Conceptualising digital technology integration in participatory theatre from a sociomaterialist perspective: ways forward for research

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Conceptualising digital technology integration in participatory theatre from a sociomaterialist perspective: ways forward for research

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Abstract
Existing research on the use of technology in participatory theatre in education has paid little attention to the moment-to-moment unfolding that characterises the liveliness at the heart of such practice. In this conceptual article, we show how a sociomaterialist perspective can illuminate the contingent co-emergence of people, things and technologies that produces this liveliness of events. Perspectives drawn from actor-network theory are used to illuminate one example of the integration of technology in participatory theatre in an educational context. The concepts of mutability, disruption, maintenance, potentialities and multiplicities are developed as an explanatory framework for future research and practice in these and similar forms of educational activity.

Key words: sociomaterialism, participatory theatre, iPads, technology, drama

Introduction
In an age of rapidly changing social arrangements and political and economic uncertainty, education has a key role to play in providing diverse opportunities for learners to explore ways of acting on and in the world in which they live. The practice described here as 'participatory theatre' has a rich contribution to make in this regard. By participatory theatre, we refer specifically to the work of theatre companies that involve people as participants in a developing drama and, through doing so, generate an ethos of trust in which participants can investigate and interrogate ideas, possibilities or experience. While participatory theatre takes place in diverse settings, our particular focus here is on participatory theatre in schools. Such work has been vulnerable over the years to shifts in curriculum, policy and funding priorities within the arts and education (Jackson 2007, Wooster, 2016). Nevertheless, participatory theatre companies continue to innovate and diversify and arguably have a distinct contribution to make to educational provision given calls for an increased focus on the creativity, criticality and collaboration needed to navigate personal, social and civic life in a complex and unstable context (Davies 2014). Currently, one area for experimentation in the work of participatory theatre is the integration of digital technologies, encouraged partly by calls for the arts to be at the forefront of technological innovation (e.g. see Nesta 2017). Such integration has varied widely, involving the use of different kinds of digital devices as well as well as applications enabling forms of multimedia engagement, connectivity, augmented and virtual reality. Despite such developments, research exploring the integration of digital technologies within participatory theatre is surprisingly sparse. Where it does exist, it largely reflects what could be described as a discourse of design, through which the contribution of technologies is defined in terms of planned use. Designed uses of technologies have enhanced participatory theatre in multiple ways. However, a discourse of design does not account for the moment-to-moment unfolding of activity that is at the heart of participatory theatre practice.

In this conceptual article we use illustrative material from the study of one participatory theatre programme to argue for a sociomaterial orientation to theorising the integration of technologies in participatory theatre. We propose that a sociomaterial account provides a means of interrogating what happens in the moment as digital technologies enter into relations with people and other materials in educational settings. From this perspective, technologies are not just resources to use, but participants in the unfolding drama. Such an account, as we explore, can expand and deepen our understanding of the relationship between digital technologies and participatory theatre and provide new orientations to the ensemble at the heart of such practice. We suggest that a sociomaterial orientation has potential to be highly generative to researchers working in the field, as well as to practitioners and policy-makers who are seeking new ways of integrating or evaluating participatory theatre within educational provision.

In what follows we begin by defining key aspects of participatory theatre in order to establish the context and warrant for our argument. We then identify three strands in previous scholarship on the integration of technology in this area of practice. Next, we outline our sociomaterial orientation drawing on the ideas of Law, Mol and others, and expand and exemplify this perspective with examples generated through a case study of one participatory theatre programme. We conclude by considering the potential of sociomaterial perspectives to generate new understandings of technology use across diverse forms of participatory theatre.

Participatory theatre

Participatory theatre has its roots partly in the theatre-in-education (T.I.E) movement that emerged in the UK in the 1960s alongside pioneering practice in educational drama (Bolton 1984; Heathcote and Bolton 1997; Jackson 2007). It is also shaped by political and site-based theatre movements that seek to reach new audiences and to dissolve the 'fourth wall' between actor and audience by positioning audience as participants who are then actively involved - to various degrees - in the world of the drama (e.g. Boal 1979; Coult and Kershaw 1983). There is not space here to survey fully the range of ways in which drama, theatre, education and participation intersect: approaches and intentions have varied considerably and debates about underpinning philosophy and form continue (see Davis 2014; Hughes and Nicholson 2016 for a fuller discussion). However the forms that we focus on here share a commitment to working in educational contexts and to ensemble working generated through co-presence in a shared space (Jackson 2007). Those working in the field see togetherness in the live event, and the negotiation and collaboration that this involves, as a powerful basis for engaging with complex, challenging or unfamiliar aspects of human experience (Neelands 2009). As Neelands writes, 'It is the quality of the social and democratic 'being with' […] that makes the distinctive difference to what is learnt in drama' (Neelands 2009,181).

Research on participatory theatre and technology: three strands

While for some digital technologies sit uneasily with the liveness and immediacy of participatory theatre (Davis, 2012), in recent years there has been increasing advocacy for the integration of digital technologies within participatory drama and theatre (Carroll, Anderson and Cameron 2006), and this is reflected in a small but growing body of literature. This literature, we propose, can be considered within three broad categories reflecting different applications of digital technologies. We refer to these as: 1. intensification of the space, 2. connection/extension of the space, and 3. making the world. Boundaries between these three categories are inevitably blurred, and indeed specific programmes may draw on a

combination of them. However below we consider each in turn in order to establish the current scope of research in this area and the different emphases that may shape technology use within participatory theatre practice.

Intensification of the space: The first category refers to the use of digital technologies to enhance the theatrical experience, through layering digital media into a physically defined theatrical space. Technologies of various forms have of course long played a part in intensifying theatrical performance, from candlelight to digitally managed sound. The distinctive emphasis here is on new forms generated through the juxtaposition or entanglement of digital media with physical form (Eglinton 2010; Giannachi 2004), such as the growing trend in 'intermediality' which involves drawing together different art forms. Live action may be blended, for instance, with film or photography. While technologies may vary considerably in sophistication (e.g. see Beswick 2016 and Kelly 2016 for contrasting examples), such work aims to complicate or enrich participants' experience of the live event (Kattenbelt 2010).

Connection/Extension of the space: The second category relates to the integration of networked technologies such as chatrooms, websites, online platforms and other virtual spaces, often mediated by mobile devices (e.g. Davis 2012). Anderson and Cameron (2015) describe how such approaches combine the 'live embodied affective world of drama education' and the 'networked, mediated world' to expand the world of the drama. The UK based company C & T, for example, has used websites and social media to establish the pretext for theatre-in-education programmes[1] (Sutton 2012). For Anderson and Cameron (2015), the potential of such work is in developing what Gee (2004) called 'affinity spaces' which they argue can extend the ensemble to include those who are not physically co-present.

Making the world: The third category involves building on and working with students' experience of digital media creation. In such work, participation is framed as production and participants as makers. Examples include Alrutz's (2013) integration of digital storytelling within programmes and the creation of virtual spaces for theatre making (Nicholls and Philip 2012). Such approaches do not just involve making and re-making using digital media, but making and re-making the world of the drama and, in doing so, they prompt participants to re-orientate to the world in which they live (Anderson and Cameron 2015).

The specific nature and motive for technology integration varies within and between these categories. In all three, however, digital technologies are used to thicken participants' experience, whether through enhancing or layering different versions of reality, or creating spaces through which new realities might be made. What we highlight here however is that the orientation to technology in all three categories can be viewed as *design-led*, by which we mean that theatrical vision, pedagogical principles or desired educational outcomes drive the selection and application of digital technologies, and indeed help frame associated research and evaluation. From this perspective, new technologies contribute to a broader suite of resources that practitioners might draw on to fit with their theatrical and/or pedagogical intentions (Anderson, Carroll and Cameron 2009). As Davis writes,

> The innovative drama practitioner is therefore a nuanced designer of experience, embracing the digital, the live, the embodied and the conceptual, framing and creating experiences that draw attention, connect and make us feel 'alive'. (Davis 2011, 514)

An emphasis on designed use is unsurprising; theatre companies will of course introduce technologies for a particular intended effect or intention. There are obvious parallels in

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[1] The pretext 'launches the dramatic action and establishes the world of the drama, the range of characters that can inhabit it, and the likely encounters that can take place within it (O,Neill, 1995)' (Cameron, 2009: 53)

education where technology integration is usually driven by explicit pedagogical aims (e.g. Luckin et al. 2012; Schleicher 2015). However, other perspectives are needed if we are to investigate what happens when technology is integrated within participatory theatre *in practice*. Participatory theatre is essentially contingent and emergent; what happens always exceeds what is designed. There is therefore a need for perspectives that acknowledge and work with that contingency and emergence, which interrogate not just how practitioners and participants put technologies to use, but the ways in which technologies themselves hold certain practices in place and open up opportunities for others. In the next section we outline the sociomaterialist perspective which we propose can usefully support this shift in emphasis.

A sociomaterialist perspective
A sociomaterialist perspective draws attention to the interconnections between the material and the social (Fenwick and Edwards 2010), suggesting that they both work on each other in complex ways. This relational ontology includes all material things as well as the social and discursive practices that texture events, but it also introduces a particular view of digital technologies which we propose is productive in examining participatory theatre. Rather than approaching technology integration from the perspective of what is *intended to happen,* it orientates us to seeing technologies as participants, foregrounding what they do when they come *into relation* with other participants. This shifts the emphasis from designed use to what happens from moment to moment as the drama unfolds and as technologies shift in and out of focus, taking on different roles as they do so.

Diverse relational ontologies, variously framed as posthuman, new materialist or sociomaterial, have been used widely in performance studies to explore aspects of theatre practice. They have been applied, for example, to the improvised process of creating devised theatre (Perry, 2011), the in-between-ness of audience/performer relations (Whalley and Miller 2017), and the sensory engagement generated through immersive theatre (Machon 2013). They have also provided generative frameworks for research in education, in studies linked to early childhood settings (e.g. Lenz Taguchi 2011) and school literacy provision (Kuby and Gutshall Rucker 2016). However, there has been little application of such perspectives to participatory theatre in educational contexts, and to our knowledge none which considers the integration of technologies within this area of practice. In this article we address relationality through a particular reading of sociomaterialism.

Acknowledging that sociomaterialism is a rather vague term that has been used to refer to a wide-ranging set of theoretical orientations (Fenwick et al., 2011), it is worth expanding on our particular perspective, which we develop in previous work (see Burnett and Merchant 2018). This perspective draws on relational ontologies emerging from actor-network theory (Latour 1987; Law 2004; Mol 2002). Actor-network theory (ANT) originated in science and technology studies in the 1980s as a means of conceptualising how the technologies and techniques of scientific method worked to construct the scientific knowledge they ostensibly sought to investigate (Latour and Woolgar 1986). It drew attention to interactions between humans and non-humans to illuminate how technologies are not simply produced by, but also act on, the social world. As Fenwick and Edwards argue,

> Things - not just humans, but the parts that make up humans and non-humans- persuade, coerce, seduce, resist and compromise each other as they come together. They may connect with other things in ways that lock them into a particular association, or they may pretend to connect, partially connect, or feel disconnected and excluded, even when they are connected. (Fenwick and Edwards 2010, 4)

'Things' here is an inclusive term, referring broadly to a diversity of artefacts, institutions, procedures, technologies and so on. Developing these ideas in what is often referred to as post ANT, Law and Mol argue (2008) argue that these interactions generate and are generative of a complex process of actor-enactment. As they assemble together, people and things *act on* and are *enacted by* one another. Things therefore are inextricable from practices: not only do they shape practice, but they are themselves mutable, enacted as they come into relation with other things. Agency from this perspective is generated and distributed through complex interactions in relational networks or assemblages of humans and non-humans.

In participatory theatre then it is not just human participants that are relevant but the materials with which they come into relation. Moreover, it is not just the artefacts designed into the programme that play a part, but other things too, including the area where the programme takes place (e.g. classroom, hall, outside space), the things already there (e.g. desks, chairs, displays), habitual ways of doing and being (e.g. school routines for entering the hall or school codes of behaviour), as well as those things imported in pockets or bags, or as memories and shared histories. Digital technologies, from this viewpoint, take their place among a range of other things in the relational field.

The sociomaterial stance counters the structuralist tendency to identify and predict social order and instead views reality as essentially unstable in a world that is not foreshadowed (Thrift 2008) and is therefore always open to reassembling as people and things come into relation in different ways. This relational ontology unsettles taken for granted ways of ordering or understanding the world and opens out other ways of knowing and other ways of being and doing (Fenwick and Edwards 2010). Over time a number of a number of processes and concepts have become associated with ANT and these have usefully illuminated the workings of educational practice in various domains (Michael 2017). However, those most closely associated with this perspective have argued that approaching it as a fixed set of procedures or ideas is at odds with its de-stabilising purpose (Fenwick and Edwards 2010; Latour 1996). Rather than wrestling with definitions or seeking to 'apply' actor-network theory, in this article we take from ANT an interest in what happens as people and things come *into relation* rather than being approached as separate pre-existing entities.

In some ways this sociomaterial perspective reflects Knowles's (2004) attempts to situate theatre's effects in relation to the multiple conditions of production and reception that come into play in any one performance. What appears on stage and how it is understood will shift along with multiple materialities, such as the theatre space, arts funding, professional regulation, geographical location, social, economic, political factors, and so on. However, what we foreground that is distinct from Knowles' work is the significance of sociomaterial relations for what happens moment to moment as the drama unfolds, and it is this that we suggest is particularly pertinent to participatory theatre. We use this sociomaterial perspective then to highlight what we refer to as the *liveliness* of digital technologies. An emphasis on liveliness, we argue, has particular potential for reviewing the pedagogical value or theatrical possibility generated through embedding digital technologies in unfolding participatory theatre, not least because the ongoing assembling and reassembling of people and things opens out new possibilities for action. As Law and Mol write,

> …what actors-enacted do is essentially indeterminate. So much comes together in the collaborative webs of complex practice. How might one begin to know beforehand how it adds up, how the various tugs and pulls intersect and interfere with one another. (Law and Mol 2008, 73).

Orientating to relations between things, including digital technologies, in this way foregrounds relations that may otherwise be neglected or missed (Mol 2002). It draws attention to how things, as 'part of spatial configurations can invite or present, as well as shape, engagements with humans' (Budach, Kell and Patrick 2015, 394).

In the remainder of this article we expand on what this sociomaterial perspective may offer to research exploring digital technologies within participatory theatre by examining a single case. In doing so, we recognise that a focus on the relations between people and things might seem at odds with the purpose and intentions of participatory theatre, with its emphasis on human experience. However, we propose that focusing on the liveliness of things as participants can illuminate aspects that are highly relevant to the human experience of participatory theatre and digital technologies. We exemplify these ideas therefore in order to draw out some general points that we propose are generative across diverse forms in this field of practice.

Examining a case

The case we use to illustrate these ideas draws on Chol Theatre's programme, *Imaginary Communities. Imaginary Communities* involves a live story-making process through which a group of people (usually school pupils and their teacher) work with one or more drama practitioners as a theatrical ensemble. Together they build an imagined world which they people with characters who respond to unfolding events. The programme takes place over a series of sessions, often over an extended period such as a school term to allow for sustained and in-depth engagement. Participants actively take part in the story-making process from the very beginning, imagining and building their unique world through drama, story-telling, and play. While the drama practitioners draw on key strategies and stages of practice based on their experience of the programme over time, there is flexibility to follow unexpected directions, and there are no preconceptions from the outset about how the story might unfold. This attunement to what is generated in the moment requires a sensitivity to the potential for novelty that we described above. Furthermore, given that individual children are invited to create their own characters, divergence is accepted and encouraged. Practitioners work to maintain a shared central narrative thread while allowing children to follow their individual, multiple narrative pathways.

In describing this case we draw on data from a research project through which we worked as an academic/practitioner partnership to investigate what happened as touchscreen tablets (specifically iPads) were integrated within *Imaginary Communities* (Burnett et al. 2018). In this conceptual article there is not space to fully expand on our research methodology or analysis. For the purpose of contextualisation however, the study focused on a delivery of *Imaginary Communities* that took place over the course of a week. It adopted an ethnographic approach, drawing on field-notes from two researchers, ethnographic interviews, and texts produced by children during the drama (e.g. drawings, writing, video). On this occasion a class of 8-9 year-olds and their teacher were invited to create an enchanted forest which they populated with fairies, animals, devils and queens, supported by two drama practitioners (Carly and Vicky) who moved in and out of role. Over the course of the week, iPads became video cameras, used by children to record interviews and video diaries and to document ongoing activity. But they were also items to be held, passed and abandoned as other things drew greater interest or as memories filled and batteries depleted. In this way, as we go on to explore, iPads played different roles in the complex relational networks that formed and reformed as the programme unfolded.

In expanding on this case, we do not suggest that the use of tablets in *Imaginary Communities* is in any way representative of general trends in the integration of digital technologies in participatory theatre. Indeed this example could be seen as particularly unusual, partly because digital technologies were inserted into an established programme, but also because it is rare for participatory theatre to be quite this fluid, or indeed for digital technologies to be introduced in such an open-ended way. Moreover, tablets, with their 'layered architecture' (Yoo et al. 2010) of small size/shape/weight, interactive screen and multiple apps, might be seen as particularly mutable technologies. However, in making our argument that digital technologies are *always* lively, we find it useful to focus on a case with openness, instability and liveliness at its core. We expand on this unique example in order to foreground what can be gained from such an approach, before returning later to consider what a sociomaterial perspective might offer participatory theatre research more broadly.

In what follows, we present five snapshots of the programme based on field-notes that orient to iPad integration in different ways. These are not intended to be read as objective records of what happened although they perhaps give a flavour of this particular project. *Imaginary Communities* allows for different kinds of participation and involves different experiences for different participants. In capturing this multiplicity, the snapshots attempt fine-grained accounts of brief episodes, told from different perspectives. Juxtaposed together, they are intended to unsettle the idea of a single linear narrative. They are followed by commentary that highlights the relationality brought to the fore by a sociomaterial perspective.

Our first snapshot captures what happened on the first day, when one of the drama practitioners (Carly) invited the children to create locations in the forest using fabric and a number of other familiar and unfamiliar objects. In it we see how iPads were just some of many things that participated in *Imaginary Communities*, and how their use was inflected by and sometimes departed from familiar schooled practices, but at all times happened as part of a complex entanglement of multiple possibilities as the drama unfolded.

Snapshot 1 They're off. There is a whirl of cloth and children and chairs and tables. Fabric gets wound round heads and waists and trails behind. Chairs are borrowed and passed between, tables hurriedly emptied and re-purposed. A treasure trove of tiny glass bottles, coins and wooden acorns has been carefully placed by one child, Ryan, on a table next to me. Ryan has created a role for himself as a Warrior with a magical spear who will defend the forest. The classroom quickly becomes somewhere else.

Ryan is sitting alone on the floor. Carly finds him and, with him, quietly gathers red and yellow material into what I think at first is a nest. It is a tiny moment of calm focus amid the noise and flurry of activity. The two of them, low down, carefully moulding fabric, making a tiny space together. Once created, Carly heads off to help another group or talk to them about what they're doing. Ryan circles the small mound of fabric and then sits down next to it. Unable to resist, unable to leave him alone, the teacher in me heads over and sits next to him to see what he's made. It's a volcano.

The volcano, or at least the fabric from which it is formed, quickly becomes a contested resource. Others try to tweak away the scraps of fabric to use in their own creations. Ryan stands guard, quietly and slowly doing a robotic dance he seems to know.

Carly brings them all to a halt. She tells them they will be tour guides, and each group will be filmed as they talk about the place they've created. She asks the teacher to choose some

children to film using iPads. She chooses some who have adopted this role before in the class, actively signalling their skills in doing so ('You're good at this…').

After a few more minutes to prepare, everyone is asked to sit while each group gives a tour. The tours are done in different ways- sometimes as a halting description of the place or of what they've built- a little like the rather formal performances often given to whole school assemblies. Others are more emergent. Sometimes the commentary seems spurred by the things they have to hand, and some bring their places to life, with characters appearing and interrupting the tour guide to take us into their world in the moment. As we watch, some children crawl into their constructions (the trees, waterfalls, etc. made from tables and fabric) transforming them it seems into 'dens'.

One child, Hayley, does most of the filming but others stand next to her, watching events unfold through the iPad screen. She always removes the iPad from its case before use. Sometimes it doesn't quite work and a new iPad is sought- one group has to repeat their tour a couple of times to make sure it's filmed. Hayley appears to take her role in capturing the action seriously with well framed and still images.

This first snapshot exemplifies how iPads were introduced in ways that mapped easily onto existing *Imaginary Communities* approaches. The opportunity to create and share locations was an established part of the Imaginary Communities process and the filming of tours providing a way of focusing in on this. However it also opened up new possibilities inviting in genres that children seemed familiar with through television or Youtube. Snapshot 2 develops this theme, telling of a sequence in which children created video diaries.

Snapshot 2 *While the children are writing character portraits based on the characters they have devised for themselves, Carly invites them to go out of the classroom one by one to make video diaries. They do this near the coat-pegs on the landing outside. I wander out at one point to see how one child is getting on, and notice how he stops recording when someone comes out of the toilet and pauses to listen. He only resumes when the child goes off again. The videos are not played to the class, they don't seem to be **for** anyone as such.. Later when, as research team, we watch the videos back, we notice how the children approached the activity in different ways: some address other characters from the forest, some talk about how they feel, some appear to be watching themselves as they film, curating their appearance on the screen. All though seem immersed in the story, whether or not they have been a strong presence in class.*

As well as playing their part as video cameras, the iPads also perhaps provided an audience and, as small devices held in front of them, helped to frame the quiet corner amongst the coats, generating a private intimate space. As such the opportunity perhaps encouraged children to share personal narratives that might otherwise be lost, narratives that seemed to sit easily alongside the class drama. At other times, however, the iPads participated in ways that seemed to disrupt rather than enrich the main narrative.

Snapshot 3 *On several occasions, the whole group convened for a meeting to reflect on what was happening in the forest and to make a plan. Again some children filmed these occasions. The meetings had a certain rhythm, as children took turns to share their thoughts and this process generated a sense of momentum, of moving forward through the story together. The iPads however sometimes worked to a different rhythm, framed by battery life and storage capacity. When a battery died or storage filled (as it frequently did during long bouts of*

filming), filming became impossible. This often happened at highly inconvenient times, at moments of high tension for example or as Carly and Vicky were working to bring together disparate ideas and characters in the meeting. When this happened, defunct iPads were sometimes abandoned or quietly swapped for others from the pile, but sometimes children would shout out what had happened – 'the battery's gone', 'the storage's full'.

Such interruptions seemed to threaten to the imagined world being created together, for adults at least, although this may have been less unsettling for children used to sustaining different kinds of engagements while at school (see Dyson, 1993). However, there were times when children and iPads seemed to conspire in activities that involved more explicit- if brief- divergence from the imagined world.

Snapshot 4 *The iPads belonged to a set used across the school, supposedly booked out for the whole week for use during* Imaginary Communities. *Occasionally however a request would come in from another class to borrow them and the pile would be taken off and returned later. As it was the end of the school year, the oldest classes were using video extensively to film themselves, documenting school memories or special activities before leaving, and these were stored on the iPads when they came back to the classroom. Sometimes these films were viewed by children during* Imaginary Communities *who found them in the archives of the iPads they were using. The children seemed to switch unproblematically between viewing these and being in the forest.*

While Snapshots 1 to 4 are written from fieldnotes. Snapshot 5 is based on video footage shot by one of the children. As such it self-consciously foregrounds the workings - and heft- of the iPad itself. It illustrates how the iPad-as-movie-camera participates as a mediating device framing a particular version of events.

Snapshot 5
> *'1996'*
> *The fairy is studying the inscription on the coin. There's a moment of uncertainty.*
> *'Well 1996 is a long time ago' says the tall girl.*
> *'I could use some magic to see if it's real?' the fairy suggests.*
> *'It's special......it makes your powers better.'*
> *'Give me that.'*
> *'It's fake.' the fairy with the furry wings decides.*
>
> *The camera slumps down, swinging round showing the children shifting their weight, clutching at dresses, swaying uncertainly.*
> *'Why would you give her something that if it makes your powers better, why would...why don't....'*
> *'It's fake.' repeats the fairy with certainty.*
> *She folds her arms. This is final, she's sure.*
> *'OK, it's not like it's gunna do any new...'*
> *'We'll make this work with the...'*
>
> *A new girl has joined this magic circle. You can only see her eyes. The rest of her face is hidden by the silver case of an iPad, which she is holding horizontally, filming.*
>
> *'We'll make this work with the very, very special power' a boy in a school shirt holds out a ruler with some red fabric attached. The camera sinks down to show everyone's*

feet planted firmly, parallel, flat to the ground. Something's over, it's not clear what it is, but it's definitely over.

For a moment no one moves, no one says anything.
'Don't worry we'll take good care of that...'
'Sorry? What?' a voice whispers as the scene ends.

In this Snapshot, we cannot see the iPad that is being used to film the action, and only gain a fleeting glimpse of another such device as a girl who is also filming briefly moves into frame. Instead the vignette foregrounds the work being done by other things - costumes, a ruler, a coin - and the references to diverse costumes (from fancy dress to theatrical to schooled) provide visual clues to how the schooled world interlaces with the imagined world and with particular ways of doing drama and/or performing theatre.

Imaginary Communities: sociomaterialism and the principle of liveliness

These five snapshots attempt to evoke the emergent quality of *Imaginary Communities*. Reading them with a sociomaterialist sensibility draws attention to what we call the principle of liveliness. Things act on people and other things and are simultaneously enacted by them. As such they are lively, in some ways unstable, even if they sometimes appear relatively lifeless or stable. Fabric becomes a volcano, coats and pegs become a backdrop. Part of this involves physicality - their size, shape, texture, etc. - which allows for certain kinds of movement, interactions and/or meaning making and not others (Ingold 2013). Digital technologies always have a physical presence (however much this is backgrounded) and this will inevitably be significant to some extent to what gets produced as they come into relation with other people and things. Liveliness however involves more than physicality. As Fenwick and Edwards argue,

> Things circulate in a midst of connections, cultural histories and symbolic values, but they themselves also compel activity […] material things are performative; they act, together with other types of things and forces, to exclude, invite and regulate particular forms of participation. (Fenwick and Edwards 2010, 7)

This notion resonates with Bennett's work on 'thing power' (Bennett 2010) which asserts the vibrancy of matter and explores how agency is produced through a mingling of humans and non-humans. Essentially the liveliness principle asserts that things can only be understood within practices. Technologies, as is evident in Snapshot 1, are just some among the many things that assemble together during participatory theatre. There is a liveliness as all of these things, including technologies, assemble with other people and things. Below we expand on this idea, exploring five ways in which liveliness manifests in the *Imaginary Communities* case.

1. **Mutability**: Things may become something else when they travel across domains/sites;
2. **Disruption**: Things are unstable, even if they appear relatively stable;
3. **Maintenance**: At the same time, things can help sustain certain ways of doing, being or knowing;
4. **Potentialities**: Given this, there are multiple potentialities folded into any moment;
5. **Multiplicities**: Sensing potentialities involves acknowledging multiple ways of knowing.

1.Mutability

By acknowledging liveliness, a relational ontology encourages us to see how bodies, things and practices are co-emergent, contingent and never fixed or predictable. This was as true for the fabric that Carly introduced as it was for the iPads. A sociomaterial perspective recognises that technologies do not enter participatory theatre spaces as neutral objects but are in effect slippery (Law and Lien 2012) and can be actor-enacted in different ways, becoming in effect different things. We can see this fluid materiality (Burnett 2017) in the various things that iPads became across the snapshots (cameras, devices, objects, sources of distraction, etc.) but also in how their salience seemed to shift from moment to moment. Prior experiences of technologies and their effects entangled with what happened in and out of the classroom. For example, some of the children's filming took place outside the classroom in the cloakroom as they spoke into small rectangular iPads, pressing play and stop to frame their monologue (see Snapshot 2). Being outside the classroom and alone seemed to enable a different kind of engagement from that facilitated by the whole group classroom storying. As this happened we might perceive different aspects of the iPad's layered architecture to be foregrounded as it was actor-enacted variously – and perhaps simultaneously - as: audience, enclosing wall, editing suite, and screen. As iPads came into relation with children, filming opportunity, coat-pegs and so on, different kinds of spaces were generated - confessional, performance space, and so on – which prompted and were prompted by different kinds of films, films which may have had different kinds of significance for the children. We might see these differences as produced through shifting sociomaterial relations in which children's own histories, preferences and feelings were folded into relations between bodies and things. This mutability means that we cannot trace cause-effect relations through what happens (we cannot state 'what the iPads enabled', for example). Instead we need to be alert to what emerges as technologies assemble with other human and non-human participants. As this happens, existing practices may be disrupted or maintained.

2.Disruption

In many ways we might see *Imaginary Communities* itself as a disruption to habitual classroom relations and routines. For instance, in Snapshot 1 arrangements of children and materials on and around the floor disrupt usual arrangements of bodies, desks and chairs. Adults and children freely move in and out of role in ways that disturb everyday classroom relations. This disruption, or reassembling, allowed ways of being in the class that differ from what happens in daily classroom practice: dressing up, fluid groupings of children, movements around the room, and so on. However, as it started to take shape, the storying of the enchanted forest itself was also open to disruption. Whilst filming was quickly established as a sanctioned use of the iPads, other dimensions of the devices came into play which seemed to interrupt the shared storying of the imagined world. In Snapshot 3, for example, these interruptions were generated by technical limitations, causing children to shout out in ways that threatened to derail the move to develop a story. And in Snapshot 4, other texts archived on the iPads (photographs, video) found their way into the children's play, inviting the possibility of distraction. Disruption, just like creativity and surprise, is always latent in the unfolding of events, and it is noticeable in the unpredictable becomings of participatory theatre and in the lively participation of technologies.

3.Maintenance

As a counterpoint to the emphasis on liveliness and instability, work from a sociomaterial perspective has also focused on how certain kinds of relations are held in place, paying attention to how things work to sustain continuity (e.g. Law and Lien 2012). For instance liveliness is often constrained or directed by the influence of established practices or

arrangements that have become routine over time and are shored up by things that help hold them in place, such as documents, policies and artefacts. Furthermore as relationships and practices move across sites and contexts, certain kinds of school and out-of-school routines may leave their traces in participatory theatre even when incongruent with its underpinning principles and emerging story world. In this case, iPads were transcontextual objects (Nichols and Snowden 2015) that at some points worked to sustain established classroom practices. While some children were familiar with iPads from home and elsewhere, all had used iPads previously at school. As such they had experience of them as situated within the 'semiotic regimes' of institutionalised learning, where certain kinds of being and doing are valued (Nicholls and Snowden 2015). Snapshot 1 illustrates some ways in which habitual schooled relations played out in the forest: as some children were selected to film (having already established themselves as experts within the class community), for example; and as some children's guided tours echoed school assembly performances. The multiple making/stealing/shaping practices that emerged as children took up the fabric ostensibly settled into the ordered turn-taking associated with classroom feedback practice, through which each group took turns to present while others watched. In doing so, children stepped in and out of the diegetic or fictional world, positioning themselves alternately as characters in the forest and as children at school. Arguably the relations that generated this familiar schooled practice were partly maintained (or at least bolstered) by the introduction of the iPad as camera to record the event. Familiar, schooled ways of being and doing, it seemed, were evoked as iPads came into relation with everything else that was going on.

It is worth noting at this point that in describing examples of maintenance and disruption we do not intend any value judgements about the pedagogical value of the activities or incidents described. We also emphasise that maintenance and disruption are not binaries, but are chiefly a matter of standpoint: what is perceived as disruption to a teacher for example, might be experienced as maintenance for a child. And perceived disruption and maintenance may interface in generative ways. Returning to Snapshot 1 for example, we might note that whilst working to maintain certain schooled ways of doing feedback, iPads also disrupted them. The 'reporting back' took diverse forms as children produced different genres, such as travelogue and live reporting, genres 'invited in' perhaps by the iPad and its designation (by Carly and the teacher) as a video camera. The camera function - with its possible resonance with television and short-form video - perhaps helped to open up a space for a diversity of genres less usual in the classroom. And for some the movement between report-back and play was more fluid. Show-and-tell transformed into crawling into the places they had constructed, the physicality of their 'den'-like space perhaps more salient for those moments than the imagined space it was designed to signify, or indeed than classroom routines for reporting back. Among other things then classroom space, video and iPad assembled in different ways with children's prior and current experience of filming and of moving image media, as well as of being in this class, and in this classroom. This emerged differently for different children at different points.

4.Potentialities
As the previous section illustrates, participatory theatre, with its focus on emergent, responsive practice tends to unfold in novel and often surprising ways. Actual events are born out of multiple possibilities and these possibilities always exceed what takes place. Liveliness then means that multiple potentialities are folded into any moment. Potentialities may of course generate directions that unfold in ways that are variously empowering or disempowering. In *Imaginary Communities*, for example, emerging stories can be surprising, enabling, and generative or they could be undesirable, inequitable or even dull. In this case,

the iPad became a medium for the exploration of multiple narratives, but it also became an obdurate device with designed limitations and possibilities. It was, as we have seen, a familiar object, but one that took on new meanings as it reassembled in multiple ways with other people and things. The very process of assembling – and the new arrangements of people and things being produced – therefore generates new possibilities for being and doing within participatory theatre.

The potentialities folded into moments are perhaps most apparent in our final snapshot which most overtly retains ambiguities and unresolved moments. The brief references to camera and iPad remind us that these technologies are still at work here, and in doing so perhaps hint at the potentialities generated as ttheir use intersects with everything else that is happening. Holding an iPad up to film, the camera-girl enters the action while maintaining her position as separate from it, and no-one comments on this. It seems possible to hold together the experience of being in the forest with the improvised use of objects and spaces, and the idea that this is an event to be recorded. Or perhaps it is the emerging arrangement of people/things/happenings that evokes the roving reporter, who moves among the world while documenting it. This is very different to the filming described in Snapshot 1, in which the cameraperson is clearly outside the action and framing it. In that case filming was of rehearsed segments (even if some of these eventually broke down), while in this case filming was part of the ongoing flow of activity. As Snapshot 5 illustrates, the liveliness of people and things generated through ongoing assembling is rich with potentialities.

5.Multiplicities

Developing the previous point, as things come into relation with other things, they are actor-enacted multiply, with different versions existing simultaneously. These are not alternate realities but exist in relation to one another. They can be imagined, as Law and Mol (2008) write, as fractals, which are more than one, less than many:

> The reality of an entity is never exhausted. Imagine it as a fractal: if you magnify a fragment you discover an image that is as complex as the first one. And it is the same if you shift your attention to another fragment. (Law and Mol 2008, 72)

As we have explored above, iPads actor-enacted in multiple ways as they came into different relations with people and things. Among other things, classroom space, video and iPad assembled in different ways with prior and current experience of filming and of moving image media, as well as of being in this class, and in this classroom. However, this reassembling is also complex and dynamic. Ryan's need to guard the fabric volcano (in Snapshot 1), for example, became pressing when other children threatened to take the scarves that formed it, but was also consistent with his role as guard in the narrative. We cannot know what prompted Ryan's robotic dance, but it seemed that this emerged as his need to guard the volcano combined with the reframed classroom, some available floor-space, and a few moments of wait-time once the volcano was finished. We might see these unfolding events then as simultaneously: a defence of territory to peers in the class; an enactment of character or development of story; and a performance perhaps improvised then and there, or perhaps re-enacted from another time. A focus on the ongoing assembling of social-material relations allows us to hold all these possibilities together, as well as recognising there will be many other ways in which this reassembling matters to participants that may be known in different ways. We might add, for example, a focus on the economic, political and social factors that mean that *these* children are present with *these* adults and *these* things in *this* room at *this*

time, or a focus on the sensory engagement with iPads as they are held, as well as with fabric as it is wound or placed (Burnett and Merchant 2017). In Snapshot 5, for example, the camera is persistent in recording events, even if this exceeds the intentionality of the cameraperson. As such it gives a different angle and hints at other ways of knowing what was going on. Holding together these different ways of knowing the integration of technologies in *Imaginary Communities* acknowledges the diversity of social-material relations that come into play.

Conceptualising the liveliness of technology in participatory theatre practice
In expanding on the case of *Imaginary Communities*, we have illustrated how a sociomaterial perspective allows us to account for what happens when technologies are integrated within participatory theatre. We have demonstrated how people and things can act with each other in ways that maintain or disrupt existing relations, and unsettled the idea that designed use necessarily plays out as planned in practice. The sociomaterial perspective explored here examines what happens moment to moment and approaches technology within a shifting economy of relationships. It prompts us to look out from the immediate context to examine, among other things, how children's social and cultural lives are folded into what happens in the moment, and the extent to which different material resources invite these to the fore. In these ways, a sociomaterial perspective troubles the boundaries of participatory theatre, challenging easy assumptions about what is and is not part of what happens.
It is worth emphasising that, in approaching technology in this way, we recognise that - as in other studies of technology use summarised earlier - what happened in our case was framed partly by prior intentions. Most uses of tablets were instigated by the two drama practitioners who were highly skilled in identifying moments of potentiality, and in generating open-ended opportunities for the children to film. However, there were dimensions of what happened that require a different explanation. The iPads themselves made certain things possible that exceeded what was usual or routine, certainly in the classroom, but also in *Imaginary Communities*. And these things happened as tablets were used alongside other materials and in particular locations. It was not just the intended uses that were relevant here, whether these were pre-designed or decided, or indeed linked to the technological capability of the iPads. Rather what was significant was what happened through relational co-presence as people, texts, digital technologies and other materials actor-enacted one another.

From this perspective, digital technologies and tools are not conceived as mediating or enhancing ensemble in the live event but are *part* of that ensemble, and as such they participate in generating what happens through the drama. Importantly they do this *in relation* with everything else that is participating in the process, which includes the other people – children, practitioners and researchers as well as the materials – fabric, cloakroom areas, tables etc. - that are co-present, and all the experiences, processes and histories that are brought to bear on what happens.

Imaginary Communities lends itself to a sociomaterial analysis as each iteration of the programme is contingent on what happens from moment to moment with particular groups of people and materials in particular sites. Open-ness is central to its pedagogical intentions. Using this case has allowed us to foreground key moments when contingency and emergence were highly salient having visible effects. Moving from the specific to the general, however, a sociomaterial perspective is not just relevant to thinking about digital technology use in programmes such as this one. Things will *always* unfold moment to moment through an intermingling of human/non-human relations, and indeed this is an idea that resonates with the aims and purpose of much participatory theatre practice. Our particular case, then, invites

us to question how this happens in other cases. In the final section, we consider how such a perspective might enrich understanding of what happens as technologies are used within educational participatory theatre more broadly, and indeed how such understandings might inform the development of practice.

Broader applications and future directions

In extending the application of a sociomaterial perspective, it is helpful to return to the three approaches to technology integration explored in the early part of this article: intensification of the space; connection/extension; and making the world. A sociomaterial perspective on intensification, for example, might foreground how an ambient lighting effect or musical score plays into and out from what else is going on, threading its way into the ongoing liveliness of event and helping to propel forward certain ways of doing or being. Or when considering use of networked technologies to connect participants, it might prompt a focus on how the screens that mediate such connections physically position readers, or on the kinds of physical and/or face to face interactions that over-layer on-screen engagements (Burnett 2011). When inviting participants to make the world, it might foreground material understandings, experiences and resonances that inflect what they do. We argue therefore that seeing digital technologies as participants, and recognising how things shift as people and things come into relation in multiple ways, is a fruitful perspective for examining a range of forms of participatory theatre and approaches to technology integration; in line with the liveliness principle we have explored above, things (including digital technologies) always act and are enacted as they assemble with other people and things.

Given this fluid take on practice, approaching research from a sociomaterial perspective is challenging. It involves attempts to track what things become as they come into relation with other people and things, recognising that things are often actor-enacted in multiple ways, and not just tuning in to what is happening but sensing what might happen. It implies that research is always imperfect as we can never know all the ways in which things matter. However, we can recognise this inevitable imperfection, and we can continue to seek out new standpoints from which to interrogate practice and explore diverse ways of orientating towards it (Law 2004). We offer Table 1 as an heuristic to support this interrogation of liveliness.

Table 1. Interrogating the liveliness of digital technologies in participatory theatre

Principle	Summary	Questions for research (and practice?)
Mutability	Things may become something else when they travel across domains/sites	What are the different ways in which technologies- and their effects – are actor/enacted during participatory theatre?
Maintenance	Things can help sustain certain ways of doing, being or knowing;	Which kinds of practices endure from established ways of being and doing (with and without technologies)?
Disruption	Things are unstable/lively, even if they appear relatively stable/lifeless;	Which novel ways of being and doing emerge?

Potentialities:	there are multiple potentialities folded into any moment	Which new directions are possible? How, for example, are new possibilities generated by the cultural resources invited into the classroom as people and things (including technologies) come into relation?
Multiplicities	Sensing potentialities involves acknowledging multiple ways of knowing	How do different ways of being and doing interface or interfere with one another?

While the primary intention of this article is to indicate fruitful directions for researchers, a sociomaterial perspective also has implications for participatory theatre practice. If events unfold through the ongoing assembling of people and things, experiences can never be completely designed. Practitioners can however act reflexively within them, and be sensitive to the complexities of what is happening and the potentialities that are latent within what is going on. While there is always more happening than we can know, there is work to be done in facilitating opportunities that are advantageous to participants (Parry 2016). Digital technologies, like other participants, might act with others in ways that are empowering and enriching or in ways that are reductive and iniquitous. As Law and Mol continue,

> We might say that an actor is a moment of indeterminacy that generates events and situations. It does this together with other actors that enact it and that it, in its turn, enacts. And it does so for better, or for worse, or both. […] what become more urgent are questions about what is happening. What do actors do? How are they creative? How do their underdetermined activities help to create or to destroy? What are the possibilities that they condition? (Law and Mol 2008, 74)

A sensitivity to the ongoing assembling of people and things may increase the likelihood of empowering, enlightening or energizing participants and leading to ethical engagements between humans and non-humans. As Massumi (2015) argues, 'If the focus then is on potentiality, on the propensity for something to be taken up, then how can the event itself be nurtured in such a way that this is more likely to happen' (14). Whether or not it has been articulated in these terms, we would argue that a sensitisation to the ongoing assembling of people and things has always been at the heart of participatory theatre. Practitioners' reflexive responses to participants' actions and interactions have long been the hallmark of this area of practice. However, we propose that this process of exploring how technologies act with and in relation to what else is happening can sharpen our thinking about the ways in which technologies push and pull at theatrical and pedagogical possibilities in the context of participatory theatre. A sociomaterial perspective highlights that digital technologies can be just as mutable and densely layered as other objects, even if they work in different ways to frame, disrupt, or enrich. As such, it orientates us to technologies as 'players' alongside other human and non-human participants. This perspective might be helpful to practitioners in sensitising to potentialities, and to ways of working that might work to foster productive and generative engagements with digital technologies. At the very least, it provides a way of articulating and alerting others to the sensitive and responsive work of practitioners in doing this.

Conclusion

This conceptual article has explored what can be gained by adopting a sociomaterial perspective in theorizing and researching technology integration within participatory theatre. It contributes to research on the integration of technology in this area of practice by expanding on the contribution of a sociomaterial perspective and in providing an heuristic for reviewing the use of technology that may well have application beyond the field of participatory theatre to education more broadly. Specifically, we have proposed that design-led research on technology integration can usefully be complemented by a sociomaterial approach which foregrounds the liveliness of digital technologies (and other things), recognising that digital technologies act and are enacted as they come into relation with whatever else is going on. This has implications for practice too. Rather than approaching the integration of technology from the perspective of what it *might do*, this perspective shifts emphasis to what technology *does* when it comes into relation with other participants, to what happens in the moment as humans, materials, activities, places, etc. come into relation. It is in capturing these ongoing, shifting relationships that we suggest that a sociomaterialist perspective has much to offer.

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To be added.

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