Lockdown literacies and semiotic assemblages: academic boundary work in the Covid-19 crisis

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ABSTRACT

In March 2020, populations were forced into home quarantine to curb the spread of the coronavirus. Universities moved the majority of their operations to homeworking, with profound implications for students, academics, and professional services staff. This paper analyses interview and visual data collected as part of a study on the impact of 'moving online' on staff at a large UK university. Drawing on sociomaterial perspectives, it considers the status and role of academics' literacy practices under lockdown, focusing particularly on the ways in which a range of boundaries are negotiated – spatial, temporal, material, digital, professional, personal and emotional – in a setting where conventional boundaries have been profoundly disrupted. We argue that these practices form part of emergent, restless and shifting semiotic assemblages. The paper concludes with a discussion of the implications of this conceptual shift for academic work, meaning-making and academic subjectivities, in lockdown and beyond.

Introduction

In an attempt to slow down the spread of the Covid-19 disease, countries hurriedly introduced social distancing rules which caused campus universities around the world to close or restrict access (UNESCO 2020). Populations in some countries were forced into home quarantine, national 'lockdowns' in order to curb the spread of the novel coronavirus. In the UK, for example, the Prime Minister announced the first national lockdown on 23rd March 2020, requiring the public to quarantine at home and stay there except for essential purposes, such as food shopping, health, exercise or travel for key forms of work. Schools closed and all work that could be carried out from home, including almost all forms of academic work, had to migrate online. UK universities, like many other workplaces, moved the majority of their operations to homeworking in a very short space of time (Watermeyer et al. 2020). This first lockdown was eased gradually, with schools reopening in England on 1st June 2020, however, in response to escalating infection rates, restrictions had to be increased in November 2020 and January 2021. Lockdown has had profound implications for students, academics, and professional services staff at universities in terms of their lives, work, and knowledge practices; with screens, digital devices and material work arrangements taking on particular importance.

The sudden move to homeworking required academics to establish space and devices in order to continue their roles. For these staff, this included a range of tasks including teaching, research,

management, and general communication with colleagues, students, and associates beyond the university. This would require digital devices in the form of laptops or desktop computers, plus facilities to conduct video calls on platforms such as Zoom. All of this needed to be achieved in domestic settings – for some this may have been an easy transition if a home office was already established – but for many others it meant challenging improvisation, and adaptation of existing domestic spaces, while also balancing demands such as childcare and home schooling, and domestic work. This also presented challenges in terms of identities and emotions, as the established divisions which had delineated home and work were dissolved, and temporal routines were overturned. In addition, individuals were suddenly separated from their everyday networks, communities, habits, mobilities, environments, and freedoms.

This paper reports on an in-depth interview study which was conducted at a large UK university, investigating how university staff responded to the March 2020 lockdown. Before turning to the data however, in the next section we will discuss the nature of the type of activities required of the academics working at home, with reference to the research literature, proposing that these events should not be conceptualised as primarily linguistic or textual, but, following on from recent work in literacy studies and applied linguistics, they should instead be viewed as *semiotic assemblages* of human and nonhuman actors.

Academic homeworking

Arguably, the fine-grained nature of academic work is somewhat under-researched in terms of exactly what academics *do* in their day-to-day practices. The 'commonsense' way of dividing up academic tasks and responsibilities tends to group the work into 'research', 'teaching' and 'administration', although clearly the academic role is varied across disciplinary contexts, and involves a wide range of activities. A closer, more ethnographic look at what academic work actually consists of, reveals that a great deal of it – perhaps unsurprisingly – revolves around writing, reading, and speaking, and forms of communication around texts of various kinds. The New Literacy Studies field of research has grown out of social anthropology and applied linguistics in the last several decades, and views these activities as forms of literacy practices (e.g., Street 1984; Barton 2007) which are fundamentally social in their nature. A series of influential studies have looked at academic literacies (e.g., Lea and Street 1998), with later work focusing on academic working practices (e.g., Lea and Stierer 2011). Lea and Stierer's study in particular revealed the extent to which the granularity of academics' day-to-day practices centres on texts, in digital and analogue formats. Work in communities by linguistic ethnographers has also uncovered the complexities of how texts travel, and move on *trajectories,* which generate co-constitutive relationships between texts, context, authors, readers, and other human and nonhuman subjects in their ambit (e.g., Kell 2006, 2011, 2015). Other work has focused on the relationships between literacy practices and the digital in particular (e.g., Goodfellow and Lea 2007, 2013). What these various strands reveal is the profoundly textual nature of academic work (texts taken here also to refer to non-linguistic semiotic resources). Given this textual/literacies focus of academic work, it is to be expected that this would continue in lockdown, in which academics strive for continuity, or suitable adaptions to their practices while working in a domestic setting.

The construct of the *literacy event* was derived from Hymes' construct of the *speech event* (1977), was traced back to Anderson, Teale, and Estrada (1980), and established in seminal work in linguistic anthropology by Shirley Brice-Heath (Brice-Heath 1982, 1983). Brice-Heath's fieldwork focused on patterns of language use related to books, focused on families in three communities in the south east of the US. She defines the literacy event as ' … occasions in which written language is integral to the nature of participants' interactions and their interpretive processes and strategies' (Brice-Heath 1982, 50). Examples from her study focusing on pre-school age children include bedtime stories, reading cereal boxes, and interpreting instructions for toys. As she puts it, 'In such literacy events, participants follow socially established rules for verbalising what they know from and about the written material' (Brice-Heath 1982, 50). Her close study of the verbal interactions which make

up literacies in these communities revealed cultural differences in terms of the conventions that govern these events.

Literacy-in-action

Subsequently, the term 'literacy practice' became widespread in the field of New Literacy Studies. However, Lenters (2014) revisits both the literacy event, and Brice-Heath's study (1983), engaging with Brice-Heath's account with an added dimension of an attention to materiality, deploying the notion of *literacy-in-action*. She points out the anthropocentric nature of the concept, emphasising the increasing interest in materiality in literacy studies, such as the use of object ethnography (Carrington 2012), multimodality (Pahl and Rowsell 2006, 2010), activity theory (Kell 2006), and actor-network theory (ANT) (Hamilton 2001; Leander and Lovvorn 2006; Michaels and Somer 2000; Nichols 2006). She reviews Brandt and Clinton (2002), who used ANT, drawing on Latour (2005), to reconceptualise literacy events. Rather than viewing texts as contextual features, Brandt and Clinton viewed them, and also technologies of communication, as agentive – in Latour's terms 'actants' – which are not only acted upon, but act on human participants. Lenters proposes that literacy-in-action as a unit of analysis allows us, in Brandt and Clintons' words, to follow ' … objective traces[s] of literacy in a setting (print, instruments, paper, other technologies) whether they are being taken up by local actors or not' (Brandt and Clinton 2002, 349; in Lenters 2014, 151). The crucial notion here is that literacy objects may be constructed at a distance, but can play a role in local literacy practices.

Literacy-as-event

More recently, the literacy event has been considered in the context of digital mediation in particular, with Burnett and Merchant (2020a) proposing *literacy-as-event* as a construct which takes account of relationality, and literacy as ' … an ongoing assembling of the human and the more-than-human' (2020a, 45). They also refer to the work of Kell (2015), and work on sociomaterial relations (Budach, Kell, and Patrick 2015; Fenwick and Edwards 2010), building on literacy research inspired by the work of Deleuze and Guattari (1988) and Massumi (2002); such as that of Leander and Boldt (2013). The work also engages with Barad's (2007) concept of *agential realism* and Bennett's (2010) notion of *vibrant matter*, both of which ' … emphasise the entanglements of materiality, embodiment and subjectivity'. Their perspective draws on the interrelated perspectives of posthumanism, new materialism and sociomaterialism, which ' … orientate to literacy as *an affective encounter generated through an ongoing reassembling of the human and more-than human*' (Burnett and Merchant 2020a, 46, our emphasis).

Burnett and Merchant argue that the concept of the literacy event allows for a rich analysis of ' … the social interactions that happen around and through text' (Burnett and Merchant 2020a, 47). However, like Lenters, they also draw attention to its limitations as a unit of analysis, in terms of its boundedness. As pointed out by Brandt and Clinton (2002), literacies are 'transcontextual'; as Kell (2011) shows, texts 'travel' across sites. This is not unique to digital communication, but is a pervasive feature of literacy events which involve multiple social actors in various physical locations, combined with off-screen activity, mobile devices, and devices which perform multiple simultaneous functions. These events are ' … porous and permeable' (Burnett and Merchant 2020a, 47), and therefore less predictable than those events analysed by Brice-Heath. Crucially, they make the point that ' … the idea of patterned, rule-bound literacy events sits uncomfortably with notions of liveliness, affect, fluidity, and emergence' (Burnett and Merchant 2020a, 47). In order to take account of this emergent and ephemeral complexity, they draw on Massumi's contention that 'Nothing is prefigured in the event. It is the collapse of structured distinction into intensity, or rules into paradox.' (Massumi 2015, 27; in Burnett and Merchant 2020a, 49). They propose *literacy-as-event*, based on three ideas:

> (1) the event is generated as people and things come into relation; (2) what happens always exceeds what can be conceived and perceived; and (3) implicit in the event are multiple potentialities, including multiple possibilities for what might materialise and what might not. (Burnett and Merchant 2020a, 49)

Drawing on Leander and Hollett (2017), meaning-making is proposed as *part of life*, rather than *instantiations of life*. As they put it:

> This perspective invites literacy research to focus more on the relations mediated through the process of meaning-making: the new collaborations, stories, conceptualisations, directions, intentions and so on that emerge as people engage in meaning-makings, all of which can and often do turn out in unexpected ways. (Burnett and Merchant 2020a, 52)

Burnett and Merchant elaborate this position more fully in their recent book-length piece (Burnett and Merchant 2020b), and a range of other recent and innovative work in literacy studies has also recognised the importance of these perspectives (e.g., Kuby, Spector, and Johnson-Thiel 2019).

Semiotic assemblages

These moves in literacy studies have been echoed recently in the field of applied linguistics, where a recognition of the centrality of the material and the emergent has begun to develop. Pennycook sets out a case for 'posthuman applied linguistics', drawing on the work of Barad (2007), Bennett (2010), Braidotti (2013) and Ferrando (2013). As he puts it:

> Breaking down distinctions between interiority and exteriority allows us to understand subjects, language and cognition not as properties of individual humans but rather as distributed across people, places and artefacts. A posthumanist applied linguistics does not assume rational human subjects engaged in mutually comprehensible dialogue: the multimodal and multisensory practices of the everyday include the dynamic relations between semiotic resources, activities, artefacts, and space. No longer, from this point of view, do we need to think in terms of competence as an individual capacity, of identity as personal, of languages as entities we acquire, of intercultural communication as uniquely human. Posthumanist thought urges us not just to broaden an understanding of communication but to relocate where social semiotics occurs. (Pennycook 2018a, 446)

Pennycook proposes that sociolinguistic repertoires ' … need to be understood in terms of spatial distribution, social practices, and material embodiment', as opposed to residing in the human individual. The subject in this conception is seen as dispersed, language as distributed, and repertoires as ' … materialist, vitalist, embodied and embedded' (Pennycook 2018a, 451). These ideas are developed in detail in his book-length work (2018b), where he proposes the construct of *semiotic assemblage*:

> Looking at language use in relation to distributed language and semiotic assemblages gives us a way to think in much more inclusive terms than individualistic accounts of linguistic or communicative competence or notions such as language in context. The focus, rather, moves away from the humanist concern with individuals and systems in their heads and looks at the greater totality of interacting objects, places and alternative forms of semiosis. (Pennycook 2018b, 54–55)

Although discussed in terms of language use, and using different terminology, this move works in parallel with those in literacy studies discussed above. The potentials of posthumanist, new materialist, and sociomaterial perspectives have already been recognised in education (e.g., Fenwick, Edwards, and Sawchuk 2011), and specifically in the context of digital practices in higher education (e.g., Bayne and Ross 2013, Bayne 2016, Gourlay and Oliver 2016, 2018). The echoing of these shifts in literacy studies and applied linguistics allows us greater purchase on the detail of digital engagement as it unfolds, in terms of communication and practices.

Turning back to our consideration of the academics under Covid-19 lockdown, we can analyse their day-to-day activities in these terms. Isolated in their homes, communication with colleagues, students, and their wider academic communities became central to day-to-day enactments of their roles. The next section will set out the study methodology, before going on to consider the accounts

of these academics of their experiences and practices. Noting the contribution of Lenters' *literacy-in-action* and also Burnett and Merchant's *literacy-as-event* to thinking in the area, the analysis uses Pennycook's broader construct of *sociomaterial assemblage*, in order to provide theoretical purchase on these practices.

The study

The University College London Institute of Education 'Moving to Teaching Online and Homeworking' research project was funded and established at the start of the 2020 March lockdown, in order to investigate the impact the move to working online at home was having on academic and professional services staff across UCL (Gourlay 2020; Littlejohn 2020). Institutional ethical approval was secured, which included commitments to informed consent, confidentiality and anonymity; all names used in this paper are pseudonyms. Staff were invited to participate by email, which was distributed via the Deans of Faculties. The survey consisted of closed questions gathering demographic data, and open questions that invited reflective narratives about participants' experiences relating to research, teaching and other areas, including management and administration. 412 respondents gave consent for their data to be used. Of these, 72% were academics, 80% were on full-time contracts, 70% were female and 88% were White. 50% of respondents had caring responsibilities, which included childcare and care for elderly relatives or other family members with chronic conditions.

As part of the survey, participants were invited to include a photo, or another image such as a drawing, to represent their experience of the lockdown at that time. The respondents were also invited to participate in an online interview, over 150 volunteered, and 32 were selected, to provide a representative cross-section of the UCL staff in terms of gender, age, seniority, role, ethnicity and sexuality. A semi-structured interview schedule was developed, focusing on the interviewees' experiences and perspectives. The interviewers invited participants to discuss the adaptations they had made to their practices, with a particular focus on the spatial and sociomaterial assemblages which they had created in their homes, to allow them to engage remotely with colleagues and students. They were also invited to describe their 'typical lockdown day'. There was extensive discussion of how the lockdown had impacted their work, their daily routines and practices, and also a focus on emotional impacts, plus consideration of the range of challenges they faced when homeworking, including those related to family life and childcare.

The interviews were conducted on *Skype* by the four authors of this paper. The recordings were professionally transcribed, with transcripts provided to the interviewees to 'member check' and make any redactions they required, in order to preserve their anonymity and that of colleagues, students, or departments. Pseudonyms were applied, and any remaining potentially identifying features were removed from the transcripts by the research team. The transcripts were then uploaded into NVivo and thematically coded. The following section focuses on a strong theme which emerged in the data; that of emergent and volatile boundaries, the blurring of boundaries, new boundaries, and the practices engaged in to redraw and renegotiate these. These boundaries related to materiality, temporality, practices, emotions, routines, home and work, relationships, and communities. The analysis focuses on the agentive role of the *sociomaterial assemblage* in which these boundaries emerged and shifted, through intertwining of human and nonhuman actors, spatiality and temporality.

Interview findings: semiotic assemblages and boundary work

The notion of *boundaries* and barriers was a recurrent theme, with several participants discussing the various ways in which pre-pandemic divisions, such as between work and home, had been breached by the lockdown. These blurred or abandoned boundaries took many forms; some were temporal, with interviewees reporting working longer hours, or work spilling into the weekend, due to

the lack of punctuation normally provided by commuting to and from the campus. Another prominent blurred boundary was spatial, with most of the participants having converted an area of their home into a work space, again obscuring the distinction between home and work, with domestic spaces such as kitchen tables, a nursery chair, and a bedside table converted to work areas (Gourlay 2020). For some participants, boundaries were felt to have been eroded in terms of identities, with the role of parent and caregiver being intermingled with the professional role (Gourlay 2020).

However, while some boundaries appeared to have broken down, others had sprung up. Along with the majority of the population, apart from key workers, all the university staff and students were confined to their homes, and at that time could not meet in person at the campus, or in any other setting. Effectively, the walls of the home and the enforced physical distance had become barriers, with the sole means of communication with colleagues and students being by phone, or more commonly via digital devices. This led to a reported series of losses; loss of community, contact, serendipitous communication, travel, research opportunities, and so on. It also enforced a very rapid move to online teaching, which was acknowledged to be advantageous in some respects, but was also discussed in negative terms by some participants, who felt that the student experience was diminished by the lack of face-to-face contact and the dearth of possibilities for practical work.

The day-to-day practices of the academics, which pre-pandemic would have centred, to a large extent, on spoken face-to-face interaction and embodied activities such as scientific experimentation, was now narrowed to interaction using digital devices for communication. In terms of the concepts discussed above, a large proportion of their days were now spent engaged in talking around or about texts, and more broadly their lockdown practices can be seen as entanglement with various *semiotic assemblages*. This section will provide three vignettes from the data, in which academics give accounts of their responses to the challenges of shifting boundaries, by engaging in a range of these emergent semiotic assemblages.

David's video

David is a senior academic who was required to move his teaching online at short notice. He was asked to produce a video about one of his modules to encourage students to select it, with the video to be shown via Moodle. His video referred to the natural setting as part of the content of the module:

> I thought, well it's a nice sunny day and I'll take my son outside, and we videoed me there. And, and I converted that into a … Into a YouTube video … And, actually, it took me so much longer. Well, it was a bit of homeschooling in, I guess, in videography. It, it rained, so I went outside in the rain and videoed the, the thunderstorm. Then I videoed the, the, the rain splattering on the patio. We did it once, we went down there, it was a lovely sunny day and the … But it was windy, so I came back, downloaded the video … You saw me and, with my mouth going, and all you heard was the wind. So, we had to go back again the next day … Because it was the weekend, it was … You know, we'd go for a walk anyway. And I had my wireless headphones on … Recording the video on my phone whilst doing the camera. And then I had to join, join it all together. And then I did, so I did that, and then at the bit in the middle, which is me talking over a PowerPoint file … But of course, the problem with it, you didn't have the birdsong. So I then downloaded a clip with a birdsong, to put on it. And it's still with iMovie. So now you get the, the … You know, me in, outdoors with birdsong, and then me talking to the PowerPoint with birdsong. So, you get the, the thunderstorm, you get this, sort of … The low-level shot of me. I walk in with … And you just see my wellies, and then, and then, then … Then I move on again, and then you see me walk off.

David's story is of interest in several respects, in terms of boundaries. He is required to record a video, and whilst he has done a simple recording of a *PowerPoint* presentation before, he has not recorded a video to camera on previous occasions. So the video itself arises in response to the physical boundary of lockdown, which seeks to breach this boundary by using a form of digital media which can travel across both time and space, given the impossibility of an ephemeral face-to-face encounter. However, instead of simply recording a talk over *PowerPoint*, he decides to film

himself in a nearby natural setting. He mentions in his interview that he is not comfortable with having images or videos taken in his house. This activity immediately crosses another boundary, from the domestic to the natural, and also sets one up; he wants to maintain a division between home life and what the students can see. He also combines the two filming trips with walks with his son, and describes it as part of homeschooling, the boundaries between work, parenthood and schooling being blurred. He adds aesthetic touches to the video, such as birdsong over the *PowerPoint*, and described in his interview how he became 'perfectionist' about it – this suggests further fuzziness between teaching, creativity and performance. He sent me a link to the video (now hosted on a different platform), and it is indeed highly professional, with the part filmed outdoors reminiscent of a well-made nature or science TV programme.

In terms of the theoretical framing discussed above, David's vignette reveals how he entangled with materialities and more-than-humans, in an emergent semiotic assemblage which was improvised and unstable. In terms of space, he judges that the interior of his house should not be used as the setting for a video, and enrols a natural outdoor space nearby for this purpose, one which until then he had regarded as scenery on his walks. This necessitated a major shift in terms of the semiotic assemblage, as he had to move away from using his laptop in his office, towards filming outdoors using his phone. This assemblage requires him to make multiple attempts to record the video, due to the fact that he must film it in one take with the phone propped up nearby or held by his son. He is required to raise his voice considerably, in order to be heard over the surrounding natural sounds and across the distance. This shift alone, we would propose, moves the semiotic assemblage of 'making a video about the module' in a profound manner, shifting the genre towards a broadcast, which is reflected in the 'blooper reel' which he shared with me. The assemblage was also shifted in terms of his self-presentation, as he appears in the video in 'outdoor-style' warm clothes and boots, as opposed to the more neutral 'smart casual' outfit which he was wearing when we conducted our interview. He was unable to integrate textual and multimodal semiotic resources into the outdoor segment, but instead interleaved the video with a 'traditional' *PowerPoint* slideshow later, creating something of a hybrid. In this regard, David's video seems to exemplify Pennycook's assemblage as ' … interacting objects, places and alternative forms of semiosis' (Pennycook 2018b, 55).

Jo's home office

Jo is a Departmental Administrator who works on clerical tasks related to HR and Finance, as part of a team of 12 who had previously been co-located in the same office. Before the pandemic Jo was not allowed to work from home. She had little time to plan the transition, which meant she had to enrol objects and equipment normally used in the domestic setting in order to allow her to engage in work. She describes how she entangled with these objects:

> I've had to be a little bit creative. I used to have two monitors, which I don't have a home … I didn't realise how much I relied on the two monitors at work … Um, you can get your laptop to mimic the two monitors, but … they were tiny. IT helped me … connect my laptop to my TV, so I have a version of two monitors on my TV, so I can get things, it's actually quite large.

Her close contact with colleagues also changed when working from home compared with on campus, and this meant she had to alter the material aspects of the assemblages she worked with, such as no longer using paper documents due to the lack of a photocopier:

> In some ways it's positive because it's making me learn things … Um, so it's forced me to find ways that are compatible with GDPR, to share documents with those kind of individuals in a way that I didn't think about before, because I would just give them a paper copy. Um, so that has changed. I'm not at the photocopier as much as I used to be [laughs]. I'm not at the printer anymore.

Jo makes reference to the ways in which these new assemblage of objects at home changed her practices. She no longer has the opportunity for serendipitous meetings with colleagues:

> I miss those accidental meetings [of colleagues at the printer]. You talk to people that you don't necessarily have to talk to … Whether you're making a cup of tea, you're at the printer, grabbing water in the lunch room, those conversations are there because you choose to have them and you want to have them. You don't … find things out quite as much as you used to because of those conversations. I miss that

Informal communication channels have been formalised, forcing Jo to reconsider who she interacts with and how she connects and interacts with colleagues:

> It's a little harder in some ways because you kind of have to make a 'Zoom appointment' with someone for them to show you something, whereas before you might have just knocked on the door and gone, 'have you got five minutes?' So that's been quite frustrating at times because it's like you're stuck on this particular screen.

Jo describes the malleability of the boundary she perceives between work and home. Having an assemblage of objects at home to enable her to work made it difficult for her to maintain a boundary between work and home life:

> At the moment there's no physical separation between, cos I'm working at my dining room table. I've quite a big front room. My dining room and my front room are the same. Um, so my transition is from the table to the sofa, but I'd like a more physical transition, so like that, when I leave that room, I've left work, and everything to do with work is no longer in sight. When I can see my work there in front of me, I'm not switching off in the way I used to.

The dining room table and TV – all objects intended for home use – now are used in her new semiotic assemblage. When Jo connects her work laptop to these objects, she associates these resources with specific multimodal and multisensory practices related to work. The dining table becomes her desk, the TV becomes her computer monitor and her 'window' on work meetings, when she meets with colleagues using MS Teams.

Connecting home objects with her work laptop made it easy for Jo move from home to work. However, it was more difficult for her to move back across the boundary from work to home, and she had to find a way to reinterpret the semiotic assemblages of artefacts associated with work as home objects. Jo realised that before lockdown, when commuting to her office on campus, she used specific multimodal and multisensory practices to signal the transition between work and home:

> When I commute on my journey, my tube journey, I would like a little crochet, and I don't think I appreciated how much of a switch off that was for me. Mentally it put me, like, you're away from work, you're now home, and it gave me that transition, and I haven't found something to replace it. Even if I sit on the sofa and crochet for a bit, I can still see work cos it's there, um, and it never quite goes away.

The ritual of crocheting previously had helped Jo to 'switch off' from work and signalled psychologically that she was on her way home. However, this habit was no longer as effective, because she associated practices of work with home objects (dining room table, TV). To resolve this dilemma and to separate work from home, Jo developed a new habit of disconnecting the 'home' objects (dining room table, TV) from the 'work' object (laptop) and hiding her laptop to signal work is over:

> At the weekend I close the laptop off and I bury it under something. I can't see it anymore. So that's been more, actually putting in boundaries between work and life has been harder for me.

Jo's account of her homeworking arrangements provides several examples of fluid reassembling of more-than-human actors in a rapidly formed assemblage. Objects shifted in terms of their ontological status and became hybrid, such as the TV, which was converted to a second 'laptop' screen. She was required to give up paper documents via the lack of a photocopier or printer frequently used in the office and was no longer able to physically hand these to co-present colleagues – instead she found new ways to send and check documents digitally. Her semiotic assemblage also changed profoundly in terms of her communication with colleagues, as serendipitous face-to-face chats in a shared co-present spaces were lost. This change, as she describes it, is not merely a technical shift –

it is now necessary to make 'appointments' on a more formalised manner. Her 'ritual' of crocheting no longer holds the same significance without the material context of being on public transport on the way home. Tellingly, she changes the meaning of the semiotic assemblage of the living room at the end of the day, buy 'burying' the laptop, and putting it out of sight.

Benjamin's autopsy

Benjamin is a senior academic whose move to home working was reported as primarily positive. This reflects his comparatively privileged status, as a man with a full-time, permanent contract, no dependents, and a home where he and his partner each had a room to work in. This enabled him to be more productive than before in some aspects of his work, including publishing. Even with this assemblage, however, he experienced boundaries that reflected the specialist demands of his research.

> I've got my laptop … I go downstairs in the morning, and then go to the desktop … upstairs in the afternoon and she swaps to having meetings downstairs from her laptop. So that's how we organise that, so everyone has their fair share of a large screen, of a proper desk setting, etc. … And I do desk work with large Excel sheets, PowerPoint work and Note for writing, uh, you know the sort of illustrations, doing that in the afternoon.

The separation and coordination of meetings and desk work were due to working with high-resolution medical images. In his academic writing meanings were assembled by relating images, numerical data and written texts. These relationships were enabled by the 'proper' desk setting, including space and a large screen.

What this hides, however, is a fluid series of other prior semiotic assemblages that made this text possible. Benjamin undertook specialist dissection work as part of an autopsy team. This involved remote working even before the lockdown, with specialists at other hospitals undertaking procedures which were broadcast live to team members elsewhere. During the lockdown, this coordination broke down, due to the safety protocols that were in place. Although Benjamin was granted exceptional access to his laboratory in order to undertake Covid-19 related research, it was not possible to reconvene the entire team in the normal way, and so this established semiotic assemblage had to be deconstructed and arranged in a fluid sequence to overcome the boundaries and barriers established by the lockdown.

First, team members came to the lab at different times, sequencing their work. After the main post mortem examination, an organ was transported to Benjamin's lab so that his specialist procedure could be undertaken. This semiotic assemblage enabled the organ, surgeons and instruments to produce an alternative kind of 'text': sections of tissue that specialists could read and diagnose to make claims about Covid-19. Before this reading took place, however, the semiotic assemblage shifted in order to overcome other boundaries. The bodily materials were passed to a third team who digitised them, creating high-quality scans of the tissue slices. Here it was the scanner, rather than the technicians, who 'read' the biological texts and 'wrote' new digital ones. These digital images were stored on a secure institutional server, accessed remotely by all team members as part of the analysis and writing process.

> The full post mortem was done in another hospital. … a colleague and myself, the two of us, we came in, we did the [organ] cut up, the sampling, uh, the lab did the sectioning and then all the, uh, publication work was done offline. So that we both had done from home, by having shared teams or SharePoint files where we can actually see what the other person is doing whilst we had the team meeting, and that worked perfectly fine. We don't need to sit together in front of a computer.

Benjamin's experience illustrates that although academic writing relies on the material and temporal assemblage of a 'proper' desk, it is also transcontextual. Writing was only possible after a fluid sequence of sociomaterial assemblages had read (and sometimes destroyed) different kinds of text in order to produce ones that overcame specific lockdown boundaries. The organ could not be

'read' until it was properly sliced; the slices could not be distributed until they were digitised; the digitised images could not be related to other data until assembled at a 'proper' desk.

The flexibility that Benjamin enjoyed was therefore an achievement that required considerable effort, since only some parts of the research process could be re-located from the laboratory site. The specialist semiotic assemblage of the laboratory brought together the researcher, equipment and organs, and was near the digitisation suite, so the material 'texts' – sections of tissue – could be moved easily, then digitised to make them considerably more portable. Once these more mobile texts had been created, the team was able to work remotely by analysing the high-resolution digital images. Again, Pennycook's construct provides theoretical purchase on the complex, fluid sequence of sociomaterial and semiotic assemblages required for this work to take place, and Benjamin's account illustrates how shifts were required that reassembled the human and nonhuman actors, temporally and spatially, in response to the restrictions of the lockdown.

Discussion

The three examples discussed above, we propose, are instances of boundary work being negotiated by means of *semiotic assemblages*. David's act of making his video enrolled a range of semiotic resources, including the natural setting, in order to generate the multimodal artefact of his video. He then interleaved the video with a *PowerPoint* presentation, also enhanced with recorded birdsong. He specifically chose to deliver the lecture element showing himself outdoors, as he did not feel comfortable with filming in his domestic environment, and explicitly avoided breaching that boundary. This transition, from working on campus, to the home office, to an outdoor setting, illustrated an evolution of David's semiotic assemblage over time. His assemblage also raised the issue of a borderline between teaching, broadcast and performance, which changed the nature of his video, and led him to spend a lot of time doing retakes, and adding 'artistic' touches such as the birdsong.

Jo's account also suggests an arrangement which was created in a process of improvisation and bricolage. The semiotic assemblage of the home office allowed her to cross the boundary from home to work effectively. However, in order to do so, she had to disrupt other boundaries in her domestic space. She enrolled her TV as a computer monitor, interfering with the boundary between that device as used for entertainment and work, and she sat at the dining room table, which also rendered its function as hybrid, both domestic and work-related. Additionally, the absence of her commute and the opportunity to do her crochet has removed the sense of the temporal boundary and ritual which used to separate home and work, and the associated 'switching off'. Interactions with colleagues are now prearranged and mediated *through* objects, such as the TV as a computer monitor, rather than as encounters *around* semiotic assemblages at work, for example talking with others while using the kettle, formalising interactions that had previously been informal.

Benjamin's homeworking arrangements involve an imposition of a temporal boundary or division between when he accesses the larger-screen desktop and when his partner uses it, leading them to use different rooms of the house at different times. His team work on an autopsy is a striking example of two complex semiotic assemblages, each composed of several people engaging digitally while other team members perform the material procedures: one pre-lockdown, which was broadcast in real time to support remote participation; and one post-lockdown, in which the process was recorded and relayed via video, then supplemented by other texts created by team members. The organ samples were 'entextualised' as digital images that could travel amongst the distributed authoring team, rather than the team travelling to the lab to view the material samples directly. These digital texts were then embedded in a semiotic assemblage in combination with a range of other texts to produce knowledge about the effects of the disease. In this way, Benjamin and his colleagues were able to break down the physical and spatial boundary which prevented them from being physically co-present at the autopsy.

Conclusions

In this paper, we propose that the academic practices and homeworking arrangements necessitated by the Covid-19 lockdown conditions may be regarded as, in Burnett and Merchant's terms; ' … an ongoing assembling of the human and the more-than-human' (2020a, 45). The sense of the emergent, contingent, more-than-human nature of these events can be seen in the accounts provided by the interview participants. We also propose that they exemplify Pennycook's *semiotic assemblage*, which he defines as ' … materialist, vitalist, embodied and embedded' (Pennycook 2018a, 451), involving a ' … totality of interacting objects, places and alternative forms of semiosis' (Pennycook 2018b, 54–55). The analysis also reveals the central role these more-than-human semiotic assemblages play in the maintenance, negotiation, establishing, and also breaking down of a range of boundaries, which may be spatial, temporal, material, habitual, and personal.

This theoretical stance and approach to data analysis offers, we suggest, the opportunity for fine-grained, ethnographically-oriented, and nuanced understandings of the complexities of what is actually going on 'behind the screen' and how these evolve over time, conferring us with greater theoretical and methodological purchase on the nature of day-to-day digital practices in education in the context of the lockdown. This type of inquiry may uncover elements of practice which would otherwise remain hidden from view, or may not be recognised as part of the 'work' required of academics and professional services staff when forced to work in a domestic setting not designed for that purpose, while dealing with other distractions and responsibilities. In this regard, individuals and teams could be more effectively supported by institutions, and challenges surrounding unseen inequities could be addressed. Issues relating to isolation and difficulties surrounding communication with colleagues could be acknowledged in more detail, and the complexities of teaching online while balancing the boundaries of privacy and space could be more fully understood. This framing of academic work as human / more-than-human semiotic practice allows for a recasting of the assumed binary of the digital / nondigital; it recognises the fundamentally sociomaterial nature of this practice, which may serve to enrich studies in this field by strengthening the connections in terms of the theoretical insights of literacy studies, applied linguistics, and digital education, in the context of the Covid-19 crisis and beyond.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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