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ATTENTIONAL ENGAGEMENT AS PRACTICE. A STUDY OF THE ATTENTIONAL INFRASTRUCTURE OF HEALTHCARE CEOS

In this paper, we investigate the attentional engagement of CEOs of large healthcare organizations in the UK. We study attention ethnographically as something managers *do* – at different times, in context, and in relation to others. We find that CEOs match the challenges of volume, fragmentation, and variety of attentional demands with a bundle of practices to activate attention, regulate the quantity and quality of information, stay focused over time and prioritize attention. We call this bundle of practices the CEO’s attentional infrastructure. The practices which compose the attentional infrastructure work together to ensure that CEOs balance paying too much with too little attention, sustain attention on multiple issues over time, and allocate attention to the issues that matter, while avoiding becoming swamped by too many other concerns. The attentional infrastructure and its component practices are constantly revised and adapted to match the changes in the environment and ensure that managers remain “on top of” the things that matter to them. The idea of a practice-based attentional infrastructure advances theory by expanding and articulating the concept of attentional engagement, a central element in the attention-based view of the firm. We also demonstrate the benefits of studying attention as practice, rather than as an exclusively mental phenomenon. Finally, we contribute to managerial practice by introducing a set of categories which managers can use to interrogate their existing attentional practices and address attentional traps and difficulties.

INTRODUCTION

In this paper, we study how chief executive officers (CEOs) pay attention in practice to what is happening within and around their organizations. We focus specifically on how managerial attention is allocated, directed, and dealt with – what Ocasio (2011) calls “attentional engagement”. Attentional engagement is critical for all managers but is especially important for CEOs who are constantly bombarded by complex signals from organizational members, customers, regulators, and other stakeholders. Because the CEO is responsible for everything that occurs in the organization, issues that arise cannot be simply ignored – even though initially the CEO may not be able to judge which will be consequential. There is a risk that they might discover too late what should have engaged their attention – as happened in the case of Volkswagen’s emissions scandal (Plungis and & Hull 2015) and Facebook’s role in the 2016 US elections (Leonardi 2014).

Previous research has addressed attentional engagement in terms of balancing foresight, oversight, and insight (Ocasio 2011, van Knippenberg et al. 2015, Shoemaker 2019). We suggest that a better

way to frame the issue is to refer to three challenges faced by managers: the challenge of *volume* of attentional demands, which requires finding the right balance between too little and too much information; the challenge of *fragmentation*, which involves paying sufficient attention to a multitude of issues at the same time without getting distracted; and the challenge of *variety*, which means focusing on the things that matter, both immediately and in the longer term. Our research question is: how do CEOs address these challenges in practice?

We study attentional engagement ethnographically as something that managers *do*, in context, using tools, and with other people. We are interested in attention as practice (Feldman and Orlikowski 2012). This approach distinguishes our study from work in the predominantly psychological tradition initiated by William James, which conceives attention mainly in terms of intrapsychic mental operations and cognitive phenomena (Calori, Johnson and Sarnin 1994, Kabanoff and Brown 2008). In contrast, we examine mundane activities through which managers regulate their efforts to remain attentionally engaged without being swamped by too many concerns, how their attentional engagement changes over time, and how they switch between and prioritize different attentional demands.

We find that CEOs address the challenges of volume, fragmentation, and variety of attentional demands with a bundle of interconnected practices, which we describe as their *attentional infrastructure*. The attentional infrastructure includes practices for activating and regulating attention, which enable the CEOs to infer the relevant foci for attention and adjust the levels of attention demand allocated to them; focusing practices that help them to identify the span of attention needed for different topics and to sustain that attention; and prioritizing practices to actively manage and orient attention. Establishing and maintaining this attentional infrastructure helps the CEO to avoid potential pitfalls and dysfunction, such as becoming overwhelmed and taking their “eyes off the ball”, or missing something of critical importance, that is “finding yourself asking after the fact how could this happen without me knowing?” (Alan [CEO 4]).

We use the term “attentional demands” to describe the issues that compete for the CEOs’ attention. These demands are in part “out there” (Bansal, Kim and Wood 2018) and in part are enacted by the bundle of practices utilized by the CEOs (Weick 1988). We refer to “bundles” since some of these

practices are tightly interconnected. The distinction we make between the three bundles of practices that compose the infrastructure is for mainly analytical purposes. In reality, most of these practices work together to produce the outcomes listed above: for example, the prioritization practices also work to regulate attentional demands and allow the CEOs to maintain focus, while focusing practices contribute also to regulation. We use the term infrastructure because the overall arrangement displays the characteristics identified by Star and Ruhleder (1996) as typifying such an array: it is mostly opaque to the CEOs; it is composed of mundane elements; although it supports the CEOs' work, it can become an obstruction, by pointing in the wrong direction or becoming obsolete. Practices, bundles, and the overall infrastructure are "personal" because they reflect individual preferences, personal histories, organizational conditions, and contextual demands. Although several attentional practices are tied to the prerogatives and obligations associated with the CEO job, which suggests that attentional engagement might be role specific, there is no single best combination or infrastructure. Instead, attentional engagement reflects a "fit" between demands, attentional infrastructure, and the individual CEO's specificities, and therefore does not allow universal prescription.

Our study responds to recent calls to pay more attention to attention (Ocasio 2011, van Knippenberg et al. 2015), and examines how managers in general and CEOs in particular, pay attention on a day-to-day basis (Ocasio 2011, p. 1292). We contribute to the attention-based view (ABV) of the firm (Ocasio 1997, 2011, Rerup 2009) by elaborating an in-depth understanding of attentional engagement, a central element of this approach. We show that much can be gained if the ABV's traditional focus on communication and cognition is extended to include material, social, and contextual elements. Our study contributes also to managerial practice, by offering managers a set of categories they can use to recognize, diagnose, and address various traps and pathologies. By developing a better theoretical understanding of their attentional engagement, CEOs can find ways to practice "smarter attention" or paying attention to everything in sufficient detail to determine its importance and an appropriate action, while leaving sufficient space for other work and personal priorities.

BACKGROUND

Studying attention can be difficult since it is simultaneously familiar and difficult to demarcate.

William James, who put attention at the core of the nascent discipline of psychology, considered it a common sense concept and suggested that “everyone knows what attention is” (James 1890, p. 403). However, this proved not to be the case. In psychology, attention is researched mainly as a cognitive and sensory phenomenon. In political science, attention is related closely to the notion of agendas (Jones and Baumgartner 2005). In economics and sociology, attention is central to the study of decision making (Davenport and Beck 2001). The way we define and study the phenomenon is also heavily dependent on the metaphor we employ to identify it. Fernandez-Duque and Johnson (1999, p. 83) suggest that underlying metaphors (e.g. attention as a filter, a spotlight, a neurological activity) help to circumscribe which attentional phenomena are studied and how, and what constitutes evidence. What attention is and how we study it go hand in hand.

The study of managerial attention

In management studies, attention traditionally is considered at the individual level, often using the cognitive metaphor of a spotlight (Fernandez-Duque and Johnson 1999). For several decades, studies focused on environmental scanning: the acquisition and use of information about an organization's external environment for decision making (Aguilar 1967, Hambrick 1982, Choo 2001). Thus, attention was addressed in terms of individual oversight and foresight (Shoemaker 2018). This strand of research established a relationship between frequency and focus of scanning, and firm outcomes (Miller 1991).

Alternatively, attention has been considered as a distinct challenge for managers. This applies to the managerial work tradition pioneered in Europe by Carlson (1951) and Stewart (1967, 1976), and in the USA by Mintzberg (1973, 2009). In this tradition, managers need enough information to make decisions, but have to find a balance between issues that required “concentration and depth of understanding” and those that required their “marginal involvement” (Mintzberg 1973, p. 179).

Managers also have to carve out some space for managerial discretion to combat the constant flux of

attentional demands (Mintzberg 2009, p. 33). Their effectiveness depended in part on how well they coped with these challenges.

A critical shift in the study of organizational attention was introduced by the ABV (Ocasio 1997, 2011, Hoffman and Ocasio 2001). The ABV integrates individual and organizational levels of analysis and considers organizations as “systems of structurally distributed attention ... in which the cognition and action of individuals are derived from the specific organizational context and situations that individual decision makers find themselves in” (Ocasio 1997, p. 198). What people pay attention to in organizations (what subscribers to the ABV call “attentional selection”) is the result of a combination of the firm’s attentional perspective, or “the cognitive and motivational structures that generate heightened awareness and focus on relevant stimuli and responses” (Ocasio 2011, p. 1288), and the attentional engagement of managers, defined as “the process of intentional, sustained allocation of cognitive resources to guide problem solving, planning, sense making, and decision making” (Ocasio 2011, p. 1287). Thus, attentional engagement refers to the critical juncture between the external context, strategic priorities, and organizational agendas, and managers’ individuality and personal histories (Kaplan 2008), which generate the managerial response, or lack thereof. Attentional engagement is critical to understanding managerial attention.

Three challenges related to attentional engagement

The study of attentional engagement, that is how managers devote time, energy, and effort to selecting a set of environmental stimuli and how they connect them to possible repertoires of responses (Ocasio 1997), can be framed in terms of three challenges: *volume*, *fragmentation* and *variety*.

The challenge of *volume* refers to the need for managers to regulate their attentional engagement to achieve “requisite attention” (Ashby 1956): enough attention to capture the critical variations in the internal and external environment without risking being overwhelmed by too much data. Failure to achieve requisite attention exposes the manager to the dual risk of missing relevant changes in the competitive landscape and information overload (Edmund and Morris 2000). Feather (1998, p. 118) defines information overload as so much information that it becomes impossible to use it.

The challenge of *fragmentation* refers to the need for managers to achieve the right trade-off in their attentional engagement between vigilance and deliberate attention. According to the ABV, attentional engagement involves two complementary mental mechanisms: vigilance (e.g. watching out for the appearance of a particular stimulus) and executive attention (e.g., deliberate, controlled, and voluntary focusing of attention). The first allows the individual to devote uninterrupted attention to a particular issue (for a limited period of time); the second allows the manager intentionally to direct attention to the issue, to detach from it if necessary, and to return to it when appropriate. The challenge lies in finding a balance between the two because effective decision making in organizations “would be impossible if one or the other of these two forces were missing” (Ocasio 2011, p. 1289). Because attentional resources are scarce, managers must adopt careful timing and sequencing to achieve this balance (Garg, Walters and Priem 2003, Ocasio and Wohlgezogen 2010).

The challenge of fragmentation can thus be framed by drawing on the work of Hall (1976), who differentiates between mono-chronic and poly-chronic orientation to time and hence to attention. Individuals with a mono-chronic orientation tend to do one thing at a time without interruption, whereas poly-chronically oriented individuals and cultures enact multiple things at the same time and tend to change their plans, emphasizing social relationships over task completion and privacy. Mono-chronicity and poly-chronicity can also be used to describe modes of attentional engagement. Mono-focal attentional engagement implies full and undivided attention to the task at hand. Poly-focality implies multitasking and fragmentation. Managers are exposed continuously to the risk of becoming overly poly-focal. Therefore, they face the challenge of how to act mono-focally in a job that tends towards extreme poly-focality and fragmentation. Inability to do this can result in attention being spread too thinly across too many issues, and important matters being overlooked, or in managers appearing superficial.

Finally, the challenge of *variety* refers to the need to pay attention to what managers consider to be important rather than succumbing to the attentional demands being put on them (Mintzberg 2009) or passively enacting the attentional structure of their firm or industry (Ocasio 1997). This difficulty is exacerbated by the fact that what top managers appear to pay attention to sends important signals to the rest of the organization (Ocasio 1997). Therefore, the challenges of attentional engagement are

related to quantity and quality over time. Managers need continuously to update their practices to match the evolving nature of attentional demands. Failure to do so can lead to especially senior managers becoming overwhelmed by the attentional demands imposed by their jobs and embedded in their firms' attentional structure (Ocasio 2011). It can result also in neglect of strategic and long-term issues (Davenport and Beck 2001) or in the manager becoming a hostage to the daily diary (Mintzberg 2009, p. 33).

Addressing the challenges

The literature says little about how these attentional engagement challenges are handled by managers. Studies of environmental scanning focus on helping managers to optimize their scarce scanning resources (Aguilar 1967, Hambrick 1982, Choo 2001). Scholars have examined how the organization's situational dimensions, organizational strategies, and managerial scanning behaviors are mutually influential and affect organizational outcomes. They suggest that the frequency, intensity, and breadth of scanning increases with increased external uncertainty (Daft, Sormunen and Parks 1988). However, scanning remains largely a "black box". Following Aguilar (1967), several authors have tried to distinguish among information sources and between active and passive scanning. However, they rarely consider what this means for managers' everyday work.

Similarly, the managerial work research tradition tends not to theorize about how managers respond to these three challenges. While this stream of studies centers the attention on and articulates the nature of attentional challenges (Mintzberg 1973, 2009), many analyses lack richness. Descriptions of related activities are often thin, missing, or relegated to appendices (e.g. see Mintzberg 2009). While some authors highlight that attentional engagement is accomplished mostly verbally (de Alwis, Majid and Chaudhry 2006), making executives' social networks critical to their effectiveness (e.g. Anderson 2008), how this unfolds is rarely explained.

Similarly, work in the ABV tradition rarely zooms in on the rich detail of attentional engagement. As a result, research on attentional engagement is less developed than work on the firm's attentional perspective or attentional selection (Ocasio 2011, p. 292). For example, Ocasio and Wohlgezogen (2010) address the challenges of volume and variety by examining how different types of

organizational control affect attentional engagement. They argue that hierarchical controls over outcomes (objectives, budgets, deliverables) and communication channels particularly influence executive attention, acting as reminders if the executive becomes distracted, and filtering information. In contrast, behavioral and cultural controls mostly influence vigilance – they operate as selection rules. However, how these controls are manifested in the daily work of managers has not been explored. Similarly, ABV scholars have investigated the issue of fragmentation and have made a convincing case for the need for managers to balance vigilance and executive attention since “an actor cannot sustain attention firmly on a stimulus and at the same time flexibly switch back and forth between stimuli” (Ocasio 2011, p. 193). How this balance is achieved (or not) in practice however, remains largely the subject of theoretical speculation (Shepherd, McMullen and Ocasio 2017). In summary, while the ABV makes attentional engagement a cornerstone of its approach, it offers limited insights into how it might look in practice. This is perhaps because much of this work is conceptual (Ocasio, 1997, 2011, Levinthal and Rerup 2006, Ocasio and Wohlgezogen, 2010, Shepherd, McMullen and Ocasio 2016), or is based on quantitative studies (Kaplan 2008) and post hoc analyses (Joseph and Ocasio 2012). In the present paper, we address this gap and open the black box of attentional engagement by examining in-depth the mundane, daily ways in which vigilance is achieved, executive attention operates, and attention emerges as a “distributed” phenomenon.

STUDYING ATTENTION THROUGH A PRACTICE LENS

To develop novel insights into how CEOs pay attention requires a theoretical and methodological orientation that allows us to overcome the limitations imposed by the information processing tradition underpinning most managerial studies of attention, including those in the ABV (Ocasio 1997) and managerial work traditions (e.g. Mintzberg 1973, Stewart 1967, 1976). Specifically, an information-processing approach positions attention as something that is done in and by the mind. Thus, attention is conceived “as one of the most fundamental tasks of the brain” (Ocasio and Wohlgezogen 2010, p. 195) or as pertaining only to the ideational, communicative sphere (e.g. Ocasio 1997, p. 191).

However, this focus obscures the more concrete ways of activating, regulating, focusing, and prioritizing attention. Accordingly, we adopt a practice lens that allows us to examine how top managers address the three challenges in practice beyond only mental engagement or talk.

Attention as practice

The term “practice lens” refers to a family of theoretical and empirical orientations which foreground “social practices”, defined as routinized regimes of materially-mediated doings, sayings, knowing, and ways of relating that form the building blocks for understanding organizational phenomena (Schatzki 2005, Miettinen, Samra-Fredericks and Yanow 2010, Feldman and Orlikowski 2012, Nicolini 2013, Feldman and Worline 2016, Nicolini and Monteiro, 2017). This approach shares with Mintzberg-inspired studies of managerial work (Mintzberg 1973, 2009; Nicolini, Korica & Ruddle 2015) a predilection for direct observation of real time action. It also demands attentiveness to social and material elements such as artefacts, bodies, and interactions – all notably absent in traditional studies of attention. Finally, practice-oriented scholars tend to be sensitive to the historical conditions allowing the possibility of particular practices; context matters. In our case, we use the practice lens as a sensitizing device, which has important consequences.

First, a practice lens invites us to study attention as something managers do. In contrast to other approaches (Wu 2011), it positions attention as an embodied, social, and situated activity, rather than an intrapsychic phenomenon or a sensory-motor behavior. As Yoshida and Burling (2011, p. 536) put it, “knowing where the eyes are is not enough”.

Second, a practice lens suggests that we should expect attention to be affected and partially structured by a number of ecological conditions. These include the objects that surround managers and their interactional order – we pay attention to people and through people (Citton 2017). Paying attention is affected also by multiple cultural formations and wider discourses (Gee 1990). Therefore, paying attention unfolds according to local and more general “attentional regimes” (Citton 2017, p. 18) – structures of socially upheld expectations (Jones 2005), which also must be accounted for.

Third, in a practice perspective, to the extent that paying attention is a future-oriented activity, it ends only when a stimulus is connected to an action (Wu 2014). Paying attention is more than simply

producing material for further mental processing – it can persist until the specific concern that underpins it is resolved. This means that “paying attention” can last for seconds or minutes measured by traditional psychological experiments, or be of longer duration characteristic of organizational life (Bansal, Kim and Wood 2018). Therefore, we need to investigate how managers navigate between multi-temporal objects of attention, and choose what to pay attention to over time.

Finally, from a practice perspective, attention is not an isolated activity, but rather a readiness nurtured by personal and social expectations and the search for meaning: what does this mean for me and my organization? It is therefore inextricably projected into the future and linked to evaluation and caring. As Schutz (1970, p. 316) put it, attention is always “turning toward an object, combined with further considerations and anticipations of its characteristics and uses”.

In summary, the practice lens encourages the study of attention as a mundane socio-material activity, with a focus on its distinctive features – in this case, how top managers pay attention over time.

Viewing attentional engagement as practice (as in the present study) also mandates that we investigate it in situ, rather than relying on post-hoc accounts which in this setting have been shown to be particularly unreliable (Fidel and Green 2004).

RESEARCH SETTINGS AND METHODOLOGY

To examine attentional engagement practices in depth, we conducted a two-year (2011-2013) ethnographic study of CEOs running complex healthcare organizations. The study involved both the authors, and combined shadowing and observation with interviews and document analysis.

Research context

Our study focused on seven CEOs of hospitals and mental health services organizations (“trusts”) in the English National Health Service (NHS). In effect, these are public sector corporations with a notable degree of formal managerial and financial independence. CEOs as accountable officers have both legal and financial responsibility, and the organizations are overseen at arm’s length by government on the basis of their operational and financial performance. The seven CEOs were managing organizations that included multiple hospitals (e.g. 3 large hospitals), annual budgets

exceeding £500 million (\$650 million), and up to 10,000 staff. The smallest organization had 3,000 employees and a budget of £200 million (\$270 million). Two organizations were in an expansion phase, three were undergoing consolidation, and two were either in difficulty or had recently experienced problems. Our selection was based on theoretical sampling: we purposefully chose to study these executives because of their need to manage multiple, often competing demands (see summary in *Figure 1*). From our background research, we were aware that in order to manage such complex webs of accountability, the CEOs would likely be processing huge amounts of information. Therefore, we identified them as ideal cases to explore the intricacies of how CEOs pay attention in challenging settings.

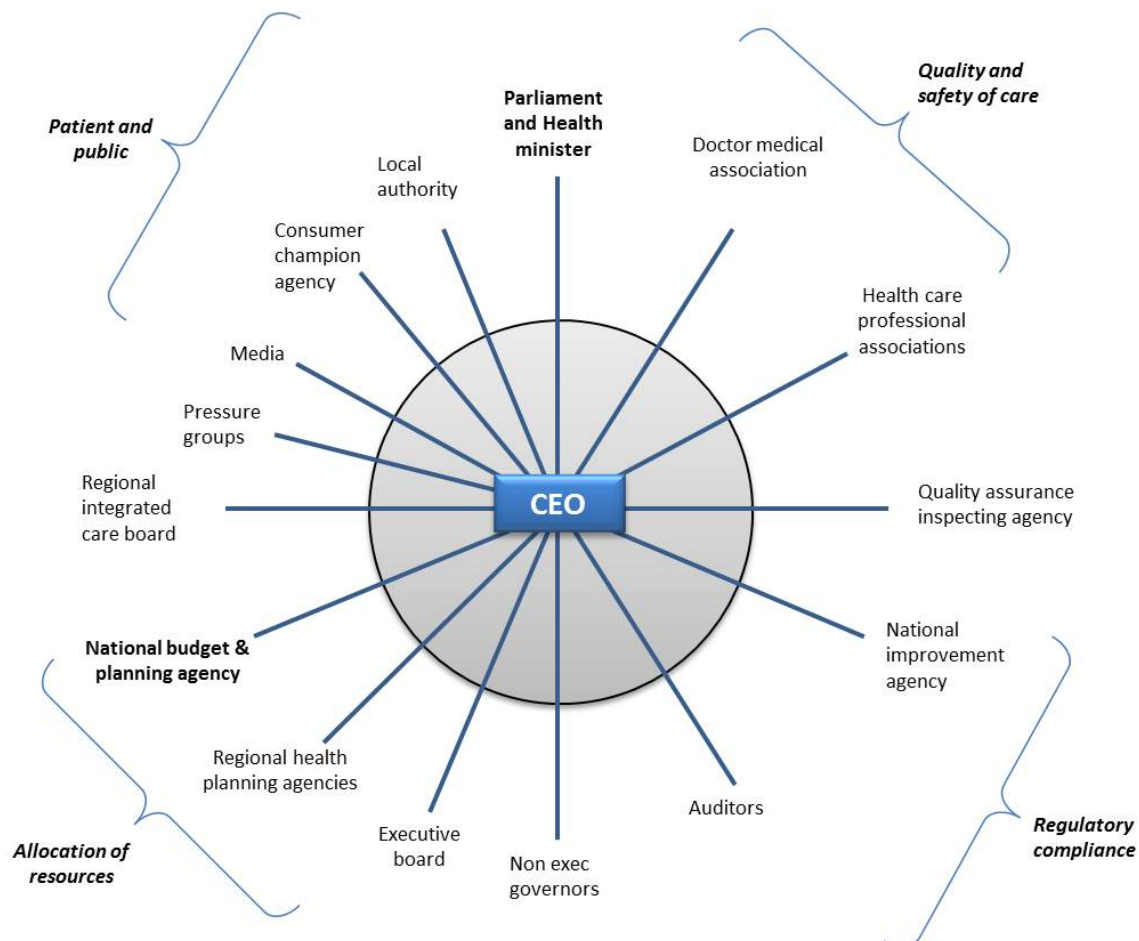


Figure 1: The multiple, often competing demands (adapted from The Health Foundation, 2016).

Sample and access

For reasons of anonymity, we refer to all the CEOs by male names (since at the time of our study there were fewer female than male CEOs, female names might be more revealing of real identities). The sample was chosen purposefully to include an almost even ratio of men to women (3:4), to maximize analytical diversity and allow examination of possible variance (Eisenhardt and Graebner 2007). For the same reasons, we recruited CEOs with diverse professional backgrounds (i.e. NHS management, private sector, nursing, medical), and at different career stages in terms of current tenure (i.e. 3 months to over 5 years) and overall experience at CEO level (i.e. 1st or 2nd experience). We also chose organizations with different levels of performance based on then-published regulator assessments. Access was obtained through a combination of personal contacts and direct requests to CEOs deemed potentially interested, for example because of previous participation in knowledge-exchange activities. Our success rate was high, with around one in every two contacted agreeing to participate. Stated rationales included their role becoming subject to such public scrutiny that “they had nothing to hide”, and our offer of comparative feedback sessions. Although some well-known CEOs declined, there was some element of self-selection. While this constitutes a limitation, since CEOs keen to display their practices may have been more open to participating (see Siggelkow 2007), we believe the effects on representativeness, and hence data reliability, are limited, given our sampling diversity considerations, and the qualitative, explorative nature of our study. Our interest was not in identifying best practice, but rather in mapping the phenomenon. The research also included a number of opportunities for member validation. Alongside individual CEO feedback sessions, we held two workshops with two groups of seven and eight other CEOs where we shared emerging results (there were 154 hospitals and 56 mental health trusts in England at the time). The feedback from these workshops showed that our account was reasonably accurate and echoed the experiences of other CEOs.

Data collection

Our main data collection method was shadowing (Czarniawska 2007, McDonald 2005), which involves the researcher following an actor throughout the working day, and observing as much as possible. Six of the executives were observed for a minimum of five weeks (in one case, the CEO was

observed for only 3.5 weeks due to last-minute CEO availability). We were able to document most aspects of the CEOs' work, save occasional one-to-one supervisory sessions, personal HR-related meetings, and private contact with patients. In the case of particularly sensitive events, we collected post-hoc accounts via short ethnographic interviews (Spradley 1979). The same method was used to collect information about CEOs' work at home or when commuting. Field notes were taken mostly in-vivo using tablet computers. On the few occasions this was deemed inappropriate, notes were written up shortly after the event during "downtime" moments (e.g. while the CEO was replying to emails). The observations were complemented by interviews. We conducted formal semi-structured interviews with five CEOs, either during or just after the final weeks of observation. The interviews lasted between 40 and 65 minutes, and were recorded and transcribed verbatim. The remaining two CEOs were interviewed informally. Both had shared their reflections extensively during on-site visits, and their diaries made scheduling of a formal interview difficult. These ethnographic interviews were also recorded and transcribed verbatim and used in the analysis. We also conducted an additional two interviews with CEO personal assistants (PAs) – in both cases interviews were recorded and transcribed.

Finally, the documentation obtained during our observations, which included meeting papers, articles referenced by CEOs and publications consulted, was another valuable source of data. The amount of documentation varied across sites - from thousands of pages to around a hundred. In the case of CEOs who were not comfortable with sharing too much documentation, we consulted publicly available information such as regulator assessments, and explored these in informal interviews.

Data analysis

We used an iterative process to analyze the data, alternating inductive and abductive coding in the tradition of interpretive scholarship (Golden-Biddle and Locke 2007, Yanow and Schwartz-Shea 2006, Locke, Feldman and Golden-Biddle 2015). Data analysis started during data collection. No set analytical categories were identified prior to entry into the field, although this exploratory research was focused initially on how CEOs deal with information, with the practice approach as a sensitizing frame (Gioia, Corley and Hamilton 2013). Both researchers regularly read through and reflected on

their field notes during the shadowing, and in particular before each return to the field, and wrote analytical notes. Eventually, these notes were expanded into 10-12 page analytical memos, which synthesized emerging insights from each case and enabled cross-case comparative and joint analysis. At the end of the fieldwork, we worked inductively, interrogating the memos for emerging patterns and going back and forth between memos and original field notes (Yanow and Schwartz-Shea 2006). We coded all the data related to how the CEOs dealt with information. With the help of the memos containing initial hunches, we grouped the codes inductively into broader categories and themes. It was at this point that attention began to emerge as a significant aspect. The first round of inductive coding generated categories and themes which confirmed previous research, but were not particularly novel (e.g. CEOs were constantly vigilant, routines and people were important attention aids, CEOs put considerable effort into making sense of events). However, other interesting and unexpected findings also emerged: at times some things were beyond the CEOs' control; the CEOs gave their attention to others; the CEOs spent time making sense of things which once they became clear signified completion of their work. We noted also that CEOs seemed able to survive the constant bombardment of stimuli to which they were subjected.

In line with the principle of abductive "live" coding (Locke, Feldman and Golden-Biddle 2015), we reformulated our research around "how did they do it", and articulated the three attentional challenges. It became clear that what we were studying was attentional engagement (see Ragin and Becker 1992). Encouraged by the comments from the reviewers, we conducted a complete recoding of our field notes (some million words), using comparative tables to shed light on the minutiae of the practices. We proceeded inductively, starting by organizing the findings around three main desired outcomes (regulating attention, sustaining attention, and managing attention actively). We revised the paper on this basis, establishing relationships between challenges, the practices used to address them, desired effects (see *Figure 4* in the discussion), and things that could go wrong (see *Table 4*).

FINDINGS: ADDRESSING THE CHALLENGE OF VOLUME THROUGH PRACTICES FOR ACTIVATING AND REGULATING ATTENTION

As suggested in the literature and shown by our data, a critical task for top managers is maintaining a balance between too little and too much information, and distinguishing between relevant signals and noise. We found that the CEOs managed this by establishing and maintaining an evolving bundle of activating and regulating practices which entailed specific routines, relationships, and artefacts. These practices, with which we are all familiar (hence our succinct discussion), enabled the CEOs to manage the challenge of volume, keep tabs on what was happening, and infer appropriate foci for attention.

Formal or informal meetings (e.g. corridor meetings, walk-about) were the single most common routines aimed at activating (“feeding”) and regulating attention, though activation was done also in less obvious ways. Consider the vignette in *Box 1*. David (CEO2) saw his routine visit to the cafeteria as another potential opportunity to actively “monitor” his environment. He did this constantly, supplementing periodic review meetings with unscheduled encounters. David thus continuously and actively “fed” his attention, by transforming impromptu interactions into “information grounds”, defined as situations with a specific purpose which nevertheless generate a social atmosphere that fosters spontaneous and serendipitous sharing of information (Pettigrew 1999, p. 811).

The repetitive nature of meetings and other routinized information gathering practices was critical for activating and regulating. Their periodic occurrence was key to ensuring that the CEOs received sufficient information. However, their repetition served two other functions. First, the practice of examining the same things at different points in time helped them to spot variances and unusual signals, and identify the appearance of a “difference that makes [could make] a difference” (Bateson 1979, p. 99). CEOs actively construct the background against which issues acquire emphasis and become potentially meaningful. Second, repetition allowed the CEOs to ignore certain things as “routine”, regulating the number of issues they needed to attend to. In short, vigilance was obtained amid and through a carefully assembled bundle of practices.

Similar to David who we quoted above, all the CEOs also paid attention through people: in David's case, Sam and the cafeteria staff acted as his eyes and ears. All the CEOs nurtured a complex network of relations from which they gathered information, and confirmed or rejected evolving hunches. Within these networks, they distinguished between distant informants who were used as sources of signals and whose information was taken with a grain of salt (e.g. cafeteria staff), and trusted informants such as Sam, but also board members, assistants, and former colleagues. We refer to this network of informants as the CEO's "attentional inner circle" (Nicolini, Korica & Ruddle 2015). Its members paid attention on the CEOs' behalf and reported back, but the CEOs processed and triangulated this information in light especially of competing insights. Finally, CEOs used a variety of mainly quite low-tech attentional artefacts for activating and regulating attention. These included folder systems (David's in full view on one side of his desk), action logs (with headings such as 'Action', 'Assigned to', 'Action response', and 'Status'), email inboxes, post-it notes, open doors that transformed the office into a scanning mechanism, and social media such as Twitter. As Jim (CEO7) put it, "if you follow the right people, you will see most of the important things coming up". *Table 1* summarizes and compares the CEOs' practices of activation and regulation.

<p>Insert Table 1 here: A comparison of the CEOs' activating and regulating practices</p>
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The bundle of familiar practices used to activate and regulate attention had several interesting aspects. First, they were context-sensitive (e.g. if a department is struggling, you want to stay in close contact with the regulator) and history-dependent (e.g. it had taken years for Michael [CEO3], a highly prominent CEO of a successful large hospital, to build his sophisticated monitoring IT system). In contrast, Alan (CEO4), who at the time had been in post only for months, inherited a bare-bones system and had to rebalance by relying on a dense social network. These aspects reflected both personal preferences and tenure. For example, Michael (CEO3), who described himself as an external thinker, paid attention predominantly with and through an inner circle of executives. In contrast, Jim (CEO7) a self-confessed people-person, relied on a small circle of trusted counsellors, and used technology predominantly to keep abreast of what was happening outside his organization. David

(CEO2), in turn, had been in post for over five years and his team had been in place for most of that time, with the result that he was more able to rely on others to pay attention on his behalf.

Second, all the elements worked together. For example, routine meetings, personal connections, and social media acted collectively to gather weak signals, identify issues, and confirm or deny evolving hunches. By using these practices in combination, the CEOs could keep in touch with what was happening on their patch, *and* tacitly infer which issues were worth paying attention to, while discarding others. To these ends, all the CEOs built into their attentional infrastructures a certain level of redundancy which improved reliability. For instance, Michael (CEO3) had access to a sophisticated monitoring system, but regularly visited the wards to gather serendipitous information and identify issues the system or his trusted executives might have missed. These types of arrangements allowed the CEOs to conjointly scan environments for specific information and maintain continued, mundane attentiveness to non-routine, but potentially relevant cues.

Third, the arrangements acted as vigilance mechanisms and tools for filtering attentional cues. For example, while all CEOs spent considerable time with their PAs reviewing agendas and sifting through emails, this took place after the PAs had already drastically reduced what needed to be considered. The CEOs relied also on attention artefacts such as filing folders, which provided a physical division between what needed attention and what could be ignored.

Finally, the activating and regulating practices frequently became performative and began actively to shape both the CEO's attention and identity. For instance, David (CEO 2) saw himself as a delegator, but his detailed exception matrices involved him deeply in day-to-day management. Also, his inner attentional circle included mostly finance and operations directors. As a result, at times he was focusing on a more granular level of detail than other CEOs. Thus, David's attentional practices performed both work and a personal identity, which diverged from his desired (notional) identity. James (1890, p. 446) wrote that "we notice what we are attuned to discern". David, like the other CEOs, noticed what his attentional practices, relationships, and artefacts allowed him to discern.

ADDRESSING THE CHALLENGE OF FRAGMENTATION VIA FOCUSING PRACTICES

Consider this rather typical morning for Stuart (CEO1):

At 9 am, the CEO calls one of his confidants. They discuss who Stuart could see on their exec team, regarding an issue he has been struggling with for weeks. The person gives suggestions. Stuart says he will take some advice from the board and pick up their conversation next week. At 9.33, he stands up, takes a stack of papers and reads while walking to a large meeting on impact of new nursing education arrangements on the workforce. After mingling, Stuart sits up front, taking notes and nods throughout. He leaves at 10.25 and walks back to his office. While checking emails, speaks quickly with the PA regarding a conversation he had at the meeting. A few seconds later, the PA pops in and says a consultant working on a change program is here, did Stuart want to see him? The consultant comes in. The CEO explains that staff have asked how his company's reports were used as part of decision-making for the closure of a certain service. Asks the consultant to walk him through all the work he's done. Takes the notebook to write, saying memory isn't what it used to be. At 10.55, the PA pops in and says "next meeting". The CEO walks the consultant out, reiterating how they agreed to solve the problem. Stuart collects his papers and prepares to meet a local MP to discuss progress with the new hospital. (Field notes)

This vignette shows how Stuart's attention was pulled in different directions: he was having to deal with very different people, issues, and demands. It also hints at the fact that different issues have different temporal duration and require different forms of engagement. For example, whom to include in the new exec team stretched over several weeks, while the workforce event was quickly considered. Top managers thus need to distribute their attention across different issues *and* time scales. We focus on three distinctive attentional engagement practices, which allowed the CEOs to address this issue: giving away their attention without attention going away (making attention *transferable*); continuously acting mono-focally in relation to evolving situations (*segmenting* attention); and operating within three distinct temporal cycles (making attention *temporally differentiated*).

Transferring attention: Intentionally giving away attention without attention going away

CEOs' attentional engagement is partly given and partly decided. However, top managers have one option that is not always available to other staff: they can give away or transfer their attention.

Consider the following short example:

Rob (CEO 5) and the HR lead go through the individual senior nursing posts urgently needed in a medical ward. He is given a print out, looks at it and agrees that they should approve a post [...]. Rob then turns back to the finance controller and summarizes the position, clarifying that “the cost is your budget” and that he wants to be sure that “there are no double whammies in there”. Rob expects him to “keep an eye” on it. (Field notes)

Here we see Rob delegating attention to budgeting issues to the financial controller who is asked to sustain this attention for a specific post. Thus, attention is maintained by being transferred to a third party, allowing Rob to address the challenge of fragmentation imposed by other attentional demands. More broadly, CEOs create attention for others in two ways: by signaling what is important and is worth paying attention to, and by transferring attention through direct delegation. The CEOs did this continually during formal meetings and following informal conversations.

Passing on or delegating attention is critical for explaining some of the practices the CEOs engaged in to maintain focus when threatened by information overload. Maintaining attention was mostly initiated by finding out “what this is a case of”, and to answer the question “who should take care of it”. This allows the CEOs to give away attention without it going away. Here, trust is critical: CEOs need to believe that when they stop paying attention, the issue will continue to receive the necessary attention from someone else. If there is weak trust, it is supplemented by other practices to ensure that attention does not go away when given away. For example, the action log was critical to David's capacity to remain vigilant about the issues passed on. This allowed the CEOs to sustain meta-attention and to expand the number of issues they could focus on without risking fragmentation.

Segmenting attention: Acting mono-focally in a poly-focal world

The variety, fragmentation, and discontinuity characterizing managerial work (Mintzberg 1973) results in CEOs needing to focus on multiple things at the same time. This suggests that managers will be predisposed to becoming generalists, operating at an abstract level, and considering things superficially. However, our study revealed a more complex picture. In attentional terms, all CEOs were aware of the risks of attending to and focusing on many things at the same time (poly-focality). Indeed, they developed personal remedial strategies to recreate the “closed room” intimacy typical of mono-focality in a job that steered them in the opposite direction. For instance, Jim (CEO7) told us “my colleagues know that an open door means ‘come in’, but a closed door is ‘let me work in peace’”. A mono-focal orientation was also applied systematically to the multitude of encounters that occupied large swaths of the CEOs’ time, as the extract below illustrates:

Alan (CEO4) and I are driving to a review meeting of the newly established maternity service. In the car, Alan excuses himself, explaining he must consider the paperwork with great attention: “they do not understand that for me this is one of the hundred things I deal with... they want full attention, they want to feel that we addressed the issue with great care”.
(Field notes)

While Alan could not devote too much attention to the specific issue, he also could not afford to give the impression of lack of attention. Having agreed to attend the meeting which signaled that issue was deserving of attention amidst other demands, he could not be seen as uninterested which would send the opposite signal. Therefore, CEOs like Alan were both chief attention payers and chief attention signalers.

The CEOs’ attentional engagement was characterized by a sequence of distinct social situations, each treated mono-focally. Of course, there were exceptions, and at times the CEO appeared distracted and peripheral to the discussion. However, such exceptions were rare and noticed quickly by colleagues, prompting extenuations (e.g. “Sorry, I’m very tired today”). Such justifications were also supported by frequent acknowledgment of the demands imposed by the need for CEOs to act mono-focally at all times. As one meeting participant said, “I simply don’t know how he does it” (Field notes).

Identifying the span of attention necessary and dealing with short, medium, and long-term attentional cycles

The CEOs not only allocated attention carefully across clearly segmented issues, they also actively distinguished between different timescales, and engaged accordingly. For example, in the vignette at the beginning of this section, Stuart (CEO1) deals with short-term issues measured in hours (e.g. meetings), medium-term issues measured in days or weeks (e.g. inspection by the regulator), and long-term issues measured in years (e.g. construction of a new hospital). These generated different “attentional cycles”, defined as the time between when the CEO begins to pay attention and when this attention ends.ⁱ We found the CEOs used distinct practices to deal with different cycles, as outlined below.

Sustaining attention during short-term attentional cycles

Short-term attentional cycles were a constant feature of the CEOs’ work: they spent most of their time dipping in and out of events. For example, during our observations, David (CEO2) attended an average of 4.8 scheduled and 2.4 unscheduled events per day,ⁱⁱ which excluded brief encounters, calls, emails, and similar. As far as was possible, the CEOs treated each of these events as a complete attentional cycle, or in the case of longer, multi-item events (e.g. periodic board meetings), as a collection of quasi-complete attentional engagements. They achieved this by segmenting and circumscribing their attention and limiting the time devoted to preparation, as in the above example of Alan (CEO4) reading the meeting papers while en route to that meeting. They also engaged in Alan’s (CEO4) other strategy of paying intensive and careful attention for a time, then dipping out. Finally, they tried to avoid unintended attentional spillages that might prolong attentional engagement. They did this by ensuring that every issue was assigned to an owner during or soon after the relevant event. A frequent question was, “Can I leave that with [two people] to think about and come back to us?” (Field notes). In summary, the CEOs focused their attention within multiple circumscribed attentional cycles in which they acted mono-focally. The goal was to ensure the cycles were completed, allowing them to disengage attentionally and move on to the next issue.

The capacity of the CEOs to maintain the requisite attention in many short-term attentional cycles was helped by the events having their own attentional structures. This was enabled by a combination of tools and artefacts, social interactions, discourses mediated by tools and people, and the actors' experiences, and interests (to paraphrase Bourdieu, 1990, their attentional "habitus"). Thus, a distinct attentional engagement was built into the fabric of the activity. An example is provided in *Box*

ROB'S PERFORMANCE REVIEW

Jim (CEO 7) meets Julie, their director of organization development, to carry out her annual performance review. They are sitting in the corner of the room. They discover that they have the wrong review document. I offer to go and make a copy. After a few seconds the "proper" review starts. The first point is on facilitating communication with stakeholders. Jim takes the opportunity to double check the status of the communication with GPs. Julie explains how they ought to engage GP in community services who are reluctant. Jim decides that this is an issue to be raised at Exec Team. Jim stands up, gets their pad and writes this down. Next thing is Julie's goal to monitor and turn around an at risk service (a maternity unit). Julie explains what she has done and the agreement they have made with the services to improve their position. Jim jokes about converting the new maternity centre into a hotel again. Jim notes that one of the items missing is the business development strategy and the development of a marketing plan, which is not in the review document. Julie says that this is due partly to a lack of staff: "as a trust, our momentum is always for path redesign, but what is missing is a market analysis to go with that". Jim agrees. They discuss who may be suitable for the role. Julie articulates what they think the person should do. Jim says they have no money for any of these jobs and asks Julie if Julie could try to find a solution [...] (Field notes)

2Error! Reference source not found..

Box 2: The structure of attention during a performance review

In this vignette, Jim's (CEO7) attention is pre-structured by the review form (providing a number of attention foci), the formal requirements of the review process, the items included by Julie, Julie's presence, and Julie's experience of previous reviews. While he had plenty of attentional work left to do, most of his attention was thus already allocated through a social and an individual process (Jones 2005). This pre-existing structure helped Jim to close the attentional cycle by giving away attention to others and quickly identifying the issues requiring further attention.

Sustaining attention during medium-term attentional cycles

CEOs also dealt with issues that stretched across days or weeks, which we call medium-term attentional cycles. Some were too complex to be resolved within a short-term attentional cycle e.g.

Michael (CEO3) organizing meetings abroad. Some required clarification before identifying appropriate action, while others resisted closure. For instance, Jim (CEO7) agonized for days about whether to send a strong message to a unit's staff regarding their poor performance. In the course of those days, he consulted several people without reaching any conclusion (he eventually decided not to send the message). In this case, ambiguity and uncertainty led to extended attentional engagement. While all the CEOs dealt with medium-term attentional engagements via their working memory – Craig (CEO6) told us that he had been “carrying an issue in his mind” for weeks, “waiting until it's crystallized” – most of this work was externalized and distributed elsewhere, both materially and socially. Besides keeping notes and using “to do” lists and email folders to keep attention “alive”, the CEOs engaged extensively in conversation to retain the focus on certain issues. They created and extended chains of focused attention cycles involving conversational work on the issue until it could be given away. For example, Alan (CEO4) was faced with the dismissal of certain clinicians following poor external assessment of a unit. Over the course of around 10 days, he referred to this issue almost daily with different people, ranging from the members of his closest team to the board chair. By so doing, he maintained his attention and the attention of those around him, allowing him to make sense of the problem. Narrating and re-narrating helped the CEOs to “connect the dots” and retain focus within an attentional cycle.

Sustaining attention during long-term attentional cycles

While our observations covered a maximum of three months per CEO, we did gain some insights into how the CEOs managed their long-term attentional engagement.

Overall, paying attention to long-term issues was less deliberate than in the case of short and medium-term issues. Attentional foci were built into the fabric of the activities as described above. These foci were often a manifestation of what ABV authors call the attentional structure of the firm and industry (Ocasio 1997). This meant that the CEOs found themselves oriented towards paying attention to certain long-term issues with little observable intentionality: they constantly monitored the long-term performance targets imposed by the government, while periodic regulator inspections meant they remained vigilant. Long-term attentional engagement was associated also to periodic organizational

obligations largely outside of the CEOs' control. These included annual financial reporting, board meetings, and signing off on formal complaints. This last requirement was imposed by government and was aimed at keeping CEO attention focused on safety and patient satisfaction.

However, CEOs also used a bundle of practices to sustain long-term attentional engagement for the things that *they* considered important. For example, long-standing attentional issues were built into the agendas of periodic meetings as recurring items. The CEOs also relied on communicative and interactional practices. For example, Craig (CEO6) often verbalized his "attention priorities, plans, and values" in what he called a "stream of consciousness" with his executive team, while Alan (CEO 4) repeatedly explained his attentional priorities during regular consultation events organized to keep staff abreast of the evolving state of the organization. While these events were aimed at structuring the attention of the rest of the organization, they also sustained the CEO's attentional engagement related to what he thought was important in the long-term: communication to others was also partly communication to himself. As Craig (CEO 6) put it, "I need to tell them so that I remind myself what my vision is" (Field notes).

Finally, attentional engagement on long-term issues was inscribed in more intimate conversations, for example with personal coaches, two of whom had worked with CEOs for several years. Among other things, these occasions served to reveal and re-evaluate the CEOs' attention priorities. For example, Craig (CEO6) spent an hour with his coach discussing his previously-agreed top five strategic priorities, and noted that "there is a bit of re-jigging to do...". While the discussion adopted the language of values and identity, it also provided an occasion to review, reinforce, and modify attentional priorities, and thus, to sustain long-term attentional engagement. Our findings on how CEOs sustain attention during long-term attentional cycles are summarized in *Table 2*.

Insert Table 2 here: Sustaining attention during long-term attentional cycles
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When the different ways to sustain attention over time come together

While in the previous section we clearly distinguished between the practices, in reality these did not operate in isolation. At times, short-term issues were connected with medium and long term ones, from which they derived meaning and to which they contributed. Consider the vignette in *Box 3*.

At a regional meeting, David (CEO2), attends a presentation after which several colleagues note “the 3rd quarter was very challenging”, and savings generated by organizational changes will be too late. On the way back, he stops to report to the Director of a struggling department. He references the comments as evidence that all trusts are increasingly getting in a bad financial position, and trouble is brewing. When we return to the office, David visits the Finance Director, one of his most trusted colleagues, and reports again the gist of the meeting. They consider: “nowadays there are so many targets and performance measures... Today I heard about one target I didn’t even know existed – and I am usually on top of things. There is a perfect storm brewing. Our income has been frozen below inflation. Initiatives to reduce admissions started working – but the fact that GPs started to refer [patients to us] much less also means loss of income. [...] We will end in a crisis... Either a collapse in quality or probably a financial crisis... Or both. You heard it this morning... a lot of CEOs are already experiencing it... the perfect storm is brewing”. Later in the day, David also pops by the HR Director’s office. They reflect briefly on the important meeting in the morning, and he repeats again the ‘perfect storm’ story as a way to summarise it.

Next day, David has a one-to-one meeting with the Chair of the Board. During the conversation, while reporting the difficulties the hospital is experiencing, David repeats again ‘the perfect storm’, further refining it: “actually there is another factor for the perfect storm - we cannot cut corners, as we have so many performance and quality targets... Do you remember the 18 weeks target? It is still there”. When back in the office, the CEO explains to me the idea of a ‘perfect storm’ (appears to be using me as a sounding board, although, as always, I remain silent). David stands up and writes the three ingredients of the ‘perfect storm’ on the whiteboard. The names are changed a couple of times. When done, a visibly satisfied David returns to writing emails. He tells me he sent the idea to two of the closest members of the exec team. Later that evening, David is meeting the local Member of Parliament. During the conversation, he repeats the argument of the perfect storm, this time pointing at his whiteboard to explain.

Next day, David recounts the story once more during the weekly executive team meeting. This time, the story is put to concrete work, as prompt to ‘so, what can we do to weather the storm’? On returning to the office, the CEO adds two more components to the white board. [In the following days, the narrative is used over and over, until it seemingly fades away]

(Reconstructed from field notes)

On the surface, the vignette illustrates the social and conversational practices through which attentional engagement was sustained in the middle-term. On closer inspection, however, we can see short-term attentional issues being conversationally weaved together into a meaningful medium-term canvas, and long-term concerns poking through. Like in the ancient artistic practice of *pentimento* (the presence or emergence, in a painting, of earlier images or strokes that have been changed and

painted over), long-term attentional concerns, like the overall survival of the organisation, manifest and are invoked. While at the end of the story David does nothing specific, the story is committed to memory for possible benefit of future events, ready to inform future attentional processes. The vignette thus paints a laminated view of the practices to deal with different attentional cycles. The idea of lamination was introduced by Goffman (1974) to emphasise that while multiple, heterogeneous and heterochronic practices (and frames) operate at the same time, in specific circumstances they are agentively combined and woven into moments of action. While the practices to deal with different attentional cycles can be kept distinct for mainly analytical purposes, they operate in laminated ways, with juxtapositions and intersections occurring in a number of occasions.

ADDRESSING THE CHALLENGE OF VARIETY BY PRIORITIZING PRACTICES

CEOs have to juggle multiple issues and stakeholders, and deal with matters ranging from minute to strategic. Consider the following:

Alan (CEO 4) is reading his emails and smiles. Then he turns to me and comments: “This is how ridiculous my life is...” He just received an email from a doctor who wants to drop off a T-shirt for him. Alan compares this to the “big stuff” of the previous meeting and says “I go from that to this”. (Field notes)

All CEOs could find themselves in similarly “ridiculous” situations. They had to pay attention to many concurrent issues and maintain a clear sense of what mattered to them, while making time for already partly pre-set attention (described by Alan as “mortgaged” attention).

In the previous two sections, we showed that to manage competing attentional demands, CEOs rely on distinct activating and regulating practices, which needed to sustain attentional engagement over time. In this section, we focus on how attentional practices were employed to allocate differential attention according to the nature of the issue, that is to prioritize. Our findings suggest that CEOs continuously and actively weeded out issues by filtering, categorizing, and selecting. They remained cognizant of the level of concern related to each issue and the attentional cycle it might trigger, and escalated and de-escalated matters with an eye to clearing the table of resolved or re-allocated issues. This enabled

the allocation of scarce attention and a balance between the “pull” issues raised by others demanding their attention, and CEOs’ “push” desires to focus on what they considered important. This on-going prioritization process is summarized in *Figure 2*. The left side focuses on the level of concern, with attentional demands experienced by the CEOs bottom left. The two arrows refer to the divergent forces at work. The tension promoted by these divergent forces and its various resolutions are discussed next.

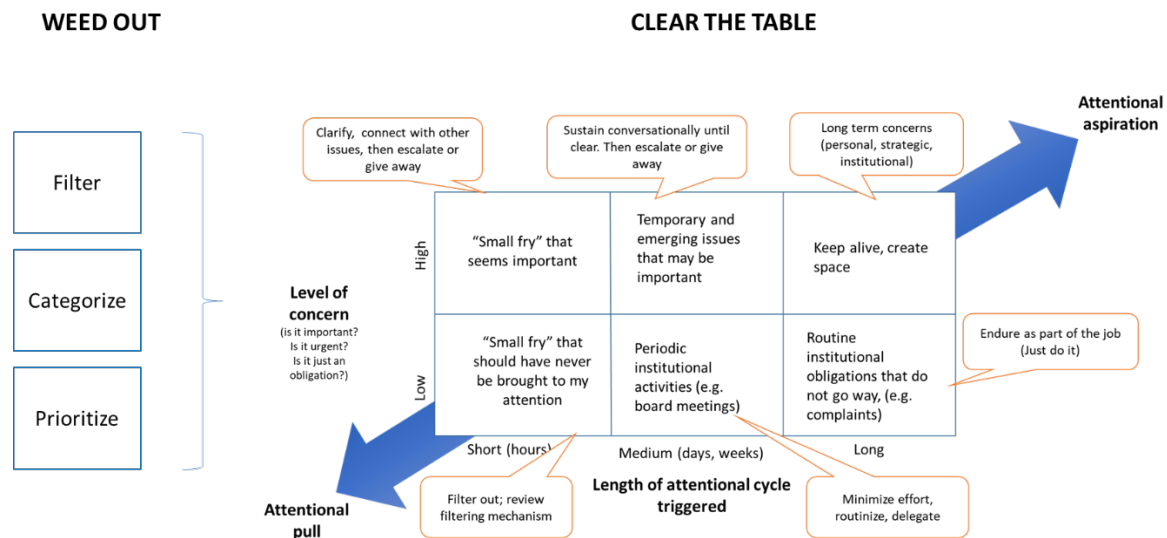


Figure 2: How CEOs allocate their attentional engagement

Managing attentional demands by “weeding out”

To manage the continuous barrage of competing demands, the CEOs engaged first in often highly routinized weeding out practices to rid themselves of certain issues – see *Box 4* below.

BOX 4 - MICHAEL (CEO3): DAILY BATTLE TO PRIORITIZE ISSUES

Michael (CEO3) sits to look at his correspondence with the PA. Each mail and email are in a see-through folder. The PA takes each out, writes on it with an action and puts it on a pile on the coffee table. Michael signs the first letter, then second. Reads next out loud and comments "oh for God's sake!" Puts two ticks. Says "oh God" to another letter, then reads for two minutes in silence (PA waits). Next item is given to Director of Delivery to deal with as not urgent. Next are requests to see him. The first is from a Times journalist, but it is not urgent from Michael's perspective. The PA asks if he wants to meet the second. Michael notes that woman gets on his nerves ("disorganized bunch of flipping wasters") and to get him out of it. Next letter is from a regional Councilor. Michael looks at it and suggests another date. Says "ok" to next (city council letterhead) and "what the fuck is that?" to final item (newsletter of some sort). He reads the final one and says "no, no, no, no". (Field notes)

In this example, the PA, as a key part of the CEO's personal attentional infrastructure, helped him prioritize according to importance and urgency. Michael (CEO3), similar to the other CEOs, took a personal approach to distinguishing between "serious things", "small fry", "urgent/not urgent stuff", and "noise". Importance was assessed first: issues were considered attentionally significant because they emanated from formal obligations and could not be ignored, because previous experience suggested that they were significant, because relevant others were paying attention to them, or because they fitted existing or emerging discourses circulating in the professional community (e.g. future financial reforms). Urgency was considered secondarily, because importance was judged against the context of anticipated further implications: at what point will the issue create problems? Issues associated with something deemed important were monitored, even though their nature initially might be unclear. For instance, we observed Michael (CEO3) starting to notice small hints regarding the effectiveness of his executive team. Because this was important, he began prioritizing by paying attention. He was seeing "cracks appear" and "I can't have that" (Field notes). These early indications, whose exact implications were unclear, meant that Michael remained attentionally engaged with the issue for several weeks (medium-length attentional cycle), with the topic reemerging in several conversations until he eventually took action and made changes.

Managing attention by escalating and de-escalating issues

The necessary accompaniment to weeding out was "clearing the table" of as many resolved issues as possible and as quickly as possible to make room for new issues or those the CEOs considered important. The CEOs used different temporal cycles and strategies as described above to deal with issues of high and low importance, the rule of thumb being the minimum possible attention. What Michael (CEO3) described as "small fry" issues were filtered or immediately given away. In fact, their appearance was seen as reflecting a malfunctioning of the personal attentional infrastructure, and occasionally led to its revision. Other "small fry" issues which resisted closure, like the above-mentioned cracks in the team, were not dismissed so readily. In those cases, the CEOs would try to establish their importance and cause. If they were identified as instances of "something bigger", they

would be escalated and linked to an existing long-term attentional cycle issue – an example being the mistreatment of an alcoholic patient which was considered a sign of a deeper cultural problem. Other issues might be de-escalated or passed to someone else, leaving room for new “small fry” problems.

Managing attention by minimizing obligations

While CEOs tried actively to clear their desks of new emerging issues, they still had to deal with those that could not be de-escalated or given away. Several CEOs said that much of their attention was occupied by issues and obligations not of their choosing. Stuart (CEO1) said: “95% of my monthly obligations are already mapped out at the start of each month”. These included attendance at board meetings (requiring attentional engagement for several days prior to and after the event), overseeing the fiscal year end accounts (which absorbed much attention over at least two weeks), and dealing with patient complaints (an on-going long-term obligation). In such cases, CEOs could try to minimize the attentional engagement required by creating robust routines or delegating parts of the task to others, or would simply “endure it”.

Figure 3 depicts the continuous competition between issues demanding the CEOs’ attention, and their constant efforts to prioritize what *they* deemed important. Minor issues (“small fry” on the left) tended to occupy CEO attention continuously through their cumulation, which made them longer-term than expected issues triggering longer than expected attentional cycles. Formal obligations and external demands also tended to consume too much CEO attention. The top right of *Figure 3* depicts the CEOs’ continuous attempts to push back to allow prioritization of the most important and relevant issues. This struggle was never-ending: our study demonstrates that executive attention is clearly an outcome of CEO work, rather than being something given to top managers or wholly pre-determined.

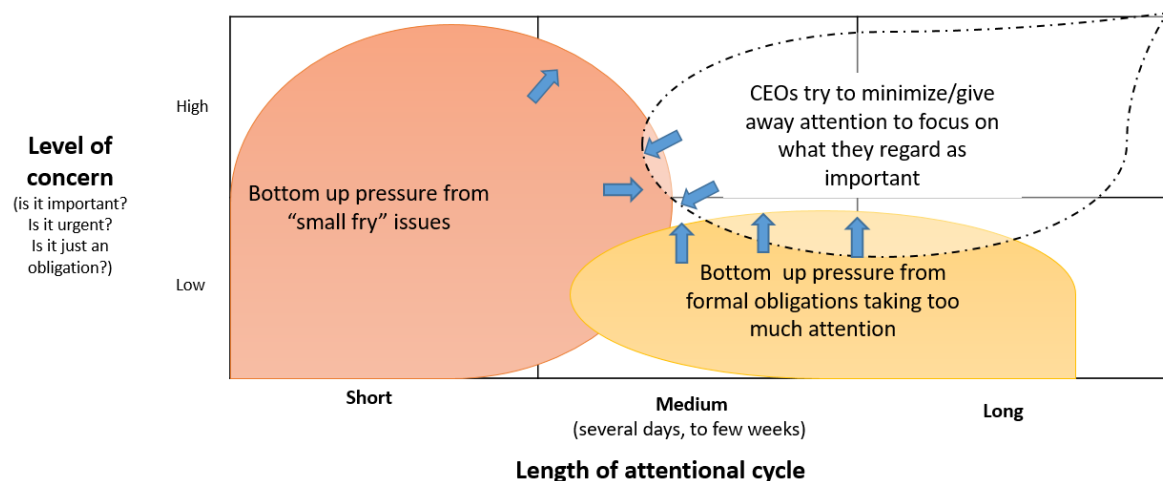


Figure 3: CEOs’ continuous struggle to manage attentional engagement and prioritize

Attentional repair: Maintaining the fit between attentional infrastructure, attentional engagement, and attentional demands

One of the problems related to prioritization is ensuring a fit between current attentional demands and the CEOs’ attentional infrastructure, which supports their attentional engagement. This is particularly relevant given that attentional practices took on habitual forms based on past experience. As Stuart (CEO1) said, “it’s sort of... using a structure that had worked for me in the past... after a while it just ... [Becomes instinctive?] That’s right”. Failure to achieve this fit can lead to attentional dysfunctions such as information overload, missing something of critical importance, forgetting to deal with a critical matter, or paying too much attention to pre-existing obligations. The CEOs’ attentional infrastructure thus required continuous adaptation, though we did not necessarily observe proactive adaptation following focused reflection regarding overall fit. More often than not, the occurrence of a minor or major breakdown would trigger adaptation or “repair”. Although our observation of each CEO spanned only a few weeks, we observed several adaptations and their triggers. These are summarized in *Table 3*.

<p>Insert Table 3 here: Repairing CEOs’ attentional engagement practices and their triggers</p>
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First, we observed changes triggered by frequency, such as the recurrence of specific minor issues or too many “false alarms”, which highlighted the need for a (re)tuning of the attentional infrastructure or a revision to the weeding out prioritization practices. Second, changes could be triggered by negative feedback, which signaled inadequacies in existing attentional engagement practices. These might relate to performance issues, that is, a current arrangement which was proving ineffective or out of date. For example, Craig (CEO6) told us that his existing attentional engagement practices, which reflected the organization in crisis that he inherited, needed to be updated to reflect the organization’s current, more steady state. Finally, adjustments could be triggered by external events, such as changes to the sector’s accountability regime, performance metrics, or sector discourses. For example, Jim (CEO7) made the deliberate decision to reduce the time allocated to certain stakeholders to allow him to give more attention to “new things happening in the local economy”.

Thus, the content in the cells in *Figure 3* was constantly evolving. For example, we observed minor issues being escalated to the top right and affecting the long-term attention rules; seeming “small fry” issues being recognized as symptoms of a larger, new problem, and given more importance; temporary issues becoming “experience”, which generated new rules of thumb for the future; and recurrent emerging minor issues being seen as indications of change in the wider accountability landscape. Other issues moved to the left through de-escalation (i.e. identified, circumscribed, then given away). Too many issues in the bottom right of the Figure or too much uncertainty led to focused revisions. New institutional obligations and shifts in the wider accountability landscape led to changes to the right hand side of the Figure (e.g. concern over finance).

However, as already mentioned, most repairs to attentional infrastructures occurred post, rather than pre-breakdown. The nature of the breakdown determined the corrective action, which often involved a rebalancing by adding or removing certain elements. The prioritization and extent of the repair depended on the perceived importance of the consequences observed, but also on the relative significance of that element for the CEOs’ attentional engagement. *Table 4* summarizes the failures experienced by each of the CEOs and the specific remedial actions taken. For instance, David’s (CEO2) activating and regulating practices led him to focus too much on operational details, while the limits in his existing personal network caused him to miss some emerging organizational issues.

Having recognized the problem, he used his existing contacts to expand his network to include other strategic actors whose insights would ensure he was on top of things. In contrast, Michael's (CEO3) diverse activating and regulating practices, which ensured variety through reliance not just on his executive team and IT system but also on impromptu ward visits, allowed him to identify a major issue that his team had not reported. This enabled him to identify complacency about information sharing as an issue, resulting from too much delegation and trust over time. Repair consisted of re-introduction of regular executive team meetings. Importantly, because Michael's executive team was a key part of his attentional infrastructure and because the problem identified involved hundreds of staff, the failure of these executives to trigger Michael's requisite attention was taken very seriously. Specifically, it was connected to a bigger issue ("can I really rely on my team?") and prioritized for several weeks.

Insert Table 4 here: Actively managing attention via repair
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DISCUSSION AND CONCLUDING REMARKS

In this paper, we examined how CEOs in the English NHS handle the challenges of volume, fragmentation, and variety related to attentional engagement. We found that CEOs avoided or minimized attentional dysfunction associated with these challenges by utilizing an attentional infrastructure which included practices for activating and regulating attention, focusing practices, and practices for prioritizing attention. Our model is summarized in *Figure 4*.

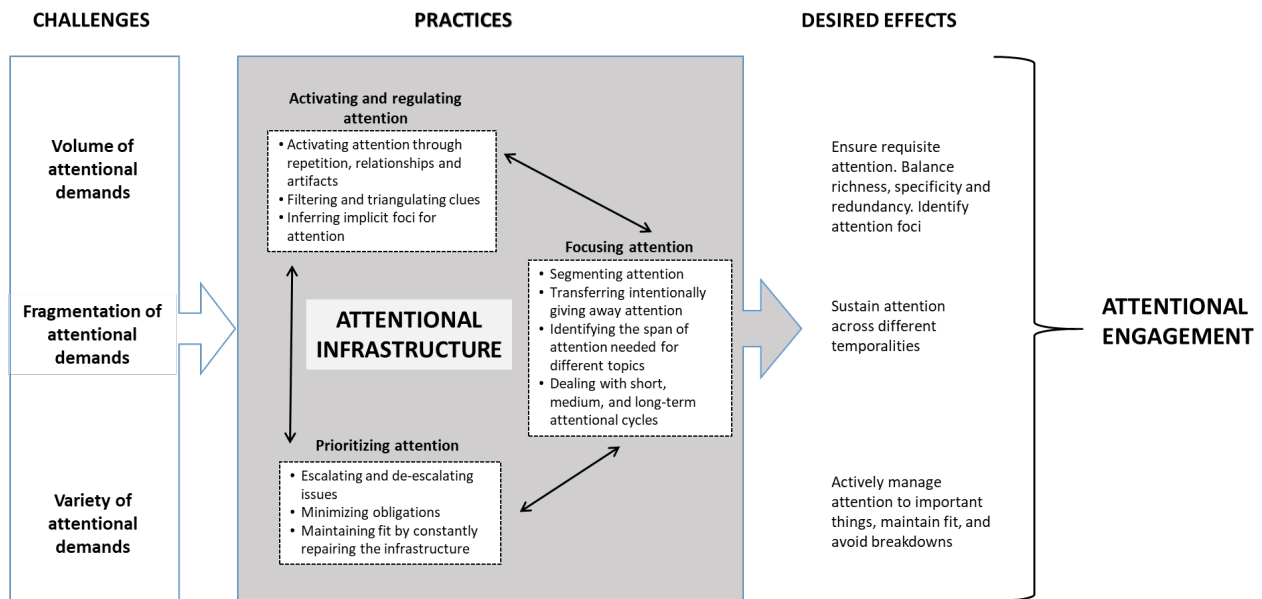


Figure 4: The attentional infrastructure of CEOs

To address the challenge of *volume*, that is the need to capture the critical variations in the internal and external environment without being overwhelmed by too much data, the CEOs used a unique combination of routines, relationships, and artefacts for activation and regulation. These elements in combination allowed the CEO to maintain vigilance, monitor his surroundings, limit amounts of information, and ensure information quality. By providing a background of “routine” information and opportunities for triangulation and validation, these practices also allowed the CEOs to infer new emerging foci of attention.

To cope with the challenge of *fragmentation*, CEOs employed careful segmentation by sustaining attention until the issue was sufficiently developed to allow it to be either given away or actioned. This required applying a degree of simultaneous mono-focal attention on several issues – which we describe as a multi-focal orientation. It also required identifying the span of attention needed for different topics and deploying a specific combination of practices depending on whether the issue was short, medium, or long-term.

Finally, to address the challenge of *variety*, the CEOs had to manage the allocation of their attention actively, by weeding out certain issues depending on their nature, determining appropriate action, and

clearing their desks of other issues to allow prioritization of what they were most concerned about. CEOs needed to ensure that their attentional engagement was in line with their personal and contextual conditions. Their practices thus continuously evolved and required constant repair. This was in response to identification of shortcomings, such as too many issues of little relevance or missed problems, or to changes in the institutional landscape.

We argue that these practices performed an infrastructural function, by operating in the background to support the work of the CEOs' work. They became visible only following breakdown. Moreover, they were composed of "humble" elements, relied on what was there before, and prompted a specific perspective; all aspects which Star and Ruhleder (1996) consider to be typical of infrastructural arrangements.

By describing these practices as an attentional infrastructure, we highlight also that they are interrelated and perform multiple functions. Therefore, it is the entire attentional infrastructure, rather than its specific parts, which helps the CEO to address the three challenges we identified. For example, the activating and regulating practices, which help CEOs to ignore routines and infer topics for attention, also serve a focusing function; the topics serve as the initial focus and prioritization is based on the intensity of the trigger. Similarly, some focusing practices help to regulate the number of issues the CEOs deals with by allowing them to focus on one particular issue while simultaneously continuing to pay attention to other signals.ⁱⁱⁱ Indeed, some function in a regime of lamination, that is, they operate at the same time and come together in specific occasions and junctures. Therefore, while distinguishing among activating/regulating, focusing, and prioritizing is a useful analytical device, it does not wholly reflect the complex, occasionally overlapping nature of observed daily practices.

Contribution to theory

This paper furthers our understanding of managerial attention by providing one of the first fine-grained accounts of attentional engagement in relation to the critical challenges faced by CEOs. We contribute to work on the ABV in a number of ways.

First, we add to scholarship on vigilance and executive attention by showing *how* managerial attention is accomplished. We propose a view of vigilance, scanning, and foresight which is less psychological and voluntaristic. Traditionally, vigilance and executive attention are conceived in terms of selective allocation of awareness and scanning (Aguilar 1967, Hambrick and Mason 1984, Garg, Walters and Priem 2003) and the assumption that what managers pay attention to is linked to their mental representations (Starbuck and Milliken 1988). This implies that managers have discretion and are able to change the target, frequency, and proactivity of their scanning behaviors (Aguilar 1967, Nag and Gioia 2012). Our study provides a more nuanced view. We show that vigilance, scanning, and monitoring are the result of infrastructural arrangements which are not entirely within the CEO's immediate sphere of control. What managers pay attention to is thus determined at least in part by the attentional infrastructure. This might not be aligned to the CEO's personal decisions, desires, and expectations, and can generate conflict in the CEOs' attentional engagement practices.

Second, our findings advance the ABV by shedding light on how managers balance vigilance and executive attention through multi-focality and distinct combinations of responses to different temporal modes. Our findings question the traditional view that individual attention is inherently sequential while organizational attention works as a parallel system (Ocasio 1997). In our study, CEOs emerged as both sequential and parallel processors. The critical challenge was how to act as both at the same time: to focus without being overwhelmed, and to manage and center on multiple problems of varied durations.

Third, our study demonstrates that the encounter between the attentional perspective of the firm (i.e. the structures that generate heightened awareness and focus) and attentional engagement may be more conflicted, fluid, and uncertain than previously thought. Ocasio's (1997, p.189) observation that "while individuals ultimately do the processing ... individual attention is situated in the context of the firm's activities and procedures" needs to be revised, since attention emerges necessarily at the encounter between the two. In other words, how managerial attention is regulated, sustained, and managed emerges at the point where a variety of personal, organizational, and contextual factors coincide. Similarly, the ABV argument that attentional engagement refers to the "intentional, sustained allocation of cognitive resources" (Ocasio 1997, p. 1288) also needs to be reconsidered. Our study suggests that attentional engagement is much less intentional and discretionary than the ABV

might suggest, and instead, is the active result of tensions between agency and structure, and between aspiration and reality (see *Figures 3 and 4*).

Finally, we contribute by addressing some of the undesired effects of the information-processing approach underpinning the ABV and most existing research on managerial attention. First, we introduce a material sensibility to the study of attentional processes. While the ABV emphasizes the “distributed nature of organizational decisions, actions, and cognitions”, suggesting that “attention is a distributed phenomenon” (Ocasio 1997, p. 189-91), it understands this distribution primarily as being limited to the cognitive (Ocasio and Joseph 2008, Nigam and Ocasio 2010) and communication/linguistic (Ocasio, Laamanen and Vaara 2018) spheres. However, we show that in describing engaging attention, the definition must be extended to include artefacts and bundles of associated practices. Second, we foreground the potential importance of non-cognitive factors usually ignored by the information-processing tradition. Our finding that CEOs work to make room for the things they care about, rather than simply making rational calculations, suggests that personal aspects such as emotions and preferences also matter. Finally, our study questions the tendency of the information-processing approach to downplay the differences derived from unequal positions in organizational hierarchies. We show that the nature of CEO attention is determined at least in part by the CEO role: some of the attentional engagement practices they employ, such as transferring attention, are not available equally to other actors. Thus, our study points to a coincidence between attention and formal authority: the lower the hierarchical position, the less the opportunity to subcontract attention. Thus, attentional engagement as a set of practices likely varies across different roles. While the idea that all managers are monitors remains intuitively valid (Mintzberg 1973), how this monitoring is enacted at different levels should be the subject of further empirical research.

Implications for practice

Our study has some important implications for practice too. While we observed ‘repairs’ to attentional engagement practices, none of the CEOs observed deliberately and regularly interrogated their overall coherence – certainly not by asking explicitly “to what and how am I paying attention?”. However, lack of attention to attention can become a serious problem, as the breakdowns we observed

demonstrated. We found also that practices are performative: unmanaged attentional infrastructures and practices ultimately may ‘manage’ the manager. Our empirically-founded theorization could thus be employed to interrogate and adjust attentional engagement practices, and diagnose emerging difficulties, traps, and pathologies. The starting point is awareness of the composition and functioning of the personal attentional infrastructure and the quality of personal attentional engagement practices. The next step is straightforwardly to address their balance and potential contradictions.

In particular, managers might find it useful to adopt the idea of an attentional infrastructure to interrogate how they regulate attention. This could involve questions like: what is my infrastructure composed of? Do I have the right combination of routines, relationships, and artefacts to allow me to stay on top of things and accomplish what I feel I need to do? What does it help me to see? What might I be missing and why? What do I need more or less of? It is important that these questions are considered frequently and not just in response to a breakdown. Our study shows that ‘paying attention’ tended to be considered a routine part of the job, and was not treated as a separate task or a skill that required to be maintained. We observed that it was only after some kind of breakdown that a repair took place. However, many such breakdowns or their negative consequences might have been minimized by regular attention to ‘paying attention’, and the realization that changing work and priorities require changes to the attentional infrastructure to ensure a continued ‘fit’.

Second, managers could use our theorization to interrogate their own maintenance of effective attention. Question they might ask include: how attentive do I appear to my collaborators? How effective am I at paying attention over different time durations? How effective am I at focusing the attention of others? Do the people and processes around me ensure that although I may stop paying attention to certain issues, they are taken up by someone else? Getting these things right should ensure that issues are not pre-emptively discarded or buried.

Finally, our theorization could help managers consider the effectiveness of their prioritization practices. They might ask: how effective am I at distributing my attention across the things I believe matter? Do I tend to be distracted or overtaken by the ‘wrong’ issues in terms of their importance or timeliness? Do I pay too much attention or act prematurely without sufficient information? Does my distribution of attention reflect personal priorities and beliefs, or is it mostly pre-determined? How can

I regain control of my attention? How effective am I at updating my attentional priorities? Such questions should be posed regularly to allow adjustment and avoid breakdowns.

Directions for future research

As one of the first ethnographic, practice-oriented explorations of managerial attention, our study leaves several critical questions unanswered, opening up opportunities for future research.

First, while our access was exceptionally comprehensive and our study is one the longest observation-based scholarly accounts of CEOs, longer observation would have yielded an even richer understanding. For example, future research could more closely map how longer-term issues are sustained and the triggers that reshape the attention to them over time. As we hint above, a longer period of observation would also allow further exploration of the overlaps and interactions among practices, and how they work together to produce certain effects.

Second, the exploratory nature of our study limited our capacity to develop a typology of attentional infrastructures and types of attentional engagement. The CEOs used significantly different combinations of practices to address the volume, fragmentation, and variety of problems (see *Table 1*). For example, Michael (CEO3) relied on a dense network of relationships built over time and supplemented by a sophisticated IT system; he used this to free space for attention to his national and international strategic work. In contrast, Jim (CEO7) used social media to make up for his lack of long-standing relationships and organizational IT infrastructure. Michael was a fierce “weeder outer” of attentional demands, while Jim was a reflector who frequently re-considered his attentional priorities. While our data suggest the contours of a typology, our rather small sample does not provide sufficient variance for contingency-based theorization. Similarly, despite highlighting the aspect of ‘fit’ among the demands, constraints, and practices we observed (see also Stewart 1967), we were unable to link types of attentional engagement and infrastructures to the effectiveness of the CEOs’ practices. Further comparative research is required to establish which practices or bundles of practices contribute to effective or ineffective attention engagement, and to identify the conditions for situational effectiveness at different times and in different contexts. This would require investigating

which attentional profiles ‘fit’ which situations, and whether and how personality traits and personal CEO preferences make a difference.

Third, more investigation is needed to compare attentional engagement at different levels in the organization, and in organizations in different industries. Based on the extensive literature on the consequences for managerial cognition of different environmental conditions and contextual circumstances (Daft, Sormunen and Parks 1988, Garg, Walters and Priem 2003, Sutcliffe 1994), we would expect to find different attentional engagement practices and attentional components in different social, economic, and cultural conditions.

Finally, future work could focus more on the non-cognitive aspects determining the content of attentional engagement. As the growing literature on the attention economy suggests, affective and pre-cognitive factors play a powerful role in attracting attention and determining what we pay attention to (Citton 2017).

Our practice-based study provides a nuanced elaboration of how CEOs perform attentional engagement using distinct bundles of practices aimed at activating, regulating, sustaining, and managing attention, thus allowing the CEOs’ to cope with challenges of volume, fragmentation, and variety. It offers new ways to expand the work of ABV scholars. Our recommendations offer further opportunities for meaningful contributions to the literature, which should be useful also to executives. Paying (even) more attention to attention is necessary and to be welcomed.

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ⁱ The CEOs engaged in other attentional engagement cycles, e.g. short duration physical actions (i.e. a handshake) and reading emails; and longer duration activities, such as career considerations. We do not discuss these here since they apply to many employees, whereas we focus on managerial attention. Managers are also increasingly being encouraged to consider environmental sustainability, which can be measured in terms of decades and centuries. However, such considerations did not seem to occupy the CEOs we observed almost a decade ago.

ⁱⁱ David worked from home most Wednesday so the average could be slightly higher than for other CEOs – although 4 meetings seemed to be the norm. Our observation is consistent with previous findings (see e.g. Tengblad 2006).

ⁱⁱⁱ We are grateful to the Associate Editor, Ann Majchrzak, for pointing this out.