

Attending Well in the Attention Economy¹

Abstract: Some have suggested that we are in the midst of a crisis of attention, in light of the attention economy and emerging technologies that manipulate out attention online. However, to understand whether we are in a crisis of attention, we first need to know how attention is supposed to function in the first place. Using etiological selected-effects accounts of proper function (Millikan 1984; Neander 1995; Shea 2013; Garson 2019), I develop a 'Needs-Based' Account, from which we can derive natural norms for attention. According to this account, attention functions to organize cognitive resources in ways suited to meeting the individual's needs in context. With the Needs-Based Account in hand, I discuss three ways in which the attention economy could negatively impact attention: through information-overload, decision-fatigue, and mental disorganization.

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1 Introduction

We seem to be in the midst of a crisis of attention. Many writers have grappled recently with the apparent problems posed by the attention economy, social media and smartphone use, and/or modern work and education environments for our ability to attend well (see for instance Castro and Pham 2020; Hari 2022; Smith and Archer 2020; Williams 2018; Wu 2017). The latest manifestation of anxieties around attention focus on the recent emergence of social media platforms, search and feed AI algorithms, and smart devices; it is this manifestation that I will primarily discuss.

Claims about the attention crisis are *normative* claims of a certain sort; they do not just claim that current informational environments do affect our attentional abilities in certain ways, but that they somehow harm or impair our ability to attend *well* or *properly*. But what is it to attend well? One might assume that attending well involves being able to focus on a single task without distraction for extended periods of time. Is this always the case? Arguably, this assumption reflects a particularly modern industrialized way of viewing what attention is for.² Some have argued, as well, that the attentional patterns characteristic of ADHD comprises, not a dysfunction in attention, but rather a distinctive cognitive style with its own benefits (Steglich-Petersen and Varga, forthcoming). In order to properly assess claims about the attention crisis, then, we need a principled way of determining what it is to attend well, compatible with the possibility of diversity in well-functioning styles or patterns of attending.

In this paper, I propose a Needs-Based Account of the function of attention, one that is sensitive to how demands on attention can call for different patterns of attention in different circumstances. The Needs-Based Account allows us to identify the genuine potential for harm posed by the attention economy while also acknowledging diversity in patterns of properly functioning attention. I develop this account through considering attention in terms of its biological proper function. When applied to attention, this approach tells us what attentional capacities have been naturally designed to do, thereby providing a basic natural

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² In a discussion of the genealogy of modern ways of thinking about attention, Jonathan Crary argues that the problem of attention is “a problem whose centrality was directly related to the emergence of a social, urban, psychic, and industrial field increasingly saturated with sensory input. Inattention, especially within the context of new forms of large-scale industrialized production, began to be treated as a danger and a serious problem, even though it was often the very modernized arrangements of labor that produced inattention” (1999, 23). Thanks to [name redacted for anonymous review] for pointing me to this way of thinking of the problem of attention.

norm for attention. This natural norm can then be appealed to in assessing whether and how emerging technologies might affect our attentional capacities in a normatively significant way, without appeal to independent moral, epistemic, or political norms on attention.

In the next section, I discuss the proper function framework as a way to identify natural norms of attention. In section three, I consider some prominent proposals about the function of attention, and show how by interpreting these in a proper function framework, we are able to identify three ways in which smart devices, social media, and the attention economy more generally can impair attention. In section 4, I propose a general account of the proper function of attention—what I call the Needs-Based Account—and argue that this account captures what is plausible in other views on the function of attention, while also providing a more fine-grained approach to natural norms for attention. Section 5 concludes.

2 Natural Norms for Attention

This section introduces a framework for addressing basic normative questions about attention. I distinguish between four different categories of norms: natural, applied, minimal and robust. Accounts of biological proper function provide natural and minimal norms. Under certain conditions, however, natural and minimal norms are relevant for robust normative evaluations, such as those advanced in claims that there is an attention crisis. I argue that natural minimal norms on attention derived from the proper function of attention meet these conditions. Thus, identifying the biological proper function of attention is relevant to assessing claims about the existence and character of a crisis of attention.

2.1 Natural, Applied, Minimal, and Robust Norms

Biological functions are natural and normative in a minimal sense. They are normative in the sense that a trait or capacity can have producing a certain effect as its function, even when the trait or capacity also does other things that are not its function, and even when the trait or capacity does not produce that effect (Garson 2019, Chapter 1). I will say that any trait or capacity with a proper function is subject to a natural norm. When effect F is a proper function of a capacity C , then a natural norm applies to C ; namely, that C is supposed to produce F . For instance, a function of hearts is to pump blood; this fact yields a natural norm for hearts, i.e., that hearts are supposed to pump blood, that a heart which does not pump blood is not doing what it is for. These sorts of norm are ‘natural’ in the sense that they are grounded just in certain facts about the devices to which they apply—facts about what effects past tokens of those types of devices have in fact had which explain the continued existence of devices of those types (Millikan 1984).

Taking a proper function approach to natural norms is not controversial, as long as the scope of the approach is properly limited. As Michael Smith (2019) points out, “Even those who are convinced that there are irreducibly normative features should agree that, when it comes to facts like the heart’s functioning *properly* . . . the constitutivist’s explanation [viz., that certain norms about X are explained by constitutive features of X] is the best available” (372). All that the characterization of natural norms given here is meant to do is to tie teleological functional explanations to a basic form of normativity, such that the proper function of a device describes its purpose, or what it is supposed to do. This is compatible with thinking

that there are other kinds of norms not grounded in facts about the device's constitution (e.g. moral, legal, practical, etc.) that also apply.³

An applied norm for some capacity *C* is a norm that applies to the operation of *C* in virtue of independent normative grounds. That is, applied norms on *C* are not themselves grounded in facts about what explains *C*'s existence. They may be ultimately grounded in the proper functions of other traits or capacities; or they may have a completely different sort of normative grounding. I might have a *moral* reason, for instance, to pay attention to what my friend is saying at the bar when they are discussing their failing marriage, rather than paying attention to the football match on the TV in the background.⁴ As another example: paying undue attention to the race of a job applicant in the context of an interview can constitute an injustice and hence be negatively morally evaluable (Whiteley 2022). These normative assessments are ultimately grounded by moral considerations, not the functioning of attention as such.

Robust norms, we can say, involve the sort of normativity of particular interest in ethics, epistemology, and practical reasoning: these are norms that have bearing on what matters to us as agents, what can count as *reasons* to act or to believe something. A minimal norm, by contrast, tracks the etymological root of the word more closely: a minimal norm is “just a criterion, standard, or rule to which something either does or does not conform and against which it can be compared or measured” (Finlay 2010). Natural norms are also minimal norms. That a heart has the proper function of pumping blood grounds a natural norm on hearts, but this natural norm does not immediately entail anything about what agents have reason to do. One does not have any reason to stop a heart from beating *just because* that would prevent it from fulfilling its proper function. In this sense, natural norms grounded in function are descriptive, not prescriptive. Still, one might have moral reasons not to stop a heart from beating, because in normal conditions, stopping the heart would end the life of the organism whose blood is being pumped, and ending a life is morally significant.

Although natural norms do not in themselves entail robust norms, they can figure as an element in a complete explanation of certain kinds of robustly normative evaluations. That is, part of the explanation of what makes a certain action or state of affairs robustly normatively evaluable is that it affects the fulfilment of certain natural norms. If I drive a stake through the heart of my nemesis, this is robustly normatively significant. It is not *because* doing so stops my nemesis' heart that it is robustly normatively significant. But the proper functioning of my nemesis' heart is normally a necessary condition for the continuation of their life, and the continuation of their life is morally significant (even if they are my nemesis). For at least this reason, stopping their heart is usually robustly normatively significant. (There are probably other relevant reasons of course, such as rights to bodily autonomy, that also apply in this case).

I will go on to provide an account of the proper function of attention according to which attention channels cognitive resources in ways that serve individuals' needs. Given that needs are themselves morally and politically significant, it will then turn out that damaging or impairing the proper functioning of attention is also robustly normatively significant. However, even if one does not accept the Needs-Based Account of attention, it should still be

³ Kathryn Lindemann (2017) has suggested that etiological selected effects accounts of proper function, such as Millikan's, might offer a promising and overlooked option for metaethical constitutivists with the broader ambition of explaining all normativity in this way. While I am sympathetic to Lindemann's approach, for present purposes my claim is much weaker—i.e., it is just that there is at least one kind of norm that is grounded in proper function, not that all norms are so grounded.

⁴ This 'Bar Talk' case is due to [name redacted for anonymous review].

acknowledged that the proper functioning of attention has robust normative significance. Many have noted a close, possibly constitutive connection between attention and agency (Wu 2014; Watzl 2017; Fairweather and Montemayor 2017; Buehler 2023). Agency is uncontroversially a robustly normatively significant capacity. Thus, given that impairments to attentional abilities can affect the capacity of individuals to exercise agency, we should acknowledge that attention has robust normative significance. Some claims about the significance of the attention crisis, I suspect, are motivated either explicitly or implicitly by the connections between attention and agency—that a threat to attention is a threat to freedom in some way (cf. Williams 2018). Other concerns about the attention economy (e.g. Smith and Archer 2020) rest on applied norms, such as applications of epistemic or political norms to attention—in these cases, it is not a malfunctioning in attention *per se* that is the locus of normative evaluation, but rather how attention is implicated in the operation of other practices, e.g., epistemic evaluations, or democratic deliberation, which are themselves the targets of certain normative evaluations.

2.2 A Teleofunctional Framework for Natural Norms of Attention

Theories of proper function aim to provide a general account of function that meets at least two desiderata (Rubner 2022):

- i) The *function-accident desideratum*: A theory of proper functions should be able to distinguish instances where a device has a useful effect in accordance with its proper function, vs. when it only accidentally has such an effect.
- ii) The *function-malfunction desideratum*: A theory of proper functions should be able to account for the possibility of malfunction.

I will focus on etiological selected-effects theories, which appeal to (recent) history in explaining proper function. The rough idea is that the proper function of a device is an effect that past instances of that type of device have had that explain the continued proliferation of devices of that type (Millikan 1984; Neander 1995; Shea 2013; Garson 2019). Etiological selected-effects theories of proper function are attractive in part because of the intuitive way in which they meet the desiderata above. A heart, in addition to having the effect of pumping blood, also makes a certain thumping noise. The noise can be a useful aid to a doctor in making a diagnosis, but it is not a function of the heart to aid in diagnosis. This is just a lucky side-effect, as it were. Etiological selected-effects accounts explain this: It is the pumping of blood through the arterial system, not making a thumping noise, that explains the continued existence of hearts in vertebrates. Thus, these views meet the function-accident desideratum.

Etiological selected-effects theories meet the function-malfunction desideratum because they maintain that whether a device *d* has *F* as its proper function depends not on what *d* currently does or is disposed to do, but rather on what past instances of devices of the same type have done. An existing heart has the function of pumping blood, even if it fails to do so in fact. This is because existing hearts were ‘copied’ or reproduced on the model of past hearts—devices that *did* pump blood and hence causally contributed to the circulation of blood through the arterial system, hence enabling the creature to survive long enough to reproduce, hence passing on the genes responsible for producing hearts.

Etiological selected-effects theories of proper function appeal to selection processes to explain how having a certain effect contributes to the continued proliferation of a type of device. While discussion often focuses on processes of natural selection, it is important to note that this is not the only kind of selection process that can be or are used in etiological theories of function. For instance, Ruth Millikan explicitly appeals to cultural selection, selection by conscious psychological goals, and selection by reinforcement learning (2004,

chapter 1).⁵ A corollary of this pluralism about selection processes is that the functions or purposes of the very same device (type) can be in conflict, either on the same level of selection process, or across levels. The possibility for cross-purposes in function will be especially useful when thinking about attention (discussed further in section 4).

3. The Proper Function of Attention

William James famously—or rather, infamously—wrote that “everybody knows what attention is” (1890, 403). The history of psychological research on attention in the past 100-plus years has not borne this claim out. There is no consensus among cognitive scientists about what attention is, or if attention even has a unified nature to know about (Hommel et al. 2019; Anderson 2011) Nevertheless, attention is one of the best studied areas in psychology. Researchers have identified and explained the mechanisms behind several attentional phenomena, such as endogenous (voluntarily controlled) attention, exogenous attention (or attention capture), perceptual vs. executive attention, and focal vs. global attention, among other categories. Moreover, while there is some dispute about the metaphysical unity of attention, there are at least some common agreed-upon themes in work on the *function* of attention.

Attention’s function is generally acknowledged to include a kind of *selectivity*, and cognitive/behavioral *flexibility*. In this section, I review some concrete ways of specifying the selectivity and flexibility ideas about attention’s function, drawing from the information-filtering paradigm (due to Broadbent 1958), the selection-for-action view (Wu 2014), and the organizational conception of attention (Watzl 2017). My particular concern is to interpret these proposals through the lens of *proper function*, and to illustrate what predictions these proposals make about what would qualify as a ‘crisis’ in attention. As a result of this analysis, I identify three ways in which the attention economy might count as impairing attention, corresponding to each proposal about attention’s function: attentional malfunctions caused by the attention economy can manifest as (i) *information-overload*; (ii) *decision-fatigue*; and (iii) *disorganization*.

3.1 Selection and Flexibility

The selectivity idea comes in different forms. Early psychological theories of attention viewed it as a selection of information—the *information-filter* paradigm for attention. Because individuals are presented with a huge amount of information from their environments—far more than they could effectively process—there must be some ‘bottleneck’ that selects some of that information for further processing. Attention is supposed to provide that informational bottleneck (Broadbent 1958).

Another approach is to view attention as having the function of selecting certain objects for *action* (Wu 2014); the *selection-for-action* view. The core idea is that attention’s main role is to solve the ‘many-many’ problem faced by any creature with a minimum degree of behavioral flexibility. A creature capable of some flexibility in action in response to a given stimulus situation faces a choice; how to act, given its environment. Attention is the capacity through which a creature can select just one out of many competing alternative possibilities for action, thus avoiding the ‘behavioral chaos’ (as Neumann 1987, 374 puts it) that would result from attempting to act on all such possibilities at once.

⁵ Justin Garson also defends a General Selected Effects theory that is intended to include selection processes beyond natural selection as it is usually defined (Garson 2019). See also Neander (2017) for a defense of function pluralism.

According to the prioritization account, attention's function is to regulate the prioritization of some mental elements over others. Attention is a "general purpose way of organizing: assigning priorities in a way that interacts with the whole organisms motivational system and the sensory situation, and in a way not tied to particular forms of behavior" (Watzl 2017, 109). The prioritization account encompasses aspects of both the information-filtering paradigm and the selection-for-action view, since the relevant prioritization involves integrating informational states with the motivational system to inform action.

Surprisingly, when philosophers of attention describe their views of the function of attention, they do not normally consider what the corresponding *malfunctions* of attention might look like, and under what conditions these malfunctions are likely to occur. This is so even when norms for attention are the explicit focus. In the philosophy of attention, 'function' seems to be used broadly along the lines of causal-role functionalism in philosophy of mind. This kind of functionalism does not typically engage with questions about malfunction, questions that are much more salient in the literature on teleosemantic theories of mental content, from which the present paper draws. Nevertheless, when existing theories about the function of attention are framed teleologically, we can derive interesting conclusions about natural norms for attention and the way in which the attention economy can impair or damage attention.

3.2 Information Filtering and Information Overload

If attention is, broadly speaking, a kind of filtering of information in light of capacity limitations, a malfunction in attention would be a failure to adequately filter information out; i.e., information-overload to a cognitive system. One way in which the attention economy might then cause a crisis of attention is precisely by causing information overload (Eppler and Mengis 2004; Roetzel 2019).

The information-filtering paradigm, however, lacks the resources to explain another kind of malfunction in attention involving information. This form of malfunction occurs, not where there is simply a failure to filter information out, but a failure to filter *irrelevant* information out. This can lead to problems where the information that gets cognitively processed ultimately does not serve the purposes of the individual. For instance, research suggests that addiction involves an attentional bias towards drug-related cues (Field and Cox 2008). This is a kind of information-filtering: drug-related information receives further cognitive processing, while other kinds of information get filtered out. Yet, this kind of information-filtering, arguably is a dysfunction in attention. The possibility of this kind of dysfunction is missed by the information-filtering paradigm because it lacks the right level of grain in what it can tell us about the function of attention. The view tells us that attention is supposed to filter some information out, but not *which* information or kind of information.

3.3 Too Much Selection

If attention is a kind of selection for action, then a malfunction of attention would consist in a failure to manage this selective process, resulting in either inaction or else confused action, the kind of 'behavioral chaos' of trying to perform two (or more) actions simultaneously. The prevalence of these sorts of malfunction do seem to be associated with aspects of modern consumer society; for instance, in the form of decision fatigue as a result of the inundation of choices (Pignatiello, Martin, and Hickman 2020). Artificial environments, either offline, e.g. in the form of modern supermarkets and shopping centers, and online, can multiply the number of choices that we face, exacerbating the many-many problem, both in terms of inputs (e.g. in the form of advertisements, and salient online content in the form of tweets,

tik-toks, etc.) and outputs (e.g. as possible purchasing behavior, possible interactions with online content).

However, the selection-for-action view, like the information-filtering paradigm, lacks a sufficiently fine grain in its account of the function of attention to capture certain forms of malfunction in attention. Wu emphasizes how the selection-for-action view explains the close connection between attention and agency: on this account, when an individual *S* attends to an object *X*, *S* selects *X* for performing some action *A*. Yet there are some intuitive cases of malfunction in attention that do not seem to involve an impairment of this kind of agency. Consider, for instance, a case where one successfully completes a series of research ‘tasks’ while browsing Wikipedia, thereby learning many details about the functioning on internal combustion engines, all the while neglecting the more significant task of finishing grading a stack of papers. The problem is not in effectively selecting objects for action, but selecting the *right* or the *fitting* objects. This leaves the selection-for-action approach with the challenge of explaining how *distraction* can exist as a form of malfunctioning or misfiring in attention, rather than simply constituting a change in cognitive task.

3.4 The (Dis)Organized Mind

According to the organizational approach (following Watzl 2017), malfunctions in attention consist in a failure to prioritize at all, or else a prioritization that does not integrate motivational system and sensory situation. A failure to prioritize mental elements—resulting in a *disorganized mind*—would qualify as a malfunction in attention on this view. This approach can explain part of what seems to be damaging about the attention economy: namely, how the constant demands placed on our attention by, e.g., online advertisements, and notifications from social media apps and smart devices, can interfere with achieving a well-organized priority structure of mental elements. Psychologically salient notifications exploit mechanisms for exogenous attention in a bid to be placed at top priority in a psychological priority structure.

Once again, however, the prioritization view lacks an appropriately fine-grained account of the function of attention to capture some cases of malfunction in attention. In particular, the prioritization account does not specify what does or what might make one way of organizing a mental priority structure better or more fitting than another. Consider again the case of addiction: we can imagine an individual with addiction whose mind is well-organized with respect to integrating sensory stimuli with their motivational system. Given how their motivational system has been shaped by a history of drug abuse, however, an organization suited to that system—one which tends to be successful in enabling the individual to acquire and use more of a certain drug—possibly manifests a malfunction of attention, a possibility missed by the organizational conception. Their attentional patterns are well-organized but warped.

In sum: There are important insights in each of these three approaches to thinking about the function of attention. We have seen how, just by interpreting some of the prominent views of attention from a proper function framework, it is possible to derive natural norms useful for assessing the pitfalls of the attention economy for our attentional capacities. However, these accounts do not seem to fully characterize the *proper* function of attention. In each case, these approaches lack a sufficiently fine grain to capture some instances where attention might go wrong. To clarify: the point is not that there *is* a malfunction of attention in e.g. addiction, but rather that a malfunction of attention (epistemically) *might* be partly constitutive of it, and existing paradigms for thinking about attention’s function lack the resources to account for such a possibility. In order to capture these cases, we need an

account of the function of attention that can answer questions about the fittingness of attention, or what makes one pattern of attention better suited to a situation than others. I aim to provide such an account in the next section.

4 Attention and Needs

In this section, I propose a unifying account of the proper function of attention. This account is intended to capture what is plausible in the information-filtering paradigm, the selection-for-action view, and the organizational conception. It is also intended to explain some possible cases of malfunction in attention that these other accounts miss (when interpreted in terms of proper function).

The basic starting point idea is that attention functions well when it enables individuals to act in ways that fulfil their needs in context. Here is the official statement of this guiding idea:

The Needs-Based Account: The proper function of attention is to channel online cognitive resources in ways that serve the individual's needs.⁶

I define 'cognitive resource' to include online information processing tools. Such cognitive processing tools include mechanisms for perceptual processing, motor representations, and activation and deployment of concepts. 'Channeling' online cognitive processing tools involves directing the flow and application of these tools. For instance, attending to a basketball can involve: collecting and using information about the basketball, such as its position and movement relative to oneself; integrating such information with motor representations required for effective manipulation of the ball, e.g. in dribbling, in intercepting, in shooting, etc.; tracking features of the basketball sufficient for differentiating it from relevant alternatives (e.g., a nearby soccer ball). The Needs-Based Account is thus able to capture a guiding thought in cognitive science research on attention, that attention acts as an information filter—in my terms, information-filtering is a form of channeling of cognitive resources. Channeling cognitive resources also serves an organizational role. Putting various cognitive resources to work in meeting a need requires an appropriate mental organization.

4.1 Intentions, Tasks, and Needs

In the psychological and philosophical literatures on attention, when attention is discussed telically—i.e., in relation to some telos, or purpose for attending—the relevant telos is often assumed to be the agent's intentions or tasks. Wu's selection-for-action view is explicitly cast in terms of the agent's intentions. And in experimental paradigms, framing attention in reference to tasks is almost unavoidable. Tasks are usefully defined by the confines of the experimental setting; subjects have the task of, say, tracking a red dot on a screen where distractors appear. This provides an effective way to measure attention.

As I see it, there is an important connection between intentions, tasks, goals, on the one hand, and needs on the other. These are all 'telic' concepts, in that each has a satisfaction condition. The completion of the satisfaction condition for intentions, tasks, and goals, also, often enough leads to fulfilment of basic needs. Insofar as an agent acts rationally her intentions will relate to her needs in a non-accidental way. The Needs-Based Account can thus build on existing research on attention (framed in terms of tasks or intentions) because normally, by completing one's tasks and fulfilling one's intentions, one's needs will be met as well as they

⁶ This account does not entail or require that one must attend *to* one's needs to function properly. Attention aids in accomplishing the individual's needs by orienting their cognitive resources in certain ways. One's needs themselves do not need to be objects of attention for this to happen.

can be given one's circumstances. These accounts, then, are not necessarily in competition: the Needs-Based Account is intended to add more detail concerning the ultimate aims of attention, as a way to ground claims about its function.

Drawing from the literature on needs in political and moral philosophy, it is common to distinguish between instrumental and basic needs (Brock and Miller 2019). Instrumental needs are requirements that must be met for the proper fulfilment of an antecedent goal that is in some sense optional for the agent; the agent could abandon the goal (and hence the need) without serious impairment to a flourishing life. If my goal is to make potato-leek soup, there is a sense in which I need leeks; but I could easily decide to make something else (or nothing at all), and no longer have a need for leeks. Basic needs, by contrast, are requirements that are not generated by antecedent and optional goals; to leave the need unfulfilled would in some substantial way be detrimental to the flourishing of the agent.⁷ It is difficult to explain specifically what flourishing for an agent amounts to, but this is not a special problem for using needs to explain the function of attention. What is important in the present context is that requirements for flourishing are relational, connecting the capacities of individuals with features of their normal environments.

The Needs-Based Account connects the function of attention to the individual's needs. I intend this to include both basic and instrumental needs. Basic needs play a more central role in the theory overall, but by including instrumental needs as well, the account is better able to capture the flow of attention moment-to-moment, since instrumental needs come and go with the individual's current goals in context. Basic needs and instrumental needs can sometimes come into conflict, because we can choose goals that, if accomplished, would in fact frustrate basic needs. We can be at cross-purposes with ourselves (Millikan 2004, Chapter 1). This multi-layered approach can be useful in considering, for instance, how attention may be malfunctioning or dysfunctional in addiction: attention may be functioning quite well in serving the individual's instrumental needs (of acquiring and using certain drugs), yet the individual's attentional patterns overall will include a bias towards drug-related cues that do not contribute to fulfilment of the individual's basic needs. I discuss the structure of this form of malfunctioning in section 4.3, in terms of the notion of a relational proper function.

Whereas intentions are mental states, needs are not. Needs are "relations between beings and their environments" (Pölzler 2021). Thus, needs are not themselves elements of mental priority structures to be organized. Instead, the needs of an individual in relation to her environment provide a *standard* for the organization of mental elements. This is the core idea of the Needs-Based Account; that flow of cognitive resources functions well when it directs those resources in a fitting way given the individual's needs relative to her environment.

4.2 Triviality and the Special Role of Attention

Understanding 'cognitive resources' and 'needs' in the broad way discussed here has the advantage of making the Needs-Based Account quite flexible. This flexibility is to be expected from a general theory of attention, given the pervasiveness of attention in mentality and the diversity of attentional phenomena. However, one might worry that the Needs-Based Account is flexible to the point of triviality. It is easy to say that attention functions to serve the individual's needs; arguably *any* evolved capacity must contribute to the fulfilment of the

⁷ Here I am drawing from accounts that connect basic needs to requirements for flourishing (Anscombe 1958). There are other theoretical options, of course. Another popular way to characterize basic needs is to view them as requirements for avoiding serious harm (Wiggins 1987, 1998). I find the flourishing approach to be a more natural fit for the proper function framework as a whole. 'Flourishing' is a concept apt for naturalistic functional explanation; 'harm' is fundamentally normative.

needs of its possessor in some way, or it would not have been selected for. There is nothing distinctive about attention in this regard, so the Needs-Based Account fails to make a substantive claim, one might argue. In effect, the Needs-Based Account seems to identify a quite *distal* function—needs satisfaction—as the proper function of attention. What then distinguishes attention’s function from, say, the function of the heart, which also, at a distal enough level, must serve the needs of individuals with hearts?

Although any evolved capacity must contribute to fulfilment of the needs of its possessor in some way or other, there is an especially direct relation between attentional capacities and needs. Attention has the function of regulating other cognitive capacities such that they do in fact contribute to the fulfilment of the individual’s needs. To perform this function, attentional capacities must be attuned to the individual’s needs. (Being ‘attuned to’ needs means tracking those needs with some reliability, not necessarily explicitly representing them in conscious thought). Attention serves as the mediator that connects cognitive resources to needs, and so it takes an active role in ensuring that those needs are met. So understood, attention’s overall role in cognition is of a higher order than perceptual and inferential capacities: attention regulates the operation of these other capacities.

To illustrate the point, contrast the role of attentional capacities with perceptual ability. The ability to perceptually track an object as it moves through a visual scene, for instance, clearly must serve some needs of the individual. It will presumably be greatly beneficial for a mobile creature to be able to identify and track sources of food and possible locations of predators. However, the point is that the mere *possession* of perceptual discrimination and tracking abilities is not useful unless those abilities are employed at an appropriate time and applied to track and discriminate among relevant objects. The role of *attention*, I have argued, is to take care of this task; attention directs the application of perceptual abilities (and other cognitive resources) so that they do serve needs of the individual. If one persistently visually attends to a dull rock instead of the easily visible, fast-approaching predator, there is a clear sense in which one’s attention is not functioning as designed, even though one may nevertheless manifest a perfectly competent application of perceptual abilities.

The relation between attention and needs will be made clearer in the next section, where I discuss some of the ways in which attention can malfunction on my account.

4.3 Malfunctioning and Maladapted Attention

Because of the continuities between the Needs-Based Account and other accounts of attention’s function, the Needs-Based Account is able to explain malfunctions of attention in instances of information-overload, decision-fatigue, and via disorganization in mental elements, introduced in section 3. This section explores in more detail how the Needs-Based Account does so.

The proper function of attention on the Needs-Based Account is best thought of as a *relational* proper function (Millikan 1984, Chapter 2). When a device or capacity has a relational proper function, it is supposed to do or produce something that bears a specific relationship to something else. For example, the color-changing mechanism of a chameleon’s skin has a relational proper function; it is supposed to produce a color-arrangement in the chameleon’s skin that bears the ‘same-color-as’ relation to whatever is directly beneath the chameleon. By producing such a color arrangement, the color-changing mechanism helps the chameleon to escape detection by predators; this is the direct proper function of mechanism. In a particular instance—say, when the chameleon is directly above something with a green-brown color pattern, the color-changing mechanism has an *adapted* function to produce a specific green-brown pattern—potentially, a specific pattern that has never occurred before in

history. Given the possible historical novelty of that specific pattern, there would be no prior instances of this specific color pattern to have been selected for. Rather, the color-changing mechanism was selected for its *relational* proper function, of producing patterns that bore the relation of same-color-as what is beneath the chameleon, whatever those patterns happened to be. In a particular instance, this yields a *derived* proper function: one of producing *such-and-such* a pattern.

The distinction between derived and direct proper functions in Millikan's framework allows for a nuanced treatment of certain kinds of malfunction. If the chameleon happens to be directly above a very conspicuously colored surface that is salient to potential predators anyway, in comparison with the rest of the surrounding environment, then while the color-changing mechanism of the chameleon satisfies its adapted proper function normally—here, adapting to an unusually colored specific spot in the environment—this can cross purposes with the direct proper function of that mechanism, to conceal the chameleon from predators. Does the color-changing mechanism then malfunction in this case? In one sense, the color-changing mechanism works as it is supposed to, since it does match the specific color pattern underneath the chameleon, but in another sense, the mechanism malfunctions, since it does nothing to protect the chameleon from predators.

One might view this as a problem of function indeterminacy (Neander 2017, chapter 7). Worries about indeterminacy in function ascriptions has led Garson, for instance, to identify functions with just the most *proximate* selected effect—thus, the function of the pigment-arranging mechanism is, in a particular instance, to produce a specific color pattern, and it is not the more distal function of concealing the chameleon from predators. The problem of functional indeterminacy, as I see it, is largely a problem when it comes to determining representational *contents* in teleosemantic theories. My goal in this paper however is not to defend a version of teleosemantics.⁸ The interesting point for our purposes is that devices can malfunction by being maladapted to the surrounding environment given that they have a relational proper function of producing a specific arrangement that corresponds in a systematic way to variations in environmental circumstances. This kind of maladaptation can occur in two ways: First, when the device produces an arrangement which corresponds to environmental conditions in a normal way, but in this instance that correspondence does not serve *its* purpose (the case where the chameleon's skin successfully matches a very conspicuous patch). And second, when the device fails to produce an arrangement that corresponds to environmental features in a normal way (i.e., where the chameleon's skin does not match the color pattern of what is beneath it).

Attention, like the color-changing mechanism of a chameleon's skin, can produce arrangements (in this case, priority structures of mental elements) that are historically novel. Indeed, perhaps, *no* mental priority structure in history has had exactly the organization of mental elements manifested in my current attentional pattern, as I write this sentence. Still, this exact current priority structure has a proper function—a derived one. On the Needs-Based Account, the regulation of mental priority structures is supposed to produce priority structures that bear a specific relation to something else—namely, the current needs of the individual. It is hard for us to say exactly what attentional pattern is supposed to be produced in a given instance, but this is just because it is often difficult to say exactly what an

⁸ Following Millikan, I am sympathetic to the idea that contents are adequately determined by the semantic mapping functions ('function' in the mathematical sense) of representational devices, which are mechanism by which representational devices normally accomplish their own proper functions (Millikan 2004 chapter 5; Millikan 2005, chapter 3). Hence, I don't think there is a content indeterminacy problem at least for Millikan's teleosemantics after all. But discussion of this point will have to await another occasion.

individual's basic needs are in a given situation, because it is difficult to say exactly what specifically is required to promote flourishing in a given situation. Still, subjective experience and research on well-being provide clues about what in general might be conducive to flourishing, and so allow us to make some educated assumptions about what general patterns of attention manifest proper or malfunctioning. Attention then can also fail to function properly in at least two ways: it can direct cognitive resources in a way that tracks the agents tasks, goals, and intentions—satisfaction of which are normally supposed to also lead to satisfying basic needs as well as possible in one's life circumstances—but where in this case satisfaction of these telic states does not in fact contribute to fulfilling basic needs (e.g., cases of active addiction). The other failure of proper function in attention occurs where cognitive resources are not adequately organized around telic states in the first place, regardless of whether satisfaction of those states would meet one's basic needs.

For attention to put cognitive resources to use in an effective way, the attention system must balance “the maintenance of goal-directed behavior in spite of distracting events” (endogenous attention) while also “allowing for the processing novel, unexpected events, that could be either advantageous or dangerous” (exogenous attention) (Chica, Bartolomeo, and Lupiáñez 2013, 108). These forms of attentional process can nevertheless also sometimes be at cross-purposes, leading to a further nuance in possibilities for malfunction in attention. When one is engaged in the task of cooking dinner when the fire alarm goes off, the functional conflict in attention is clear; completing the task of cooking dinner requires sustained attention despite distractors, while alertness to potential danger requires being sensitive to the fire alarm, ready to shift attention in response to the loud noise and light. In this case, arguably there are two relevant needs to be served by attention—cooking dinner is a way of satisfying a need for food, and leaving the building in the event of a fire alarm is a way of satisfying the need for physical safety (again, a defeasible one, as many actual fire alarms are false alarms). In this case, there is an intuitive ordering of the relative priority of these needs: physical safety is more important than satisfying the need for food in the moment. When attention functions well overall, one's attentional pattern should track this priority in needs: prioritize exiting the building first, and return to dinner when one's physical safety has been assured.

I take it as an advantage of the present account that it provides a complex model for thinking about functions and malfunctions in attention. There is not just one way for attention to malfunction. Attention, as a complex mental activity, can fulfil one aspect of the normal mechanisms for functioning while failing in other respects. Similarly, the ‘check engine’ light in my car can be indicative of any of a number of malfunctions, at any of a number of points in the whole process of the functioning of an internal combustion engine.

4.3.1 Information Overload

I discussed in section 3.1 how the information-filtering paradigm of attention, when interpreted as making a claim about the proper function of attention, predicts that an overabundance of information will yield malfunctions in attention due to an inability to effectively filter out information. The Needs-Based Account shares in this prediction. As I discussed, channeling cognitive resources, in my view, is a kind of information processing.

Information overload can be understood as the situation where an individual is faced with an abundance of potentially relevant information. In my view, the purported relevance of information is relevance for fulfilling the individual's needs. For information to be presented as relevant to one's needs is for that information to be made *salient*. Salience, as a property of ways of encoding information, is tied to mechanisms for attention capture, or exogenous

attention. Salience concerns bottom-up features, i.e. features that tend to attract attention, rather than top-down factors that drive attention by reference to the individual's goals. Taken together, this tells us that information-overload occurs when there are more features in one's environment that make demands on one's attention (i.e., that exploit mechanisms of exogenous attention) than can be effectively attended to in effecting action that serves the individual's needs.

According to Stothart et al. (2015), just hearing the sound or feeling the vibration of a smartphone (without checking the notification) is enough to distract individuals and decrease performance on a primary task. Moreover, they find that a physical notification is not always even necessary for such exogenous distraction effects; simply noticing *someone else* interacting with a smartphone or being *reminded* of a task one can accomplish on a smartphone is enough to capture attention despite trying to avoid distraction. This study provides one example of how a now-ubiquitous form of attention-capture—capture by smartphone notifications—can detract from performance on other tasks. We are conditioned to respond to smartphone notifications in anticipation of reward, even when these responses do not in fact always serve our needs (Lembke 2021).

4.3.2 Decision Fatigue

The selection-for-action view, when presented as an account of the proper function of attention, predicts that one form of malfunction in attention occurs when the number of sensory inputs and behavioral outputs explodes to a point that the individual can no longer effectively pair them to inform meaningful action. Again, the Needs-Based Account also predicts this form of malfunction in attention. Channeling, or directing, the flow of cognitive resources, is sensitive both to the available sources of salient information, and to the ends to which such information might be put. In addition, our digital existence, i.e. presence in social media platforms, provides a radical increase in opportunities for interaction and engagement. This might appear to be a positive thing, insofar as it increases agency in the sense of enabling us to interact, at any time and with immediate effect, in new and varied ways not possible before (in the form of liking, re-tweeting, commenting, posting, etc., on topics and with individuals we could not easily meet offline). The sheer extent of possible new interactions can also be thought of as radically increasing the behavior space (i.e. possible input-output pairings) of individual's with smart devices. Not only is there more information and sensory inputs to which cognitive resources can be directed; there are more possibilities for action any given input affords. From the perspective of the Needs-Based Account, the difficulties presented by this situation are those of both tracking what information and what kinds of actions of those available really are relevant to needs.

Wang and Tchernev (2012) conducted a study explicitly examining the relationship between users needs as motivating smartphone use with the outcomes of smartphone use in gratifying those needs. Following the Use and Gratification theory (Katz, Blumer, and Gurevitch 1973), Wang and Tchernev understand needs as “the combined product of psychological dispositions, sociological factors, and environmental conditions” and gratification as the “perceived fulfilment” of such needs. Wang and Tchernev find that users tend to cite cognitive needs (relating to acquiring knowledge and information) as the motivation for smartphone use, but that such cognitive needs were rarely satisfied, with users reporting *emotional* gratification instead. They take this to suggest that continued smartphone use may in fact be driven by emotional needs, even while users conceive of their use as cognition-related. One might pull out one's phone to look up the location of a restaurant (a cognitive need), but then find oneself continue to use the phone to look at amusing and relatable memes (emotional gratification). Does this reflect a properly functioning application of attention? In

one sense, what keeps users continuing to use smartphones seems connected to the emotional gratification they receive. This gratification can, following Wang and Tcherney, be understood as a satisfaction of the genuine needs for users. However, Wang and Tcherney also note that the gratification of emotional needs comes with a cost; a decrease in effectiveness in gratifying the cognitive needs users tend to report as their motivation.

4.3.3 The (Dis)Organized Mind

The organizational conception of attention, when interpreted as an account of attentions proper function, predicts that attention malfunctions when it fails to integrate the sensory situation and motivational system of the individual. The Needs-Based Account also captures this type of malfunction in attention, with the addition that such a failure to integrate counts as malfunctioning in virtue of preventing the normal satisfaction of needs.

Wang and Tcherney's study (2012, discussed above) reveals one way in which the digital era and the attention economy might be understood to impact the organization of the mind with detrimental effect on individual's ability to satisfy their needs. The mismatch between the motivations of users with the gratification they receive indicates that users' understandings of what activities smart devices afford and can be used for—e.g., cognitive needs such as finding relevant information—comes apart from what aspects of their motivational systems may in fact be causally responsible for their use—e.g. emotional needs, “such as feeling entertained or relaxed” (Wang and Tcherney 2012). A difficulty here is that Wang and Tcherney understand gratification of needs in terms of individuals 'perceived fulfilment' of those needs, where it is not clear that our *perceptions* of need fulfilment always (or even usually) track *actual* need fulfilment. What feels good for us is not always what is good for us. What is 'gratifying' for an individual may not in the end serve her most significant needs and contribute to flourishing.

5 Conclusion

In light of emerging technologies, and the attention economy, and the information age more generally, it is no surprise that philosophers of attention have been interested in addressing basic normative questions about attention. While recent work has considered the important questions how various types of norms—ethical, epistemic, rational, political—apply to attention (Baker, n.d.; Watzl 2022; Wu forthcoming; Panizza 2022; Whiteley 2022; Siegel 2022; Smith and Archer 2020; Saint-Croix, 2022; Munton 2023), the goal of the present paper has been to provide a framework for thinking about *natural* norms about attention. This framework can help us to develop theories about what attention is supposed to do, independently of other norms that might apply to it. Understanding the norms that apply to attention as such will then enable us to assess claims about whether and how the attention economy for instance might impair our ability to attend well.

While existing philosophical accounts of attention are not typically framed with the function vs. malfunction contrast in mind, I have argued that when these accounts as interpreted as views about the proper function of attention, we can derive some interesting predictions about the potential harms of the attention economy, in the form of information-overload, decision-fatigue, and mental disorganization. If nothing else, this paper then serves to show the benefit of taking a proper function framework in assessing foundational normative questions about attention. However, I have also argued that existing accounts lack a sufficiently fine grain to accommodate all the instances of malfunction in attention we should seek to explain. I have proposed a Needs-Based Account that has the requisite fineness of grain by describing attention as having a relational proper function.

An interesting further consequence of adopting the Needs-Based Account is that we can begin to see what is especially normatively significant about the attention economy, i.e., why attention might not be like other commodities we ordinarily regard as permissible to buy, sell, and exchange. Attention's proper function, I have argued, is related to the needs of individuals. Thus, impairing someone's attentional capacities is especially likely to be harmful because doing so will likely frustrate their ability to meet their needs. Media companies, under current business models, rely upon grabbing and maintaining the attention of users (for advertisement revenue). In theory, there seem to be two basic strategies to do this. One is to cater to existing needs or manufacture new needs, then allow attention to do its job of prioritizing salient information. The other strategy (these will probably work in tandem) is to construct a type of evolutionary mismatch: that is, exploiting attentional mechanisms that have been shaped by selection processes, but for different ends. Our attention is naturally apt to be captured by novel stimuli, by social cues, and by morally and emotionally expressive media (Brady, Gantman, and Van Bavel 2020). In an evolutionary perspective, this makes good sense; it serves our needs to be sensitive to possible sources of danger in the environment and to the emotional lives of our companions. The problem is that we are bombarded by demands on our attention that, when satisfied, do not always end up serving our basic needs, but rather the interests of media companies incentivized to grab and hold our attention with engaging content.

I have suggested some ways in which the use of smart devices might negatively impact attention given a Needs-Based Account of attention's function. These should be understood just as suggestions, that I hope will prompt further discussion about what constitutes malfunctioning and properly functioning attention. There are, for instance, also ways to identify potential *positive* effects of the digital era on attention. Wilmer et al. (2017) note, for example, that "While media multitasking appears, at least under certain circumstances, to be negatively correlated with the ability to task-switch and filter distractions, one form of media included on the questionnaire has been associated with *improvements* in multitasking: action video games", perhaps because "Action games require high cognitive and perceptual loads, divided visual processing, and feedback learning with a complex reward schedule". In addition, as alluded to in the discussion of gratification of needs, one positive effect of social media engagement may be that it aids building and maintaining connections and relationships with other people. Increased access to socially and emotionally salient information can, if managed properly, enable satisfaction of important needs.

In sum, I hope to have shown in this paper the usefulness of employing a proper function framework to address basic normative questions about mental capacities such as attention. I have also provided a novel account of the proper function of attention, and shown how this can be used to assess claims about the potential harms of smart device use and the attention economy. This approach can inform future work assessing the impact of emerging technologies on cognitive functioning, as well as in the analysis of mental disorders.

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