drums in a jazz band), even though she lacks veto control over other concurrent cognitive processes (e.g. feature binding in the visual system or a stream of wandering thoughts). Filevich and I define a restricted notion of veto control over one ongoing behaviour.
when you lose your grip. To your horror and your friend’s amusement, there’s nothing you can do: the ball slips from your fingers and crashes behind you.

Unlike the case in which you release a letter into a mailbox, you lack veto control over dropping the bowling ball. Once the ball begins to slip, you are unable to stop yourself from dropping it behind you.

Metzinger argues that when our minds wander, we lack veto control, and thus lack mental agency, over our thoughts. Goal-directedness is insufficient for mental agency, which also requires (at least) veto control. So Metzinger can concede that mind-wandering is often goal-directed, but still draw a principled distinction between mind-wandering and forms of mental agency like reasoning, listening, or planning. When I am solving the Times crossword, Metzinger would say, I can stop myself from doing so. In contrast, when my mind wanders to my upcoming geography quiz, I cannot voluntarily stop my thoughts. So even though the folk are wrong to think that mind-wandering is purposeless, they are right to contrast mind-wandering with examples of linear thinking like solving the Times crossword.

To support his view, Metzinger appeals to (admittedly inconclusive) evidence that mind-wandering often unfolds without meta-awareness (Schooler et al. 2011). Meta-awareness is a higher-order mental state that is about one’s ongoing, or very recently past, mental states or processes. One example is the tip of the tongue phenomenon (“I’m sure I remember her name…”), whose object is a mental state: memory. Another is the sudden realization that one’s mind was wandering: for instance, Rosewood might realize, “Shoot! My mind was wandering…I haven’t listened to a word Taggart said!”.

My reconstruction of Metzinger’s argument has two premises. First, meta-awareness is necessary for veto control over a mental state or process (Metzinger 2013a, p. 3): a person cannot terminate something he’s unaware of. Suppose Taggart notices that Rosewood wasn’t paying attention and asks, “Rosewood! Why didn’t you stop your mind from wandering earlier?!” Rosewood might respond, “I didn’t know my mind was wandering until
just now!” Second, whenever a person’s mind is wandering, she lacks meta-awareness of her wandering thoughts. From these premises, it follows that people lack veto control over their wandering thoughts.

Premise two is the crucial one, for our purposes: why think that mind-wandering unfolds without meta-awareness? Cases like Rosewood’s are suggestive: Rosewood’s mind wanders for some time before he recognizes this fact. According to Metzinger, Rosewood regains meta-awareness only after his mind has stopped wandering; only then can he look back, agog, at how his thoughts drifted away from Taggart.

Here, I should forestall an obvious objection to Metzinger. My description of Rosewood is perhaps too charitable to Metzinger. Alternatively, Rosewood could first become aware that his mind is wandering. Then, exerting veto control, he could bring his attention back to Taggart. So for a brief time, Rosewood’s mind could wander with meta-awareness and veto control. Surely mind-wandering sometimes ends like this (with a brief period of meta-awareness and veto control), which is enough to refute Metzinger’s view. Metzinger considers cases like this, and responds that they involve the mere “illusion of control” (Metzinger 2013a, p. 11; cf. Schooler et al. 2011). After someone’s mind stops wandering, she might retrospectively confabulate that she brought her attention back to the task. In reality, an unconscious and sub-personal process stopped her mind from wandering; she neither had, nor exercised, veto control during the mind-wandering episode itself.

In addition, there is empirical evidence that our minds frequently wander without meta-awareness. Schooler et al. (2004) examined the relationship between mind-wandering and meta-awareness while subjects read War and Peace. Subjects in the experimental condition were a) asked to report that their mind had wandered whenever they became aware of this fact and b) randomly probed and asked whether their immediately preceding thoughts had wandered away from the passage. Crucially, 18% of the total probes caught a subject’s mind wandering before she reported this on her own. Schooler et
al. (2004) took this as evidence that mind-wandering frequently unfolds without meta-awareness.

Metzinger provides a plausible definition of mind-wandering (see § 1.1.1). Here’s a first approximation:

*Mind-wandering is conscious, waking, non-perceptual thinking that unfolds without meta-awareness and thus without veto control.*

Nonetheless, this definition is too broad in one way (§ 1.2.2) and too narrow in another (§ 1.2.3).

### 1.2.2 Too Broad: Mind-Wandering Versus Absorption and Rumination

Mind-wandering intuitively contrasts with two mental activities—absorption and rumination—even though both satisfy Metzinger’s definition. In *The Psychology of Attention*, Théodore Ribot (1890) distinguishes between two forms of distraction: dispersion and absorption.

“[D]istraction”...in our language (the French) has an equivocal sense. We call “distracted” people whose intelligence is unable to fix itself with any degree of persistence, and who pass incessantly from one idea to another...It is a perpetual state of mobility and dispersion...But the term “distraction” is also applied to cases entirely different from this...[to] people who, wholly absorbed by some idea, are also really “distracted” in regard to what takes place around them...Such people appear incapable of attention for the very reason that they are very attentive. Many scholars have been noted for their “distraction” [in this second sense]....While those whose distraction amounts to dispersion are characterized by the incessant transition from one idea to another...those whose distraction amounts to absorption are distinguished precisely by the impossibility or the great difficulty of a transfer of this (Ribot 1890, pp. 78-79).

Paradigm examples of mind-wandering seem to involve dispersion in Ribot’s sense: “a perpetual state of mobility and dispersion...characterized by the incessant transition
from one idea to another”. I think Ribot is right to contrast the phenomenologies of dispersion (i.e. mind-wandering) and intellectual absorption. Intellectual absorption doesn’t involve mobility and dispersion; rather, it involves being “wholly absorbed by some idea...distinguished precisely by the impossibility or the great difficulty of a transfer...from one idea to another”. However, intellectual absorption can satisfy Metzinger’s definition of mind-wandering. People who are absorbed are conscious and awake. Their experiences are non-perceptual, in that they “...are really ‘distracted’ in regard to what takes place around them”. And paradigm cases of absorption unfold at least without veto control and, possibly, without meta-awareness. I was once so absorbed in an argument I was constructing that I failed to notice a tornado outside. It seems to me that, in such a state, I would have been unable to immediately suspend my ongoing train of thoughts (e.g. if someone told me to look at the tornado). Before doing so, it seems that I would need a moment to become less absorbed and regain some awareness of my surroundings (and perhaps, some meta-awareness that I was absorbed). Only then would I regain veto control.

Rumination presents a structurally analogous counter-example to Metzinger’s view. Rumination is a hallmark of major depressive disorder, defined as “a mode of responding to distress that involves repetitively and passively focusing on symptoms of distress and on the possible causes and consequences of these symptoms...people who are ruminating remain fixated on the problems and on their feelings about them” (Nolen-Hoeksema, Wisco, and Lyubomirsky 2008). Less extreme analogues of rumination are common: for days after I received my first nasty teaching evaluation, for example, my attention was obsessively drawn back to the negative comments and their causes and consequences.

Absorption and rumination present the same sort of problem for Metzinger. Absorption and rumination seem antithetical to mind-wandering: attention remains fixed (albeit involuntarily in rumination) on a single topic, rather than drifting from one topic to the next. Yet like mind-wandering, we often lack veto control over absorbed or rumi-
native thoughts. And rumination (at least) can likely unfold without meta-awareness: while I’m reading a book after receiving my teaching evaluations, I might begin to ruminate about those darned comments before I realize that I am doing so. Thus, Metzinger’s analysis is insufficiently fine-grained to reflect the differences between mind-wandering and its antitheses.

The orthodox definition of mind-wandering as task-unrelated thought faces a similar problem. Rumination is frequently unrelated to the task one is currently performing. For instance, someone who is reading a book might find his thoughts continually drawn to the symptoms, causes, and consequences of his distress. For this reason, many psychologists classify rumination as a type of mind-wandering (see Smallwood and Schooler 2006 for a review). But again, this seems to conflate mind-wandering and its antithesis.

Here is a diagnosis of the problem: mind-wandering differs from both absorption and rumination in terms of its dynamics—in particular, how attention evolves over time. Mind-wandering is “…characterized by the incessant transition from one idea to another” (Ribot 1890, p. 79). Here, attention is unstable: attentional focus drifts from one topic to the next. Absorption and rumination are characterized by irresistible perseveration on a single idea. Here, attention is stable: it remains fixed on the same topic over time. Similarly, Hobbes contrasts mind-wandering with regulated trains of thoughts on the grounds that the latter is more stable (or “constant”). Regulated trains of thought are “more constant...For the impression made by such things as wee desire, or feare, is strong and permanent, or, (if it cease for a time,) of quick return” (Hobbes 1651/1928, p. 21). Thomas Aquinas also characterizes mind-wandering in terms of its dynamics: the “tendency to wander...shows the unsteadiness of the mind...[and] is called ‘instability’” (Aquinas 1273/2002, IIa IIae q.35 a.4). Metzinger’s account and the orthodox definition overgeneralize because they abstract from the characteristic instability of mind-wandering. Stable trains of thoughts can proceed without veto control and be task-unrelated, just as mind-wandering can.
We have seen that the absence of veto control is insufficient for mind-wandering. I will now argue that it is unnecessary.

1.2.3 Too Narrow: Watching the Mind Wander

Metzinger holds that when our minds wander, we always lack meta-awareness of and thus veto control over our wandering thoughts. The empirical evidence we’ve surveyed shows that mind-wandering sometimes unfolds without meta-awareness. However, there are anecdotal counter-examples to the universal claim that it always does so:

Watching the Mind Wander: While I am reading an article, my mind wanders: I compose lines for lecture, muse that it’s sunny in California, etc. All the while, I watch my thoughts drift. I don’t actively control my thoughts, directing them toward one topic or another. Yet I am aware that I could do so; at any moment, for example, I could intervene and bring myself back on task.

Watching the Mind Wander is recognizable as a case of mind-wandering. Yet I have meta-awareness of and veto control over my ongoing thoughts. What’s more, the case is recognizably non-agentive: when I watch my mind wander, I don’t “actively control my thoughts”. Metzinger agrees that meta-aware mind-wandering (if it existed) would be passive, rather than active: one would be “mind wandering while being passively aware of this fact” (2013a, footnote 4). But then even with meta-awareness and veto control, mind-wandering is not a form of mental agency: unlike solving a crossword, mind-wandering is still something that happens to us, not something we do. By Metzinger’s own lights, therefore, his definition cannot be the whole story about why mind-wandering is non-agentive.

A closer inspection of the empirical literature suggests that such cases are common. Various studies use self-reports to assess meta-awareness: for instance, subjects who catch their minds wandering are asked whether they were previously aware of this fact. For example, Smallwood et al. gave subjects the following instructions to distinguish
aware and unaware mind-wandering (which they called “tuning out” and “zoning out”, respectively):

**Tuning Out:** Sometimes when your mind wanders, you are aware that your mind has drifted, but for whatever reason you still continue to read. This is what we refer to as “tuning out”—i.e., when your mind wanders and you know it all along.

**Zoning Out:** Other times when your mind wanders, you don’t realize that your thoughts have drifted away from the text until you catch yourself. This is what we refer to as “zoning out”—i.e., when your mind wanders, but you don’t realize this until you catch it (Smallwood, McSpadden, and Schooler 2007, p. 533).

Across all conditions, Smallwood et al. (2007) found that tuning out was as frequent or more frequent than zoning out: if anything, therefore, it is probably more common for one’s mind to wander with meta-awareness than without (cf. Smallwood et al. 2008; Schooler, Reichle, and Halpern 2004).

In response, Metzinger could question whether self-reports of “tuning out” (i.e. mind-wandering with meta-awareness) are reliable. Metzinger, recall, believes that after our minds stop wandering, we often retrospectively confabulate that we had meta-awareness and veto control before this point (§1.2.1). But this response squares poorly with evidence that tuning and zoning out have different behavioural and neural profiles (see Schooler et al. 2011 for a review). One study examined subjects who reported that their minds wandered away from key passages in a Sherlock Holmes novel (in this case, passages providing a clue about the villain’s identity). Those whose minds wandered with meta-awareness (as opposed to without) were better able to deduce the villain’s identity and answer ancillary questions in a subsequent task (Smallwood et al. 2008). Furthermore, Christoff et al. (2009) found that mind-wandering without meta-awareness is associated with greater activation of the default and executive networks than mind-wandering with meta-awareness (see §5.3.3). Metzinger owes us some account of the difference between the empirical cases in question. And it’s not clear that any such account will avoid being ad hoc.
Metzinger could also stipulate such counter-examples away. Indeed, he considers apparent cases of meta-aware mind-wandering and proposes a “terminological solution”: “intentional episodes of daydreaming, to the extent that they do involve [mental autonomy]..., thereby do not count as episodes of mind wandering, which refer only to unintentional episodes of stimulus-independent thought” (Metzinger 2013a, footnote 4). Metzinger argues (convincingly) that his stipulative definition does explanatory work: it clarifies the distinction between tuning and zoning out (Metzinger 2013a, footnote 4). However, it’s not clear why we should identify mind-wandering with zoning out; instead, we could say that Metzinger has clarified an important type of mind-wandering. Furthermore, we’ve seen that Metzinger’s definition does not answer a more fundamental explanandum: why is mind-wandering non-agentive? For cases like Watching the Mind Wander are recognizably non-agentive, even though they proceed with veto control. A unified explanation of why mind-wandering is non-agentive (if available) would surely be fruitful.

My diagnosis of the problem again concerns the dynamics of mind-wandering. Mind-wandering is “...characterized by the incessant transition from one idea to another” (Ribot 1890, p. 79). And such transitions are evident in Watching the Mind Wander: my thoughts drift from lecture, to California, to that snowy winter from my childhood. Watching the Mind Wander is recognizable as a case of mind-wandering due to its unstable dynamics. Metzinger’s definition founders because he cannot capture the dynamics of the wandering mind. My account will explain these dynamics.

### 1.3 Is Mind-Wandering a Mental State?

Before I present my positive view, I should consider an alternative to my preliminary characterization of mind-wandering. I have focused on two distinctive features of the wandering mind: its relationship to agency and its dynamics. Alternatively, one might
characterize mind-wandering in terms of its *constituent mental states*. Perhaps mind-wandering is constituted by mental states with a particular type of content, propositional attitude, or some other feature. Stative accounts of mind-wandering could take various forms. I will focus on two popular views, raising objections to both. More importantly, I will present general reasons for scepticism about stative accounts of mind-wandering.

Sigmund Freud (1908) characterizes daydreaming (i.e. mind-wandering) in terms of its *contents*. According to Freud, daydreams are about fanciful or unrealistic scenarios: for example, you might daydream about fulfilling a wish that you are unlikely to satisfy due to practical constraints or social norms. While influential, Freud’s view enjoys only limited empirical support. Klinger et al. used thought sampling methods to assess how often mind-wandering is fanciful. Contra Freud, subjects reported that the majority (80%) of their wandering thoughts were realistic (see Klinger 2009 for a review). These results are unsurprising: intuitively, our minds often wander to everyday events, such as our plans, daily affairs, etc. So while mind-wandering can be fanciful, this is far from its defining feature.

Cognitive scientists sometimes characterize mind-wandering in terms of the propositional attitudes (e.g. imagination, memory) one has towards one’s wandering thoughts. For example, Smallwood et al. claim that, “[m]ind wandering represents a state of decoupled attention because, instead of processing information from the external environment, our attention is directed toward our own private thoughts and feelings” (Smallwood, Fishman, and Schooler 2007). On this definition, mind-wandering would seem to include all thought that unfolds without perception (imagination, memory, inner speech, etc.).

But mind-wandering seems antithetical to many cases of goal-directed imagination, memory, and inner speech. For example, I might imagine how my students would respond to an anecdote in a deliberate and directed fashion. There is a general worry about stative accounts in the vicinity: the same sequence of mental states can unfold in a wan-
dering way and in a goal-directed way. For example, I can compose lines for lecture, muse that it’s sunny in California, etc. while my mind wanders. Or I can call these thoughts to mind in a goal-directed fashion (e.g. in order to relive the vignette from my dissertation). Now suppose I characterize the first sequence as mind-wandering on the basis of its constituent mental states (perhaps they are sufficiently fanciful or imaginative). Since the goal-directed sequence includes the same mental states, I will have to characterize it as mind-wandering as well.

Stative accounts of mind-wandering face another general worry. A wide range of mental states can count as mind-wandering (imagining, remembering, visual imagery, inner speech, etc.). Such states vary widely with respect to their contents and our attitudes toward their contents. Stative accounts of mind-wandering must therefore be broad (e.g. mind-wandering includes all non-perceptual states) or disjunctive (e.g. mind-wandering includes memory or imagination or…). Faced with such an account, one might worry that the concept mind-wandering does not capture a natural or interesting division within the mind. I think this worry reflects a problem with stative definitions. Our wandering thoughts are not unified at the level of content or propositional attitude. Rather, these thoughts are unified by their relationship to agency and dynamics. Specifically, I will argue that our wandering thoughts are unified by how they lack guidance.

Conclusion

Philosophers of mind-wandering must answer at least two core questions. First, how is the wandering mind at once purposeless and caused by our goals (§ 1.1)? Second, how can we explain the unstable dynamics of mind-wandering (§ 1.2)? Chapter 2 proposes a theory that parsimoniously answers both questions: mind-wandering is unguided attention.
Chapter 2

Mind-Wandering is Unguided Attention

The natural tendency of attention when left to itself is to wander to ever new things –William James, *Principles of Psychology* (1890/1981, p. 422)

In a way, my theory takes off from James’ insight: when left to itself, attention wanders. Attention is “left to itself” when there is slack in the reins of guidance. Mind-wandering is thus unguided attention. Whether the focus of attention is guided in my sense concerns how it is monitored and regulated as it unfolds over time. Roughly speaking, someone’s attention is guided when she would feel pulled back, were she distracted from her current focus. Because a wandering attention drifts unchecked from one topic (e.g. lecture) to the next (e.g. the winter), it is unguided.

This chapter begins with a defence of two theses: mind-wandering is a type of attention (§ 2.1) and it unfolds without guidance (§ 2.2). My central argument is abductive: unlike previous theories, my account of mind-wandering explains the explananda from Chapter 1 (§ 2.2.2). After I motivate a minimal version of my definition, I then turn to seven unanswered questions and/or objections (§ 2.3). Each moves me to develop or explain a key aspect of the theory that mind-wandering is unguided attention.
2.1 Mind-Wandering is a Type of Attention

James claims that “the natural tendency of attention...is to wander” (1890/1981, p. 422).\footnote{Although James is quoting Helmholtz in this passage, we can attribute this thesis to James for two reasons. First, James claims that Helmholtz’s remarks are “of fundamental importance” and true of both sensory and intellectual attention (1890/1981, p. 423). Second, James’ translation of Helmholtz is loose, leaving room for James’ own views to appear in the passage.} I assume he would therefore classify mind-wandering as attention. Although James (characteristically) leaves his thesis undefended, he needn’t have done so. Here’s a two premise argument that James would likely endorse. First, James famously defines attention as focused consciousness:

> Everyone knows what attention is. It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Focalization, concentration, of consciousness are of its essence (James 1890/1981, 403-404, my emphasis).

Second, when someone’s mind wanders, her consciousness focuses on whatever thoughts drift before her mind. Therefore, mind-wandering is a type of attention.

My argument’s first premise—focused consciousness is, or at least is sufficient for, attention—does not commit me to a specific analysis of attention. Many philosophers define attention as a focused mode of consciousness, where focus can be characterized in terms of determinacy (Nanay 2010), rational accessibility (Smithies 2011), a primitive structuring relation (Watzl 2011a), or something else. Nanay (2010) holds that attended properties are more determinate than unattended ones. For instance, when you shift your attention to a pimpernel, its apparent hue might change from red to the more determinate shade scarlet.\footnote{Nanay doesn’t commit to the thesis that non-visual (let alone non-perceptual) attention increases determinacy. Given that mind-wandering is (at least frequently) non-perceptual, Nanay needn’t hold that it is attention. However, Fortney (Manuscript) argues that intellectual attention increases the determinacy of non-perceptual mental states. Mind-wandering may well be attention in Fortney’s sense.} Smithies argues that attention is rational access consciousness: that is, attended information is “accessible to the subject as a reason that justifies the subject in forming a belief or performing an action” (Smithies 2011, p. 260). For example, when...
you attend to some bullrushes, your visual experience might justify your belief that the rushes have tall stalks. Watzl (2011a) argues that attention structures consciousness into foreground and background. While you examine a tiger lily, for instance, your experience of its petals might be more central than your experience of a minuet playing in the background.

Despite their divergent theories, these philosophers agree with James that attention is a focused mode of consciousness. Below, I will argue that mind-wandering is a type of attention in this sense. But first I should head off an objection. Empirical evidence arguably shows that normal and clinical subjects can have unconscious attention (see Mole 2014 for a review). Therefore, one might worry that my argument rests on a dubious assumption: all attention is conscious. Fortunately, I require only the premise that focused consciousness (in whatever sense turns out to be relevant) is sufficient for attention.

My argument’s second premise is that consciousness is focused when the mind wanders. One argument for this premise is phenomenological. When you catch your mind wandering, introspect on your preceding stream of thoughts. You’ll find that the lights didn’t go off. Rather, you had a vivid series of conscious thoughts, in which you focused on various types of information (e.g. memories, inner speech, future-directed imagination). Furthermore, you’ll find that your consciousness was selective. For example, memories of your childhood may have entered the foreground of consciousness whereas awareness of your surroundings receded into the background (see Watzl 2011b for a similar argument). This is precisely the sort of selective focus that characterizes conscious attention.

Theorists who tie the focusing of consciousness to accessibility (e.g. Smithies 2011) have another reason to accept my second premise. The accessibility of mind-wandering is what makes it possible to study using thought sampling, where a subject verbally reports whether his thoughts are on-task or off-task (Smallwood and Schooler 2006; see Smallwood 2010 for a similar argument). Indeed, our wandering thoughts seem rationally accessible (Smithies 2011). Suppose a subject is aware that his mind is wandering
to childhood memories. This accessible information can justify the subject’s belief that he is off-task. Creative problem solving provides further evidence that our wandering thoughts are rationally accessible. § 2.3.1 and § 5.4.2 explore the connection between mind-wandering and creativity. For now, an example will suffice. While Jorge’s mind wanders in the shower, he alights upon a creative solution to an interpersonal conflict. Afterward, he practically deliberates about whether to employ this solution. Jorge’s mind therefore wandered to information that was accessible as a reason in deliberation.

One could object that the preceding arguments establish only that paradigm or typical cases of mind-wandering are conscious. So I haven’t ruled out the possibility that there are marginal cases of unconscious mind-wandering. For example, one might argue that there is unconscious mind-wandering on neural grounds. Perhaps one identifies mind-wandering with a certain pattern of neural activation (e.g. activity in the default network). One might then find evidence that this neural mechanism does not always broadcast its outputs to consciousness. From this, one might conclude that mind-wandering can be unconscious. But let’s be clear about what is required for unconscious mind-wandering. It’s not simply that your mind is consciously wandering, but you have no meta-cognitive awareness of this fact; such cases are indeed common (§ 1.2.1-1.2.3). Rather, what’s required are cases where you have a stream of wandering thoughts that do not reach consciousness at all.

Evidence from ordinary language makes me skeptical of such a possibility. Philosophers, scientists, and the folk often characterize mind-wandering as a kind of intellectual failure. For example, Aquinas says that mind-wandering is a “daughter sin” of sloth (Aquinas 1273/2002, IIa IIae q.35a.4) and psychologist Wendy Hasenkamp discusses the “curse of the wandering mind” (Hasenkamp July 17, 2013). These sorts of criticisms would border on incoherence if mind-wandering could be unconscious. Consider a case

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3I find such an identification implausible, since there is rarely a one-to-one mapping of neural structure onto function (§ 5.3.2). For now, let’s set these worries aside.
where Miss Wormwood chastises Calvin, “Stop mind-wandering, Calvin! Get your head back in class!” and Calvin responds, “I wasn’t!! My attention was completely focused on your lesson!” Suppose Wormwood sincerely believes Calvin. For once, his eyes were fixed on the board and his comments were pertinent to the lesson. It would seem absurd for Wormwood to press on, “I know you were consciously focused on my lesson...but I’ll bet your unconscious mind was wandering all over the place!!”

Miss Wormwood’s response seems absurd for two reasons. First, imagine the situation from Calvin’s point of view. From the inside, he seems completely on task. Wormwood believes him, but continues to insist that his mind was wandering. It would seem reasonable for Calvin to conclude that Miss Wormwood is playing a joke or misunderstands the concept mind-wandering. This provides evidence that a lack of conscious mind-wandering is a lack of mind-wandering simpliciter. Second, consider why we pass judgment on mind-wandering. Mind-wandering is criticizable (if at all) because it wastes the limited resources of consciousness. Calvin can attend to only so many things. When his mind wanders, precious attentional resources are occupied with irrelevancies (or so the criticism goes). But this criticism makes no sense if mind-wandering can be unconscious.

My purpose here is not to endorse how we ascribe blame for mind-wandering. Rather, my point is this: our ordinary ascriptions of blame border on incoherence without the presupposition that mind-wandering is conscious (and even attentive). But the practice of assigning blame is (for better or worse) central to how philosophers, scientists, and the folk talk about the wandering mind. Therefore, our best explanation of the evidence from ordinary language is that mind-wandering is essentially conscious.

My argument thus far is relatively simple: focused consciousness is sufficient for attention. And consciousness is focused when the mind wanders. Therefore, mind-wandering is a type of attention. Chapter 4 discusses complications to this simple picture of the re-

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4I thank Chris Mole for helping me to formulate this argument.
2.2 Mind-Wandering is Unguided

When the mind wanders, the focus of attention drifts unguided from one topic to the next. Contrast this with attention fixed on ruminative thoughts or absorbed in a philosophical argument. Here, attention doesn’t drift without purpose or guidance; rather, it is drawn to those ruminative thoughts or held on that argument. I will argue that “drawing” and “holding” are forms of guidance; rumination and absorption are therefore forms of guided attention.

My view rests on a distinction between what I call “motivation” and “guidance”. Motivated (bodily or mental) behaviours are actions in a Davidsonian sense (1963): their causal antecedents include the agent’s beliefs and desires/goals. Frankfurt’s seminal critique of the belief/desire picture of action is that it concerns only how behaviours are initiated, not how they unfold over time (1978, pp. 157-158). But whether a behaviour is purposeful or active depends also on how it is guided while it unfolds: “Behaviour is purposive when its course is subject to adjustments which compensate for the effects of forces which would otherwise interfere with the course of the behaviour...This is merely another way of saying that their course is guided” (1978, pp. 159-160).6 Guidance in Frankfurt’s sense involves the online monitoring and regulation of behaviour. Although

5Mind-wandering seems attentive in one sense. But can’t we also characterize mind-wandering as inattentive? I address these issues in Chapter 4, where I argue that mind-wandering is a choice-point between two schools of thought in the philosophy of attention. For the present chapter, these complications will stay under the rug. Readers with no prior theoretical commitments are invited to accept (for now) that focused consciousness is sufficient for attention. Readers committed to an incompatible theory of attention may translate my view into more acceptable terms. Such readers can (awkwardly) translate “mind-wandering is unguided attention” as “when the mind wanders, the focus of consciousness unfolds without guidance”.

6Other philosophers draw similar distinctions. For example, Searle (1983) contrasts Davidsonian intentions with intentions in action. Mele (1992) and Pacherie (2008) contrast Davidsonian intentions with proximal intentions. Of these philosophers, Pacherie’s account is closest to my own, since her account of proximal intentions is grounded in a notion of guidance similar to my habitual guidance. I thank Elizabeth Pacherie for clarifying my thoughts on this point.
our wandering thoughts are frequently motivated, they are not monitored or regulated in the right way to count as guided.

From here, we can see contours of how to solve our puzzles. Mind-wandering is unguided and thus purposeless and non-agentive (just as the folk indicate). And yet it can also be motivated (as suggested by empirical evidence). Furthermore, there is a core distinction between ruminations/absorptions and mind-wandering: the former two are guided; the latter is not.

Yet our analysis cannot stop with Frankfurt’s minimal notion of guidance. For one, guidance in Frankfurt’s sense cannot capture the phenomenology of rumination or absorption. When one’s attention is drawn to ruminative thoughts or held on a philosophical argument, the experience of being drawn to or held on something is part of one’s phenomenology. But Frankfurtian guidance has no essential tie to phenomenology, since unconscious processes can be guided. For example, “[t]he dilation of the pupils of a person’s eyes when the light fades...is a purposive movement” because “there are mechanisms which guide its course” (Frankfurt 1978, p. 159). Relatedly, Frankfurtian guidance need not involve the agent. But attentional guidance is agent-involving: the agent is drawn to her ruminative thoughts or held on an argument.

I need a stronger account of guidance than Frankfurt’s. Yet this account must be weak enough to allow that ruminations are guided, even though it is frequently involuntary (“I don’t mean to have these thoughts...and I just can’t stop them”) and in conflict with the agent’s avowed goals (“I can’t pull my attention out of this loop and back to my essay”). I will argue that the relevant notion of guidance is exemplified by habitual behaviours like striking a pool ball.
2.2.1 Attentional Guidance as Habitual Guidance

My analysis of attentional guidance is drawn from inspecting habitual behaviours. Such behaviours are guided in a thin way that nonetheless involves the agent (Brownstein and Madva 2012; Railton 2009): an agent’s behaviour is habitually guided by a norm if and only if that behaviour is the manifestation of a reliable disposition to act in accordance with the norm, such that the agent is disposed to notice, feel discomfited by, and thereby correct behaviour that seems (to her) to violate the norm. One example of habitual guidance is our tendency to notice when we are standing (what seems to us) too close to a conversational partner. Such violations of conversational norms cause discomfort, and thereby dispose us to take a step back until the discomfort stops (Brownstein and Madva 2012).

Habitual guidance is stronger than reliability (this will be crucial when I discuss mind-wandering). When the agent is habitually guided, she is disposed to experience errors or violations “...as calling for correction” (Railton 2009, p. 9). In this sense, habitual guidance involves the agent: to her, violations seem to call for correction. Contrast this with Railton’s reliable disposition to leave the kitchen cupboards ajar: “...if I find myself in a kitchen with self-closing cabinets, I make no effort to prevail against them” (Railton 2009, p. 9). What distinguishes habitual guidance from mere reliability is a counter-factual condition concerning how the agent would respond, were she to violate the norm in question.

From the notion of habitual guidance, I derive a notion of attentional guidance: An agent \( A \) is guided to focus her attention on some information\(^8\) if and only if she has two

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\(^7\)My account of habitual guidance is adapted from Railton (2009, p. 8). Similar accounts are developed by Brownstein and Madva (2012), Rietveld (2008), and Kelly (2010) among others. In particular, my account of attentional guidance is indebted to conversations with Aaron Henry, who is writing a dissertation on perceptual activity.

\(^8\)Recall that information in my sense need not be factive or have anything anything analogous to a subject-predicate structure (footnote 6). I therefore allow that one can attend to objects (e.g. Dominic), properties (e.g. unshavenness), or states of affairs (e.g. that Dominic is unshaven). However, nothing in my view hangs on this liberal conception of information. For example, if there is good reason to think that
dispositions:

1. A is reliably disposed to focus her attention on \( i \) and

2. If A’s attention weren’t focused on \( i \), she would notice, feel discomfited by, and thereby be disposed to correct this fact.

Rumination is guided in this minimal sense. Rumination, recall, involves “repetitively and passively focusing on symptoms of distress and on the possible causes and consequences of these symptoms” (Nolen-Hoeksema, Wisco, and Lyubomirsky 2008). If a depressed person breaks away from his ruminative thoughts, I hypothesize, he will feel pulled back to those thoughts. This is precisely the sort of “directed discontent” (Brownstein and Madva 2012, p. 421; Rietveld 2008, Section 3) that is characteristic of how habitually guided agents respond to errors. Likewise, rumination satisfies the counterfactual condition in my definition of attentional guidance (condition 2).

Attentional guidance can be **akratic**: agents can be guided to something they genuinely want to ignore. Someone who is depressed might sincerely say, “I don’t \textit{want} to think about my distress. I just get pulled back to these thoughts.” Plato’s \textit{Republic} contains perhaps the most famous example of akratic attentional guidance (and of akrasia more generally):

Leontius, the son of Aglaion, was going up from the Piraeus under the outside of the North Wall when he noticed corpses lying by the public executioner. He desired to look, but at the same time he was disgusted and made himself turn away; and for a while he struggled and covered his face. But finally, overpowered by the desire, he opened his eyes wide, ran toward the corpses and said: ‘Look, you damned wretches, take your fill of the fair sight’ (Plato 1991, 439e-440a).

Leontius’ akratic desire is to look at—that is, visually attend to—the corpses. In what sense does Leontius \textit{desire} to attend to the corpses? At least part of the answer is that he’s guided to do so. When Leontius shifts his attention away from the bodies, turning away

we always attend to states of affairs, I could restrict my theory accordingly.
and covering his face, he feels his attention *drawn back*: he “struggles” to avert his gaze until he is “overpowered by desire”. Leontius struggles against the directed discontent characteristic of attentional guidance.

Akratic attentional guidance is no counter-example to my account, since in general, habitual guidance does not require reflective endorsement. For example, many avowed egalitarians have discriminatory micro-behaviours (e.g. standing farther from black than white conversants). Regrettably, however, discriminatory behaviour can still be habitually guided: for instance, one might feel uncomfortable and step back sooner when one is talking to a black rather than a white speaker (Brownstein and Madva 2012). Although this behaviour is not directed by goals that agents reflectively endorse—that is, avowed egalitarians don’t discriminate on purpose—it can still be habitually guided. Similarly, rumination and other forms of akratic attention are still habitually guided, even in cases where they are out of line with the agent’s goals.

Absorption is guided in a strictly stronger sense: it is goal-directed (that is, directed by a goal).\(^9\) Whereas attentional guidance merely *involves* someone who is ruminating, attentional guidance *issues* from someone who is goal-directed. Whereas a depressed person is *guided* to attend to his distress, a goal-directed person *guides* his attention to relevant information. For now, I’ll remain somewhat neutral on how to distinguish guidance that merely involves, rather than issues from an agent. Perhaps the distinction concerns whether the guided behaviour is motivated by the agent's goals in the Davidsonian sense I specified above (§ 2.2). Or perhaps the distinction concerns whether the guided behaviour is motivated by the agent’s higher-order goals (Frankfurt 1971). I return to this issue in § 2.3.2.

What I am currently committed to is this: goals set standards for what counts as relevant to, and thus what guides, goal-directed attention. An agent A’s attention is directed

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\(^9\)Sometimes, rumination also seems goal-directed: for example, when I obsessively consider how to improve my teaching, in light of a sub-par evaluation. I can subsume such cases under my account of goal-directed attention.
Chapter 2. Mind-Wandering is Unguided Attention

by one of her goals, $\tau$, if and only if $A$ is guided to focus her attention on information that she takes to be relevant to $\tau$; that is, $A$ has two dispositions:

1. $A$ is reliably disposed to focus her attention on information that she takes to be relevant to $\tau$ and

2. If $A$'s attention weren't focused on information that she takes to be relevant to $\tau$, $A$ would notice, feel discomfited by, and thereby be disposed to correct this fact.

Consider the case where I was so absorbed in my argument that I failed to notice a tornado outside. Plausibly, my absorption would affect my attention in two ways. First, I would be reliably disposed to focus my attention on the argument. Second, were my attention to fall upon seemingly irrelevant information (e.g. a student dropping his books), I would notice that I was distracted and, after a moment of frustration, my attention would return to the argument. Note that when I construct my argument, I implicitly distinguish between information I take to be goal-relevant (i.e. that pertains to my argument) and goal-irrelevant distractions. This is a crucial feature of goal-directed attention in my sense: part of what it means to pursue a goal is to have a conception of what counts as relevant and irrelevant to that goal.

Sometimes, one is reflectively aware of one's conception of a goal (or at least, part of that conception). Suppose I perform a visual search task, where I must identify a visual target while ignoring a salient distraction (e.g. a picture of Spiderman; Forster et al. 2014). Here, I might explicitly hold a conception of my goal in mind, continually reminding myself to ignore the distracting image. Yet these cases are the exception. Typically, one's conception of a goal does not pass the threshold of reflective awareness. For example, when I focus attention on an argument, I do not first call to mind every relevant and irrelevant aspect of the argument (indeed, Dennett’s (1984) version of the frame problem suggests that intelligent agents cannot call all this to mind). Rather, conceptions of a goal are functionally defined, in terms of how the agent's attention is guided as a result.
of pursuing that goal (§ 2.3.2).

Although rumination is a form of guided attention, it needn’t also be goal-directed. When one ruminates, one’s attention needn’t be guided toward information that is relevant according to some overarching goal. Her attention might be drawn to some information (e.g. a snarky teaching evaluation), even though this is truly irrelevant, given all her goals. Similarly, Leontius’ attention is drawn to the corpses, even though he (arguably) does not want to look.

Absorption in my sense bears some similarities to the empirical construct of “flow”. Flow occurs when “attention is completely absorbed” (Csikszentmihalyi et al. 2005, p. 601; cf. Bruya 2010) in skilled activities like athletic or musical performance. During both absorption and flow, attention is structured around one’s goals: “flow tends to occur when the activity one engages in contains a clear set of goals. These goals serve to add direction and purpose to behavior. Their value lies in their capacity to structure experience by channeling attention” (Csikszentmihalyi et al. 2005, p. 601). And during flow, attention and behaviour are subject to the kind of fine-grained adjustments characteristic of habitual guidance: “flow is dependent on the presence of clear and immediate feedback...[that] informs the individual how well he or she is progressing in the activity, and dictates whether to adjust or maintain the present course of action” (Csikszentmihalyi et al. 2005, p. 601). One disanalogy is that my examples of absorption are purely intellectual, whereas the paradigm examples of flow are sensorimotor activities. However, Csikszentmihalyi (1991, Chapter 6) argues that intellectual cases of flow can occur while reading or solving mental puzzles, for example.

I should stave off a potential confusion. When I say that someone’s attention is goal-directed, I do not mean that her attention is directed towards (i.e. focused on) a goal. I mean instead that her attention is directed by a goal: that is, her attention is guided toward goal-relevant information. My account fits with a natural picture of how goals

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10I thank John Sutton for suggesting that I relate absorption and flow.
manifest phenomenologically: often, goals are not the object of attention, even though they structure attention by guiding us to focus on whatever is goal-relevant. That is not to say that we never focus attention on a goal: for example, a novice driver might explicitly attend to the goal *come to a complete stop* when he approaches an intersection. Or Julius might focus on the goal *make dinner plans with Suzie* when he schedules the upcoming week. But contexts wherein we attend to a goal—for example, novice action and deliberation—are not the only ones where goals structure our attention.

Indeed, many goal-directed agents—especially skilled ones—lack the meta-cognitive awareness required to focus on (i.e. direct attention toward) their goals. Consider that the performance deficit called “the yips” seems to occur when athletes become meta-aware of their performance, which disrupts the flow state (although this is contentious; see Papineau 2013). Alan White makes a similar point in his 1964 monograph *Attention*:

> Whether or not a man is giving attention to his fishing depends on whether he looks at the water, listens to the rustling of the reeds, and thinks about the habits of fish or whether he looks at his watch, listens to the aeroplane in the sky and worries about his children’s education and his stocks and shares. The attentive is distinguished from the inattentive fisherman by the relevance or irrelevance to his fishing of what he gives his attention to. He is not to be distinguished by whether he watches himself fishing in the way that he could watch another fishing—as he might if he were a novice or a writer on the art of fishing (White 1964, p. 16; cf. my § 4.2)

White’s insight is that someone who skillfully pursues a goal (e.g. fishing) directs her attention onto objects that are relevant to that goal (e.g. the reeds, water, and fish), not onto the fact that she is pursuing that goal. I agree, although I add that goal-directed attention remains on relevant information because of attentional guidance.

My paradigm cases of guided attention so far are rumination and absorption. One might object that I have left out the central case: what about controlled attention, where we effortfully pursue some goal? I discuss such cases in § 4.2.3 and Chapter 5, where I argue that they are special cases of goal-directed attention in my sense.
With accounts of guided and goal-directed attention in hand, I can now define mind-wandering as unguided attention. We’ll see that my definition parsimoniously explains features of the wandering mind that elude previous theories (Chapter 1).

### 2.2.2 Mind-Wandering as Unguided Attention

Mind-wandering is neither habitually guided nor goal-directed. Rather, it is a form of unguided attention: for any agent $A$ whose attention is focused on some information, $A$’s attention is unguided if and only if $A$ is not habitually guided to focus her attention on any information. In particular, she does not satisfy the counter-factual condition for attentional guidance: that is,

- There is no information $i$ such that, if $A$’s attention weren’t focused on $i$, she would notice, feel discomfited by, and thereby be disposed to correct this fact.

One moment, the wanderer might think about his lecture; the next moment, he might reminisce about the winter. Crucially, whenever the focus of his wandering attention shifts from one topic (e.g. lecture) to the next (e.g. the winter), he feels no discomfort drawing him back. Rather, he drifts onward unchecked. We can also characterize my view in terms of the notion of distraction (§ 2.3.3). Someone whose attention is guided would experience interruptions to her current focus as distractions. In contrast, someone whose mind is wandering would not feel distracted if her attention were to shift. Her attention would simply wander onward.

Given that my discussion is pitched at the level of phenomenology and agency, my definition does not rule out the possibility that mind-wandering is guided by unconscious mechanisms. Such mechanisms would monitor and regulate the course of our wandering thoughts, but post no error signals to consciousness. Proponents of such a view could maintain that mind-wandering still feels unguided to the agent, even though it is in fact guided. For present purposes, I am neutral on the prospects of this view. Note
that even if mind-wandering is guided unconsciously, my view still elucidates how mind-wandering is non-agentive: it is not subject to a type of conscious guidance that involves the agent. However, it is unclear whether the instability of our wandering thoughts could be explained by theories on which mind-wandering is guided unconsciously. In contrast, theories on which mind-wandering is unguided *simpliciter* can easily explain this fact: mind-wandering is unstable because it is unguided.

My definition of mind-wandering as unguided attention explains four explananda that previous theories cannot capture (Chapter 1). First, I solve the Puzzle of the Purposeful Wanderer. Theorists like Carruthers, Smallwood, and Metzinger concede the core intuition that mind-wandering is purposeless. Others capture this intuition, defining mind-wandering as associational or task-unrelated thought. But the latter proposals are stymied by the evidence that our minds frequently wander to goals and, indeed, that mind-wandering is frequently motivated.

My definition avoids both sides of the puzzle. Our minds frequently wander to our goals because mind-wandering is frequently motivated. For example, when someone is about to take a geography quiz, his mind will reliably wander to geography. This is no counter-example to my account, since we have seen that reliability is in general insufficient for habitual guidance. Recall that Railton reliably leaves his cupboard doors open, even though he is not guided by the goal of leaving his cupboard doors open. He isn’t guided because he doesn’t experience errors as calling for correction. Likewise, the empirical fact that our minds reliably wander to goal-relevant information doesn’t imply that goals guide our wandering thoughts. Mind-wandering isn’t guided, because when our attention shifts away from a goal, we feel no discomfort drawing us back. We don’t experience these shifts as distractions that call for correction.

Second, I can explain how mind-wandering differs from rumination and absorption: the latter two are forms of guided attention whereas mind-wandering is not. Recall that prominent theorists—Metzinger and those who define mind-wandering as task-
unrelated thought—cannot capture these distinctions.

Furthermore, I can explain why mind-wandering is less stable than rumination or absorption. Following Williamson (2000, p. 123), I assume that stability is a modal notion: that is, stability concerns not whether something will remain the same over time, but rather whether something would remain the same under slightly different conditions. To clarify the modal notion of stability, imagine two balls, one balanced on top of a (smooth) hill and the other settled on the bottom of a basin. Suppose that neither will move, since both are in an equilibrium state. The latter is nevertheless more stable, in that it will remain even if it is perturbed (e.g. by a small breeze). Hobbes also characterizes the distinction between mind-wandering and regulated trains of thoughts in terms of counterfactual stability. Regulated trains of thoughts are “more constant...For the impression made by such things as we desire, or feare, is strong and permanent, or, (if it cease for a time,) of quick return” (Hobbes 1651/1928, 21, my emphasis).

The unguided character of mind-wandering explains its relative instability. When someone is absorbed or ruminating and her attention is perturbed, she will feel drawn back to her original topic. In contrast, perturbations to a wandering attention go unchecked. Given this, absorbed or ruminative attention is more likely to return after perturbations, and is thus more stable in Williamson’s counterfactual sense. Third, I allow that one can watch one’s mind wander. Such cases are counter-examples to Metzinger’s view that mind-wandering always lacks meta-awareness. Worse still, Metzinger cannot explain why meta-aware mind-wandering is non-agentive, since it unfolds with meta-awareness and thus with veto control. On my view, when someone watches his mind wander, he has meta-awareness of and veto control over a stream of unguided attention. I therefore have an easy explanation of why such cases are non-agentive: they are not guided.

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11 This example is adapted from Williamson (2000, p. 123). Williamson’s stability is comparable to robustness under perturbations to initial conditions. Robustness also plays a central role in philosophical discussions of biological purposefulness (e.g. Thompson 2007; Walsh 2013). I thank Jonathan Weisberg for suggesting that I use Williamson’s notion of stability.
Finally, I avoid two general problems with stative definitions of mind-wandering (§1.3). The first problem is that the same sequence of mental states can unfold in a wandering way and in a goal-directed way. My definition explains why: although wandering and goal-directed sequences can have the same constituent mental states, only the latter is guided. To unfold “in a wandering way” is to unfold without guidance. The second problem is that a motley collection of mental states can count as mind-wandering (imagining, inner speech, etc.). Presented only with stative accounts, one might therefore worry that mind-wandering is not a unified and natural psychological category. I identify where stative definitions go wrong: sequences of wandering thoughts are unified not by their constituent mental states, but rather by how they unfold without guidance.

Thus far, my definition of mind-wandering is something of a sketch. Yet even this simple picture is sufficient to explain central, and otherwise puzzling, features of the wandering mind. I will now fill in the sketch, explaining more thoroughly how mind-wandering is unguided attention.

### 2.3 Filling in the Sketch

#### 2.3.1 Hierarchical Conceptions of a Goal

I draw a sharp distinction between mind-wandering and phenomena like rumination and absorption: the latter are guided; mind-wandering is not. In this way, I diverge from theorists who draw gradual distinctions between mind wandering and other phenomena (e.g. Sutton 2010, p. 5; Fox et al. 2014). It’s therefore worth thinking about whether I can explain why certain cases of goal-directed attention seem less similar to mind-wandering—indeed, more *guided*—than others.\(^\text{12}\) Consider three cases of goal-directed attention, which seem progressively more like mind-wandering:

\[^{12}\text{I thank Kalina Christoff, Jonathan Weisberg, John Broome, and John Sutton for suggesting this question.}\]
Algebra Homework: Little Paolo understands exactly where to direct his attention when he solves algebra problems: perform operations inside brackets first, then turn to exponents, etc. Paolo therefore guides his attention to exactly that part of the problem he must currently solve.

Cryptic Crossword: Jonathan doesn’t solve cryptic crosswords in a linear fashion. Rather, he lets his attention bounce between clues somewhat randomly. He might think about 2 down for a few seconds, turn to 13 across for over a minute, then shift his attention 6 across, etc. Jonathan always guides his attention to the crossword; but which clue he focuses on is usually up for grabs.

Brainstorming: Kalina is brainstorming ideas for her term paper on Dennett. Her attention is guided, but only to the following extent: the topic must pertain to Dennett’s Multiple Drafts Model and issues covered in the course. Aside from those restrictions, Kalina lets her attention drift freely.

Suppose that all three cases describe goal-directed attention in my sense: all three subjects would feel drawn back, were they distracted by something unrelated to their current goal. My sharp definition marks no distinction between these cases. Yet each case seems progressively less guided, progressively more like mind-wandering. The characteristic phenomenology of mind-wandering is that our thoughts drift from one topic to the next. And each of the above cases seems to drift more than the last: Paolo’s attention doesn’t drift at all—he focuses on whatever part of the problem he must currently solve; Jonathan’s attention drifts between specific clues, albeit in no apparent order; Kalina’s attention drifts freely to any idea that pertains to Multiple Drafts and her course.

My theory can allow for gradations in attentional guidance, but only once I introduce new machinery: hierarchical conceptions of a goal. Recall that one’s attention is goal-directed only if one has a conception of what counts as relevant and irrelevant to the goal in question. All three agents in our examples implicitly distinguish between information they take to be goal-relevant, and goal-irrelevant distractions. This is part of what it means to pursue a goal (§ 2.2.1).

Conceptions of a goal can have hierarchical structure. For example, Paolo’s conception of his algebra problem specifies various sub-goals (e.g. sum numbers inside brack-
ets, multiply these sums together) and an order in which these sub-goals should be performed (i.e. PEDMAS/BEDMAS; Figure 2.1a). Goal-directed attention comes in degrees because some conceptions of a goal have less hierarchical structure than others. Jonathan’s conception of his cryptic crossword specifies sub-goals (solve 1 across, solve 12 down, etc.), but no order in which to perform them (Figure 2.1b). Kalina has only the broadest conception of her overarching goal—generate a topic relevant to Dennett and the course—with no conception of her sub-goals (Figure 2.1c).

Goal-directed attention inherits this hierarchical structure. Paolo is guided to attend to information that seems relevant to his current sub-goal. If his attention drifts to another part of the algebra problem, he would feel pulled back. Jonathan is guided to attend to information that seems relevant to some sub-goal, to one of his clues, but he can drift from to clue to clue unchecked. Kalina’s attention can drift freely within the domain of information relevant to her overarching goal; she would feel pulled back only if her attention were to fall on something entirely unrelated (e.g. a fly buzzing on the wall). Each case of goal-directed attention is therefore guided in a less structured way than the last. In this way, each case is progressively more similar to mind-wandering, which is not guided at all.

Hierarchal conceptions of a goal allow me to account for degrees in attentional guidance. Using this machinery, I can also subsume Dorsch’s distinction between mind-wandering and what he calls “focused daydreaming” (2014). Dorsch’s paradigm case of focused daydreaming involves goal-directed visualization:

In preparation of their ride down the track, the drivers of bobsleighs tend to close their eyes and imagine racing the whole run from start to finish, thereby visualizing the alternating curves and straight passages. In fact, someone, who is an ardent spectator of the sport and almost as familiar with the track as the drivers, may engage in more or less the same focused daydream, even though without any intention to follow it up with a real run through the ice canal (Dorsch 2014, Introduction).13

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13Because Dorsch’s paper is published online first, the Review of Philosophy and Psychology has not yet assigned page numbers for his article. I opt to use section numbers instead.
Figure 2.1: Structured Conceptions of Goals
Dorsch argues that focused daydreaming has two features that mind-wandering lacks (Dorsch 2014, §1.5). First, focused daydreaming is goal-directed, and thus a form of mental agency. Second, focused daydreams possess a distinctive kind of narrative structure. For example, the above daydream represents a temporally ordered sequence of events involving the same entities (e.g. the bobsled, the drivers, the track). When our minds wander, in contrast, our thoughts tend not to constitute this sort of cohesive narrative: we may drift from prospection to memory, and from one set of entities (e.g. the students in next week’s lecture) to another (e.g. the snowman we built as a child).

Goal-directed visualization is admittedly a counterintuitive example of daydreaming. However, Dorsch could make his point using more familiar examples of daydreams. Suppose that Calvin imagines being an intergalactic superhero, and that he does so deliberately (e.g. in order to escape from Miss Wormwood’s humdrum lesson). This is a paradigm case of daydreaming. Furthermore, Calvin’s daydream seems goal-directed and possessed of narrative structure. So there are intuitive cases of focused daydreams in Dorsch’s sense.

On my view, Dorsch’s focused daydreaming is one among many types of goal-directed attention. Conceptions of a goal can have various types of hierarchical structure, including what Dorsch calls ‘narrative structure’. Focused daydreaming inherits this structure: for example, the daydreamer is guided to attend to each segment of her narrative in order. One advantage of my account is that I provide explanatory unification, showing how focused daydreaming is an instance of a general category: goal-directed attention. Furthermore, I can locate focused daydreaming on a scale of more or less structured forms of imagination: due to the narrative structure of focused daydreaming, it is less like mind-wandering (and more like arithmetic) than cases of unstructured imagination such as brainstorming. Finally, I illuminate the sense in which focused daydreaming involves agency: it is guided and goal-directed.
2.3.2 Goal-Directedness as Motivated Guidance

I hold that goals set standards for what counts as relevant to, and thus what guides, goal-directed attention. But this arguably does not follow from my initial definition: an agent $A$’s attention is directed by one of her goals, $\tau$, if and only if $A$ is guided to focus her attention on information that she takes to be relevant to $\tau$.

The problem is that my definition allows for an agent’s attention to be goal-directed, even though his goals have no influence on how his attention is guided.

Jeff and the Fly: Jeff listlessly pursues a goal: listen to a fly buzzing in a quiet library. Jeff’s goal pursuit is so lackadaisical that it makes no difference to where Jeff directs his attention. Yet Jeff’s attention is guided to the fly regardless, since its buzzing is so salient.

Jeff’s attention is guided to information he takes to be goal-relevant—the fly’s buzzing—and is therefore goal-directed in my sense. But since Jeff’s goal makes no difference to where he directs his attention, this goal does not itself set standards for what guides Jeff’s attention. My initial definition therefore allows for goals to direct attention without setting standards for attenational guidance. I need a revised account of how goals set these standards.

My account is this: goals set standards for attenational guidance by motivating us to adopt those standards. In a slogan, goal-directed attention is motivated attenational guidance. An agent $A$’s attention is directed by one of her goals, $\tau$, if and only if $\tau$ motivates $A$ to guide her attention to information that she takes to be relevant to $\tau$; that is, $\tau$ motivates $A$ to have two dispositions:

1. $A$ is reliably disposed to focus her attention on information that she takes to be relevant to $\tau$ and

2. If $A$’s attention weren’t focused on information that she takes to be relevant to $\tau$, $A$ would notice, feel discomfited by, and thereby be disposed to correct this fact.
Goal-directed attention depends not on guidance or motivation alone, but rather on the interaction between these features of agency. Motivation affects goal-directed attention (at least in part) through its effect on attentional guidance. That is, goals motivate us to adopt standards for attentional guidance that accord with our conceptions of those goals. According to my revised account, Jeff’s attention is not goal-directed because his goal has no motivational force. Jeff is guided to attend to the buzzing fly, but not because he is motivated to do so. He is not subject to motivated attentional guidance.

My account gives us a taxonomy of how attention can involve the agent. On the one extreme, we have goal-directed attention, where goals motivate and thus bias the mechanisms that guide attention (Fig 2.2a). On the other extreme, we have purely passive attention, which does not involve the agent at all. Some cases of mind-wandering—where our attention drifts unguided and unmotivated from one topic to the next—fall into this category (Fig 2.2b).

Many cases of attention fall between these extremes; they involve some features of agency, but fail to meet the standards required for goal-directed attention. Motivated mind-wandering is such a case. Goals often motivate, and thus bias, the wandering mind. When this occurs, our mind will likely wander to goal-relevant information. But since these motivations bypass guidance (Fig 2.2c), mind-wandering is never goal-directed. Paradigm cases of akratic attention (e.g. rumination) also fall between the extremes. Ruminative attention is always guided, for example, but rarely by standards the agent is motivated to follow (Fig 2.2d). Jeff and the Fly is a final case in the middle ground of agency. Jeff’s attention is guided in accordance with his goal, but Jeff’s goal plays no motivational role in his setting the standards for guidance (Fig 2.2e).

There may be a further question about when attentional guidance issues from an agent. Paradigm cases of goal-directed attention (e.g. Paolo’s algebraic reasoning) don’t just involve the agent; they issue from her (§ 2.2.1). I could propose that attentional guidance issues from the agent when it is goal-directed; that is, when it is motivated atten-
Figure 2.2: Preliminary Taxonomy of Attentional Agency
tional guidance. But one might worry that this account is too permissive. For example, in Plato’s example, Leontius’ attentional guidance is arguably motivated by a goal: to look at the corpses. Indeed, Plato says that Leontius, “desired to look” (Plato 1991, 439e–440a; cf. § 2.2.1). But this case is also paradigmatically akratic: attentional guidance involves Leontius, but arguably does not issue from him.

Goal-directed attention may therefore issue from the agent only when other conditions are met. Perhaps the agent must identify with (i.e. have a higher-order desire to pursue) the goal \( \tau \) that motivates his attentional guidance (Frankfurt 1971). Perhaps the agent must, in pursuing \( \tau \), have the aim of knowing what she is doing (Velleman 2000, Introduction). I can (and should) remain neutral on whether additional conditions such as these are required to distinguish between guidance that issues from, rather than involves, the agent. For this depends on deep questions for causal theories of action, which my theory of attention should not decide.

### 2.3.3 Distraction

My theory casts new light on the relationship between attention and distraction. One natural approach is to characterize goal-directed attention as the absence of distraction. Chris Mole takes this approach: he claims that someone performs a task attentively (i.e. his attention is goal-directed) only if none of the cognitive processes that he could use to perform that task are occupied with something else (Mole 2011, p. 51; cf. § 4.1.1). Suppose that Paolo’s attention falls upon a buzzing fly while he completes his homework. During this period of distraction, Mole would say that Paolo’s attention is not goal-directed; for the cognitive resources that Paolo could have used for homework are occupied with the fly. Mole captures one distraction, akin to what psychologists call “task-unrelated thought” (§ 1.1.1).

I explicate another notion of distraction. Distraction in my sense is compatible with
goal-directed attention. So long as Paolo feels drawn back from the fly, for instance, his attention still counts as goal-directed. One’s attention can be directed by a goal during periods where (a) one’s attention is currently focused on information that seems goal-relevant or (b) one feels distracted and pulled back to the goal at hand.

My definition of distraction is not stipulative; instead, I draw out something embedded within the ordinary concept *distraction*. Consider the etymology of “distraction”: the Latin root of “distract” is *distráhere*, meaning to draw or drag (*-tráhere*) apart (*dis-*)\(^\text{14}\). In the traditional sense, then, someone is distracted when her mind is pulled in different directions. On my view, this is reflected in the phenomenology of distraction: for instance, Paolo might feel drawn to a buzzing fly and pulled back to his homework simultaneously.

Distraction has this phenomenology—of being pulled in opposing directions—due to a deep feature of guidance (and by extension, of agency). Guided behaviour is not always successful; what’s crucial is how one responds to errors (Railton 2009, p. 9). For example, whether one is guided to stand a certain distance from one’s conversational partner depends partly on how one responds when one seems to be standing too close. Guided agents experience such lapses as *errors*.

Similarly, whether one’s attention is goal-directed depends on how one responds when one’s attention is in error: that is, when one is *distracted*. The fact that Paolo experiences attentional lapses as *distractions* is a crucial part of what makes Paolo’s attention goal-directed. Indeed, it’s these feelings of discomfort that bring Paolo back on task. Periods where Paolo feels distracted do not therefore indicate the absence of goal-directed attention. Such periods are instead a core manifestation of Paolo’s attentional guidance. Goal-directed attention does not require uninterrupted focus; this would be too much to ask of agents whose minds are constantly on the move. Rather, what makes someone goal-directed is how she manages the vicissitudes of attention. Does she bring herself back from distraction or does her mind drift onward?

\(^{14}\)I thank Diana Raffman for suggesting that I investigate the traditional concept *distraction*.
2.3.4 Halting the Wandering Mind

Various philosophers have confronted me with a similar sort of counter-example, where one's mind wanders to a striking thought that subsequently guides attention. Suppose your mind wanders to an unsavoury topic (e.g. death or lascivious images). You might feel discomfited and therefore stop your mind from wandering. Or you might begin to ruminate about that topic. Alternatively, suppose that your mind wanders to a creative insight (e.g. a new idea for a paper). You might feel drawn to immediately develop that insight. In these cases, your mind wanders to a thought that subsequently guides attention. Doesn't this show that a wandering attention can be guided?

I think not: these are not cases where your attention is guided while your mind continues to wander. Rather, they are cases where you drift to a topic so striking that your mind stops wandering. The moment attention starts to be guided, mind-wandering has stopped. My opponents could press the objection in two ways. First, one could object that our final wandering thoughts are sometimes guided. For example, when your mind wanders to unsavoury thoughts, you might briefly indulge in their forbidden delights even though you feel yourself pulled away. One could argue that while your mind is wandering here, you are subject to the kind of discomfort characteristic of guided attention.

I agree that your attention is guided when you feel that discomfort, but I disagree that your mind continues to wander. The moment you start to feel pulled away, your mind has stopped wandering. A bit of formalism will clarify my reply. Consider the point in time where you begin to feel pulled back. Your mind wanders over the open interval before that point; your attention is guided for the closed interval after. My reply is not ad hoc; rather, it is motivated by the very notion of guided attention. Whether attention is guided concerns whether it is monitored and regulated as it unfolds over time. During the period where you feel pulled away, your attention is monitored and regulated in precisely

\footnote{Jonathan Weisberg, Ronnie de Sousa, Bence Nanay, and Tashi Alford-Duguid have suggested similar objections.}
this manner.

What reason might my opponent have to say thoughts during this period are wandering? Perhaps it is that your thoughts before and after the initiation of guidance are about the same topic. You might wander to lascivious images for a while before you begin to feel pulled away from those very images. But that is just to characterize mind-wandering in terms of its contents, a losing strategy (§ 1.3, 2.2.2). Our wandering thoughts are unified not in terms of their contents, but instead in terms of the unguided manner in which those contents unfold. The moment you feel pulled back—that is, the moment you are guided—is therefore a fissure between mind-wandering and guided attention.

My opponent’s next response could be to modify their counter-examples. In the initial cases, a striking thought stops one’s mind from wandering. In the modified cases, a striking thought changes the course of one’s mind-wandering. For example, when your mind wanders to something unpleasant (e.g. the inevitability of death), you might be drawn not to stop mind-wandering, but rather to change the topic. Perhaps your mind begins wandering to the soothing notes of a lapping tide. Prima facie, my initial reply isn’t available here: since your mind continues to wander, I can’t say that the onset of guidance is the cessation of mind-wandering.

However, a version of my reply is still available. The modified cases really involve three stages: at first, your mind is wandering; then, your attention is (briefly) guided toward the desired topic; then, you let your mind wander, perhaps hoping that you will continue to think about that topic. Again, there is no period of guided mind-wandering. There is simply a closed interval of guided attention between two open intervals of mind-wandering.
2.3.5 Guiding Your Mind To Wander

Another family of objections to my view is based on the idea that someone can guide his mind to wander. Consider Walter, who ambles through a park to decompress. Walter lets his thoughts drift where they will—from a creature rustling, to a student’s question during lecture, to an awful pun. So far, this is a standard case of mind-wandering. What complicates matters is that Walter actively maintains his wandering state of mind, allowing no thoughts to seize his attention. For example, Walter’s attention is briefly gripped by an uncomfortable memory: a student, crushed after he was caught plagiarizing. Walter immediately notices that the memory has disrupted his relaxation and, after a moment of frustration, lets his thoughts drift once more. Here’s the problem: to maintain his wandering state of mind, Walter monitors and regulates his thoughts in precisely the way required for guidance. Walter guides his mind to wander. We therefore have an apparent counter-example to my definition of mind-wandering as unguided attention.

Carruthers (in conversation) presented a similar objection to my view, motivated by the everyday phenomenon of mental effort. Carruthers’ objection draws on Kurzban et al.’s (2013) unorthodox, but well-motivated, theory of mental effort. Kurzban et al. propose to explain why “performing certain tasks cause[s] the aversive experience of mental effort and concomitant deterioration in task performance” (Kurzban et al. 2013, p. 661). On their model, mental effort is the output of an unconscious cost-benefit calculation. Tasks occupy cognitive resources (e.g. working memory) that cannot be used for other purposes. For example, if you are performing an experimental task, you cannot check your smartphone. Kurzban et al. (2013) argue that unconscious mechanisms calculate the opportunity cost of using cognitive resources for your current task, compared to any relevant alternatives. If the opportunity cost is high, your current task will take mental effort, which motivates you to abandon your current task for something better.

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16 This case is adapted from conversations with Ronnie DeSousa and Walter Sinnott-Armstrong.
Kurzban et al. (2013, pp. 666-667) argue that mind-wandering is often the relevant alternative to performing one’s current task. If they’re correct, mental effort is often the output of an unconscious cost-benefit analysis, according to which mind-wandering has almost as much (or more) expected value than our current task. This is plausibly a form of guidance: if someone were to perform a task that is less valuable than mind-wandering, she would notice and feel discomfited by this fact (i.e. experience mental effort), and thereby be disposed to let her mind wander. Therefore, Kurzban et al.’s (2013) theory suggests that our minds are guided to wander as a matter of course, not merely during unusual cases such as Walter’s.

Despite appearances, my definition (correctly) classifies the forgoing cases as mind-wandering. Consider Walter. On my definition, Walter’s mind is wandering because he is not guided to focus his attention on any information. By actively maintaining his wandering state of mind, Walter ensures that there is no information such that, if his attention weren’t focused on it, he would notice, feel discomfited by, and thereby be disposed to bring his focus back to it. Admittedly, Walter monitors and regulates a higher-order feature of his stream of thoughts: whether his attention is guided. But this does not amount to attentional guidance, since this places no first-order constraints on where Walter’s attentional focus is directed.

Walter’s case can teach us a general lesson. Mind-wandering in my sense is incompatible with first-order attentional guidance: that is, guidance that operates on the focus of attention. Yet mind-wandering is compatible with forms of second-order guidance that operate on the mechanisms that guide attention. Specifically, the wanderer can actively suppress the guidance of attentional focus. By doing so, she actively cultivates a mode of wandering attention, even though her focus on any given object is unguided.

Using these distinctions, I can reconcile Kurzban et al’s theory with my own. Suppose that while Ben reads a dull legal brief, he must exert great mental effort to keep his mind from wandering. I’ll concede (for the sake of argument) that Ben’s mind is guided to wan-
der. But this is a form of second-order attentional guidance: Ben is guided to abandon his briefs, cede control of his attention, and let his thoughts drift where they will. Crucially, Ben is guided not to focus on anything in particular, but simply to indulge his urge to wander. Contrast this with a case where Ben exerts mental effort to keep his attention away from some tantalizing information (e.g. the football scores). This is a standard case of first-order attentional guidance, since Ben is guided to focus on something in particular (e.g. the scores).

2.3.6 Mind-Wandering as Disunified Thinking

I’ve argued that my theory explains core features of mind-wandering better than its competitors. However, I’ve yet to discuss an alternative definition that Carruthers (2015) and Dorsch (2014) briefly consider. I now have the conceptual distinctions required to engage with these philosophers. According to the definition in question, a stream of thoughts is mind-wandering if and only if those thoughts are not unified under a common goal. Let’s call this the view that mind-wandering is disunified thinking. Although neither Carruthers nor Dorsch explicitly endorses or develops this view, it appears to rival the explanatory power of my own.

Carruthers holds that mind-wandering is goal-directed and thus active (§ 1.1.4). Yet he recognizes that mind-wandering does “not seem, introspectively, to be active in nature. Sometimes one’s thoughts change direction for no apparent reason (especially when one’s mind is wandering)” (Carruthers 2015, p. 166). To explain away this intuition, Carruthers first claims that mind-wandering seems passive because the goals that direct our wandering mind are unconscious. I argue against this explanation in § 1.1.4.

However, Carruthers presents another proposal that could explain away these intuitions. Here’s the idea: when one’s mind wanders, individual thoughts (or short stretches of thoughts) are goal-directed. Yet extended stretches of mind-wandering seem passive
because they are not unified under a goal. That is,

...during mind wandering there is no single goal controlling the direction of attention in a sustained way. But in the absence of a strong enough sustained goal, [each] conscious content or series of contents is likely soon to be supplanted by another. As a result, one's thoughts when mind wandering may flit from topic to topic. Mind wandering is active, I suggest, in much the same sense that someone physically wandering around in a garden is active. Such a person's movements are actions governed by momentary decisions—now to walk here, now to walk there—even though there is no over-arching goal that governs his actions (Carruthers 2015, 167–168, original emphasis).

Dorsch (2014) makes a similar comment to resolve a tension within his view. On the one hand, Dorsch argues that mind-wandering is associational, rather than intentional (§ 1.1.3). On the other hand, he allows that there are “instances of mind-wandering” where we drift from one focused daydream to another (Dorsch 2014, § 2.1). These claims are in tension because Dorsch holds that focused daydreams are intentional: for instance, during a daydream, an athlete might intentionally visualize her bobsled run (§ 2.3.1). The question is this: when an episode of mind-wandering contains focused daydreams, how can that episode fail to be intentional?

Dorsch answers that such episodes of mind-wandering are unintentional because our transitions from one focused daydream (e.g. visualizing a bobsled run) to another (e.g. planning tonight’s dinner) are unintentional. Such “sequences of focused daydreams” are

...similar to the activity of more or less aimlessly wandering around a city. During the walk, most—if not all—of our steps or turns are made intentionally. But they are usually not governed by an overall purpose directing them towards a certain destination, say, or giving them an intelligible pattern (e.g., when we aim to turn right at every second corner). For where we direct our steps to is often determined by factors beyond us: because something catches our eyes; because we just follow other people; because there occurs an unexpected opening between the houses or walls; and so on. Similarly, when we let focused daydream follow focused daydream, we are in control of the particular daydreams...But our various daydreams typically do not share an overall representational goal: they normally do not concern the same subject matter or even the same characters, places, events, and so on (Dorsch 2014, p. 2.1).
Dorsch could use a similar strategy to account for motivated mind-wandering. Goals often motivate our wandering thoughts, which makes them intentional in a broadly Davidsonian sense. Recall that this puts pressure on Dorsch’s thesis that mind-wandering is associational, and thus unintentional (§1.1.3). Yet Dorsch could respond as follows. Individual wandering thoughts are often motivated, and thus intentional. Yet long stretches of mind-wandering are “unintentional” in another sense: their constituent thoughts “do not share an overall...goal”. Rather, “the force of association” (Dorsch 2014, §2.2) moves us from one goal (e.g. planning lecture) to the next (e.g. preparing for a date).

Carruthers and Dorsch’s comments suggest a theory of mind-wandering as disunified thought. That is, a sequence of thoughts is wandering if and only if those thoughts are not unified under a common goal. Although neither philosopher explicitly endorses or develops this proposal, it rivals the explanatory power of my own in three ways. First, this theory avoids the Puzzle of Wandering Purpose. Individual wandering thoughts may be motivated by goals (as the empirical evidence suggests), just as our individual movements around a garden may be governed by decisions. Yet mind-wandering still seems purposeless because “there is no overarching goal that governs” (Carruthers 2015, p. 168) an entire stream of wandering thoughts. Second, the theory explains the unstable dynamics of mind-wandering: because our wandering thoughts lack an overarching goal, they “flit from topic to topic” (Carruthers 2015, p. 168). Finally, the theory arguably captures the distinction between wandering and goal-directed thinking. One could argue that goal-directed thinking is unified thinking. For example, Little Paolo’s thoughts about algebra are unified by the problem he’s working on. Or in Dorsch’s paradigm case of directed daydreaming, a bobsledder’s imaginings are unified by the goal of visualizing her race (§2.3.1).

Despite this proposal’s apparent advantages, we have yet to explicate its central notion: disunified thought. What does it mean for thoughts to be (or fail to be) unified under a common goal? I’ll consider three answers, all of which face significant problems.
The first two answers explicate unification in terms of goal-relatedness and motivation, respectively. A sequence of thoughts is unified (rather than wandering) if and only if those thoughts are a) related to or b) motivated by a common goal. Both accounts of unification misclassify certain intuitive cases of mind-wandering. Suppose I’m reading an email and my mind drifts away, “what about baked salmon for dinner?” My imagination then falls upon an image of fennel-grilled shrimp, from a recipe I’ve been meaning to cook. Then...the phone rings, interrupting my train of thoughts. My drifting thoughts were related to a common goal: planning dinner. Furthermore, we can stipulate that this goal *motivated* me to have each thought. Therefore, my thoughts are unambiguously unified (and thus not wandering) in our first two senses.

But suppose also that my attention was not guided: if I had drifted to a different topic (e.g. tomorrow’s quiz), I would not have been pulled back to dinner recipes. Suppose further that if I had not been interrupted by a phone call, my thoughts would have drifted to a different topic. The views under consideration must say that my mind was not wandering, since the thoughts I *happened to have* were related to and motivated by a common goal. But then, whether one’s mind is wandering or unified becomes a matter of luck. In this case, my mind happened to be unified because I was interrupted before I drifted away. We must therefore concede that unification is insufficient for goal-directed thought. For goal-directed thinkers aren’t lucky to remain on task. Rather, pursuing a goal keeps their attention fixed in the face of distraction. We’ve then failed to satisfy a core desideratum for theories of mind-wandering: to isolate the essential contrast between mind-wandering and goal-directed thought.

One would be better off to define unification in terms of guidance: a sequence of thoughts is unified (rather than wandering) if and only if those thoughts are guided by a common goal. On this view, the above case counts as mind-wandering: even though I am motivated to think about a single goal (planning dinner), that goal does not guide me. Furthermore, when my thoughts are guided by a common goal, I am not lucky to
remain on task: I would feel pulled back, were I distracted.

Yet this definition—along with the first two—has an unhappy consequence. Consider my thoughts on an average morning. For a time, I compose a portion of my lecture on my computer. Then, for no particular reason, I open my web browser and respond to a few emails. At some arbitrary point, I close my computer and stare out the window, deliberately watching a bag float in the wind. Suppose I’ve pursued each goal with the utmost of focus, guiding my attention to every detail. Even so, my thoughts count as wandering on the proposed definition, since they are not guided by an overarching goal. I’m engaged in the intellectual equivalent of wandering throughout a garden (Carruthers 2015, p. 5.1) or a city (Dorsch 2014, p. 2.1). In all these cases, my proximal physical and mental behaviours are guided—for example, I deliberately smell a rose, walk into a shop, or focus on an email—but no overarching goal unifies my behaviour or thoughts.

My definition captures why it’s tempting to say that my mind is wandering in the above example. Compare my thoughts on an average morning to thoughts that are cogs in a regimented plan: for twenty minutes, work on my lecture; then write emails for ten; finally, stare out the window for ninety seconds. This plan adds an additional layer of hierarchical structure to my conception of my goal, which was not present in the original example. Due to this overarching plan, therefore, my attention is guided in a more structured way, and is more dissimilar to mind-wandering (§ 2.3.1).

But I do not define mind-wandering in terms of the absence of overarching goals. Such a definition has a troubling consequence: whether my mind counts as wandering depends on how far we zoom out. Suppose we inspect my thoughts over a five minute interval: the whole while, my attention is guided by the goal of composing my lecture. During that interval, my attention is unified, my mind is not wandering. But if we zoom 17

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17One might object that these thoughts do not count as mind-wandering because they are perceptual. I remain neutral on whether there can be perceptual mind-wandering (§ 1.1.1). If not, I could replace each activity with a non-perceptual analogue. In my head, I first deliberately entertain various plans for my lecture; I then actively consider how I will respond to an email; finally, I purposefully visualize that scene from American Beauty where a bag floats in the wind.
out, we will find thoughts about three separate goals; from this broader perspective, my attention is disunified, my mind is wandering. The problem is that we lack principled grounds to decide how far out to zoom. Thus, we lack principled grounds to say whether my mind is wandering at any point in time. Note that this problem arises for all three versions of the view that mind-wandering is disunified thinking. Whether my thoughts are related to or motivated by a single goal also depends on how far out we zoom.

This threatens to undermine the systematic study of mind-wandering. For example, consider the question of how to quantify mental occurrences like mind-wandering (§3.1). In general, one can count the number of mental occurrences (e.g. how many times did you saccade?) or their duration (e.g. for how long did you dream last night?). But on the definition under consideration, there’s no principled way to say when mind-wandering begins or ends: that depends on how far you zoom out. So there’s no principled way to quantify mind-wandering’s number or duration. For example, did the time I spent working on a lecture add to the duration of mind-wandering? Was it part of an episode of mind-wandering? The definition under consideration leaves us no way to tell.

More generally, current scientific methods assume that we can identify when the mind is wandering and when it is not. Having done so, we can study the distinctive features of our wandering thoughts (e.g. their contents and neural correlates) as compared to thoughts of other types of thought. For example, Christoff et al. (2009) compared neural activation when subjects were concentrating on versus wandering away from an easy task. If mind-wandering is disunified thinking, such methods are misguided: if we zoom out, subjects’ on-task thoughts are probably wandering. No methodological innovation could solve these problems. On the proposed definition, there could be no principled way to distinguish mind-wandering from its antithesis. This is a non-starter for the science and philosophy of mind-wandering.

We can avoid these methodological consequences if we treat disunification as merely a necessary condition for mind-wandering. If someone’s mind is wandering over some in-
terval, then her thoughts during that interval are not unified by a common goal. But this is not a definition of mind-wandering, and thus does not rival my view. Furthermore, we must again explicate what it means to be unified under a goal. If we explicate unification in terms of goal-relatedness or motivation, then we cannot account for cases where our wandering thoughts happen to remain on the same topic (see above). If we explicate unification in terms of guidance, then we have a plausible constraint on mind-wandering. But this constraint follows from a more general, and more defining, feature of mind-wandering: wandering thoughts are unguided simpliciter; a fortiori, such thoughts are not guided by a common goal.

2.4 Conclusion

Philosophers of mind, in our neglect of mind-wandering, have ignored between one third and one half of our waking thoughts. I have brought those neglected thoughts into focus, proposing that mind-wandering is unguided attention. I have attempted to show that mind-wandering is not only a phenomenon that calls for explanation, but also a new lens on the mind. We have already seen the relevance of mind-wandering for a tapestry of issues in the philosophy of mind. Two of the central features of agency—motivation and guidance—come apart when the mind wanders. And in accounting for mind-wandering, we can discover how guidance involves the dynamics and phenomenology of thinking. The wandering mind is also at the centre of a web of mental activities including rumination, absorption, goal-directed thinking.

The remainder of my dissertation takes a broader focus, discussing the relevance of mind-wandering for three further topics: individuation, attention, and thinking. We can use mind-wandering to gain new purchase on these topics because it contrasts with standard cases in the literature. For example, mind-wandering brings out the significance of metaphysical debates about the individuation of mental occurrences for empirical sci-
ence and the philosophy of attention (Chapter 3). Furthermore, the puzzling relationship between mind-wandering and attention gives us reason to distinguish between three notions of attention: that of the spectator, the agent, and the patient (Chapter 4). Mind-wandering also occupies an intriguing middle-ground between controlled and automatic thinking, which clarifies how working memory supports conscious thinking (Chapter 5).
Chapter 3

Individuation and Telicity

Metzinger poses a question that any adequate theory of mind-wandering must answer: how (if at all) can we individuate episodes of mind-wandering? The individuative question is at the heart of a methodological problem concerning how psychologists quantify mind-wandering (§ 3.1; Metzinger 2013a; Franklin et al. 2013; Smallwood 2013). Metzinger’s answer to the individuative question rests on an assumption I’ve argued against: we always lack veto control over our wandering minds (§ 1.2.3, Irving 2015). Furthermore, his individuative criterion carves up episodes of mind-wandering too finely, obscuring the dynamic instability of our wandering thoughts (§ 3.1).

The problem lies not with the details of Metzinger’s answer, but with his presupposition that we must individuate mind-wandering. Mind-wandering is an atelic occurrence: something that unfolds over time (an occurrence), but not toward a specific endpoint. Research in metaphysics suggests that we can quantify atelic occurrences without carving them up into countable units. Indeed, the most natural way to quantify atelic occurrences is in terms of their duration (§ 3.2.1; Mourelatos 1978). My discussion of individuation dissolves the aforementioned methodological problem (§ 3.2.1-§ 3.2.2). Building on my discussion, I distinguish between telic and atelic attention (§ 3.3). This distinction elucidates the structure of core cases of attention such as visual search. Furthermore, the distinction undermines Koralus’ (2014c) erotetic theory of attention (§ 3.4).
Chapter 3. Individuation and Telicity

3.1 Metzinger on The Individuative Question

Metzinger poses a crucial question: how (if at all) can we individuate episodes of mind-wandering?

How does one conceptually individuate mind wandering episodes, how does one turn them into countable entities? This is a methodological problem every good theory about mind wandering will have to solve: If mind wandering episodes are to be well-defined research targets and proper theoretical entities, one must be able to exactly specify the identity criteria that make one such episode one and the same episode (Metzinger 2013a, p. 14; Smallwood 2013 and Franklin et al. 2013 also discuss this question).

Metzinger’s answer rests on a criterion for identifying the boundaries of a mind-wandering episode. Metzinger argues that the onset and cessation of a mind-wandering episode are marked by a “sudden shift in the [u]nit of [i]dentification” (Metzinger 2013a). Roughly speaking, a unit of identification is the aspect of one’s “self” that she currently identifies with, for which she feels “I am this!” (Metzinger 2013a, p. 10, original emphasis). Mind-wandering precipitates such a shift because it involves a) “mental time travel” (i.e. thoughts about the past or future), b) the suppression of sensorimotor activity, and c) the lack of mental agency (specifically veto control). So when one’s mind begins to wander, she will cease to identify as a sensory-motor agent, acting in the present. Before and after, she will identify with at least one of these features.

One problem with Metzinger’s criterion is that we do not always lack veto control over our wandering minds (§ 1.2.3). Thus, Metzinger hasn’t shown that the shift from, say, deliberately planning a dinner party to watching your mind wander about the same party will be marked by a shift in the unit of identification. It therefore seems that mind-wandering can begin or end without a shift in the unit of identification.

In another way, Metzinger’s criterion carves up episodes of mind-wandering too finely.

1This technical notion is part of Metzinger’s (2004) comprehensive error theory about the phenomenal self. Thus, he holds that the tendency to identify with a self is ultimately mistaken.
Within what seems to be a single episode of mind-wandering, one often changes temporal perspectives (e.g. from remembering the past to imagining the future). But such changes will (by Metzinger’s own lights) amount to a change in the unit of identification and, therefore, new episodes of mind-wandering.

Metzinger could reply that his criterion gets such cases right: they really involve many distinct episodes of mind-wandering, not one. After all, when we shift temporal perspectives, our stream of thought becomes fragmentary. Yet this reply misses the fact that mind-wandering is by its very nature fragmentary. Mind-wandering is characteristically unstable: wandering thoughts drift between topics and, by extension, between units of identification (§ 1.2.2, 1.2). Metzinger’s individuative criterion can’t capture this intuition, since episodes of mind-wandering don’t drift for Metzinger. Indeed, they can’t drift, for this would just initiate a new episode of mind-wandering. Metzinger’s criterion therefore does not tell us how (if at all) to individuate mind-wandering episodes.

### 3.1.1 Why Individuate Mind-Wandering?

Why must we answer the individuative question? One reason is to elucidate the metaphysics of mind-wandering. Another is to test our definitions. Some definitions of mind-wandering (such as Metzinger’s) suggest answers to the individuative question. Whether these answers are plausible provides evidence for or against the definitions in question. For example, Metzinger’s answer raises a now-familiar limitation of his view: he cannot explain the dynamic instability of mind-wandering (§ 1.2.2-1.2.3).

A final reason is to resolve a problem with current empirical methods. Franklin et al. have recently worried that “current methodology confounds frequency of mind-wandering with duration of a mind-wandering episode” (2013, p. 540). Consider the standard method of probe-caught thought sampling. While individuals go about their day or complete a laboratory task, they are asked to rate whether, “At the time of the [probe], my
mind had wandered to something other than what I was doing” (Kane et al. 2007, p. 616). Each instance where someone answers “yes” is operationally defined as one episode of mind-wandering. The problem is that one individual might answer “yes” 30% of the time because he had many brief episodes of mind-wandering, whereas another individual might answer “yes” 30% of the time because she had a few protracted episodes. Here’s another way to put the problem: thought sampling methods tell us only the “amount of time spent in a state of [mind-wandering], not the frequency or number of episodes” (Smallwood 2013).

To understand why researchers find this problem pressing, consider an analogy. Imagine that the psychologists who study saccades—fast eye movements that many animals use to scan a scene—could determine only the amount of time an animal spends moving its eyes. Such researchers would be blind to the difference between creatures like humans, whose saccades are frequent and fast (lasting between twenty and one hundred milliseconds) versus hypothetical creatures whose saccades are infrequent and slow (lasting seconds). Surely they would have missed something essential. Any adequate theory of saccades must be able to determine how many times an animal moves its eyes; only then can we quantify saccades. Likewise, one could argue that our current methods leave us unable to quantify mind-wandering. Before we can solve this problem, we need to know how (if at all) to carve up mind-wandering into countable units.

3.2 We Needn’t Count Mind-Wandering

Metzinger presupposes that we must individuate mind-wandering. He contends that “...any good theory about mind-wandering” must “conceptually individuate mind-wandering episodes,...turn[ing] them into countable entities”. Only then will our wandering thoughts be “well-defined research targets and proper theoretical entities” (Metzinger 2013a, p. 14).

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2I thank Evan Thompson for suggesting this analogy.
I will challenge this presupposition.

At heart, my disagreement with Metzinger concerns how to quantify mental entities. We agree that some entities—for instance, saccades—can be quantified only once they are carved up into countable units. Yet I argue that it is natural to quantify mind-wandering in durational terms (by how long one spends wandering). This difference in appropriate standards for quantification reflects a metaphysical distinction between telic and atelic occurrences (§ 3.2.1). It’s possible to individuate atelic occurrences (including mind-wandering) into uninterrupted stretches. But stretches play less of a central role in theorizing about atelic occurrences than episodes play in theorizing about telic occurrences (§ 3.2.2).

### 3.2.1 Atelic Occurrences

Metaphysicians have long distinguished between telic and atelic occurrences\(^3\), where an occurrence is something that unfolds over time (e.g. Vendler 1957; Mourelatos 1978). Roughly speaking, telic occurrences like running a race or solving a crossword develop toward an endpoint, after which they are finished. In contrast, atelic occurrences like running around or carrying a backpack do not develop toward an endpoint.

Mourelatos (1978) uses a spatial metaphor to explicate the distinction between telic and atelic occurrences. Telic occurrences are like things (e.g. bananas, atoms, children) in the sense that they are countable. Terms that refer to telic occurrences are analogous to count-nouns like ‘banana’; just as we would ask how many bananas someone has, we would say, “he’s run the Boston Marathon twice” or “she’s solved the Times Crossword many times”. It’s natural to count telic occurrences because they have endpoints: every

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\(^3\)Metaphysicians use varied terminology to refer to the distinction between telic and atelic occurrences. Telic occurrences are often called ‘events’ or ‘accomplishments’, whereas atelic occurrences are often called ‘processes’ or ‘activities’. My terminology, which is also common currency, has two advantages. First, the terms ‘telic occurrence’ and ‘atelic occurrence’ highlight features of the ontological categories that are important for my purposes: (a) occurrences are things that unfold over time and (b) telic and atelic occurrences differ in terms of whether they possess an endpoint or “telos”. Second, my terminology does not commit me to a contentious analysis of the distinction between events and processes.
time the telos is achieved, the occurrence happens exactly once (e.g. you’ve finished running a marathon when you cross the finish line).

In contrast, atelic occurrences are like stuff (e.g. flour, milk, bounty) in the sense that we don’t (typically) count them. Terms that refer to atelic occurrences are analogous to mass-nouns like ‘flour’. Rather than ask how many flour someone has, we ask how much flour she has. Similarly, we quantify atelic occurrences not by counting them, but rather by measuring their duration: we say “he’s run around for twenty minutes” or “she’s been carrying that backpack all morning”. It’s unusual to count atelic occurrences because they have no natural endpoints that we can use to individuate them.

Mourelatos’ account explains why it is problematic to individuate mind-wandering. Mind-wandering is an atelic occurrence par excellence: mind-wandering is not goal-directed and thus does not evolve toward some telos (§3.3). It’s therefore natural to quantify mind-wandering in durational terms, rather than attempt to “turn [mind-wandering] into countable entities” (Metzinger 2013a, p. 14).

My thesis that mind-wandering is an atelic occurrence dissolves the methodological problems about how to quantify mind-wandering (§3.1.1). Psychologists worry that “[c]urrent methodology confounds frequency of mindwandering with duration of a mind-wandering episode” (Franklin et al. 2013, p. 540). But if mind-wandering is an atelic occurrence, this worry has little bite. Current methods are sufficient to measure the duration of mind-wandering; and since ‘mind-wandering’ is a mass term, duration is all we need to quantify.

Contrast mind-wandering with an occurrence psychologists should individuate: saccades. Imagine that the psychologists who study saccades could determine only the amount of time an animal spends moving its eyes. Such methods would indeed miss something essential. But that is because saccades are telic occurrences: they evolve toward endpoints (new eye positions), after which they are complete. Because saccades are telic, we successfully quantify them only when we count how many times an animal moves its eyes. In
contrast, because mind-wandering is atelic, our methods need only quantify the amount of time spent wandering.

### 3.2.2 Stretches of Mind-Wandering

Crowther (2011) and Hornsby (2012) argue that we can individuate atelic occurrences by carving them into uninterrupted stretches. One might worry that this undermines my answer to the individuative question, as well as my solution to the attendant methodological problems. However, there are important differences—both theoretical and methodological—between uninterrupted stretches and complete episodes. These differences clarify why it is natural to quantify mind-wandering in durational terms, in contrast to a telic occurrence like saccades.

Crowther (2011) and Hornsby (2012) draw an analogy between atelic occurrences and stuff, but maintain that we can individuate stuff. Their basic contention is that stuff can be individuated into units like lumps, piles, or puddles, the boundary conditions of which are determined by the transition from one type of stuff to another. For example, piles of flour and puddles of milk are uninterrupted quantities of flour and milk. Atelic occurrences can likewise be individuated into stretches, the boundary conditions of which are determined by the transition from one type of occurrence to another. For example, “If Sebastian started strolling at 10a.m. and continued to stroll until he stopped at 11a.m., then there was a one-hour stretch of Sebastian’s strolling, and this was an activity” (Hornsby 2012, 239, original emphasis). Mourelatos briefly endorses a similar view:

...just as we can collect and thus individuate stuffs into such extrinsic containers as bottles or lumps or measures, we can correspondingly collect and individuate activities into stretches (Mourelatos 1978, p. 430).

We can use my definition to individuate mind-wandering into stretches: a stretch of mind-wandering is a stream of unguided attention that contains no attentional guid-

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4My thoughts in this section are indebted to conversations with Julia Janczur and Jasper Heaton, as well as Julia’s manuscript on this topic (“The Importance of Individuation”).
ance. Since atelic occurrences are (in general) bounded by the transition from one type of occurrence to another, we can locate the boundaries for stretches of mind-wandering at the transitions between guided and unguided attention. Prima facie, my individuative criterion reintroduces the methodological problem I claimed to dissolve (§ 3.2.1). Current thought sampling methods are blind to the difference between people who undergo many brief stretches of mind-wandering and a few protracted stretches.

However, the blow is softened by differences between episodes of telic occurrences and stretches of mind-wandering. To draw out the distinction, contrast two cases. In the first, Jill solves seven logic problems over the course of an hour. Here it’s natural to say that Jill completed seven episodes of problem solving. Here’s why: each time Jill solves a problem, her thoughts about that problem are complete. Similarly, each time someone’s eye moves to a new location, her saccade is complete. In general, telic occurrences are complete when they reach their goal, and thus can be carved up into complete episodes.

In the second case, Jack's mind wanders for (almost) all of his hour-long philosophy lecture. Yet he briefly focuses on the lecture six times: for a few seconds, his attention is guided by the lecture, after which his mind continues to wander. Does Jack's mind wander seven times? In a sense, the answer is, “yes”. That is, Jack undergoes seven uninterrupted stretches of mind-wandering. Yet it seemed more perspicacious to say that Jill solved seven problems. That is because Jill completed seven episodes of problem solving. In contrast, Jack did not complete any stretches of mind-wandering; these stretches simply came to an end. Here’s the general point: atelic occurrences do not unfold toward a goal, and thus are never complete (except in the trivial sense that they are interrupted).

With this distinction in mind, we can return to methodological issues. Imagine again that the psychologists who study saccades and problem solving could determine only the amount of time someone spends moving her eyes and working on problems, respectively. We can now say what such methods would miss: the number of complete saccades and problems. In contrast, psychologists who measure only the duration of mind-
wandering are not blind to the number of complete mind-wanderings. For stretches of mind-wandering are never complete; they are simply interrupted.

Admittedly, psychologists may have reasons to count stretches of mind-wandering. For instance, it may be useful to distinguish between people whose minds wander continuously versus intermittently (but frequently). Perhaps continuous and intermittent mind-wandering are markers for different disorders, such as compulsive fantasizing (Bigelsen and Schupak 2011) and attention deficit disorder, respectively. Current thought sampling methods might well fail to capture these distinctions.

Yet I do not accept Metzinger’s contention that current thought-sampling methods leave mind-wandering researchers without “well-defined research targets and proper theoretical entities” (Metzinger 2013a, p. 14). Because stretches of mind-wandering are not complete units, we need not always take these stretches into account. For most purposes, we can (and in fact should) quantify mind-wandering in terms of its duration.

### 3.3 Telicity and Attentional Guidance

I classify mind-wandering as both unguided and atelic. These two characteristics seem related: in particular, both seem central to the distinction between mind-wandering and goal-directed thought. Yet guidance and telicity can arguably come apart. Atelic behaviour can be habitually guided. Consider someone who is running in no particular direction. Suppose (as seems likely) that her running is habitually guided: were she to trip, for example, she would notice, feel discomfited by, and thereby be disposed to correct her gait. Although guided, her running is not evolving toward an endpoint and is therefore atelic.

Prima facie, unguided behaviour can also be telic. Consider a toy example: a rabbit race, where the contestants (rabbits) hop around aimlessly until one happens to cross the finish line. Suppose Marshmallow wins the race. His hopping is not guided by the goal of
winning the race: were Marshmallow to hop off course, for example, he would not notice and feel drawn back. Yet unbeknownst to Marshmallow, his hopping is telic. Marshmallow’s hopping unfolds toward an endpoint—crossing the finish line—after which the rabbit race is over.

Based on such examples, one might concede that guidance and telicity are unrelated. Whether behaviour is guided depends on how it is monitored and regulated as it unfolds over time. Whether behaviour is telic concerns not how it unfolds, but rather how it ends: telic behaviour ends when it is complete; atelic behaviour ends when it is interrupted (§ 3.2.2). Yet this concession is too quick. Marshmallow’s hopping is indeed telic. Yet this telos is not intrinsic to Marshmallow’s own activity, but rather imposed by an external observer. In contrast, suppose Marshmallow hops off in search of water. If Marshmallow reaches water, his hopping will be complete. Here, Marshmallow’s behaviour is guided by a goal—find water—that also sets the completion conditions (the telos) for his behaviour. Let’s say that Marshmallow’s behaviour is “intrinsically telic”.

There is a deep connection between guided and intrinsically telic behaviour. Guidance concerns how behaviour is monitored and regulated. Thus far, I have discussed only how behaviour is monitored and regulated \textit{while it is unfolding}. But intrinsically telic behaviour is also monitored and regulated \textit{when it concludes}. For example, when Marshmallow reaches water, he will notice that his goal is complete and thus cease to search for water. Intrinsically telic behaviour is guided while it is unfolding \textit{and} when it concludes.

One of the most studied types of goal-directed attention in the empirical literature—attentional search\textsuperscript{5}—is intrinsically telic. Suppose you look for your friend Pierre in a sea of strangers. Your attention will be guided in two ways. First, you will feel pulled back, if your attention falls on something completely irrelevant (e.g. a passing Ferrari). Second,

\textsuperscript{5}See Wu 2014a, pp. 21–23 for a philosophical review of the empirical literature on visual search. My example of visual search is inspired by Jean Paul Sartre (1943/1956, p. 41).
you will take your search to be complete, once you attend to Pierre. In cases of attentional search, your goal’s telos is to direct your attention onto the appropriate object. My current account of goal-directed attention captures only the first type of guidance.

My account of goal-directed attention can be expanded to capture intrinsically telic attention: An agent \( A \)’s attention is directed by one of her goals, \( \tau \), and \( \tau \)’s telos of attending to \( \epsilon \), if and only if \( \tau \) motivates \( A \) to guide her attention to information that she takes to be relevant to \( \tau \) until she attends to \( \epsilon \); that is, \( \tau \) motivates \( A \) to have three dispositions:

1. \( A \) is reliably disposed to focus her attention on information that she takes to be relevant to \( \tau \).

2. If \( A \)’s attention weren’t focused on information that she takes to be relevant to \( \tau \), \( A \) would notice, feel discomfited by, and thereby be disposed to correct this fact.

3. If \( A \)’s attention were focused on \( \epsilon \), she would take \( \tau \) to be complete and thus no longer guide her attention by \( \tau \).

We can also modify my definition of mind-wandering to disallow telic guidance: for any agent \( A \) whose attention is focused on some information, \( A \)’s attention is unguided if and only if \( A \)’s attention is not habitually guided while it unfolds or concludes. In particular, she satisfies neither of the counter-factual conditions for attentional guidance:

- There is no information \( \iota \) such that, if \( A \)’s attention weren’t focused on \( \iota \), she would notice, feel discomfited by, and thereby be disposed to correct this fact.

- There is no information \( \epsilon \) such that, if \( A \)’s attention were focused on \( \epsilon \), she would take her current episode of attention to be complete.

One might worry that this revised definition is inconsistent with my treatment of thoughts that halt the wandering mind (§ 2.3.4). For instance, I might feel discomfited and stop my mind from wandering when I think of an unsavoury topic. I’ve argued that
my mind-wandering ceases as soon as I have this unsavoury thought; for at this moment, my attention starts to be guided. But would I not then take my mind-wandering to be complete, the moment I focus on the unsavoury thought?

This objection conflates two different ways that a period of attention can cease (§ 3.2.2). Suppose I am searching for Pierre in a crowd. If I attend to him, this will complete my attentional search, for telic occurrences are complete when they reach their telos. Now suppose that my search ends for another reason: for example, my attention is captured by a meteor that crashes in front of me. Here, my attentional search is not complete, since it does not reach its telos. Rather, my search simply comes to an end when it is supplanted by my attention to the meteor.

Similarly, my mind-wandering is not complete when I think of an unsavoury topic, nor do I take it to be complete. For my wandering thoughts do not evolve toward the goal of attending to an unsavoury topic. Instead, my mind-wandering simply comes to an end when it is supplanted by guided attention. Cases of halted mind-wandering thus fail to satisfy my definition’s second condition, and are no counter-example to my account.

My response is motivated by a deep and general distinction between ways that occurrences can cease (§ 3.2.2). Telic occurrences evolve toward an endpoint. If they reach this endpoint, such occurrences cease because they are complete. Atelic occurrences do not evolve toward an endpoint, and thus are never complete (nor do agents take them to be complete). Rather, stretches of an atelic occurrence simply come to an end when they are interrupted by another type of activity. Mind-wandering can likewise be interrupted by guided attention. But because mind-wandering is an atelic occurrence, it cannot be (nor would one take it to be) complete.
3.4 Telicity and the Erotetic Theory of Attention

My distinction between telic and atelic attention undermines Koralus’ (2014c) erotetic theory of attention. Koralus means to capture all cases of attentive task performance. I object that he cannot account for the attentive performance of atelic tasks, such as looking at a mountain vista or following a conversation. Furthermore, he captures only part of the structure of telic attention.

Koralus is an adverbialist: that is, he analyzes attention in terms of attentive task performance (i.e. goal-directed attention). “On the erotetic theory of attention, you pay attention to a task by [reliably] monitoring whether it has been completed” (Koralus 2014a, p. 1; cf. Koralus 2014c, p. 40). Koralus gives an erotetic (i.e. question-based) model of attentional monitoring. Consider someone whose task is to look for a banana. Koralus thinks of her task as posing a question: “where is a banana?” (Koralus 2014c, p. 33). She looks for a banana attentively if and only if she is reliably “sensitive to...congruent answers” (Koralus 2014c, p. 40) to this question (namely, bananas) as she casts her gaze around her kitchen. Specifically, she will likely take her task to be complete if she focuses on a banana and she is unlikely to take her task to be complete otherwise (e.g. she's unlikely to mistake a telephone for a banana).

Koralus and I agree that attentive task performance involves monitoring. Indeed, we agree that attentive agents monitor their attentional focus as it unfolds over time (this is an essential feature of guided attention). Yet Koralus’ account of attentional monitoring is too narrow. I am not the first to object that the erotetic theory is too narrow (this issue arose during a Brains Blog symposium on Koralus: see Watzl 2014; Wu 2014b; Brigard 2014). For example, Watzl objects that

Many activities (potentially attentive) are not easily modelled as questions (in contrast to what Koralus seems to think). Here is a very partial list: playing basketball,...watching TV, looking at my friend’s face, listening to Mozart’s Requiem, pulling a rope....No doubt, many (maybe all) of the above can some-
how be fit into the Q and A mold. Think of...playing basketball as “Have we won the basketball game, yet?”...; or listing to the Mozart piece as “What is the next tone going to be?”...These look very strained, and one would like to know why one should try to fit all tasks into this kind of mold that seems so obviously inadequate (Watzl 2014, pp. 2-3).

Watzl’s objection is burden-shifting. If erotetic analyses of tasks are often “strained”, the burden is on Koralus to show “why one should try to fit all tasks into this kind of mold”. But this objection is far from decisive. Watzl identifies nothing substantively wrong with erotetic models; he simply calls them “very strained” or “obviously inadequate”.

There is a deeper problem with the erotetic model of task performance. Koralus assumes that “every goal-directed task has to determine conditions under which a cognitive system can count it as completed” (Koralus 2014c, p. 33). But atelic tasks—for instance, looking at a mountain vista or listening to a conversation—have no completion conditions (3.2.2). Such tasks do not unfold toward an endpoint, and so are never complete (except in the trivial sense that we move on). In contrast, telic tasks—for instance, looking for a banana or listening for thunder—have completion conditions. Such tasks evolve toward an endpoint: for example, one’s search for the banana is complete when one finds the banana. This difference in boundary conditions is not terminological: rather, it marks the metaphysical distinction between atelic and telic occurrences (Crowther 2011; Hornsby 2012). Koralus’ assumption that all tasks have completion conditions is therefore metaphysically unfounded.

Core cases of attentive task performance are atelic. One can look with rapt attention upon a mountain vista or attend with care to a dull conversation. But both tasks can unfold without completion conditions. One needn’t be looking for some feature on the mountain (e.g. a particular peak) or listening for some bit of dialogue in the conversation (e.g. an admission of guilt). One’s task is not to complete a visual or auditory search, but rather to simply maintain visual or auditory attention. Since these tasks have no completion conditions, Koralus must deny that one can perform them attentively. For
‘...on the erotetic theory, you pay attention to a task by monitoring whether it has been completed” (Koralus 2014a, p. 1).

Likewise, Koralus cannot capture how atelic attention is monitored or controlled. Koralus holds that all attentive tasks are monitored in the same way, “you pay attention to a task by monitoring whether it has been completed” (Koralus 2014a, p. 2) or “monitor[ing] if your ends have been achieved” (Koralus 2014a, p. 1). His analysis of attentional control is similarly monolithic, “I take attention to be about task control. And I argue...that we control tasks attentively by monitoring if we have met the completion conditions for the task” (Koralus 2014b, p. 5). Atelic tasks have no completion conditions, so we cannot monitor whether they are complete. Yet we monitor and control atelic tasks in other ways: in particular, we notice and feel pulled back if our attentional focus drifts to task-irrelevant information (§ 2.2.1). We monitor and control atelic tasks to maintain our current attentional focus, not to remain “sensitive to...congruent answers” (Koralus 2014c, p. 40) that we might encounter in the future.

Koralus could respond to the problems posed by atelic attention in at least three ways. First, Koralus could ease the restriction that all tasks have completion conditions. But it's unclear whether his erotetic (i.e. question-based) model is compatible with an alternative model of task performance. For Koralus relies on completion conditions to analyze task-performance in terms of questions:

If you perform a task attentively you monitor if your ends have been achieved....You can be understood as trying to answer the question of whether you have achieved your objective, as long as you continue to perform your task attentively (Koralus 2014a, 1, my emphasis).

On the erotetic theory of attention, you pay attention to a task by monitoring whether it has been completed. The question of whether the task has been completed translates to the question of whether you are in one of the acceptable completion states defined by the task (Koralus 2014a, 2, my emphasis).

I take attention to be about task control. And I argued that we control tasks attentively by monitoring if we have met the completion conditions for the task. Those completion conditions can be represented in the form of a ques-
Second, Koralus could respond that apparent cases of atelic attention are actually telic. Koralus considers two such cases: “paying attention to a child or to a situation” (Koralus 2014c, p. 38). Both cases seem atelic: one maintains attention on the child or situation, rather than monitoring whether one’s attention to them is complete. Yet Koralus argues that both tasks have a deeper telic structure:

Paying attention to a child means being poised to adopt whatever issues arise from the child. If the child asks a question or makes a request, one makes it one’s task to answer the question and fulfill the request, under the constraints of what is reasonable. Paying attention to someone means being responsive to them in a way that fits well with the erotetic theory. Similarly, if one claims to pay attention to a situation, one is ordinarily not saying that one is just accumulating information about it. Paying attention to a situation in the fairly thick intuitive sense means that one is disposed to address those issues or tasks that arise from it as a function of what happens and what one’s background commitments are (Koralus 2014c, 38, footnote 7).

From Koralus’ response to these cases, we can extract a general strategy. Take an apparent case of atelic attention, which seems to involve the mere maintenance of attentional focus (e.g. on a child). Koralus can argue that one’s attention involves various telic subtasks: for example, attending to a child involves listening out for his questions and requests, and watching out for dangers that might befall him. These subtasks have completion conditions that we can model in terms of questions: is Paolo asking a question or making a request? Is Paolo in danger? Therefore, apparent cases of atelic attention actually have a telic, and erotetic, structure.

There are two problems with this response. First, not all cases of atelic attention have hidden telic structure. For example, one can look upon a mountain with rapt attention without looking out for any further features of the mountain (e.g. a particular peak). Second, this response does not capture the complete structure of atelic attention. Being attentive to a child may be partly constituted by one’s sensitivity to his future questions or requests; but attentiveness also manifests in one’s sustained focus on the child over time.
In general, atelic attention is constituted (at least partly) by how one maintains focus on the object of attention. The erotetic theory of attention—with its exclusive focus on telic tasks—does not capture this aspect of attentive task performance. Therefore, Koralus does not (as he claims) offer a comprehensive analysis of attention.

Koralus’ third response could be to restrict his theory to telic attention: that is, he could argue that “you pay attention to a [telic] task by monitoring whether it has been completed” (Koralus 2014a, p. 1). But the erotetic theory can capture only part of the structure of telic attention (§ 3.3). When one performs a telic task attentively, one is not merely sensitive to completion conditions; in addition, one maintains focus on task-irrelevant information. Consider someone attentively searching for a green square on a computer screen. Her attentiveness manifests (in part) by how she keeps her attention on the screen: were her attention to drift to her watch or a poster on the wall, she would feel pulled back. Koralus therefore offers only a partial analysis of the telic cases that best support his theory (e.g. visual search).

My account improves upon the erotetic theory. I explain Koralus’ insight that attentive task performance involves monitoring and control: on my view, goal-directed attention is guided (i.e. monitored and regulated) as it unfolds over time (§ 2.2.1). Yet I allow for cases of atelic goal-directed attention such as looking upon a mountain landscape, which have no completion conditions. Although we do not (indeed, cannot) monitor whether such goals are complete, our attention is still guided to goal-relevant information. Furthermore, I account for those cases that best support the erotetic theory: examples of telic goal-directed attention such as looking for a banana. Such cases involve two types of attentional guidance: a) we are guided to maintain our attention to goal-relevant information and b) if we attend to certain information (e.g. a banana), we take our goal to be complete (§ 3.3). I offer a more complete analysis of telic attention than Koralus, since I capture how such cases involve the maintenance of attention (condition a), not just sensitivity to completion conditions (condition b).
Chapter 4

Mind-Wandering and Attention

I have thus far defined mind-wandering as unguided *attention*. Yet this position is contentious. Over a century ago, it was already evident that mind-wandering has a nuanced relationship with attention. William James took mind-wandering to be a paradigm case of attention: “...the natural tendency of attention when left to itself is to wander to ever new things” (1890/1981, p. 422). In contrast, Ribot held that mind-wandering (or “dispersion”) “...is the very reverse of attention” (1890, p. 78). What’s puzzling is that both positions seem natural. Each wandering thought seems focused (and thus attentive), yet a wandering mind is paradigmatically distracted (and thus inattentive). How can mind-wandering be a paradigm case of both attention and inattention?

Attention researchers have much to gain from addressing the wandering mind. Indeed, mind-wandering provides a rare choice-point between two schools in the philosophy of attention: one defines attention in terms of consciousness, the other in terms of agency. Philosophers who adopt these views should classify mind-wandering as attentive and as inattentive, respectively (§ 4.1). My diagnosis of the problem is that each view contains part of the truth about mind-wandering, and thus, about attention. Reviving Alan White’s (1964) distinction between spectator and agent attention, I merge these truths into a single theory: *spectator attention* is focused consciousness, which becomes *agent* or *patient* attention when it is guided (§ 4.2). Because mind-wandering is pure (i.e. un-guided) spectator attention, it is a rare case where these notions of attention come apart.
Chapter 4. Mind-Wandering and Attention

My discussion leads to a new taxonomy of attention, which is grounded in deep features of human agency (§ 4.2.2).

4.1 Choice Point: Is Mind-Wandering Attention or Inattention?

Mind-wandering is a rare choice point between two schools in the philosophy of attention. One school defines attention as focused consciousness, where focus is variously characterized in terms of determinacy (Nanay 2010), rational accessibility (Smithies 2011), a primitive structuring relation (Watzl 2011a), or something else. We’ve already seen that these philosophers should classify mind-wandering as attention; for when someone’s mind wanders, his consciousness is focused on each thought that drifts before him (see § 2.1).

Philosophers in the other school define attention in terms of agency (Mole 2011; Wu 2011; Jennings 2012; Koralus 2014c). For example, adverbialists (e.g. Mole 2011; Koralus 2014c) hold that agents attend only when they perform some task attentively. § 4.1.1 directly argues that adverbialists—and agency-based theorists in general—should classify mind-wandering as inattention. § 4.1.2-4.1.4 indirectly supports this conclusion. Here, I consider the best arguments for a constitutive link between attention and agency. Although these proposals accommodate other putative examples of passive attention (e.g. attention captured by an alluring smell), they do not account for mind-wandering. I then consider a brief debate between Mole and Watzl over mind-wandering, which highlights the dialectical significance of mind-wandering for the philosophy of attention (§ 4.1.5).
4.1.1 Mind-Wandering and Adverbial Theories of Attention

Adverbialists—who analyze attention in terms of attentive task performance (Mole 2011; Koralus 2014c)—should characterize mind-wandering as inattention. Roughly speaking, here's why: tasks are things that agents do, such as “making a cup of tea...or looking for the ear keys” (Mole 2011, p. 52). But mind-wandering is not guided in the right way to count as doing a task. A fortiori, mind-wandering cannot count as doing a task attentively. So mind-wandering is not attention.

Christopher Mole, the first contemporary adverbialist, denies that mind-wandering is a type of attention on similar grounds (2011, p. 57). We must explicate some of Mole's theory of attention to understand his argument. Mole holds that task performance is attentive when it displays “cognitive unison”. Here's an intuitive statement of his view: you do something attentively when you are not distracted.\(^1\) That is, your task performance is attentive when none of the cognitive processes you could (with understanding) use to perform the task are currently being used to do something else.

Suppose I’m making tea. Because my kettle boils too hot, I must listen for when the water just begins to boil (and I understand this). Listening is thus part of the “background set” for my task (generally speaking, my background set includes all of the cognitive processes I take to be relevant to my task). Therefore, I won’t count as attentively making tea if I am listening to the radio instead of the kettle.

Mole’s analysis of task performance is central to his view. He holds that anyone who performs a task does so with a kind of tacit understanding. This understanding has three features that are relevant for current purposes (Mole 2011, pp. 59-60). First, an agent’s understanding of his task specifies a background set of cognitive processes that he takes to be relevant to that task. For example, my background set for making tea includes the cognitive processes involved in listening. Relatedly, an agent’s understanding of his task

\(^1\)While Mole's view may at first glance seem trivial, his characterization of attention as an adverbial phenomenon contradicts most philosophers and psychologists, who characterize attention as a process.
determines what counts as task-relevant and task-irrelevant uses of those processes in his background set. For example, my understanding of how to boil tea counts listening to the kettle as task-relevant and listening to Nas’ *Illmatic* as task-irrelevant.

Finally, task performance is guided by an agent’s understanding. Guidance by understanding is a counter-factual notion for Mole. An agent’s understanding of a task allows him to “redeploy the cognitive basis of his performance in a way that enables him to deal with alternatives” (Mole 2011, p. 55). For example, my understanding allows me to make tea from loose leaves with a kettle that boils water to the correct temperature. But I can also make tea from a tea bag with a kettle that boils too hot. Mole’s notion of guidance is of a piece with Frankfurt’s (and by extension, mine): both concern how the agent would adjust her behaviour to accomplish her goal in alternative scenarios. According to Frankfurt, behaviour is guided “when its course is subject to adjustments which compensate for the effects of forces which would otherwise interfere with the course of the behaviour” (Frankfurt 1978, p. 160; § 2.2).

Mole’s theory implies that mind-wandering is not attention. We have already seen the basic structure of Mole’s argument: mind-wandering is not guided in the right way to count as performing a task. A fortiori, mind-wandering cannot count as performing a task attentively. Therefore, mind-wandering is not attention. More precisely,

Suppose we have a daydreamer whose dreaming is not done as part of any deliberate relaxation technique, or with the intention of opening himself to inspiration. He is just letting his mind wander in an idle moment...If the thinker is in a state like this then more or less anything that goes through his mind will serve as a contribution to his general reverie—an idea from memory, a verbalization of the content of the image in the mind’s eye, an awareness of the cooking smell coming from downstairs....Cases in which there really are no constraints on which processes do and which do not serve the daydreaming are cases in which the daydreaming is not under the control of the subject’s understanding. In such a case the subject does not have daydreaming as a task at all. If so...there is no risk that [an adverbialist] theory will count the daydreamer as performing attentively (Mole 2011, p. 57).

Mole’s crucial premise is that mind-wandering cannot count as performing a task be-
cause it is not guided by (i.e. “under the control of”) our understanding. There are two reasons why mind-wandering cannot be guided by understanding. First, an agent’s understanding of her task sets standards for what counts as task-relevant and task-irrelevant uses of processes in her background set. But mind-wandering sets no such standards: in essence, “there really are no constraints” on what thoughts can count as mind-wandering. My view explains this lack of constraints: goal set standards for what counts as relevant and irrelevant, and guide attention accordingly. Mind-wandering is subject to no such standards, because it is unguided.

Second, someone who is guided in Mole’s sense can “redploy the cognitive basis of his performance in a way that enables him to deal with alternatives” (Mole 2011, p. 55). That is, guided agents are disposed to adjust their behaviour so as to accomplish their goals in alternative scenarios. But mind-wandering is not guided in this way: the wanderer drifts from thought to thought unchecked. She never adjusts her thoughts to better accomplish her goals, for doing so would cease mind-wandering.

Philipp Koralus, another prominent adverbialist, should also deny that mind-wandering is a type of attention. Recall that on Koralus’ erotetic theory of attention, someone performs a task attentively only if she monitors whether that task is complete. For example, someone looks for a banana attentively only if she is sensitive to bananas while she focuses on various items in the environment (§ 3.4). But because mind-wandering is unguided, it is not monitored in this way. Specifically, when an agent’s mind wanders, there is no information such that, if she were to focus on that information, she would take her attention to be complete (§ 3.3).

Mole and Koralus—the two most prominent adverbialists—should therefore deny that mind-wandering can be attentive. So should other philosophers who define attention in terms of agency. Wu (2011) follows Allport (1987) in defining attention as selection for action. Dicey-Jennings argues that attention is “the act of mental selection” (Jennings 2012, emphasis altered). Watzl (2011d) holds that attention is the personal-level
activity of structuring consciousness into a foreground and background. These theorists all hold that attention involves agency: attending is something we do, not something that happens to us.

From a distance, it’s easy to see why such theorists should classify mind-wandering as inattention. Agency-based theorists assume that someone attends only when she pays attention to something she is doing (e.g. kicking a ball or making a cup of tea). But mind-wandering is something that happens to us, not something we do; for our wandering thoughts are not guided in the right way to be agentive. So mind-wandering cannot be attention.

Rather than explicate the aforementioned theories in detail, I’ll consider the case each theorist presents for a constitutive link between agency and involuntary attention (e.g. attention captured by an alluring smell). One might argue that we can adapt these arguments to accommodate mind-wandering (see Watzl 2010). I argue that we cannot, which secures my thesis that agency-based theorists should classify mind-wandering as inattention.

4.1.2 Mind-Wandering, Attention and Veto Control

Carolyn Dicey-Jennings argues for a constitutive link between attention and agency: “attention is a process of mental selection that is within the control of the subject...a direction of the mind by the subject, rather than a mere occurrence or happening” (Jennings 2012, p. 535). She must therefore explain away seemingly passive cases of captured attention, such as when “attention...is grabbed by a colorful advertisement or by an annoying conversation” (Jennings 2012, p. 541). Perhaps her argument can also accommodate mind-wandering?

Dicey-Jennings offers the following account of captured attention:

The colorful advertisement, and the annoying conversation [are examples where] the subject is active in allowing him or herself to be distracted; the large text,
the colorful advertisement, and the annoying conversation could be actively suppressed by the subject with effort, but are instead allowed to disrupt the subject’s thoughts because the subject “turns toward” the distracting stimuli in willfully allowing them to intrude (Jennings 2012).

Dicey-Jennings’ account hinges on something like the notion of veto control: that is, the (personal-level) ability to cease an ongoing behaviour (§ 1.2.1). Automatic behaviours can in general proceed without veto control: for example, someone who habitually reaches into the cookie jar (usually) has the ability to stop himself before spoiling dinner (it is partly for this reason that we blame cookie eaters who fail to resist the temptation). Similarly, agents have veto control over captured attention: for instance, an individual whose attention is briefly captured by an annoying conversation can turn her attention to something else. Dicey-Jennings can therefore argue that captured attention is active insofar as we have veto control over whether we maintain attention to salient stimuli.

However, we cannot extend Dicey-Jennings account to mind-wandering. Recall Metzinger’s argument for the passivity of mind-wandering (Metzinger 2013a; § 1.2.1). Our wandering thoughts often unfold without meta-awareness: that is, without higher-order awareness of one’s ongoing, or very recently past, mental states or processes. But meta-awareness is necessary for veto control over a mental state or process: a person cannot veto something he’s unaware of. For instance, suppose Taggart notices that Rosewood isn’t paying attention to his instructions and asks, “Rosewood! Why didn’t you stop your mind from wandering earlier?!” Rosewood might respond, “I didn’t know my mind was wandering until just now!” Therefore, mind-wandering often proceeds without veto control.

In response, Dicey-Jennings could adopt weaker requirements for agency. Her discussion of captured attention suggests one such requirement:

The subject “turns toward” the distracting stimuli in willfully allowing them to intrude. A sign that this turning toward is active in the case of captured attention is that there are instances where the same stimulus does not serve as a
distraction—where the large text, the colorful advertisement, and the annoying conversation do not manage to disrupt one’s stream of thought because of greater attention to that stream of thought. It is a comparison with these instances that warrants the claim that the subject actively allows the capture of attention to occur when the subject finds him or herself distracted (Jennings 2012, p. 524).

Recall that mind-wandering sometimes unfolds with meta-awareness; during these periods, we have—and sometimes exercise—veto control over our wandering thoughts (§ 1.2.3). Dicey-Jennings could take this as a “sign” that we actively “turn toward” mind-wandering.

But this argument rests on a dubious principle: if we sometimes withhold a type of behaviour, then all instances of that behaviour are active. Consider that we sometimes stop ourselves from blinking (e.g. during a staring contest), even though most instances of blinking are paradigmatically passive. Blinking exemplifies the flaw with Dicey-Jennings’ principle: behaviours can be active when they proceed with veto control, but passive when they proceeds without veto control. Therefore, even if mind-wandering is active when it unfolds with veto control, we cannot infer that it is active in general.

Dicey-Jennings’ argument from veto control does not establish that mind-wandering is active. However, this could be due to general limitations of her argument. Dicey-Jennings assumes that we always retain veto control over captured attention. But some stimuli capture our attention so violently that they cannot be ignored. Imagine slamming your thumb in a car door or stepping on a hot coal by accident. Entomologist Justin O Schmidt describes a more extreme case of pain: being stung by a tarantula hawk (a type of wasp that preys on tarantulas).

Stung by a tarantula hawk? The advice I give in speaking engagements is to lie down and scream. The pain is so debilitating and excruciating that the victim is at risk of further injury by tripping in a hole or over an object in the path and then falling onto a cactus or into a barbed-wire fence. Such is the sting pain that almost nobody can maintain normal coordination or cognitive control to prevent accidental injury....The pain is instantaneous, electrifying, excruciating, and totally debilitating (Schmidt Forthcoming, p. 137).

This electrifying pain would surely capture one’s attention. But it far fetched to assume
that someone in this kind of pain could direct her attention elsewhere. Indeed, the sting is “totally debilitating” and overcomes “cognitive control”. We therefore have a case of captured attention without veto control.²

Watzl (2011d; 4.1.3) and Wu (2014a; 4.1.4) present other arguments for a constitutive link between attention and agency. Unlike Dicey-Jennings, Watzl and Wu can account for examples like a tarantula hawk’s sting. Yet their arguments cannot accommodate mind-wandering, for they presuppose that attention is guided (§ 4.1.3–§ 4.1.4).

### 4.1.3 Mind-Wandering, Attention, and Encounters of Salience

Watzl (2010, Chapters 2 and 4) argues that attending is a mental activity: something that agents do, not something that happens to us. Specifically, attending is the activity of “structuring one’s stream of consciousness so that some parts of it are more central than others” (Watzl 2011a, p. 143). I’ll argue that Watzl accommodates captured attention, but not mind-wandering.

Activities in Watzl’s sense are a type of Dretskean process (1991, Chapter 2). All Dretskean processes have two parts: (1) driving states that cause and causally sustain (2) resultant states. For example, the process of boiling water may consist of a kettle causing and causally sustaining 100°C water. Activities are processes whose driving and resultant states are conscious and attributable to the whole person (Watzl 2010, p. 108).³

Attention is therefore an activity only if its driving and resultant states are conscious and personal-level. Watzl holds that the resultant state of attention is consciousness, structured into a foreground and background (Watzl 2010, Chapters 3; Watzl 2011a; § 2.1). More importantly for our purposes, Watzl contends that conscious and personal-level states drive attentional structure. This thesis is relatively uncontentious for cases

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²Elliot Carter raised a similar objection to Dicey-Jennings in conversation.

³Watzl also requires that activities can be done intentionally (Watzl 2010, p. 108). I do not discuss this requirement, since it plays less of a role in his account of captured attention and mind-wandering.
where attention is directed (and thus driven) by a goal. But what about cases where our attention is captured, drawn to something like the sting of a tarantula hawk? Watzl acknowledges that

Objects and events in our surroundings as well as parts of our own body and bodily sensations like itches and pains constantly draw our attention to them. The loud sound of a siren might catch your attention, or a flickering of the light bulb in your office. An itch in your foot might distract you from concentrating on your work. Or a pain in your back might catch your attention, against your will (Watzl 2010, p. 168).

Watzl argues that the driving states of captured attention\(^4\)—that which draws our attention—are conscious and personal-level *encounters of salience* (Watzl 2010, pp. 181-184). First and foremost, Watzl defines salience in terms of its distinctive phenomenology: encounters of salience are experienced by the subject as an inclination to direct one’s attention to the salient object (the object “draws our attention”). Concurrently experienced objects “compete or ‘strive’ for centrality” (Watzl 2010, p. 170), such that our attention tends to be drawn towards and held on those objects that are most salient for us. For example, the sting of a tarantula hawk is driven to the foreground of consciousness and held there because it is vastly more salient than any other concurrent experience.

Watzl presents four arguments in favour of his thesis that captured attention is an activity with personal-level and conscious driving states (these arguments will be important when we turn to mind-wandering). First, when our attention is captured, this is something we do, not something that happens to us. Consider that one might answer the question, “what are you doing?” with “attending to...the siren” (Watzl 2010, pp. 172-173). Such locutions provide evidence that captured attention is an activity. Second, encounters of salience give us reasons to attend to salient objects. When asked, “why are you listening to that song?”, one might reply, “the sound just strikes me a certain way, I feel

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\(^4\)Watzl calls these cases ‘involuntary attention’. I opt for the term ‘captured attention’ to allow for distinctions between different types of involuntary attention. For instance, it’s natural to describe mind-wandering as involuntary attention, even though mind-wandering is not guided in the same way as captured attention (see below).
drawn to it, it grabs me” (Watzl 2010, p. 173). Watzl therefore argues that the driving states of captured attention are personal-level. Third, encounters of salience are accessible, in that someone can become aware that her attention is being drawn (Watzl 2010, pp. 173-174). Thus, captured attention has conscious driving states. Finally, Watzl contends that his view does explanatory work by identifying a common factor between all objects of captured attention: “they are relatively salient for you...they grab and keep your attention” (Watzl 2010, p. 175).

For present purposes, I’ll grant Watzl his account of captured attention. What’s important here is whether Watzl’s account—and his arguments for it—can be extended to mind-wandering. He argues that they can: ‘mind-wandering...can be understood as a non-perceptual, non-sensational form of involuntary [i.e. captured] attention” (Watzl 2010, p. 168). In other words, mind-wandering is attention captured by an internal stimulus such as a memory or a thought. My theory contrasts with Watzl’s characterization of mind-wandering as captured attention. On my view, a wandering attention cannot be “drawn” to salient objects, for this would make it guided. Similarly, the objects of mind-wandering do not “compete or ‘strive’ for centrality”, for mind-wandering drifts between objects unchecked.

Watzl’s account leaves little room for a distinction between mind-wandering and rumination. Unlike mind-wandering, it’s natural to describe rumination as “a non-perceptual, non-sensational form of involuntary [i.e. captured] attention”. Ruminative attention is captured by internal stimuli, including one’s distress. Ruminative attention is plausibly drawn to one’s distress, which is more salient than other potential objects of attention. But rumination is antithetical to mind-wandering (§ 1.2.2). Rumination is drawn to a single topic, whereas mind-wandering drifts from topic to topic unchecked. Ruminati

tion seems passive because it is (often) guided to things we would rather ignore, whereas mind-wandering seems passive because it is not guided at all. It’s hard to see how Watzl can tease these antithetical phenomena apart, if he characterizes both as non-perceptual
involuntary attention.

Watzl has some resources to reply to my challenge. He acknowledges an apparent difference between standard cases of captured attention and cases where perceptual attention “drifts” or “wanders”:

The loud sound of a siren might catch your attention, [as might] a flickering of the light bulb in your office....In these cases attention gets powerfully drawn to something, while in other cases perceptual attention drifts more silently. Your attention might drift to the fly that circles around your head, while the fly doesn’t necessary “catch” it. In idle moments (and unfortunately not only then!) your perceptual attention might wander, as it were, aimlessly (Watzl 2010, 168, my emphasis).

For Watzl, captured and drifting perceptual attention are both driven by encounters of salience. Here’s the difference: the former is driven “powerfully” whereas the latter is driven “silently”. Similarly, Watzl says elsewhere that captured attention is driven “forcefully” whereas mind-wandering is driven “quietly” (Watzl Spring 2011).

Watzl could locate the difference between rumination and mind-wandering here: the former is driven forcefully and the latter quietly. Yet this is unilluminating. Watzl provides no further analysis of the metaphors of “forceful” versus “quiet” encounters of salience. Without such an analysis, these metaphors simply point to the difference to be explained rather than explaining it.

Furthermore, if encounters of salience can be “quiet”, this undermines Watzl’s arguments that attending is an activity. Let’s reconsider Watzl’s four arguments, but now for mind-wandering rather than captured attention. First, mind-wandering is something that happens to us, not something we do. Recall that we refer to mind-wandering with non-agentive stylistic constructions, in which the grammatical subject is not the agent. For instance, we would say “my mind was wandering” or “Luke’s mind wandered” rather than “I was mind-wandering” or “Luke mind-wandered” (§ 1.1).

Second, “quiet” encounters of salience would not give us reasons to attend to their objects. Suppose someone asks, “why did your mind wander to that memory of the snow in
elementary school?” I would not reply, “I felt drawn to it, it grabbed me” (Watzl 2010, p. 173). I might instead say, “I don’t know, my thoughts just drifted there.” Or I might offer an associational explanation: “well, I was wondering how my boots would survive the winter, which, I guess, made me think of the snowiest February from my childhood.” But my explanation would not advert to the “draw” or “grabbing” characteristic of encounters of salience.

Third, if an encounter of salience is “quiet”, we have no reason to think that it is consciously accessible. Indeed, we experience our wandering thoughts as drifting from one topic to another, rather than being drawn in any particular direction. So Watzl has no evidence that the driving states of mind-wandering are conscious. Finally, if Watzl allows that encounters of salience can be forceful or quiet, it’s unclear whether he has identified a common factor between all objects of involuntary attention (as he claims to do). While the objects of captured attention forcefully “grab and keep your attention” (Watzl 2010, p. 175), the objects of mind-wandering do not.

Watzl does not successfully show that mind-wandering is an activity. Since Watzl holds that attending is an activity, he should therefore classify mind-wandering as inattention.

4.1.4 Mind-Wandering, Attention, and Orienting

Wu (2014a) follows Allport (1987) in defining attention as selection for action. Here’s a sketch of the view. Attention is essentially selective: when we attend to a soccer ball, for example, we select that ball over any other potential object of attention (e.g. other items in the gym cabinet). But this raises a question: what are the targets of attention selected for? Wu answers that they are selected for action. For instance, we might select the soccer ball to kick.

Prima facie, attentional capture puts pressure on Wu’s thesis that selection for action
is necessary for attention. Wu describes the problem cases as follows:

Attentional capture is driven by cases where there are sudden changes in one’s mental state in respect of an object (or feature): a loud sound (or a sudden shift in the pitch of a current sound), a swooping bird, a fragrant smell, a pleasurable memory, a twinge in one’s calf, or a disturbing thought. One thereby moves from not having any mental states directed at the object (which has not yet appeared) to having a mental state directed at that object (Wu 2014a, p. 92).

It’s not obvious that the objects of captured attention are selected for action. We needn’t focus on the loud sound or the disturbing thought in order to perform some further action (e.g. to assess the sound’s pitch or discover the thought’s root in childhood trauma). Rather the opposite: “attentional capture” often seems to “disrupt [our] current goal-directed behaviour” (Wu 2014a, p. 92).

Wu responds that the objects of captured attention are selected for a type of action: the orienting response. “What captures attention always engages a response: you move your body towards the object, orienting towards it; you think about it; you explore it with the other senses” (Wu 2014a, pp. 92-93). This response is straightforward when attention is captured by perceptual stimuli, toward which we can orient our bodies and sensory receptors. Wu’s account of non-perceptual captured attention is more subtle, since we cannot physically orient toward a thought. Here, Wu argues that our “response” is to “maintain” the thoughts that capture attention (Wu 2014a, p. 93). For instance, our response to a disturbing thought may be to brood over it or fixate on it.

Yet further analysis is needed to specify the conditions under which a thought is actively maintained. Mere persistence through time is insufficient for active maintenance. Suppose my thoughts drift to the mental image of a snowman. For a few seconds, the snowman remains in my mind’s eye. Then I drift onward. My mental image persists through a (brief) period of time. But it doesn’t seem that this imagery is actively maintained: my mind happens to remain on the snowman, but is not actively held there. The brevity of my attention to the snowman is not what makes it passive. Consider a case
where my attention is captured by an intense but fleeting twinge in my thigh. For a few painful seconds, my attention to the twinge does seem to be actively maintained: whereas I happen to focus on the snowman, I’m held on the pain. What distinguishes my attention to the snowman and the twinge?

One plausible answer is that my attention is guided to the twinge, but not the snowman. Consider what would have happened, were my attention to drift away during the few seconds I focused on each object. Rather than being drawn back to the snowman, my attention would have drifted onward. It would have been far more difficult to wrest my attention from the twinge: were my thoughts to drift away, I would feel pulled back. My attention to the twinge is actively maintained, insofar as it is made stable by a basic feature of agency: guidance. More generally, captured attention is active insofar as it is actively maintained through attentional guidance (§ 2.2.1).

Wu can plausibly account for captured attention because it is guided. Yet this account cannot accommodate our unguided, wandering thoughts. Suppose my mind wanders to an image of a snowman, for example. I do not actively maintain this image, even if it persists for a few seconds. For I’m not guided to hold my focus on the snowman. Wu therefore has no reason to classify mind-wandering as attention.

Watzl and Wu offer accounts of captured attention that are deeply similar. Watzl argues captured attention is active insofar as we are drawn to its objects. Being drawn is part of the characteristic phenomenology of attentional guidance. Wu argues that captured attention is active insofar as it is actively maintained over time. One of the characteristic effects of attentional guidance is to actively maintain attentional focus over time. Both philosophers therefore argue—in different ways—that captured attention is active because it is guided. We cannot extend these arguments to account for mind-wandering, since it is unguided.

Watzl and Wu might respond that mind-wandering is active for another reason: it is motivated. Recall, for instance, that the goal of performing well on a geography quiz
motivates one’s mind to wander to geography (Morsella et al. 2010; § 1.1). However, this response cannot account for un motivated mind-wandering, which is pervasive. For instance, Baird et al. (2011) measured whether subject’s thoughts were goal-related when their minds wandered to the past or future (thoughts about the present or without a temporal focus were not included in their analysis). Baird et al. found that 62% of those wandering thoughts were not goal-related, in that they “included [no] indication of a specific goal (defined as an objective or desired result that an individual endeavours to achieve)” (Baird, Smallwood, and Schooler 2011, p. 1606). These results suggest that many (probably most) of our wandering thoughts are not motivated by our goals.

Dicey-Jennings, Watzl, and Wu present three of the best cases for a constitutive link between attention and agency. Yet none of these theorists can capture mind-wandering. Here’s why: those who define attention in terms of agency should classify mind-wandering as inattention.

### 4.1.5 Mind-Wandering as Inattention: Begging the Question?

Agency-based theorists should classify mind-wandering as inattention. A brief debate between Mole and Watzl highlights why this is dialectically significant for the philosophy of attention. Watzl objects that Mole’s position on mind-wandering begs the question against consciousness-based theories of attention (given that Watzl should classify mind-wandering as inattention, we could now level the same objection against him).

Mole would probably say that the cases at hand are just the opposite of attention: distraction, daydreaming, etc. If we were to classify daydreaming, for example, as a case of attention (though involuntary), we would lose our grip on what attention is by losing its opposite. Yet, this response seems to rely on favoring one notion of attention at the expense of others (which is the type of charge Mole raises against many [other] theories). Ordinary talk about attention includes talk about attention drifting.... Introspection of our conscious experience seems to detect in these cases the same kind of highlighting of our experience of an object or event.... I agree with Mole (pp. 157f) that a theory of attention has to account for the selectivity within our mental lives. Yet,
arguably, selectivity is present in drifting attention or daydreaming (certain sounds or mental images are selected at the expense of, say, awareness of the subject’s surroundings) (Watzl 2011c).

Watzl correctly notes that Mole’s treatment of mind-wandering “seems to rely on favouring one notion of attention at the expense of others”. Mole characterizes mind-wandering as inattention because he defines attention in terms of agency. But it is equally natural to classify mind-wandering as attention: indeed, “ordinary talk about attention includes talk about attention drifting”. Furthermore, philosophical theories of attention that privilege “highlighting of our experience of an object or event” should classify mind-wandering as attention. However, it’s equally question-begging to characterize mind-wandering as attention. There are compelling reasons—both pre-theoretical and theoretical—to go the other way.

The debate between Mole and Watzl is significant because it reaches an impasse: there are compelling reasons to classify mind-wandering as attention and equally compelling reasons to classify it as inattention. My diagnosis of the impasse is that mind-wandering is a choice-point between consciousness-based and agency-based theories of attention. Theorists in the former camp should characterize mind-wandering as attention; theorists in the latter camp should characterize it as inattention.

4.2 Spectator versus Agent Attention

Drawing on White’s monograph Attention (1964), I will reconcile these competing pictures of mind-wandering—and by extension, of attention. Each picture illuminates a distinct notion of attention: spectator attention is focused consciousness, which becomes agent (§ 4.2.1) or patient attention (§ 4.2.2) when it is guided. Our wandering thoughts are attentive in the spectator sense, but not in the agent or patient sense. That is why it’s natural to characterize mind-wandering as attention and as inattention. My discus-
sion leads to a new taxonomy of attention, which is grounded in deep features of human agency (§ 4.2.2).

### 4.2.1 White on Spectator Versus Agent Attention

Alan White’s monograph *Attention* (1964) is a primary inspiration for Mole’s theory of attention. On Mole’s reading, White is an adverbialist: he analyzes attention in terms of doing something attentively. This reading places White squarely within the agent-based camp. Yet White’s distinction between spectator and agent attention puts pressure on Mole’s reading. White explicitly distinguishes agent attention—“doing something attentively”—from spectator attention—“paying attention to something” (White 1964, p. 17). Furthermore, White argues that “substituting the adverbial phrases ‘attentively’ or ‘with attention’ for the verbal phrase ‘attending’, as when we say ‘driving attentively’ instead of ‘attending to one’s driving’...is only legitimate in the agent-type” (White 1964, p. 11). It therefore appears that only agent attention—a proper subset of attentional phenomena—is adverbial for White.

Mole offers a deflationary account of the distinction between spectator and agent attention, on which both are attention in the adverbial sense. Mole focuses on a pair of examples that White uses to motivate his distinction:

> A novice might watch his own driving as he would his instructor’s, to learn the right operations and correct those which are mistaken. But in attending to his own driving the novice is not necessarily, or even probably, driving attentively, and in attending to his instructor’s driving he could not be driving attentively (White 1964, p. 9).

White’s example of spectator attention is the novice’s attention to his own (or his instructor’s) driving, whereas his example of agent attention is the expert’s attentive driving.

Mole concedes that the two cases differ. But he argues that

> we do not need a distinction between two kinds of attention in order to account for [the difference]. The cognitive unison theory accounts for the difference as a difference in the task attended. The novice gives his attention to
the task of driving, but also to the task of learning how to drive, [which in-
volves]...noticing and remembering the appropriate techniques and routines
for particular situations, and...monitoring his own driving to discover ways in
which it falls short of the approved manner. When the practiced driver drives
attentively, however, he just performs the task of driving (Mole 2011, p. 74).

Mole’s contention is this: attending in the spectator sense consists in the attentive performance of some higher-order task, during which one monitors how well one is performing a first-order task (e.g. driving).

However, Mole’s account of spectator attention squares poorly with the following passage from White:

There is a logical connexion between attending as an agent and attending as a spectator. The man who is attending as an agent to his reading is thereby attending as a spectator to various perceptual and intellectual objects relevant to these activities. One reads with close attention if one looks at or thinks about, not one’s reading, but the letters and the argument of what one is reading and keeps one’s gaze and one’s mind off passing clouds and foreign thoughts (White 1964, pp. 16-17).

This passage creates two problems for Mole’s interpretation. First, White claims in this passage that all attentive task performance (i.e. agent attention) requires spectator attention. But on Mole’s reading, spectator attention is the attentive performance of a higher-order task. These two theses commit White to a “contemplative” view of attention, on which the attentive performance of a task requires attentive monitoring of one’s performance. But White explicitly rejects the contemplative view, and for good reasons. For one, the view generates a regress (White 1964, p. 11): suppose that the attentive performance of any task \( \tau \) requires the attentive monitoring of \( \tau \). But attentively monitoring a task is itself a (second-order) task (call this \( \tau’ \)). So the attentive performance of \( \tau’ \) requires the attentive monitoring of \( \tau’ \), which is itself a task...and so on.

Furthermore, Mole’s interpretation squares poorly with White’s example of spectator attention during reading. On Mole’s deflationary reading, spectator attention always in-

\[\text{My interpretation of this passage—and the problems it creates for Mole—was developed in collaboration with Aaron Henry.}\]
volves monitoring one’s task-performance. But in White’s example, the man is “attending as a spectator to various perceptual and intellectual objects...[including] the letters and the arguments of what one is reading” (White 1964, p. 17). The man’s spectator attention is focused on first-order objects—for example, letters and arguments—not on higher-order features of his task performance (e.g. whether he’s reading thoroughly).

Admittedly, this passage is perplexing from an interpretive standpoint. If White holds that we can have first-order spectator attention, why does he emphasize examples of higher-order spectator attention? White introduces spectator attention with an extensive discussion of a novice watching his driving (White 1964, p. 9). In contrast, White’s example of first-order spectator attention (to letters and arguments) appears at the end of this section, buried in a paragraph eight pages later.

Yet there’s an explanation for this difference in emphasis. White introduces spectator attention in a section where he develops

...an instructive example...of the notion of paying attention...in which the object of our attention is some activity in which we ourselves are engaged; when, as we say, we are ‘attending to what we are doing’ (White 1964, 8, my emphasis).

When White introduces the notion of spectator attention, his goal is to explicate the notion of “attending to what we are doing”. Spectator attention becomes attention to what we are doing only when we attend, as a spectator, to our performance of a task. But this is merely an “instructive example” of spectator attention. There are other cases, where spectator attention is focused on first-order objects like letters on a page.

But what is spectator attention, if not attentively monitoring one’s task performance? What are we doing when we attend, as a spectator, to letters or arguments? White isn’t explicit on this point, but one clue is his thesis that attention is “object-demanding”: “attention...must have an object” (White 1964, p. 2) on which “we concentrate, focus and centre our attention” (White 1964, p. 7). White claims that we concentrate attention on

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6I assume White means that attention has an intentional object—that is, it is about something—not
ordinary objects or events: “[w]e can ‘attend to’ or ‘look at’ the blackboard, ‘attend to’ or ‘listen to’ the music” (White 1964, p. 7). On my interpretation, to concentrate attention on these things is to attend in the spectator sense. Similarly, one can concentrate spectator attention on “perceptual or intellectual objects” such as letters and arguments or one’s performance of a task like driving.

On my interpretation, spectator attention is focused consciousness. Hence, there are as many views of spectator attention as there are consciousness-based theories of attention. Spectator attention may involve enhanced determinacy (Nanay 2010), rational accessibility (Smithies 2011), a primitive structuring relation (Watzl 2011a), or something else. Whether White would endorse one of these specific views is not relevant for our purposes.

What is relevant is White’s insight that a “connexion” exists between spectator attention (i.e. focused consciousness) and agent attention (White 1964, p. 16). Someone who attends as an agent (i.e. who does something attentively) actively directs her spectator attention. For instance, the attentive reader actively directs her spectator attention toward “the letters and the argument of what [she] is reading” and away from “passing clouds and foreign thoughts” (White 1964, p. 17).

The spectator/agent distinction can reconcile our competing pictures of mind-wandering—and by extension, of attention. Consciousness-based and agent-based theories illuminate distinct notions of attention: spectator attention is focused consciousness, which becomes agent attention when we actively direct it. Mind-wandering is pure spectator attention without agent attention: for consciousness is focused when the mind wanders, but we do not actively direct our wandering thoughts. We can therefore explain why it’s equally compelling to classify our wandering thoughts as attention and inattention: mind-wandering is a rare case where two distinct notions of attention pull apart.

Two contemporary theories of attention include something like the spectator/agent

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that it is always directed toward objects in the metaphysical sense (in contrast to properties, events, etc.).
Table 4.1: Varieties of Attention (Examples)

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<td>Rumination, Captured Attention</td>
</tr>
<tr>
<td>Unguided</td>
<td>Motivated Mind-Wandering</td>
<td>Unmotivated Mind-Wandering</td>
</tr>
</tbody>
</table>

distinction. Although both theories identify attention with agent attention, we could easily revise these theories to distinguish between spectator and agent attention. Watzl (2011d) defines attention as the activity of structuring consciousness into foreground and background. Watzl could say that someone attends as a spectator if and only if his consciousness is structured into a foreground and background. He could then say that someone attends as an agent only if his personal-level and conscious mental states drive this attentional structure (§ 4.1.3). Koralus has a notion directly analogous to spectator attention: “attentional focus” (2014c, p. 37). And he holds that attentive task performance—which he could characterize as agent attention—involves actively directing our attentional focus. Specifically, someone performs a task attentively if and only if she monitors her attentional focus for conditions that would complete her task (§ 3.4).

My explication of White has implications for how the philosophy of attention should proceed. Rather than debate over which is the true notion of attention—spectator or agent—we should explore how spectator and agent attention interact, and under what conditions they come apart. I do just this, developing a taxonomy of attention.

4.2.2 A Taxonomy: Spectator, Agent, and Patient Attention

Spectator and agent attention have places in my taxonomy. Recall that my taxonomy of attention has two orthogonal dimensions—guidance and motivation. I therefore distinguish between four varieties of attention, paradigm examples of which are in Table 4.1. By siting White’s distinctions within my taxonomy, I will not only develop White’s insights, but also clarify the subject’s role in each type of attention.
Spectator attention is focused consciousness. I’m officially neutral on how to define focused consciousness: it may involve enhanced determinacy (Nanay 2010), rational accessibility (Smithies 2011), a primitive structuring relation (Watzl 2011a), or something else. All forms of attention involve attention in the spectator sense.

Agent attention consists in the motivated guidance of spectator attention (Figure 4.1a). That is, agent attention is directed by some goal \( \tau \) that motivates the agent to guide her spectator attention to information that she takes to be relevant to \( \tau \) (§ 2.3.2). For example, the attentive reader is disposed to attend to information that seems relevant to the text, such as “the letters and the argument of what [she] is reading” (White 1964, p. 17). Furthermore, she would notice and feel pulled back if her attention were to fall upon irrelevant information, such as “passing clouds and foreign thoughts” (White 1964, p. 17).

Spectator attention unfolds without agent attention during mind-wandering, where attention drifts unguided from one topic to the next (Figure 4.1b). I’ll say that unmotivated mind-wandering is “pure spectator attention”, since the attentive subject’s role is that of a mere spectator. His consciousness is focused on (e.g. he watches, listens to, or spectates) information. Yet he does not actively direct his spectator attention, either by motivating or guiding his thoughts. Kendall Walton articulates a similar idea about spontaneous imagination (a species of mind-wandering in my sense):

Spontaneous imaginings have a life of their own. The imaginer is more of a “spectator” than a perpetrator of them. Rather than constructing her imaginary world, she “watches” as it unfolds. It seems less her own contrivance than something created and existing independently of her...She may be amazed to find herself imagining a bear with candy cane stripes, and then “watch” with astonishment as (so to speak) this extraordinary beast jumps over the moon (Walton 1990, p. 14).

Like me, Walton describes the subject of mind-wandering as a spectator, rather than an agent (i.e. perpetrator), of her thoughts.

Motivated mind-wandering falls in between pure spectator and agent attention. The subject does not direct her spectator attention, since it is unguided. Yet her goals motivate
her spectator attention toward seemingly relevant information. The subject’s role is still that of a spectator: she does not construct her stream of thoughts, but rather watches as it unfolds (to paraphrase Walton). Yet she watches a stream of thoughts that is tailored to her. We can put the point in terms of a theatrical metaphor. The subject’s role is not to direct the action. Rather, she is akin to the audience at an improv show, who shouts out topics for the actors to explore and then watches the scene unfold. I’ll call this species of attention “motivated spectator attention”.

Agent attention is also absent during certain cases of habitual attention— for instance, attention captured by a tarantula hawk’s sting or drawn to ruminative thoughts (Figure 4.1d). Spectator attention is guided during these cases, but not by a person’s (avowed) goals. For example, someone can be drawn to physical or mental anguish against her will (§ 2.2.1). When this occurs, the subject is not an agent of her attentional guidance, since this guidance does not issue from a source with which she identifies (e.g. her avowed goals). Yet the subject is not a mere spectator: rather than watch her thoughts go by, she is captured by a sudden pain or drawn to ruminative thoughts. Such cases of attentional guidance involve the subject as a patient, rather than an agent: she is drawn by or captured by information, but does not guide her spectator attention toward information. I’ll therefore call these cases “patient attention”.

4.2.3 Advantages over Current Taxonomies

My taxonomy of attention is far from the first. Psychologists distinguish between many different types of attention: top-down versus bottom up, endogenous versus exogenous, controlled versus automatic, voluntary versus involuntary, goal-directed versus stimulus driven, internal versus external, and so on. I can’t hope to survey all these distinctions,
which are not drawn in consistent ways throughout the psychological literature. Instead, I’ll focus on taxonomies of attention developed by two philosophers, Watzl and Wu.

Watzl distinguishes between voluntary and involuntary attention. According to Watzl, the process of attention has two parts: (a) personal-level and conscious driving states that cause and causally sustain (b) the structuring of consciousness into foreground and background. Watzl locates the distinction between voluntary and involuntary attention in their driving states. The driving states of voluntary attention are “the subject’s desires, intentions or tryings” (Watzl 2011d, p. 108), whereas the driving states of involuntary attention are “encounters of salience” (Watzl 2010, pp. 181-184) (§ 4.1.3). Watzl’s taxonomy captures my distinction between agent and patient attention. Agent (i.e. goal-directed) attention is driven by “the subject’s desires, intentions or tryings”. Patient attention is driven by “encounters of salience”, which I’ve explicated in terms of habitual guidance (4.1.3).

Yet Watzl’s taxonomy breaks down when applied to mind-wandering. Watzl should classify unmotivated mind-wandering as inattention, since it’s not driven by conscious
and personal-level driving states (§ 4.1.3). My taxonomy has an advantage here: I explain why it’s equally natural to classify unmotivated mind-wandering as attention—it involves spectator attention—or as inattention—it does not involve agent or patient attention.

There’s also a dilemma about how Watzl should classify motivated mind-wandering. Watzl could argue that our goals motivate and thus drive the structuring of this species of consciousness. He could therefore classify motivated mind-wandering as voluntary attention. But then Watzl’s taxonomy does not distinguish mind-wandering from its antithesis, goal-directed attention (§ 1.1). For goal-directed attention is the paradigm case of voluntary attention. Alternatively, Watzl could deny that motivated mind-wandering is voluntary attention. He claims that goals not only cause, but also causally sustain, the structuring of voluntary attention. But goals do not guide—and thus do not causally sustain—our wandering thoughts. However, parallel logic forces Watzl to deny that motivated mind-wandering is a type of attention at all: attention in Watzl’s sense is caused and causally sustained by personal-level and conscious driving states. But motivated mind-wandering is not guided—and thus not causally sustained—by any personal-level or conscious state. Therefore, motivated mind-wandering is not attention. Watzl then faces a dilemma: he must either collapse the distinction between motivated mind-wandering and goal-directed attention, or deny that motivated mind-wandering is attention.

Wu divides attention along two dimensions: top-down versus bottom up and controlled versus automatic. Let’s start with the first. Attention is top-down if and only if a non-perceptual state or capacity influences its occurrence. Attention is bottom-up otherwise (Wu 2014a, p. 30). Wu notes that his taxonomy counts most cases of attention as top-down. One reason is that attention is subject to a wide range of non-perceptual influences: intentions, goals, “memories, expectations, emotions, values, and habits” (Wu 2014a, p. 31). For example, affect-biased attention—attention drawn to affectively salient stimuli such as smiling faces (Todd et al. 2012)—will count as top-down for Wu. So will attention to non-perceptual information, such as memories or imagined scenes.
Imaginative mind-wandering is therefore top-down, as are rumination and goal-directed attention.

Psychologists have even questioned whether genuine cases of bottom-up attention even exist (see Wu 2014a, pp. 36-38 for a review). Consider a putative example of bottom-up attention: when someone searches for a unique item (e.g. a red triangle) amidst a sea of distractors (e.g. green circles), the former “pops out” due to its unique perceptual features. Here, one attends to the green circle (at least in part) because one’s *task* is to find it. Therefore, one’s attention is top-down in Wu’s sense (Wu 2014a, p. 37; Jonides and Yantis 1988). Cases of truly bottom-up attention—for example, attention captured by an unexpected loud bang—are few and far between, at least in the empirical literature (though see Forster and Lavie 2008; Forster and Lavie 2011; Parks, Kim, and Hopfinger 2014) Wu must therefore rely on his distinction between automatic and controlled attention to carve up the majority of cases of attention.

Wu defines controlled attention as follows:

S’s attention to X is **controlled** relative to its feature F iff S’s attention having F results from S’s intending it to have F (Wu 2014a, 33, original emphasis)

Wu’s paradigmatic case of controlled attention is a visual search task, during which a subject tries to find a red E. Here, the subject intends to attend to a red E; as a result, she does so.

Wu defines automatic attention in terms of the absence of control:

S’s attention to X is **automatic** relative to its feature F iff S’s attention having F is not due to control (Wu 2014a, 33, original emphasis)

Wu’s taxonomy has one obvious limitation: it cannot distinguish unmotivated mind-wandering (i.e. pure spectator attention) from habitually guided attention (i.e. patient attention). Since goals do not motivate either type of attention, they are automatic in Wu’s sense. Furthermore, both are top-down: mind-wandering is typically non-perceptual
and patient attention is habitually guided. Therefore, both are influenced by non-perceptual states.

More surprisingly, Wu characterizes intuitive cases of goal-directed attention as automatic. For instance, Wu (2014a, pp. 35-36) cites Yarbus’ (1967) famous eye-tracking results as an example of automatic attention. Yarbus (1967) tracked subjects’ eye-movements as they inspected Repin’s painting, “Unexpected Visitor” (Fig 4.2a), which depicts a Russian soldier returning home from exile. Subjects who perform various tasks as they inspect the image show different patterns of eye-movements, which Wu and Yarbus take as a proxy for different patterns of visual attention. For example, subjects who are told to remember what people are wearing focus on the family’s clothes (Fig 4.2b). In contrast, subjects who are told to estimate each family member’s age focus on their faces (Fig 4.2c). And subjects who are told to guess what each person was doing prior to the soldier’s return inspect objects that are neglected in other conditions, such as the dishes on the table and music on the piano (Fig 4.2d).

Wu characterizes these cases as top-down, automatic attention. They are top-down because “the patterns of eye movements [and thus of attention] make sense given the subjects’ more abstract intentions to carry out Yarbus’s instructions” (Wu 2014a, p. 36). Yet they are automatic because subjects have no explicit intention to attend to each item they focus on (e.g. the soldier’s jacket or the young girl’s food). When subjects form “abstract intentions” such as “remember the clothes...this intention need not be an intention to move one’s eyes [or direct one’s attention] in any specific way” (Wu 2014a).

Wu is correct about the scope of his view: if controlled attention requires the explicit intention to attend to something, then Yarbus’ case is automatic. But so are most ordinary cases of goal-directed attention or “attentiveness”. Most attentive drivers do not form the explicit intention to attend to their blind-spot before merging. Rather, drivers intend

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8Greene et al. (2012) recently failed to replicate Yarbus’ results with different pictures. This does not affect my argument, since I use Yarbus only as an example of the restrictiveness of controlled attention in Wu’s sense.
Figure 4.2: Patterns of attention across different tasks. Figures 4.2b-4.2d display subjects’ eye movement across different tasks: (4.2b) remember what people are wearing; (4.2c) estimate each family member’s age; (4.2d) guess what each person was doing prior to the soldier’s arrival. Images are reproduced from Archibald (2009).
to merge safely; and to do so, they must first attend to their blind-spot. White makes a similar point when he discusses the attentive fisherman:

Whether or not a man is giving attention to his fishing depends on whether he looks at the water, listens to the rustling of the reeds, and thinks about the habits of fish or whether he looks at his watch, listens to the aeroplane in the sky and worries about his children's education and his stocks and shares. The attentive is distinguished from the inattentive fisherman by the relevance or irrelevance to his fishing of what he gives his attention to (White 1964, p. 16; cf. § 2.2.1).

The attentive fisherman forms no explicit intention to attend to the water or the rustling of the reeds. Yet he does so because of his goal of catching fish.

Wu therefore classifies most cases of attention as top-down and automatic, including mind-wandering, patient attention, and most cases of goal-directed attention. Wu would no doubt respond that automatic attention is indeed this pervasive. In general, Wu (2013) is impressed by empirical evidence for the pervasiveness of automatic behaviour. Yet Wu's taxonomy of attention reflects his failure to appreciate how apparent cases of automatic behaviour involve minimal forms of agency (Brownstein and Madva 2012; Railton 2006). Yarbus' subjects attend as agents, I hypothesize, because of how their attention is guided as a result of their goals. For example, a subject who is trying to remember the family's clothes will feel drawn back, if she fixates on the grandmother's face. The attentive driver and fisherman, similarly, would feel inclined to return from distracting thoughts about their child's education or today's stock prices. Even the ruminator's attention displays a kind of subjectivity (that of a patient), for she is guided to fixate on her distress.

Wu might object that my taxonomy collapses an important distinction between cases of goal-directed attention. During a visual search task, for example, subjects are reflectively aware of where they are trying to direct their attention (e.g. to a red E). This needn't be the case for Yarbus' subjects. For example, someone who is trying to determine the family members' ages might be unaware that she is directing her attention toward their
faces. Wu could argue that this distinction is what makes the former case controlled and the latter automatic.

I offer another account of the distinction: it concerns whether an agent’s conception of her goal is explicit or implicit. Agents sometimes hold an explicit conception of their goal in mind. For example, a novice driver might explicitly remind herself that she needs to attend to her blind-spot before turning. Subjects in a cognitive psychology laboratory often have an explicit conception of their goal. This is because cognitive neuroscientists typically administer optimal tasks, where subjects are explicitly told how to interpret the task perform it optimally (Stanovich 2009, pp. 60-61; § 5.4.1). But ordinary tasks are often not like this (§ 2.2.1). For example, expert drivers may be unable to tell you what they find relevant and irrelevant on the road (and thus, what deserves attention). But expert drivers have an implicit conception of their goal, which is manifest in how their attention is guided as a result of the goal of driving safely. In this way, the attention of an expert driver is controlled (more specifically, it is guided). We can add the distinction between explicit and implicit goal-directed attention to my taxonomy (Figure 4.3).

Throughout this dissertation, I’ve introduced other distinctions that we can incorporate into my taxonomy. First, agent attention can either be telic or atelic (§ 3.3). Telic agent attention (e.g. looking for a banana, listening for a beep) is guided to cease once the agent’s attention falls upon information that completes his goal. Atelic agent attention (e.g. looking at a mountain vista, listening to a conversation) has no such completion conditions.

Second, all three species of attention can proceed with or without veto control, which is the (personal-level) ability to cease an ongoing behaviour (§ 1.2.1). Pure (or motivated) spectator attention often proceeds without veto control, as evidenced by how frequently we come to the sudden realization that our minds are wandering (§ 1.2.1). But someone who watches his mind wander displays pure (or motivated) spectator attention without veto control. Agent and patient attention frequently proceed with veto control: we can
Figure 4.3: Goal-Directed Attention

(a) Explicit Goal-Directed Agent Attention

(b) Implicit Goal-Directed Agent Attention
### Table 4.2: Twelve part taxonomy of attention

<table>
<thead>
<tr>
<th>Type of Attention</th>
<th># of Subtypes</th>
<th>Orthogonal Dimensions of Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectator Attention Only</td>
<td>4</td>
<td>• Motivated versus unmotivated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Veto control versus no veto control</td>
</tr>
<tr>
<td>Patient Attention</td>
<td>2</td>
<td>• Veto control versus no veto control</td>
</tr>
<tr>
<td>Agent Attention</td>
<td>8</td>
<td>• Explicit versus implicit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Telic versus atelic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Veto control versus no veto control</td>
</tr>
</tbody>
</table>

Table 4.2: Twelve part taxonomy of attention

turn our attention away from the crossword or the annoying conversation. But agent attention can proceed without veto control: for instance, when I was so absorbed in an argument that I failed to notice a tornado outside, it’s plausible that I would have been unable to immediately suspend my train of thought (§ 1.2.2). Similarly, someone stung by a tarantula hawk would likely be unable to withhold his patient attention to the pain (§ 4.1.2). Using these divisions, we can subdivide the three basic types of attention into a twelve part taxonomy (Table 4.2).

### Conclusion

Mind-wandering is a powerful lens on attention. The wandering mind drives a wedge between two schools in the philosophy of attention. Rather than side with one school or the other, I opt for reconciliation. Each school explicates a distinct notion of attention: spectator attention is focused consciousness, which becomes agent or patient attention when it is guided. Beginning with these divisions, we can carve out a taxonomy of attention that respects the nuances of human agency.
Dual process theorists hold that thinking is either automatic (Type 1) or analytic (Type 2). Mind-wandering does not fit cleanly into this framework. Consider how mind-wandering seems to stand with respect to a cluster of attributes associated with Type 1 and Type 2 processes (Table 5.1). Admittedly, prominent dual process theorists eschew the cluster approach, claiming that these are typical rather than defining features of each type of thinking (e.g. Evans and Stanovich 2013).

Yet if anything, mind-wandering is more puzzling for dual process theorists who reject the cluster view. Evans (e.g. 2011) and Stanovich (e.g. 2009) argue that the fundamental distinction between Type 1 and Type 2 processing is that the latter requires Working Memory (WM) resources whereas the former does not (cf. Carruthers 2015, Chapter 7). The psychological conception of WM gives us phenomenological and psychometric diagnostics that we can use to determine whether a process is Type 1 or Type 2. Puzzlingly, both diagnostics are equivocal about how to classify mind-wandering. Some psychologists (e.g. Smallwood et al. 2012) argue that neural evidence gives us a clearer verdict about whether mind-wandering uses WM (§ 5.3). However, these arguments employ

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1 Most dual process theorists focus on a particular type of thinking—for instance, reasoning or social cognition—not thinking simpliciter. This clarification does not undermine my argument (§ 5.2.3).

2 There is an interesting question about how mind-wandering relates to philosophical theories of automaticity, such as Tamar Gendler's theory of alief. I touch on this question when I discuss why mind-wandering is not automatically guided, in Brownstein and Madva's (2012) sense (§ 2.2). For Brownstein and Madva's view is an elaboration of the notion of alief.
Table 5.1: Mind-wandering and the cluster approach to dual process theory.

<table>
<thead>
<tr>
<th>Type 1 (automatic)</th>
<th>Type 2 (analytic)</th>
<th>Mind-Wandering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parallel</td>
<td>Serial</td>
<td>Serial</td>
</tr>
<tr>
<td>Unconscious</td>
<td>Conscious</td>
<td>Conscious</td>
</tr>
<tr>
<td>High Capacity</td>
<td>Capacity Limited</td>
<td>Capacity Limited (one’s mind wanders to a small number of thoughts at a time)</td>
</tr>
<tr>
<td>Effortless</td>
<td>Effortful</td>
<td>Effortless</td>
</tr>
<tr>
<td>Automatic</td>
<td>Controlled</td>
<td>Automatic (?)</td>
</tr>
<tr>
<td>Associative</td>
<td>Rule-based</td>
<td>Associative</td>
</tr>
<tr>
<td>Fast</td>
<td>Slow</td>
<td>Slow (?)</td>
</tr>
<tr>
<td>Independent of cognitive ability</td>
<td>Correlated with cognitive ability</td>
<td>Context-dependent relationship with cognitive ability (§ 5.2.1)</td>
</tr>
</tbody>
</table>

We can locate mind-wandering within the dual process framework, but only if we enrich the framework in a novel way. I maintain that there are basically two kinds of cognitive processes: those that use WM and those that don’t. Since mind-wandering uses WM, it is a Type 2 process. Yet there are divisions within (at least) Type 2 processes, which reflect different ways that WM can support conscious thinking. My view draws on Stanovich’s (2009) distinction between algorithmic and reflective Type 2 cognition: the algorithmic mind optimizes the performance of well-defined tasks, whereas the reflective mind contributes to the interpretation of ambiguous tasks. But whereas Stanovich holds that the reflective mind is exhausted by rational thinking dispositions (e.g. how much one is willing to engage in effortful cognitive activity), I believe that there is a distinctive mode of reflective Type 2 processing: mind-wandering.3

3One might argue that I have really denied dual process theory, since there are (at least) three kinds of processes: automatic, algorithmic, and reflective. I am unsure what (if anything) hangs on whether we call the algorithmic/reflective distinction a division within Type 2 processing or a distinction between Type 2 and Type 3 processing. If you have reasons to prefer the latter terminology, feel free to call me a ‘Tri-Process
My proposal will improve our understanding of mind-wandering and the reflective mind. On the one hand, I elucidate mind-wandering's distinctive phenomenology and puzzling relationship to working memory, sketching a novel model of how WM can support conscious thought. On the other hand, because I identify (for the first time) a mode of reflective Type 2 processing, I provide new reason to think that the reflective mind is a distinctive psychological category. We are left with a more comprehensive model of how WM supports cognition “in the wild”, outside the restrictive context of experimental tasks.

5.1 Evans and Stanovich’s Dual Process Theory

Evans and Stanovich define Type 2 processes as those that require WM resources, and Type 1 processes as those that do not. Carruthers (Carruthers 2015, Chapter 7) has recently followed in their footsteps. At least two features of the psychological conception of WM are relevant to the question of where mind-wandering fits into the dual process framework.

The first feature is functional and phenomenological: WM’s role is to maintain and manipulate information in conscious awareness. The relevant concept of consciousness is functional and not (merely) phenomenological. We can start with Block’s notion of ‘access consciousness’, where ‘...a representation is [access]-conscious if it is poised for free use in reasoning and for direct ‘rational’ control of action and speech” (1995, p. 382). An example will help to interpret Block’s locutions of “free use” and “direct ‘rational’ control”.

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Smithies distinguishes between causal and rational-access-consciousness. The former is a more liberal notion, which is satisfied by mental states that exert “nonrational forms of causal influence, including priming effects, on action, reasoning, and verbal report” (2011, p. 255). The latter requires that a mental state is “rationally accessible in the sense that it is accessible to the subject as a reason that justifies the subject in forming a belief or performing an action” (2011, p. 260; Smithies believes that this sort of access requires phenomenal consciousness). I remain neutral on whether causal or rational access consciousness is operative in the psychological conception of WM. So far as I can see, my argument does not hinge on either interpretation.
Suppose I see a pile of newspapers on my neighbours’ front porch and, moments later, infer that they are away on vacation. The contents that visual experience makes available for “free use” and “direct rational control” are those I am immediately aware of before making inferences (e.g. an object with a determinate colour or shape or newspapers on the front porch of a house). My visual experience does not make me immediately aware that my neighbours are away on vacation; I have to infer this from my experience.

The second feature is psychometric: tests of WM Capacity (WMC) predict individual differences in WM function. Operation Span tests, for example, require participants to remember a list of words (holding information in awareness) while they perform some cognitively demanding task like mental arithmetic (manipulating information in awareness). Many psychologists hold that such tasks are difficult because WM is capacity limited: that is, tasks that load WM are thought to deplete a limited pool of resources, which is why it is difficult to perform them simultaneously (as one is asked to do in Operation Span tests). Individuals with higher WMC arguably have a larger pool of WM resources, allowing them to perform better on tasks like the Operation Span.

Whatever WMC measures, that capacity (or set of capacities) must be widely applicable. WMC predicts a large range of seemingly unrelated cognitive abilities, such as reading comprehension (Daneman and Merikle 1996), following complex directions (Engle, Carullo, and Collins 1991), and composing prose (Benton et al. 1984). Furthermore, WMC is so predictive of general (fluid) intelligence that various psychologists argue that intelligence tests measure WM function (Kane, Hambrick, and Conway 2005; Oberauer et al. 2005; but see Ackerman, Beier, and Boyle 2005). And general intelligence predicts important life outcomes ranging from job performance (e.g. Gottfredson 1997) to academic success (e.g. Rohde and Thompson 2007). So WMC tests must measure a cognitive process (or a set of processes) that is applicable in a wide variety of laboratory and real-world contexts. The capacity to hold and manipulate information in conscious awareness surely fits the bill.
From these features of WM, we can extract phenomenological and psychometric diagnostics to determine whether a process is Type 1 or Type 2. I will discuss these diagnostics, arguing that they do not tell us how to classify mind-wandering (§ 5.2).

5.2 Puzzle: Mind-Wandering is Neither Type 1 nor 2

5.2.1 The Psychometric Diagnostic

The psychometric diagnostic says that a process is Type 2 if people with higher WMC can more readily perform tasks requiring that process. Otherwise, a process is Type 1. For example, if people with higher WMC are better arithmetical reasoners, we can conclude that Type 2 processes contribute to arithmetical reasoning. Prima facie, it’s unclear how to apply the psychometric criterion to mind-wandering: if you’re like me, you lack a grip on what it means to mind-wander well (or poorly).\(^5\) But recall that WMC is thought to reflect individual differences in the capacity limitations of WM. Thus, if mind-wandering is Type 2, people with higher WMC should have a larger pool of WM resources to split between their everyday tasks and wandering minds. So individuals with higher WMC should mind-wander more often as they perform tasks in the laboratory and everyday life.\(^6\)

Puzzlingly, psychometric evidence suggests that the relationship between mind-wandering and WMC is context-dependent. Relative to individuals with low WMC, those with high

\(^{5}\)I thank Jennifer Nagel for pushing me to clarify this point.

\(^{6}\)Alex Madva has pointed out that the foregoing argument needs an additional premise. From the assumptions that mind-wandering is Type 2 and that people with higher WMC have a larger pool of WMC resources to split between their everyday tasks and wandering minds, it follows only that people with higher WMC could mind-wander more often. But to predict that such individuals will mind-wander more often, we also have to assume that minds are disposed to wander when the opportunity is there. One could motivate this assumption by arguing that mind-wandering is a type of cognitive default that one’s mind frequently reverts to when it has free WM resources. Kurzban et al. (2013) defend such a view, arguing that unconscious mechanisms calculate the opportunity cost of using cognitive resources for your current task, compared to mind-wandering. If the opportunity cost is high, mental effort motivates you to let your mind wander.
WMC mind-wander less when they perform difficult tasks or concentrate; yet their minds wander more when they perform easy tasks or aren’t concentrating. Kane et al.’s (2007) found this to be the case in a study of mind-wandering during everyday life. Laboratory studies demonstrated analogous results concerning task difficulty. McVay and Kane (2009; McVay and Kane 2012) found that, in a difficult variant of the Sustained Attention to Response Task (SART), subjects with high WMC mind-wandered less than their low WMC peers. Levinson et al. (2012) found that during easy tasks, where subjects either had to count their breaths or identify a target presented alongside easy-to-distinguish distractors, subjects with high WMC mind-wandered more. Finally, during an intermediate difficulty task, where subjects had to identify a target presented alongside visually similar distractors, WMC did not predict rate of mind-wandering. Rummell and Boywitt (2014) obtained a complementary result within a single study. WMC positively predicts the extent to which rates of mind-wandering adapt to task difficulty: the higher one’s WMC, the more one’s rate of mind-wandering decreases with task difficulty.

Therefore, the psychometric diagnostic does not tell us how to classify mind-wandering. Some results suggest that mind-wandering is a Type 1 process. Others suggests it is Type 2. We’ll now see that the phenomenological diagnostic does no better.

5.2.2 Sloman’s Phenomenological Diagnostic

Sloman (1996) proposes a phenomenological diagnostic to distinguish between Type 1 and Type 2 processes (Carruthers 2015, p. 178 employs a similar diagnostic). Although Sloman wrote before Evans and Stanovich, we can think of Sloman’s phenomenological heuristic as a richer version of the functional/phenomenological claim that Type 2 processes hold and manipulate information in conscious awareness:

One tentative rule of thumb...has to do with the contents of awareness. When a response is produced solely by [Type 1 processing], a person is conscious only of the result of the computation, not the process. Consider an anagram such as involnutray for which the correct answer likely pops to mind associatively
The result is accessible, but the process is not. In contrast, a person is aware of both the result and the process in [Type 2 processing]. Consider a harder anagram such as uersoippv. If you figured out the answer (purposive), and even if you did not, you likely applied various rules (like put different letters in the first position) which were consciously accessible. If you did get the answer, you were aware not only of the process but also of the result (Sloman 1996, p. 6).

According to Sloman, Type 1 processes broadcast at most their outputs to consciousness. In contrast, Type 2 processes broadcast (at least some) processing to access consciousness; hence, it is accurate to say that these processes manipulate information in conscious awareness. There are at least two interpretations of what it means to broadcast processing to access consciousness (these interpretations are not mutually exclusive). On the Intermediate Stages interpretation, Type 1 processes broadcast only their output to consciousness whereas Type 2 processes broadcast the contents of intermediate stages as well. I am aware of various intermediate steps when I solve the anagram ‘uersoippv’. For example, I consider potential anagrams with ‘user’ in the first position, with ‘s’ in the first position, etc. In contrast, I am aware of only two mental events when I solve the anagram ‘involnutray’: I begin to think about the problem and then a solution pops into my mind.

On the Rules interpretation, when we engage in Type 2 processing, we are aware of applying rules that licence us to move from one stage in our processing to the next. For example, when working through a direct proof in propositional logic, we might be aware of applying a number of logical rules in order to transform the premises of our proof into the conclusions. Sloman similarly argues that when you solve the anagram ‘uersoippv’,

---

7 We could add that Type 1 processes can broadcast metacognitive signals. For example, when I solve the anagram ‘involnutray’, I am aware of both the answer and the metacognitive fact that the answer was easy to come by. But I am not aware of the process that solved the anagram.

8 Trenchant difficulties face any account of what it means to consciously apply a rule while reasoning. For example, Broome (2013, Chapter 12) argues against views on which your belief that you ought to follow a rule serves as a premise in your reasoning. I am sympathetic to Broome’s positive proposal (2013, Chapter 13), which is that reasoners use rules to operate on the contents of their premise attitudes to produce their conclusion attitudes. One could apply Broome’s view to explicate what I’ve said about the Rules Interpretation of Type 2 processing. So far as I can see, my argument does not depend on whether Broome’s view is correct.
“you likely applied various rules (like put different letters in the first position) which were consciously accessible”. The Rules interpretation is stronger than the Intermediate Stages interpretation. On the Intermediate Stages interpretation, we have conscious access to one feature of Type 2 processing only: the intermediate stages. On the Rules interpretation, we have conscious access to these intermediate stages and the reasons why we move from one intermediate stage to the next.

When our minds wander, we are aware of intermediate stages in our processing but unaware of the rules used to transition from stage to stage. For instance, when my mind wanders, I might be aware that I spitefully mused that it’s sunny in Berkeley today, wondered whether Toronto’s salt will erode my new boots, and then reminisced about that snowy winter when they shut down elementary school. The content of each intermediate thought is broadcast to consciousness. Yet I lack conscious access to the (probably associational) processes that caused me to token each thought after the last. Admittedly, I may think back and come up with hypotheses about why I tokened each thought (e.g. by postulating associations between the two). Yet these are likely just confabulations. And even if my hypotheses are correct, I am not directly aware of them while my mind wanders. Rather, I have to infer what these associations might have been from information I am aware of (the content of each thought I token). But then these associational rules are not immediately available for report and thus are not access conscious (§ 5.1).

So when our minds wander, we are aware of more processing than when we use a Type 1 process (e.g. solving the anagram ‘involuntray’); but we are aware of less processing than when we use a Type 2 process (e.g. solving the anagram ‘uersoippv’). Sloman’s phenomenological diagnostic therefore suggests that mind-wandering occupies an intermediate position between Type 1 and Type 2 processing.
5.2.3 Objection: Mind-Wandering is Not Reasoning

One might object that mind-wandering is outside the scope of Evans and Stanovich’s dual process theory. Evans and Stanovich’s “…particular interest is in dual-process accounts of human reasoning and related higher cognitive processes, such as judgment and decision making” (Evans and Stanovich 2013, p. 223). But one is not reasoning or making judgments and decisions while her mind wanders (so the objection goes). Indeed, mind-wandering is thinking that occurs in the absence of such tasks. So it is only natural that mind-wandering resists classification on Evans and Stanovich’s dual process framework.

But dual process theorists who happen to study one domain (e.g. reasoning) often assume that their theory has wider scope. For example, Evans (2008) and Stanovich (1999) both attempt to unify dual process theories across domains (learning, social cognition, reasoning, judgment, decision making, etc.), and Samuels (2009) argues that dual process theory identifies a general distinction between cognitive kinds. It’s worth asking whether these general projects can be successful. Moreover, there are two good reasons to pursue unification. First, dual process theory is much more interesting when conceived of as general account of thinking, rather than a theory limited to a particular domain. Second, Evans and Stanovich’s dual process theory rests on a fundamental distinction between two types of thinking: one uses WM resources, the other does not. WM supports a vast range of thinking outside the context of reasoning and decision making. We should therefore expect dual process theory to provide a general model of thinking. But if dual process theory is so comprehensive, it makes sense to ask how it applies to mind-wandering.

Furthermore, mind-wandering is important even for more restricted dual-process theories of reasoning and decision making. Mind-wandering facilitates various forms of reasoning and decision making. For example, mind-wandering facilitates insight problem solving, which is plausibly a form of reasoning (§ 5.4.2). Furthermore, there is evi-
dence that mind-wandering contributes to autobiographical planning and decision making: recall that our minds frequently wander to personal goals, and that these goals motivate our minds to wander to goal-relevant information (Chapter 1). Insofar as Evans and Stanovich hope to offer a comprehensive account of the types of processing that contribute to reasoning decision making, they should therefore consider where mind-wandering fits into the framework.⁹

5.3 The Neural Diagnostic

Large portions of the executive network—which is active during standard tests of WM (Rottschy et al. 2012; Owen et al. 2005)—are also active when the mind wanders. Based on this neural evidence, some psychologists (e.g. Smallwood 2013, p. 528; cf. Smallwood et al. 2012) have concluded that mind-wandering uses WM. By extension, one could argue that mind-wandering is Type 2. However, these proposals are vulnerable to three objections.

5.3.1 Mind-Wandering and the Executive

Various psychologists argue on neural grounds that WM supports mind-wandering. Some background on the frontal-parietal executive network is necessary to explicate these arguments. Executive regions—including portions of the dorso and ventrolateral prefrontal cortex (dPFC and vACC), dorsal anterior cingulate cortex (dACC), inferior parietal lobe (IPL), and anterior insula—are active across most classic tasks that place demands

⁹Peter Carruthers (in communication) argues that dual process theory should be restricted to guided reasoning and decision making, in which cases it needn't account for mind-wandering. I'm sympathetic to his suggestion: in this case, unguided reflective processes would simply fall outside the scope of dual process theory. But note that we cannot make this move with resources internal to Evans and Stanovich's dual process framework. We must first recognize the fundamental difference between how WM resources support guided and unguided thinking. Of course, this is the central innovation of my current chapter. So I can (though I need not) take on Carruthers' suggestion as a friendly amendment, a way to re-frame my central argument.
on WM. Rottschy et al. (2012) conducted a meta-analysis over 189 fMRI experiments in which healthy subjects performed four of the most prevalent WM tasks. The core executive network, which maps closely onto the frontal-parietal regions mentioned above, was active across all tasks, stimuli, and control conditions (cf. Owen et al. 2005 for similar meta-analytic results). This network is therefore thought to play a core role in our capacity to maintain and manipulate information in conscious awareness.

Executive regions form an integrated network because they meet two conditions (Vincent et al. 2008, p. 3334). First, they activate in unison during a particular type of task (those that require WM). Second, the activation (and deactivation) of executive regions over time is highly correlated while subjects are at rest (that is, in the absence of a task; Vincent et al. 2008; Spreng et al. 2013). When a subject is at rest—say, lying prone in a scanner—her brain will not become inactive or fire randomly; nor will she display a unitary pattern of neural activation. Instead, neural activity at rest shifts from one large-scale brain network to another, regions within each network activating (and deactivating) in concert. Specifically, activation is more strongly correlated within networks such as the executive than between networks (Yeo et al. 2011 present a comprehensive network analysis of the cerebral cortex; Vincent et al. 2008 and Spreng et al. 2013 analyze the executive network, specifically). Such spontaneous patterns of activation indicate that networks function as a coherent unit irrespective of the idiosyncratic demands of particular tasks.

Despite widespread agreement that the executive network supports WMC, it’s less clear how the executive serves this function. One theory is worth mentioning, not only because of its prominence generally, but also because of its influence within the literature on mind-wandering (§ 5.3.4). The view in question states that the executive’s function is inhibitory: it serves to maintain goal-directed thoughts in conscious awareness by inhibiting goal-irrelevant distractions (e.g. Kane and Engle 2002). This view is especially popular amongst those who argue that inhibition is the primary factor underlying individual differences in WMC (e.g. Hasher and Zacks 1988; Hasher et al. 2007). Such
theorists paint a picture of the executive as an integrated network that supports the maintenance and manipulation of conscious information (i.e. WM) by insulating a stream of thoughts against distraction.

Mind-wandering activates a broad range of the executive network. Fox et al. (2015) recently performed a meta-analysis of 24 fMRI and Positron Emission Tomography (PET) neuroimaging studies of mind-wandering. They found consistent activation of five executive regions when the mind wanders: dACC, right IPL, right dorso/rostrolateral PFC, left vlPFC, and left mid-insula (Table 5.2). Largely on the basis of this evidence, Smallwood, Spreng and others have proposed the *decoupling hypothesis*: executive processes support mind-wandering by insulating our wandering thoughts against distractions (e.g. Smallwood 2013, p. 528; cf. Smallwood et al. 2012).
### Table 5.2: Meta-analysis of neural activation during mind-wandering. Reproduced from Fox et al. (2015).

<table>
<thead>
<tr>
<th>Region</th>
<th>Cluster Size ($mm^3$)</th>
<th>MNI Coordinates</th>
<th>Broadman’s Area</th>
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</thead>
<tbody>
<tr>
<td><strong>Executive Regions</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Frontal Lobe</strong></td>
<td></td>
<td></td>
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<tr>
<td>Dorsal Anterior Cingulate Cortex</td>
<td>2920</td>
<td>-5, 27, 39</td>
<td>32</td>
</tr>
<tr>
<td>Right dorsolateral/rostrolateral prefrontal cortex</td>
<td>1656</td>
<td>45, 43, -8</td>
<td>46/10</td>
</tr>
<tr>
<td>Left ventrolateral prefrontal cortex</td>
<td>1320</td>
<td>-35, 10, -26</td>
<td>47/11</td>
</tr>
<tr>
<td><strong>Parietal Lobe</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Right Inferior Parietal Lobule</td>
<td>1808</td>
<td>56, -51, 33</td>
<td>40/399</td>
</tr>
<tr>
<td>Left mid-insula</td>
<td>1032</td>
<td>-42, 29, -12</td>
<td>13</td>
</tr>
<tr>
<td><strong>Default Regions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Frontal Lobe</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rostromedial prefrontal cortex</td>
<td>1256</td>
<td>3, 61, 13</td>
<td>10/9</td>
</tr>
<tr>
<td>Medial prefrontal cortex; anterior cingulate cortex</td>
<td>1080</td>
<td>4, 42, 3</td>
<td>24/32</td>
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<tr>
<td><strong>Parietal Lobe</strong></td>
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<tr>
<td>Precuneus; posterior cingulate cortex</td>
<td>3784</td>
<td>-8, -56, 39</td>
<td>7/31</td>
</tr>
<tr>
<td>Left inferior parietal lobule</td>
<td>2616</td>
<td>-46, -72, 25</td>
<td>39</td>
</tr>
<tr>
<td><strong>Temporal Lobe</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left parahippocampus</td>
<td>3496</td>
<td>-27, -37, -18</td>
<td>36</td>
</tr>
<tr>
<td><strong>Neither Executive Nor Default</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temporal Lobe</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Left temporopolar cortex</td>
<td>2608</td>
<td>-50, -1, -5</td>
<td>38</td>
</tr>
<tr>
<td><strong>Parietal Lobe</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right secondary somatosensory cortex</td>
<td>1416</td>
<td>24, -39, 56</td>
<td>4/40</td>
</tr>
</tbody>
</table>
The decoupling hypothesis posits that a core component of WM—the central executive—supports mind-wandering. If correct, this theory gives us unequivocal reason to classify mind-wandering as Type 2. However, proponents of the decoupling hypothesis must overcome three objections. First is the problem of reverse inference: it’s notoriously problematic to infer that a psychological process (e.g. executive control) is active on the basis of neural activation (e.g. of executive regions) (§ 5.3.2). Second, even if executive processes are active while the mind wanders, it doesn’t follow that these processes support rather than inhibit mind-wandering (§ 5.3.3). Even if we set aside these difficulties, the decoupling hypothesis provides neither an empirically nor theoretically adequate model of how the executive supports mind-wandering (§ 5.3.4). These objections re-introduce the puzzle about how dual process theorists should classify mind-wandering.

### 5.3.2 The Reverse Inference Problem

Proponents of the decoupling hypothesis use neural evidence to infer that executive processes are active while the mind wanders (§ 5.3.1). These arguments rely on a problematic form of reverse inference (Poldrack 2006). Neuroscientists commonly employ two forms of inference from neuroimaging data. Forward inference uses neuroimaging data to infer which neural regions a cognitive process activates. Reverse inference attempts to move in the opposite direction, inferring that a cognitive process is engaged from neural activation. Reverse inference often takes the following form:

1. When subjects perform task T, brain area B is active
2. Brain area B is (typically) active when cognitive process P is engaged
3. Thus, task T engages cognitive process P (Poldrack 2006, p. 1).

Proponents of the decoupling hypothesis rely on reverse inference. They infer that mind-wandering (“task” T) engages executive processes (cognitive process P) because regions within the executive network (brain area B) are active when someone’s mind wan-
ders. Such reverse inferences are problematic, since brain areas can subserve a multitude of cognitive processes. And the argument schema above gives us no reason to attribute the activation of a brain area to one cognitive process, rather than any of the other cognitive processes that activate this brain area (Poldrack 2006).

Formally, we can state the reverse inference problem in terms of Bayes’ Rule (Poldrack 2006). We want to know the probability that cognitive process is engaged by a task \(P\), given that a certain brain area is active during the task \(B\); that is, we want to know the posterior probability \(Pr(P|B)\). Bayes’ Rule tells us that

\[
Pr(P|B) = \frac{Pr(B|P)Pr(P)}{Pr(B|P)Pr(P) + Pr(B|\sim P)Pr(\sim P)}.
\]

What’s relevant for our purposes is that \(Pr(P|B)\) decreases, the more likely it is that brain area \(B\) is activated by processes other than \(P\): that is, \(Pr(P|B)\) is decreasing on \(Pr(B|\sim P)\). So reverse inference works only if the neural activation in question is relatively selective: that is, only if the activation is much more likely when cognitive process \(P\) is engaged than otherwise. Unfortunately, neural activation is rarely that selective. For brain areas support different processes depending on features of the context, such as what other regions are currently active (Pessoa 2014). Higher-level regions (e.g. the dLPFC) tend to be even less selective than lower-level ones (e.g. the primary visual cortex), since they tend to serve more functions. Therefore, reverse inference is especially problematic when applied to executive processes.

However, reverse inferences are more reliable, if they are based on the activity of networks rather than individual areas (Poldrack 2006, p. 4). Cognitive processes are often subserved by integrated networks of areas that operate in concert. The activation of a whole network is typically more selective than the activation of each area individually. For example, we’ve seen that WM is subserved by an executive network that includes por-
tions of the dlPFC and vlPFC, dACC, IPL, and anterior insula. The concurrent activation of all (or most of) these areas better predicts the presence of WM (and the executive) than the activation of one area in isolation. This fact supports the thesis that mind-wandering uses WM. Recall that a broad range of the executive network—dACC, right IPL, right dorso/rostrolateral PFC, left vlPFC, and left mid-insula—is active while the mind wanders (Fox et al. 2015; Table 5.2). On their own, activation in any of these regions might not significantly predict the presence of WM. But activation of all five regions is better evidence that WM is engaged during mind-wandering.

Network analyses are not a panacea, however. Pessoa—a proponent of the network approach to neuroscience—concedes that there is unlikely to be a one-one mapping of networks onto cognitive processes. Different cognitive processes can lead to the co-activation of multiple regions within a network, depending on a multitude of contextual features that include the state of neurotransmitter systems, the subject’s arousal (Pessoa 2014, p. 408), changes in functional connectivity between sub-regions within a network (Klein 2012, p. 957), and changes in functional connectivity between networks. Since Fox et al.’s meta-analysis does not control for these sorts of contextual factors, our neural evidence does not conclusively demonstrate that executive processes are engaged while the mind wanders. Although the evidence supports this conclusion, caution is still required.

5.3.3 The Inhibitory View

Neuroimaging data provides (admittedly inconclusive) evidence that executive processes are engaged while the mind wanders. Yet it does not follow—as proponents of the decoupling hypothesis argue—that executive resources support mind-wandering. Instead, executive resources could be engaged to inhibit our wandering thoughts. McVay and Kane (2010; 2012) object to the decoupling hypothesis on similar grounds. They propose a neural model on which the default network generates our wandering thoughts automatically, without the support of executive resources or WM (2010, pp. 193-194).
The default network is made up of regions that are more active when subjects are at rest (e.g. lying prone in an fMRI scanner) than during a wide variety of tasks (see Buckner, Andrews-Hanna, and Schacter 2008 for a review). This network is also active when the mind wanders (Fox et al. 2015; Table 2). McVay and Kane (2010, pp. 193-194) hypothesize that the executive is engaged during mind-wandering in order to inhibit default activation, insulating goal-directed thought against the distractions of mind-wandering.

McVay and Kane’s theory coheres with the common-sense position that mind-wandering is antithetical to goal-directed thought (§ 1.1). Mind-wandering is paradigmatically passive, drifting unchecked from thought to thought. Goal-directed thought is paradigmatically active, staying focused due to monitoring and regulation. McVay and Kane can explain these differences in terms of the executive. Executive resources underlie our ability to monitor and regulate trains of thought (so the story goes). Because the executive supports goal-directed thought but not mind-wandering, the former stays focused while the latter drifts.

Despite the common-sense appeal of McVay and Kane’s model, it is vulnerable to five empirical objections. The first is psychometric. Differences in WMC (at least partly) reflect differences in executive function (e.g. Kane and Engle 2002). Thus, if the executive serves to inhibit mind-wandering, people with higher WMC should mind-wander less than those with low WMC (McVay and Kane 2010, pp. 191-193). But the opposite is true when subjects perform easy tasks or do not concentrate (§ 5.2.1).

The second objection is motivated by imaging data on mind-wandering and meta-awareness. McVay and Kane predict that when the mind wanders, executive regions are most active when subjects have begun to inhibit mind-wandering. Subjects who are aware that their minds are wandering can inhibit their thoughts; subjects who are unaware cannot. Thus, mind-wandering with meta-awareness should be associated with more inhibition—and if McVay and Kane are correct, more executive activation—than mind-wandering without awareness. But Christoff et al. (2009) found the opposite:
executive regions—specifically, the dlPFC and dACC—are more active when one's mind wanders without meta-awareness than with meta-awareness.\textsuperscript{10}

Two further objections concern functional connectivity: that is, correlations between the activity of distinct regions over time. Regions that display positive functional connectivity tend to activate and deactivate together; regions that display negative functional connectivity do the opposite. Christoff (2012) examined functional connectivity between executive and default regions during mind-wandering. If the executive serves to inhibit default activation, these regions should display negative functional connectivity: when executive regions become active, they should inhibit and thus decrease the activation of default regions. If anything, Christoff found the opposite. Christoff examined whether one executive region—the dACC—and two default regions—the ventral ACC and Posterior Cingulate Cortex (PCC)—showed significant functional connectivity with any other regions in the brain. Executive and default regions showed no negative functional connectivity with each other. Indeed, the dACC and vACC showed positive functional connectivity.

Spreng et al. (2013) examined the functional connectivity between default and executive\textsuperscript{11} regions during rest. McVay and Kane explicitly predict that:

If...executive-control areas are only active [while the mind wanders] in ser-

\textsuperscript{10}McVay and Kane consider this objection and respond that “(a) When subjects are unaware of their mind wandering, they may require even more control activity to bring their thoughts back on track, leading to an increase in PFC and ACC activity during TUTs without awareness; (b) unconscious monitoring processes may be responsible for tracking and redirecting one's thoughts” (McVay and Kane 2010, p. 194). For two reasons, this response is unlikely to account for the data. First, it appeals to two contentious empirical hypotheses: (a) and (b) above. Furthermore, even if we grant that unconsciousness monitoring processes can corral our wandering thoughts, it doesn’t follow that such processes are usually active when our minds wander without meta-awareness. Instead, it’s likely that unaware mind-wandering often proceeds uninhibited (consider that our minds can wander from a book for minutes at a time. Surely, unconscious control processes did not attempt and fail to inhibit our thoughts that whole time). McVay and Kane should predict that the executive deactivates during such periods of unaware and uninhibited mind-wandering. So on average, the executive should still be more active when the mind wanders with meta-awareness than without.

\textsuperscript{11}Following Vincent et al. (Vincent et al. 2008), Spreng et al. call the executive network the “Frontal Parietal Control Network”. I use the term “executive network” for two reasons. First, this terminology is more common in the literature on WM and dual-process theory. Second, the term “Frontal Parietal Control Network” builds in a contentious assumption: the executive’s primary function is control. I will argue that mind-wandering challenges this assumption.
vice of redirecting thoughts back toward the task, they should be active only during TUTs [i.e. when we wander away from a task] and not during unconstrained thought or rest (McVay and Kane 2010, p. 194).

McVay and Kane should therefore predict that default and executive regions display negative functional connectivity during rest. Yet Spreng et al. (2013) found that during rest, there is positive functional connectivity between the default network and many executive regions (e.g. dACC, left IPL, left rostrolateral PFC, and left anterior insula).

Axelrod et al.’s (2015) transcranial direct current stimulation (tDCS) study provides additional evidence against McVay and Kane. tDCS can be used to selectively activate areas of the brain via electrodes placed on the scalp (the targeted area becomes more active during and for a brief period after stimulation). Using tDCS, neuroscientists can test causal claims about the effect of neural activation on cognitive processes. Axelrod et al. (Axelrod et al. 2015) tested the causal effect of executive activation on mind-wandering. Specifically, they used tDCS to increase activation of the dlPFC, a key hub within the executive network. For two twenty minute periods—one during and one immediately after stimulation—subjects performed a SART and were intermittently interrupted and asked whether their minds were wandering. If activation of the executive network inhibits mind-wandering, Axelrod’s tDCS manipulation should decrease mind-wandering relative to controls. Axelrod found the opposite: tDCS stimulation of the dlPFC increased mind-wandering relative to controls, who either underwent “sham stimulation” (i.e. inactive electrodes were placed on the scalp) or stimulation of a non-executive area in the occipital lobe.

Neuroimaging provides (admittedly imperfect) evidence that executive processes are engaged while the mind wanders (§ 5.3.2). If these processes are engaged, they support, rather than inhibit, our wandering thoughts. Neural evidence therefore appears to suggest that mind-wandering uses WM and is thus Type 2. However, standard models of how the executive supports WM are ill-positioned to account for mind-wandering,
which reintroduced the puzzle about how dual process theorists should classify mind-wandering.

### 5.3.4 Proposal: The Executive Insulates Mind-Wandering

Neuroimaging provides (admittedly imperfect) evidence that executive processes support mind-wandering. The question is: how?\(^\text{12}\) One prominent theory of executive function (especially amongst mind-wandering researchers) is inhibitory: the executive supports WM by insulating a conscious stream of thoughts against distraction. Mind-wandering occupies the place of *distraction* in McVay and Kane’s version of the theory: the executive insulates goal-directed thoughts against the distracting influence of mind-wandering.

Smallwood, Spreng, and others offer a counter-proposal: our wandering thoughts are (sometimes) *what the executive acts to insulate*:

> The decoupling hypothesis proposes that when self-generated information [e.g. mind-wandering] becomes the target of attention, the process of perceptual decoupling [which is subserved by the executive] acts to insulate an internal train of thought against the distracting impact of the outside world (Smallwood 2013, p. 528; cf. Smallwood et al. 2012).

Smallwood et al. disagree with the details of McVay and Kane’s view, but share one of their fundamental presuppositions: an inhibitory view of executive function. Indeed, Smallwood (2013, p. 523) explicitly adopts Kane and Engle’s definition of executive control as “the capability to prevent attentional focus from being captured by mental or environmental distractors, and thus drawn away from the actively maintained target information” (Kane and Engle 2002). Smallwood simply adds that the executive can actively maintain mind-wandering.

Smallwood et al.’s decoupling hypothesis explains various empirical results. For one, it predicts that the executive network supports mind-wandering (§ 5.3). Furthermore, it

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\(^{12}\text{This section draws on material from my presentation with Kalina Christoff and Kieran Fox (2015).}\)
explains why the relationship between mind-wandering and WMC is context-dependent (§ 5.2.1). When someone performs a difficult task or concentrates, his executive network insulates that task against distracting influences (including mind-wandering). In these contexts, high-WMC individuals should mind-wander less than those with low-WMC. In contrast, when someone does not concentrate on a task or finds it easy, his executive network shifts its focus and insulates internal trains of thought (including mind-wandering) against distraction. In these contexts, high-WMC individuals should mind-wander more than those with low-WMC.

However, the decoupling hypothesis cannot account for an important empirical datum. Recall that Axelrod et al. (2015) used tDCS stimulation of the dlPFC to increase mind-wandering. So far, so good: this is what the decoupling hypothesis predicts. But Smallwood et al. make an additional prediction about how executive activation increases mind-wandering: the executive insulates mind-wandering “against the distracting impact of the outside world” (Smallwood 2013, p. 528). Therefore, whenever tDCS stimulation of the executive increases mind-wandering, it should do so by inhibiting our attention to the external environment, which should hurt our performance on experimental tasks. However, Axelrod et al. (2015) found no evidence that tDCS-induced increases in mind-wandering led to performance decrements. If anything, Axelrod et al. found the opposite trend: in two experiments, tDCS activation increased performance on a difficult SART while concurrently increasing mind-wandering (though neither trend reached significance). The decoupling hypothesis—with its inhibitory view of executive function—cannot account for these results.

Furthermore, the decoupling hypothesis squares poorly with our common sense picture of mind-wandering. Almost by definition, the folk contrast mind-wandering with goal-directed cognition. Smallwood et al. collapse this core distinction. For they maintain that the executive supports goal-directed thought and mind-wandering in the same way: by inhibiting distractions. Mind-wandering is “associated with a reduction in the
processing of distracter stimuli, a hallmark process by which individuals stay on task to achieve goals” (Callard, Smallwood, and Margulies 2011, 3, my emphasis). The inhibition of distraction is indeed a hallmark of goal-directed attention: goal-directed agents are guided to ignore irrelevant information (§ 2.2.1; 2.3.3). But this is precisely the joint at which goal-directed and wandering attention come apart: only the former is guided.

Proponents of the decoupling hypothesis present various arguments against the common sense picture (§ 1.1.4). Two are worth mentioning here. First, mind-wandering is goal-directed because our minds frequently wander to our goals (e.g. Callard, Smallwood, and Margulies 2011, p. 4). For example, Morsella et al. (2010) found that subjects’ minds repeatedly wandered to an upcoming geography quiz. I concede that mind-wandering can be related to—even motivated by—our goals. But this does not imply that mind-wandering is guided (or insulated against distraction) in the right way to count as goal-directed (§ 2.2.2). If mind-wandering were goal-directed, our wandering thoughts would be insulated not only “against the distracting impact of the outside world” (Smallwood 2013, p. 528) but also against goals other than our current one. But a paradigmatic feature of mind-wandering is that our thoughts drift from one goal to the next.

The second argument appeals to reverse inference: mind-wandering is a goal-directed process because “mind-wandering and the [goal-directed] process of autobiographical planning entail activity in both the [default network] and the executive system” (Callard, Smallwood, and Margulies 2011; cf. Spreng et al. 2010). Because this argument is a reverse inference, it depends on the selectivity of default/executive co-activation (§ 5.3.2). If these networks are active together only during autobiographical planning, we have evidence that mind-wandering involves (goal-directed) planning. However, we’ll see that default/executive co-activation also subserves a process with deep similarities to mind-wandering: creative problem solving. In fact, I will argue that creativity helps to illuminate the relationship between mind-wandering and working memory (§ 5.4.2).

Neural evidence appears to suggest that mind-wandering is a Type 2 process, since
executive resources support our wandering thoughts. However, the verdict becomes less clear once we examine how executive resources are supposed to support Type 2 thought. Many theorists hold that executive resources are essentially inhibitory, insulating goal-directed thought against distraction. This maps closely onto the image of Type 2 thinking as “controlled” rather than “automatic”. But there are empirical and philosophical reasons why the inhibitory theory cannot extend to mind-wandering. Our standard characterizations of Type 1 and Type 2 processes again fail to capture mind-wandering.

5.4 Solution: Mind-Wandering and the Reflective Mind

Stanovich (2009) argues that we should distinguish between algorithmic and reflective Type 2 processing. I will argue that mind-wandering contributes to the reflective rather than the algorithmic mind. And I will draw on this thesis to explain why our psychometric, phenomenological, and neural diagnostics are equivocal about how to classify mind-wandering.

5.4.1 Reflective versus Algorithmic Processing

Stanovich’s distinction between algorithmic and reflective processing is grounded in the psychometric distinction between optimal and typical task conditions (Stanovich 2009, pp. 60-61). Algorithmic processing involves the use of WM resources to optimize tasks administered under “optimal conditions”. Under optimal conditions, a subject’s instructions are explicit and unambiguous about three points: how to interpret the task, how to perform the task optimally, and that the subject is meant to optimize task performance. Tests of WMC are typically administered under optimal conditions. For example, subjects taking an Operation Span test might be instructed to a) remember a list of words while completing arithmetical problems, b) complete each problem within a given time frame while remembering as many words as possible and, c) do the best they can.
Tasks administered under typical conditions leave some ambiguity regarding how to perform and/or optimize a task. In Stanovich’s example of a typical task, subjects are instructed to evaluate whether syllogisms like the following are valid: “All roses need water; All living things need water; Therefore, Roses are living things”. Surprisingly, approximately 70% of university students conclude that this syllogism is valid (e.g. Stanovich and West 1997). The classic explanation of these errors is that that subjects automatically rely on a heuristic that arguments with true conclusions are usually valid. (The fact that the argument’s premises are true and that its premises and conclusions have overlapping content could also contribute to its apparent validity. Subjects might therefore use a more complex heuristic than Stanovich discusses.) Stanovich (2009, p. 61) therefore argues that the Rose Syllogism’s instructions are ambiguous about whether subjects should ignore their belief in the conclusion when evaluating validity. So the Rose Syllogism is a typical task.

Stanovich operationally defines the reflective mind as whatever features of our psychology contribute to stable individual differences in the successful interpretation of tasks under typical conditions (2009, pp. 60-61). Stanovich emphasizes the contribution of rational thinking dispositions—for example, how willing an individual is to engage in effortful cognitive activity, as measured by the Need for Cognition Scale—to the reflective mind. When faced with a typical task like the Rose Syllogism, for example, individuals reticent to expend cognitive effort will be unlikely to logically evaluate the validity of the argument, even if they have high WMC; relying on heuristics is easier.13

Stanovich argues for a distinction between the algorithmic and reflective minds on psychometric grounds: rational thinking dispositions predict success on typical tasks, even when intelligence is controlled for (e.g. Bruine de Bruin, Parker, and Fischhoff

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13Admittedly, whether one is successful at resolving ambiguous tasks on any given occasion may depend on vagaries such as priming effects, past exposure to similar problems, peculiarities about one’s idiolect, etc. The reflective mind therefore includes only those features of our psychology that make us better at resolving ambiguous tasks, in general.
We have already seen, for example, why subjects with higher need for cognition are more likely to successfully interpret the Rose Syllogism. Stanovich therefore concludes that the reflective mind includes at least one non-algorithmic feature of our psychology: rational thinking dispositions.

Yet Stanovich’s distinction between the reflective and algorithmic minds is limited in two ways. First, Stanovich’s operational definition leaves open the possibility that algorithmic processing also contributes to the reflective mind. After all, someone can resolve ambiguities about her task algorithmically, if she treats task interpretation as a higher-order optimal task. For instance, a participant in Stanovich’s experiments might reason algorithmically about whether she ought to expend effort evaluating syllogisms or just coast her way to a course credit. Outside of controlled experimental tasks like syllogistic reasoning, such higher-order thinking about one’s task is probably even more common. When Sam’s partner asks, “does this tie make me look fat?”, for example, Sam might algorithmically reason about what task he has been asked to perform.

Second, Stanovich identifies no categorical grounds for rational thinking dispositions. One possibility is that these dispositions track individual differences in cognitive processes that aren’t measured by optimal psychometric tasks. If so, our theory of the reflective mind should discuss these underlying cognitive processes. Another possibility is that rational thinking dispositions reflect brute preferences (e.g. for effortful cognition) that cannot be further analyzed in terms of cognitive processes. But if so, Stanovich’s algorithmic/reflective distinction is trivial: Stanovich defines the algorithmic mind as a type of cognitive process; but ex hypothesis, brute preferences and cognitive processes belong to different ontological categories. It is therefore true by fiat that such preferences are not part of the algorithmic mind; no empirical result could falsify this hypothesis.

Stanovich’s reflective/algorhithmic distinction would be more surprising (and falsifiable) if he hypothesized that there is a distinctive form of reflective cognitive processing.
I conjecture that mind-wandering is just such a process. Three lines of evidence support my hypothesis. First, mind-wandering facilitates a paradigmatic type of reflective processing: insight problem solving (§ 5.4.2). Second, mind-wandering could not be regulated in the right way to count as algorithmic processing. Finally, the thesis that mind-wandering is reflective processing provides a unified solution to our puzzles about how dual process theorists should classify mind-wandering (§ 5.4.3).

5.4.2 Mind-Wandering and Insight

Insight problem solving is a paradigm case of reflective processing (i.e. processing that resolves ambiguities about one's task). Insight problems are small puzzles such as the following: “A Canadian man married seven women last week without breaking any laws. How did he do it?” Subjects will often respond with outlandish scenarios, such as a man who rapidly marries and murders women, that fail for one reason or another (in this case, murder is illegal). The correct answer is that he's a priest. Insight problems suggest an obvious task interpretation that leads to an impasse (Schooler, Ohlsson, and Brooks 1993). In the multiple marriage example, subjects cotton on to the wrong definition of ‘married’. The most difficult stage of an insight problem is therefore interpreting one's task correctly (i.e. reflective processing).

Laboratory studies of creative incubation provide evidence that mind-wandering facilitates insight problem solving. Incubation effects occur when subjects who work on a problem continuously are outperformed by those who work on the problem for a time and then return to it after a period of seemingly unrelated activity (e.g. reading an unrelated passage). Sio and Ormerod’s (2009) quantitative meta-analysis revealed that incubation effects on verbal insight problems are strongest when incubation periods contain an undemanding task (e.g. reading), as opposed to rest (i.e. an uninterrupted break) or a demanding task (e.g. a difficult WM test). This supports the hypothesis that mind-wandering facilitates insight, since undemanding tasks lead to high rates of mind-wandering
(e.g. Antrobus 1968, Smallwood et al. 2004, Teasdale et al. 1995). These results are unsurprising: think of the folk wisdom that when you are stuck on a problem, you should take a walk or have a shower. During such activities, insights often seem to arise in the contents of our wandering thoughts.

Neuroimaging experiments support these behavioural conclusions, though they must be interpreted with caution. Kounios and colleagues found that insight problem solving is associated with increased activity in both default and executive regions: namely, the anterior cingulate cortex (ACC), posterior cingulate cortex (PCC), and temporal gyrus. This co-activation is present in preparatory intervals before subjects are presented with problems they subsequently solve via insight (Kounios et al. 2006; Subramaniam et al. 2009) and while subjects solve problems by insight (Jung-Beeman et al. 2004; Subramaniam et al. 2009). Default/executive co-activation is relatively rare, though it is present across a range of creative tasks (see Beaty et al. 2015 for a review) and during mind-wandering (§ 5.3; Fox et al. 2015). One explanation of the unusual activation associated with insight, therefore, is that mind-wandering facilitates insight problem solving (and perhaps, creativity more generally). However, this argument must be made with caution because it employs reverse inference. Further research is needed to support a definitive interpretation of the neuroscience of insight.

Preliminary evidence suggests that mind-wandering facilitates a paradigmatic type of reflective processing: insight problem solving. It is therefore plausible that mind-wandering is part of the reflective mind.

5.4.3 Puzzles Solved: How to Classify Mind-Wandering

Mind-wandering is part of the reflective mind: it is a process that contributes to task interpretation under typical conditions. My thesis solves our puzzle about how to classify mind-wandering, so long as we adopt a plausible distinction between algorithmic and
reflective uses of WM. In general, WM resources are used to maintain and manipulate information in awareness. During algorithmic processing, we maintain (among other things) an explicit interpretation of our current task (and how to optimize it). Doing so guides our thoughts: when we attend to something sub-optimal according to our task-interpretation, we are drawn back to task-relevant thoughts. Algorithmic processing is thus a paradigm case of goal-directed attention (§2.2.1). By definition, mind-wandering is not subject to attentional guidance (§2.2.2). So someone cannot hold an optimal task-interpretation in mind while her mind wanders; rather, WM resources are used only to hold a wandering stream of thoughts in mind.

My model has at least four advantages. First, I account for the context-dependent relationship between mind-wandering and WMC. When we perform tasks that are difficult or require concentration, we hold an interpretation of how to optimize that task in mind. Doing so regulates and thus optimizes our task performance because WM resources inhibit any thoughts that seem irrelevant to our current task (including mind-wandering). In contrast, subjects performing an easy task or not concentrating needn’t hold an interpretation of their task in mind. Under such conditions, WM resources are not used to regulate our thinking or inhibit mind-wandering. Rather, these resources are free to hold a drifting stream of thoughts in access consciousness while one’s mind wanders. My hypothesis therefore explains why the minds of people with higher WMC wander less when they perform tasks that are difficult or require concentration, but wander more when they perform tasks that are easy or don’t require concentration.

Second, I explain why mind-wandering facilitates insight problem solving. Someone who employs goal-directed attention to solve insight problems will be regulated by her initial conception of her goal. She will thereby be likely to ignore information that seems irrelevant, including the problem’s solution (e.g. the correct definition of “married” in the multiple marriage problem). In contrast, when someone’s mind wanders, her attention will not be guided by her initial conception of her goal. She will therefore be more likely
to attend to the seemingly irrelevant information necessary to solve an insight problem.

Third, my theory captures why the phenomenology of mind-wandering is unlike the phenomenology of Type 1 or (algorithmic) Type 2 processing. When someone’s mind wanders, WM resources are used to hold a stream of access conscious thoughts in mind. Mind-wandering therefore broadcasts intermediate stages to consciousness (unlike Type 1 processes). Algorithmic Type 2 processes make us aware of not only intermediate stages but also an interpretation of our task. Through our task interpretation, we are aware of reasons why we move from one intermediate stage to the next. For example, consider an algorithmic solution to the anagram ‘uersoippv’. One’s task interpretation might be to (A) put a plausible combination in the first position (e.g. ‘us’), (B) search for words beginning with that combination, and (C) repeat (A) with a new combination if (B) is unsuccessful. If one holds this interpretation in mind, she will *ipso facto* be aware of why she is engaging in each intermediate stage of her problem solving. For example, someone who puts a new combination in the first position will be aware that her reason for doing so is that she found no word beginning with the last combination.

Finally, I elucidate how executive processes could support mind-wandering. For two reasons, mind-wandering researchers should move past inhibitory models of the executive (§ 5.3.4). First, inhibitory models do not allow that executive activation increases mind-wandering without decreasing performance on a concurrent task (Axelrod et al. 2015). Second, inhibitory models run afoul of the common sense view that mind-wandering is not goal-directed. Here is a diagnosis of the problem: inhibitory models are designed to account for the executive’s role in *algorithmic* thought; but mind-wandering is a *reflective* thought process. But if not inhibition, what role(s) could the executive play? At least three roles are consistent with the empirical and philosophical evidence.

The first two roles—updating and shifting—enable turnover in the contents of consciousness:

>[Updating] changes what is stored in WM. Generally, this involves removing
some or all the items stored in WM and replacing them with new items....Shifting is thought to leave the contents of WM unchanged while changing the focus of attention within those contents (Nee et al. 2013, p. 267).\textsuperscript{14}

When the mind wanders, the contents of consciousness do not remain constant. Rather, attention drifts from one thought to another. The executive could therefore support mind-wandering by updating the contents of WM and shifting the focus of attention. Because updating and shifting are not inhibitory functions, these models allow that executive activation can increase mind-wandering without decreasing performance on one’s primary task (as Axelrod’s results suggest). An activated executive updates WM and shifts attention more effectively; this can benefit both mind-wandering and task performance. Furthermore, these models do not imply that mind-wandering is goal-directed: updating and shifting support all conscious streams of thought (goal-directed or not).

We can empirically test whether updating/shifting support mind-wandering in two ways. First, psychometric tests have been designed to distinguish updating and shifting (e.g. Miyake et al. 2000; Yntema 1963; Morris and Jones 1990; Krawitz 2007, Bledowski, Rahm, and Rowe 2009) from inhibitory functions of WM (inhibition of long term memories: e.g. Anderson and Green 2001; Anderson, Bjork, and Bjork 2000; Zellner and Bäuml 2006; inhibition of perception: e.g. Friedman and Miyake 2004; Forster and Lavie 2008; Forster and Lavie 2011; Forster et al. 2014; Parks, Kim, and Hopfinger 2014). If I am correct, individual differences in updating and shifting should be especially good positive predictors of mind-wandering rates. Second, tests of updating and shifting are associated with (subtly) distinct patterns of executive-network activation from tests of inhibition (Nee et al. 2013). I should predict that the former patterns map more closely onto those found when the mind wanders.

The executive’s third potential role is to maintain the unguided character of think-

\textsuperscript{14}I am actually neutral on whether shifting is a distinct executive function. Shifting is an executive function only if the contents of WM are strictly broader than the contents of attention. But this is a contentious position on which I do not take a stand.
ing. Recall that one can actively maintain an unguided stream of thought (§ 2.3.5). For example, while Walter ambles through a park to decompress, he might suppress any thoughts that seize and hold his attention. Agents like Walter monitor and regulate a higher-order feature of their stream of thought: whether their attention is guided. But this does not amount to attentional guidance, since the agent places no first-order constraints on where his attentional focus wanders. Executive resources may play a similar role when the mind wanders. Unlike Walter, most of us do not deliberately monitor whether our attention has become guided. Yet the executive may serve to promote and extend stretches of mind-wandering by detecting and (surreptitiously) motivating us to halt the onset of attentional guidance. Call this the “higher-order maintenance model” of executive function.

The higher-order maintenance model has empirical and theoretical advantages over Smallwood et al.’s decoupling hypothesis. On the decoupling hypothesis, the executive guides one’s attention away from external information (including information about one’s task). On the higher-order maintenance model, the executive stops one’s attention from being guided to any information (including information about one’s task). However, one’s attention can still drift to the task at hand. So it’s compatible with the higher-order maintenance model that executive activation increases mind-wandering without decreasing attention to one’s task (and thus, without decreasing task-performance). Furthermore, my model does not imply that mind-wandering is goal-directed. Indeed, the executive supports mind-wandering by ensuring that attention does not become guided (and a fortiori, does not become goal-directed).

“Dual” process theory can accommodate mind-wandering, but only when supplemented with a richer version of Stanovich’s distinction between the algorithmic and reflective minds. We should distinguish between two kinds of processes: those that use WM and those that don’t. Yet we should equally recognize a division between two modes of Type 2 processing—algorithmic and reflective—each of which uses WM and execu-
tive resources in a different way. Mind-wandering is a form of reflective, rather than algorithmic, Type 2 processing. My thesis promises to improve our understanding of mind-wandering, WM, and the reflective mind. In this section, we have shed light on mind-wandering’s phenomenology and elusive relationship to WM and the executive. In identifying a mode of reflective processing (mind-wandering), we have fortified the reflective mind’s status as a distinctive psychological category. And due to mind-wandering, we have looked beyond an inhibitory model of executive function.

Mind-wandering is a lens on both the mind and how we study it. “Typical” experimental tasks shed light on thinking, but we must pinion thoughts before they can be brought under the lamp. Some types of thinking retain their form when bound—our standard cases of controlled and automatic thought included. Other types wait for us in the murk. Only there can we find our commonest case of reflection, “the natural tendency of attention when left to itself” (James 1890/1981, p. 422): mind-wandering.

\[\textit{15} \text{Perhaps I should be called a ‘Tri-process Theorist’. I don’t consider this suggestion in depth, so as to avoid a merely terminological dispute (see footnote 3).}\]
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Acknowledgments


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