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Casting a line: digital co-production, hospitality and mobilities in cultural heritage settings

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[A-Head] Abstract

This article argues that co-production in digital cultural heritage settings has distinctive features, of interest to researchers and professionals in the field. Drawing on theories of hospitality and mobilities, it explores the impact of multiple spaces and times, the ‘unknowable other’, the challenges to the stability of relationships of host and guest, and the rethinking of hospitality that come along with digital co-production. It offers the concept of ‘trajectory’ as a new and generative way of considering hospitality. Tracing the concept of trajectory through a recent research project, Artcasting, it concludes with observations about how features of digital co-production can and should shape our understandings and expectations of digital and mobile engagement with cultural heritage.

[A-Head] Introduction

how should we welcome the stranger, the sojourner, the traveller, the other? Where might hospitable encounters occur, and what kinds of spaces does hospitality produce? Who is able to perform the welcoming host, and who can be admitted as a guest? And in extending hospitality to the other, how should we define our ...self? (Molz and Gibson 2007, 1)

Co-production in cultural heritage settings has been discussed, and critiqued, from a number of perspectives in recent years, but there is still useful work researchers and professionals can do with the concept to understand its relevance to online, digital, and mobile engagement. This article draws on theories of *hospitality* and *mobility* to propose an approach for thinking about co-production in digital cultural heritage settings.

In setting out this approach, I argue that the tensions and uncertainties of co-production (Morse, Macpherson, and Robinson 2013) can be understood in online contexts as a relationship between visitor and institution which is spatially and temporally ‘out of joint’, and where the role of the institution is one of the ‘host’ in the troublesome sense theorised by Derrida: ‘giving place to a guest – without, even,

knowing when this guest will arrive' (Ruitenberg 2011, 32). Tensions around power, control and what it means to be welcoming are frequently seen in discussions of co-production, but explicit discussion of theories of hospitality are not. Hospitality, and what Doron (2009) refers to as 'hospitality's infinite obligation to the unknowable other' (p.178), provides a valuable new approach to understanding co-production. This, combined with mobilities theory-informed insights into spatial and temporal disjointedness, trajectories and the permeability of boundaries, provides the main theoretical focus of this article.

Mobilities theory offers ways of understanding social phenomena (Sheller and Urry 2006), looking beyond a bounded setting (a classroom, a city, a museum) and instead tracing trajectories and networks. Analysing digital co-production through a lens of mobilities theory, this article looks at the instability of relationships and collaborations that digital co-production can bring and proposes these as generative rather than simply problematic.

The article begins by outlining theories of hospitality and their influence on museum learning and engagement. It goes on to examine some key issues in relation to co-production, then introduces mobilities theory as a way to address some of the conceptual difficulties around digital co-production. Drawing the strands of hospitality and mobilities together in a discussion of David Bell's concept of the 'host-spot' (Bell 2012), I propose and discuss four key elements of digital co-production. I argue that digital co-production:

- unfolds across multiple times and spaces;
- involves the 'unknowable other';
- challenges the stability of relationships;
- invites a rethinking of hospitality.

Exploring these four dimensions, I develop the argument that, in digital contexts, hospitality is best understood as a *trajectory* rather than as a fixed set of relations. This approach is illustrated through the example of Artcasting, a research project funded through the UK's Arts and Humanities Research Council in 2015-16. The project was informed by a mobilities-led perspective on visitor engagement with art, and this perspective was tested by building and piloting a digital platform called 'Artcasting'. Reflecting on Artcasting's design, functionality and the data it generated, I show how it can be usefully understood as digital co-production in line with the key elements I have proposed: a form of engagement which may, or may not, unfold over time and in locations well beyond the gallery space, which generated new hosting-guesting relationships, and which required significant openness on the part of the participating galleries to the unknowable other that might, or might not, arrive through mediated encounters.

Digital and mobile interventions can create opportunities for digital cultural heritage engagement and learning, but they also lend new urgency to questions at the heart of current engagement and co-production practices: how do power and participation interact? Whose role is it to welcome, and whose to be welcomed, and what happens when these roles shift? Digital co-production, and the concept of the trajectory, offer a

new way of thinking about what digital engagement activity and practice does, and how to approach and evaluate it.

[A-Head] Hospitality

Hospitality is commonly understood as synonymous with welcome, friendliness, kindness and warmth – as ‘invitations to strangers’ (Dowler 2013, 783) – and it may therefore seem to be an uncontroversial aim for cultural heritage organisations, and especially for those which aspire to co-produce and co-create with audiences. However, the apparent simplicity of such an aim masks considerable complexities in the nature of insider/host and outsider/guest power dynamics; the limits of welcome; and the meaning of ‘encounter’. These tensions are emerging strongly in current discussions of co-production, as we will see, and Derrida’s theory of hospitality as self-contradictory (Derrida 2000, 2005; Derrida and Dufourmantelle 2000) helps explain why.

For Derrida (2000), hospitality is far from simple to perform, as it ‘can only self-destruct... or protect itself from itself, auto-immunize itself in some way, which is to say, deconstruct itself – precisely – in being put into practice’ (5). Hospitality requires the host to be in control, to be the one that gives permission for the guest to enter, and to define the conduct of that guest. At the same time, the host is ‘hostage’ to the stranger: ‘he urges him to come, even though he has no way of making him come more quickly. He waits impatiently for him as a liberator’ (2000, 10). The irreconcilable tension this generates highlights the impossibility of the position of the host, leading Derrida to coin the word ‘hostipitality’ (evoking hospitality and hostility at once).

There is relatively little literature addressing hospitality in cultural heritage engagement and interpretation settings, especially not that which engages with hospitality as theoretical rather than solely a practical or economic concern. For example, drawing on Lashley’s (2000) ‘hospitality lens’, Grit (2013) analyses an experience in an open-air museum in the Netherlands, and describes a desire amongst visitors there for ‘recognition and interactions which go beyond the planned commercial interaction at the end of the restaurant’s kitchen where the trays pass the cash register’ (20); and for freedom of interaction which allow them to ‘build their own temporary ‘organisations’ on top of existing organisations and to live through these by creating new museum spaces’ (ibid). This desire for less transactional and more open-ended engagement is met, in this museum, by the work of volunteers who invite visitors into their ‘homes’ and provide them with a personalised experience, including snacks, toys to play with, and conversation. The paper describes one of these encounters, and the effect it has on the author, transforming an alienating experience of museum-ness (‘In an open air museum I always feel like a voyeur and an uninvited guest, who is somehow being stopped at the threshold’ (19)) and perfunctory restaurant service (‘The line is so long that the foam of my two chocolate milks disappears. ...I also receive two cookies in a wrapper and a silent ‘enjoy your meal’. We finish the ‘meal’ and find a place where we can hand in our trays’), into a space where the welcome is generous (‘We enjoyed each other’s company and stay in the house for two hours’) and the cookies are ‘home-made’. Grit’s focus in this paper on visitor experience leaves everything unspoken about what it might take in terms of

material infrastructure (funding, people and resource) to create and sustain such hospitality. The perspectives of the volunteers are not explored here, so any complexities around this encounter from their points of view are left to the reader's imagination. The pressures the museum might face in juggling this provision of time and connection with the need to accommodate many visitors are equally not addressed. Theorising hospitality in Derrida's terms would invite greater consideration of these more potentially complex aspects of encounters between host and guest.

One of the most illuminating uses of theories of hospitality in the cultural heritage literature comes from Doron (2009, 178), whose critique of the concept of social inclusion in the museum is explicit about the issues of power that are so important in the context of co-production. She observes that hospitality has changed its meaning from one fraught with risk and 'fundamental incommensurability between host and guest, educator and child, museum and community', to one 'legislable' through concepts like multiculturalism, which: 'transforms ancient hospitality's infinite obligation to the unknowable other into an economy of reciprocal relations'. To rectify this, Doron argues that museums must seek out 'strangeness' and uncertainty in their relations with visitors. She uses the example of the Jewish custom of the *sukkah*, in which a ritualised dwelling space is built outside the home, to urge a rethinking of how guests are welcomed into children's museums:

Children's museums need to become a site where hospitality is taking place not simply as a representation of a cultural form, but as a singular event where host culture and guest audience are not equalized, and where the museum does not serve as the silent third term that neutralizes the risk of being there face-to-face with each other.

The difficulty of preserving difference and experiencing risk in museum settings links directly to issues of co-production, which I now go on to discuss and frame in relation to its mediation through digital technologies.

[A-Head] Co-production

Co-production in cultural heritage settings describes activity in which representatives of the cultural heritage institution and representatives of one or more of that institution's publics are engaged in reciprocal forms of participation, interpretation, co-operation or exchange. Ideally, co-production enables museums and their publics to work together to make decisions, to design programmes, or to create exhibitions and experiences, thereby ensuring the relevance of those experiences to other visitors.

The reality of a co-production collaboration has been contested in a number of ways. Kidd (2014) argues that the concept of co-production is increasingly legible as a form of 'currency' for museum professionals, who are encouraged to view interactions with visitors, especially digital interactions, as evidence of the value and impact of the institution and its activities. She describes digital technologies as inscribed with multiple 'power and potentials' for the museum in this regard. These pressures perhaps explain the extent to which institutions have invoked principles of co-

production while leaving intact their authority to manage outcomes and participation itself:

despite well meaning intentions, participation is not always the democratic process it sets out to be; rather, it more frequently reflects the agendas of the institution where the processes, such as the final right to edit content, are tightly controlled by the museum. (Morse, Macpherson, and Robinson 2013, 92)

This observation echoes Lynch's (2009) description of co-production as 'empowerment-lite' – reflecting her analysis that public participation and engagement has not become as central to the work of the UK's museums as the investment, financial and otherwise, in such activities might suggest it should have. 'Engagement' within institutions is often 'underlain by particular ways of knowing and unconscious subjective roles that reinforce more manipulative and controlling senses of the word' (Ashley 2014, 262). Graham (2016) describes co-production as a political rationality 'aimed at both pluralising the number of people and stabilising the legitimacy of museums as institutions that can manage materiality and time in particular ways'. Entrenched processes of demarcation, and their centrality in the practice and the *idea* of the museum, mean that co-production in the museum setting has to be seen as involved in the production of knowledge and the stability of the institution.

Debates about power and control in cultural heritage engagement are nothing new, and they reveal certain tensions around hospitality: between insiders and outsiders, between authority and openness, and about the meanings of inclusion:

the museum has always facilitated a conversation between "us" about "them." It has always, since its birth, served to engineer a change in its visitor: to make a (better) citizen of the stranger. So what of "social inclusion" is new? (Doron 2009, 173)

Inclusion, Illeris (2006) argues, always involves the construction of an 'audience' or a 'participant'. Co-production, therefore, involves the institution in first defining who is in the group deemed 'participants' and consequently invited into the conversation being produced.

However, the notion of control can be overstated in assumptions of how cultural institutions can create and maintain spaces for public participation on its own terms. Henning (2007) argues that museums are inherently spaces of 'madness' and 'over-accumulation', which challenges the extent to which they can be analysed as 'disciplinary institutions'. The idea of the public as a stable entity is no less problematic: it needs to be understood, in itself, as a construction, or a 'phantom': 'something that is made, made of countless other issues' (Weibel and Latour 2008, 100). This is perhaps a useful way to understand why, as Graham (2016) claims, there is considerable uncertainty in the political rationality of co-production:

Once museum practices are opened up to more people – increased *variety* – then the *variability* of museum practices tends also to be opened up in

unpredictable ways. ...Community co-production tends to generate new theories of what museums are.

She suggests that co-production should best be understood as ‘distributed responsibility’, with both objects and people implicated in its widening sense of accountability for the future.

Digital engagement, communication and interpretation provides one avenue through which to explore generative ideas about participation and co-production, and account for the ‘madness’ of museums, the ‘phantom’ that is the public, and possible meanings of ‘distributed responsibility’. Museums and galleries’ digital engagements are subject to different kinds of relations of space and time, ones that can be significantly ‘out of joint’ with respect to anticipated boundaries of engagement.

Out-of-jointness can be seen as a positive principle, as Hogsden and Poulter (2012) found in their research on what they call ‘virtual contact zones’. In contact zones, digital distance from the museum could, they argue, ‘free up’ interactions with a bark shield which formed the basis for project work involving the British Museum and students in the Netherlands and Australia, thereby putting more control in the hands of the students. They attributed this to the students’ creative work taking place in locations outside the museum, with different influences consequently able to shape their interactions. Hogsden and Poulter propose this type of collaborative work as an antidote to limitations in how museums and galleries tend to see digital engagement – in particular their tendency to embrace a broadcast model which is too impersonal and focused on scale to allow for genuine reciprocity between the museum and its publics. This understanding of reciprocity, in a virtual context, helps situate my argument about hospitality and mobilities in the following section.

Distance, out-of-jointness, and reciprocity can present puzzles for educators and others with a remit to achieve impact, to evaluate effectiveness of engagement, and other duties that exist within a climate ‘dominated by the language of targets, outcomes, outputs, and delivery’ (Simons and McCormack 2007, 295). Digital co-production might therefore require different approaches to both engagement and evaluation than cultural heritage institutions, and their funders, are accustomed to. It makes more untenable binary notions of ‘transfer of power’ and offers insight into how engagement constitutes ‘a complex series of negotiations and adjustments, which are not always predictable or static’ (Mason, Whitehead, and Graham 2013, 165). Taking the instability of both institution and public seriously, museums undertaking digital co-production are working in modes where relationships and spaces cannot be taken for granted, and where the mobilities, spaces and times of encounters are in flux. The following section explores how such work can be supported by mobilities thinking.

[A-Head] ‘Host-spots’, mobilities and trajectory in digital co-production

Ruitenbergh (2015), considering how to operationalise hospitality in an educational context, explains it as ‘a gift that is impossible and imperfect, as it operates in theaporetic tension between the abstract idea of absolute, unconditional hospitality and

the concrete demands of hospitality in *a given place and time*' (15, emphasis mine). Dikec, Clark and Barnett (2009) maintain that unconditional hospitality can exist in reality, but only as a '*moment within the event* of hospitality' (10, emphasis mine). The emphasis on the fleeting moment or particular place as a site of hospitality offers a constructive way of understanding hospitality as *temporary*. This is especially so if we consider that the moment might not be temporally aligned for host and guest – or, as Ruitenbergh (2015, 35), following Derrida, puts it, that a 'simple binary between presence and absence does not hold':

the host need not be present upon the guest's arrival for the guest to experience hospitality: I may have to retrieve the key from under the mat in the absence of the host, but the sign on the door welcoming me shows that my arrival is anticipated, as do the plate of cookies and note on the kitchen table. These are traces of the host that greet me in the host's absence but that show an effort has been made to create a welcoming space for me to arrive.

Challenging a binary of absence and presence can prompt reflection and a reimagining of the nature of co-production in museum settings as *trajectory* rather than *position*. This thinking is usefully supported by mobilities theory.

Mobilities theory takes as its starting point a challenge to understanding people, communities, organisations or practices as stable or fixed, instead focusing on 'the combined movements of people, objects and information in all of their complex relational dynamics' (Sheller 2011, 1). The 'mobilities paradigm' (Sheller and Urry 2006) has had a significant impact on thinking about movement as a social and political issue as well as a practical one (Cresswell 2011). It seeks to understand a range of different mobilities and their 'complex combinations': 'corporeal travel of people; physical movement of objects; virtual travel often in real-time transcending distance; communicative travel through person-to-person messages; and imaginative travel' (Sheller and Urry 2016, 11).

Theories of mobility can be usefully applied to the use of mobile technologies like smartphones, including in cultural heritage settings (Ross et al. 2018). These technologies are part of a redefinition of space as 'hybrid' (De Souza e Silva 2006, 274), and able to 'carry' experiences across different environments (Charitonos et al. 2012), generating networked space not bound by the time scales of the visit. This hints at the kinds of analysis that are possible with a mobilities approach – that experience, interpretation, relationships and memory can also be understood in more dynamic terms.

David Bell (2012) challenges hospitality's presumed stability of the host, and the presumed rootlessness of the guest, by exploring the impact of the new mobilities paradigm on the concepts of host and guest. Instead of analysing these roles as mutually exclusive, he focuses on the role of host and the possibilities of hosting, of performing 'host-ness' in the mobile age, and he coins the term 'host-spots' (a play on the term 'hot-spots', a common way of describing wirelessly networked locations) to redefine hosting and guesting as subject positions which are tied up with spatial and temporal settings:

‘host-spots’: more or less stable or fragile places and/or times when hosting-guesting occurs, or when host-like or guest-like potentialities are afforded. (Bell 2012, 30)

Bell describes ‘flickering moments of hosting and guesting’ as a common feature of urban life which bring public and private spaces together. He argues that co-presence and tele-presence co-exist in a hybrid, and mobile technologies and their functionality reconfigure users’ hospitality performances and forms of hospitable space.

I am interested in linking hospitality with a specific aspect of mobility: the trajectory. Temporality is well understood in the context of museum learning, for example in Falk and Dierking’s (2000) description of the museum experience as circular rather than linear, reflecting its many ‘twists and turns’ that defy easy divisibility; or Charitonos et al’s (2012, 2-3) description of museum learning as ‘defined by temporal connections’:

it can be extended and augmented, depending on what sorts of connections a person realises, recognises and acknowledges, as well as makes to past or future interactions with other people, things, ideas or institutions.

In the context of co-production, trajectory invites us to consider movements of people into, through and away from the museum, taking up different positions in relation to shifting host/guest trajectories as they enter, leave, and re-encounter it.

What are the possibilities of ‘host-spots’ in trajectories of digital co-production and hybrid space? Uses of digital cultural heritage objects in social media are one common example. The sources of such objects can usefully be categorised along axes of ‘direct–aggregated’, referring to the original location of the object that has been shared, and ‘authorised–unauthorised’, depending on whether the institution has authorised the sharing or reuse of digital objects on social media (Figure 1).

[Figure 1]

[Figure 1 caption] Figure 1. Sources of digital cultural heritage objects online

Similarly, the uses of these objects can be viewed along a spectrum from fully referenced and acknowledged to informally posted without credit, to more active uses such as modifying by cropping or superimposing.

This range of practices in relation to access and use of digital cultural heritage objects offers many possible trajectories of hospitality. The position of ‘host’ shifts from the museum to the aggregator web site to the user themselves as control over and location of the digital object moves. Guesting is constructed and reconfigured through timelines, searches, mentions, likes and upvotes. The user-as-host might even extend a welcome to the museum-as-guest by mentioning it on their personal feed. All of these trajectories coalesce around an object whose meanings are shifting in the process.

These encounters directly or indirectly make a connection to the museum, through the use of these objects, and trace a trajectory away from it, to express memories, relationships, feelings, ideas and sensibilities of hosting. It is useful to theorise this range of kinds of connections as an asynchronous form of co-production, in which museums and visitors work co-operatively, but not together, to create new encounters with objects. Reciprocity is performed through the movements of digital artefacts into and between different spaces and contexts, producing new exchanges of meaning. In terms of Bell's host-spots, 'flickering moments' of digital co-production are trajectories of hosting, lines of movement that cut through the stable and fixed boundaries of an exhibition or collection and carry their offering elsewhere, to a guest that may not arrive in the museum, but may nonetheless be part of an encounter with it. Encounters with digital museum objects are neither tied exclusively to the institution, nor independent of it – they are not certain to happen, their happening is unpredictable, and their effects are often beyond the scope of control of those tasked with engaging the public. What, then, does reciprocity and co-production mean in these encounters?

From unauthorised examples of appropriation, such as on sites like Fly Art Productions where hip hop lyrics are superimposed on artworks¹, to visitors photographing and sharing with their online communities things they have seen in museums, roles of hosting and forms of co-production of digital cultural heritage meanings create new possibilities and tensions for museums. Users and others might continue to re-encounter and re-use digital objects in a future which no longer includes the original exhibition or collection. When a museum explicitly invites visitors to exchange and share digital objects, the museum makes itself a point of reference for the trajectory of the hosting and guesting that might subsequently occur. It simultaneously makes these future exchanges possible, and takes itself out of active participation in them. This, too, may be an important element of hospitality, as Ruitenberg (2015, 3) suggests in relation to education:

the task of education is to welcome newcomers into the old world, the world as it is, and not to predetermine for newcomers what they may want to do with that world as they receive it.

In other cases, these trajectories may be initiated by the results of a search engine query, browsing a cultural aggregation site like Europeana, or encounters that begin in social networks. As more collections and digital objects and images become open to re-use, uses that were previously unauthorised and therefore beyond the gaze of the museum become one of its matters of concern, and a possible part of its strategies for outreach, connection and co-creation.

What is the responsibility of the museum in relation to digital technologies and practices? Derrida's ethic of hospitality 'radically decentres' the position of the host (Ruitenberg 2015, 14) – and Ruitenberg notes that, in practice, this ethic leaves us without clear answers to 'right action' or the appropriate ways that institutions should 'receive the other':

¹ <http://flyartproductions.tumblr.com>

While I must use reasoning in thinking about how I will receive the other, reasoning will only get me so far. The final decision is an actual de-cision, a cut, and not the outcome of a calculation. (21-2)

However, I suggest that the role of the museum in this context is to set up co-productive situations that can allow for multiple hostings and guestings, and, following Doron, inhabiting more uncertain, less secure positions in relation to its role as ‘host’. Trajectory thinking can take account of changes and interactions that are be unexpected or surprising (Prior 2011), and ultimately influence how the cultural sector accounts for engagement and collaboration in their co-productive activities. I consider that digital co-production requires attention to four key elements: multiple times and spaces; challenges to the stability of relationships; the involvement of the ‘unknowable other’; and a rethinking of hospitality. Each of these is introduced in turn, and then developed further in the Artcasting case study that follows.

[B-Head] Digital co-production unfolds across multiple times and spaces

The spatial and temporal disjointedness of digital co-production is its most remarkable and challenging feature, requiring a rethinking of notions of contact and collaboration. In the context of collaboration, co-creation and co-production, the perceived need for particular kinds of relationships and engagements – face-to-face, in person, synchronous, and often tightly orchestrated – shifts to make room for different possibilities. Existing examples of digital collaboration in the research literature, for example, Hogsden and Poulter’s (2012) ‘digital contact zones’, are not always described as co-production, but looking at them through this lens can help to understand how thinking in terms of trajectories of engagement and reciprocity can be generative and useful.

[B-Head] Digital co-production challenges the stability of relationships between museum and visitor

Doron (2009) urges us to avoid ‘equalizing’ host and guest in trajectories of hospitality – to leave room for strangeness and difference: for the guest who may not appear, for hosting which may ‘flicker’ in and out of being, and for relationships to the institution to be transformed. This potential unbalance and strangeness is intensified by the way digital objects can circulate, change, split off, and be recontextualised or decontextualised (for example, through what boyd (2010) has referred to as ‘context collapse’). This circulation makes Graham’s (2016) notion of ‘distributed responsibility’ not only possible but indeed a primary mode through which digital co-production can take place. Some of the museum’s responsibilities – to care for objects, for example – take on a different form in digital contexts and thereby make space for new relational possibilities around interpretation, access and what it means to learn from and with digital collections and objects.

[B-Head] Digital co-production involves the ‘unknowable other’

The new relational possibilities of co-production can and sometimes must include entanglements with unknown others. This is a direct consequence of the increasing

openness of cultural institutions as they work to make their content, but also their practices, more digitally accessible to more people and uses. The emergence of priorities around open data indicates likely directions of travel and digital futures for museums, but has little to say about how these priorities will affect each museum's understanding of its visitors, or how it will conceptualise partnerships and co-production when neither the digital objects nor their locations are controlled in the same way as before. Where and when people encounter, use, build on, share or otherwise engage with digital museum objects becomes increasingly uncertain, and their identities, needs and expectations of the museum less knowable. Hospitality, in this context, involves risk-taking and 'radical trust' (Russo et al. 2008).

[B-Head] Digital co-production invites a rethinking of hospitality

The paradox of hospitality can usefully be considered through mobilities thinking: the flickering of hostness and guestness; and trajectories, rather than positions, of hospitality. The three previous elements of digital co-production come together to invite us to rethink what we mean by hospitality – to take the valuable work that has so far informed co-production in the cultural sector and bring it together with an attunement to 'flickering' and the malleability of host and guest roles in digital contexts.

Aspects of these four elements can be found in other forms of co-production, but taken together they capture what is distinctive about digital co-production. Practice and thinking in the museum sector has grappled with the meanings of hospitality and the particular possibilities and challenges of digital engagement in many productive ways. My articulation of trajectories of hospitality builds on important work done by museum educators and scholars over several decades, building on crucial insights about the unpredictability of the visitor experience (Falk and Dierking 2000) and interpretation and meaning (Hooper-Greenhill 2000). Nevertheless, there is still a need for theoretical frameworks that help conceptualise engagement, learning and co-production in digital contexts, and bringing together hospitality and mobilities theories offers a generative and useful approach for this work. In the case study that follows, I explore how this approach may be useful in practice both for designing and for analysing digital co-production in the museum.

[A-Head] Case study: Artcasting, mobilities and encounters

We never look at just one thing; we are always looking at the relation between things and ourselves. Our vision is continually active, continually moving, continually holding things in a circle around itself, constituting what is present to us as we are. (Berger 1986, 9)

Artcasting was a mobile application developed and piloted in 2015-16 as part of an Arts and Humanities Research Council-funded research project in the UK. The app invited visitors to selected exhibitions to choose an artwork and digitally 'cast' it on a trajectory to a new location, adding information about their choice of cast and their associations with the artwork, and potentially re-encountering their own or other artcasts in the future. With an emphasis on movement, trajectory and imagination, Artcasting offered a way of experiencing a gallery exhibition as mobile, open-ended,

and continually exposed to new interpretations and encounters. Artcasting was piloted in two ARTIST ROOMS exhibitions in 2015-16: ARTIST ROOMS: Roy Lichtenstein at the Scottish National Gallery of Modern Art, and Robert Mapplethorpe: The Magic in the Muse at the Bowes Museum.

ARTIST ROOMS is a collection of more than 1600 works of international contemporary art, jointly owned and managed by Tate & National Galleries of Scotland. ARTIST ROOMS On Tour shares the collection in a series of monographic exhibitions throughout the UK, organised in collaboration with local associate galleries of all sizes. It puts internationally important contemporary artworks in many locations that do not routinely have access to such works and puts the task of making them relevant in the hands of local galleries and users. It particularly aims to ensure the collection engages new, young audiences. The Artcasting platform invited visitors to selected ARTIST ROOMS exhibitions to digitally move or ‘cast’ artworks into other places and times, and to re-encounter and respond to artworks from beyond the gallery space. The record of these locations, journeys, encounters and responses, in turn, helped the galleries and researchers consider the evaluation of visitor engagement in new ways (Ross et al. 2017).

The process of Artcasting involved selecting an artwork, either while engaging with it in the museum or gallery, or after the visit; creating an artcast by choosing where, when and why the artcast was to be sent; and encountering or re-encountering artcasts at other places and times, possibly responding to these encounters by ‘re-casting’ to third location. The app showed lines tracing the journeys made by each artwork, and were dashed where a journey was in progress to a future arrival time (Figure 2).

[Figure 2]

[Figure 2 caption] Figure 2: lines of trajectory showing artcasts as they moved

The app provided the means to choose the time of arrival for a cast artwork, and also the speed at which an artwork travelled to its destination.

Analysis of three artcasts illustrates artcasting’s trajectory of hospitality: namely that it can be understood as a form of public interpretation of the artwork, where visitors are creating new and varied encounters with art in new places and times – the gallery guest becoming the host of a new exhibition. Each example is an idiosyncratic, personal response to the selected artwork. These interpretations bear no direct relationship to the official interpretations of the works offered by ARTIST ROOMS, and the locations chosen for the artworks are similarly not directly associated with the artist or the historical context of the works².

[B-Head] Artcast 1: ‘Tobermory’ (artcast of Reflections on Crash by Roy Lichtenstein, sent to Tobermory on the Isle of Mull, Scotland)

² this was common in the 167 artcasts analysed as part of the project, though there were also a number of casts which did make explicit reference to art history or knowledge of the artist.

This artwork reminds me of a treehouse my brother and I built one summer, in the woods by our house. Ramshackle and held together with string and rope, we were convinced it was the best house ever built! It crashed to the ground within an hour of completion.

This cast invites the viewer to associate this image with a memory of childhood, both idyllic and dramatic. The ‘stereotypical masculine hero’³ satirised in the artwork is transformed to evoke two children’s misplaced confidence in their ‘ramshackle’ creation. This connects in an oblique way with Foster’s (2012) account of Lichtenstein’s commentary on the politics of gender representation. At the same time, it evokes a set of ideas about playfulness, creativity and failure, and is affectionate in tone. The cast travels in space and time to deliver a pop art classic to the woods of a Scottish island.

[B-Head] Artcast 2: ‘European Parliament’ (artcast of Lowell Smith by Robert Mapplethorpe, sent to Brussels, Belgium)

this is a reminder to me and my fellow MEPs to look after and welcome people fleeing conflict who are hanging onto life in the most difficult of circumstances

This cast uses what the ARTIST ROOMS text about the artwork describes as a fairly typical Mapplethorpe combination of a close up of a human body and abstract background⁴ to make a pointed political statement about refugees and asylum seekers at a time of intense debate about these issues. The sender of the cast self-identifies as a Member of the European Parliament, and frames the cast as a reminder ‘to me and my fellow MEPs’. The name of the photograph is that of the subject, the American ballet dancer Lowell Smith. But the photo is reinterpreted as a generic person ‘fleeing conflict’ and ‘hanging on to life’. The cast is addressed to specific people, but it has a doubly performative dimension, in that it also functions as a message to others who view the cast about the sender and his or her politics and commitments.

[B-Head] Artcast 3: ‘My old home’ (artcast of Water Lilies with Cloud by Roy Lichtenstein, sent to Liaoning Province in China)

‘Lotus is often seen as an Eastern symbol. It reminds me of my home country. The work might appear in a dream of my home. Hmm I really want to have that dream in the bed of my old house.’

This final example artcast is a more introspective one, with the caster beginning with an explanation of the meaning of the lotus in their home country of China. The symbolism of the lotus is associated with a dream state, and the imagined dream, in turn, produces a longing for another home. The layers of desire expressed in the cast – for a particular symbol to appear in a dream in a place left behind – are rich and

³ Summary of *Reflections on Crash*, Tate web site. <http://www.tate.org.uk/art/artworks/lichtenstein-reflections-on-crash-al00368>

⁴ <http://www.tate.org.uk/art/artworks/mapplethorpe-lowell-smith-ar00161>

evocative. The ARTIST ROOMS description of the artwork focuses exclusively on its technical dimensions, describing it as part of a group of six works ‘paying homage to ... Monet’⁵, while the artcast gives an emotional, personal framing of the work.

Together, these three artcasts demonstrate the shift between guest and host as each author reinterprets artworks to send a message, share an association, or perform a memory. In each case the caster takes an artwork, the gallery setting and context, and perhaps some of the interpretative material offered by the host gallery, and produces their own meanings and narratives, linked to place. The design of the app and accessibility to other visitors meant that these narratives could be viewed by others, and the artcasts could contribute to their own relationship to the artwork and to the place the cast was sent. Each artcast became a host-spot for a new set of interpretations.

Returning to the elements of digital co-production outlined in the previous section, we can use them to reflect on both the design and the analytic possibilities of artcasting to arrive at a useful understanding of what this project did and the ideas it opens up.

Designing for multiple times and spaces. The design of the app and the process of casting foregrounded the ‘out-of-jointness’ of the interaction between gallery and visitor. The app was designed to be used in the gallery – indeed, in the period of this project it could only be activated with a code available on the printed leaflet in the gallery. Some users encountered the app by independently picking up a leaflet or exploring the in-gallery materials, others were invited by the research team as they passed through the space, and still others attended events and workshops in which it was being used. Regardless, once a cast was created, it was unmoored from both the location and the timeframe of the gallery – able to be sent forwards or backwards in time, and to any location on earth. Users of the app could navigate around the map at any time and see the casts sent by others. The temporality of the process could therefore be significantly out of sync with the timeframe of the exhibition to which it referred.

Involving the ‘unknowable other’. On a practical level, like many engagement projects in museums, use of Artcasting was entirely voluntary and we did not know for certain who would be attracted by or willing to engage with it. In addition, the design of the app invited users to enter their age range and postcode, but this was optional, and the first iteration did not account for people using the app in pairs or groups (which some did). The choice to gather minimal demographic information was deliberate, and aligned with the project’s aim to think inventively about evaluation (Ross et al. 2017) and find new ways to represent engagement. The identity of individual visitors was less important to our analysis than an understanding of how the movement of artworks, people, ideas and inspiration might offer something generative to the cultural heritage sector (Ross et al. 2018). This aligns theoretically with Derrida’s (2000) observation that hospitality concerns relationships with foreigners or strangers (Dufourmantelle highlights the double meaning of ‘l’etranger’ in her translator’s notes on these lectures, p.ix). Contemporary evaluation practice attempts to neutralise the ‘otherness’ of the visitor, to categorise and translate the

⁵ <https://www.nationalgalleries.org/art-and-artists/133662>

visitor's experience into instrumental forms (Belfiore and Bennett 2010). This invokes what Derrida (2000, p.15) refers to as the first question of hospitality: 'must we ask the foreigner to understand us, to speak our language...so as to be able to welcome him into our country?'. The researchers and partners in Artcasting were interested in preserving difference, and our analysis of artcasting data followed this principle (Ross et al. 2018).

Challenging the stability of relationships between gallery and audience. The project's orientation was equally one of encouraging visitors *in*, and extending the reach of exhibitions *outwards*, into new times and spaces. In the first sense, framed in terms of evaluation of visitor engagement, the data was collated and visualised through a dashboard interface to which the galleries had access, and was a novel, but not especially challenging, mode of user response. It could be kept safely within the bounds of the typical visitor-gallery power dynamic, where specific user-generated content is provided at the behest of the gallery and is controlled and interpreted by gallery professionals for their own purposes – in this case, to contribute to stories of engagement and to help develop the gallery's understanding of visitor experiences. At the same time, however, this process was a form of public interpretation of the artwork, an interpretation which could be encountered by any user in a spatial and temporal location beyond the gallery. Artcasting's attention to movement, time and trajectory had the effect of pushing future engagement beyond the boundaries of the institution. The app allowed users to both send and receive artcasts; so users moved between being host and guest in relation to the reconfigured exhibition. These 'flickering moments' were visualised and understood as trajectories, altering the boundaries of the exhibition and producing less-stable dynamics and roles for the gallery.

Inviting a rethinking of hospitality. One of the distinctive design elements of the app was its 're-encountering' functionality, designed to use location-aware smartphone technology, where any user with the app installed on their own device would receive a notification if they went to a physical location to which an artcast had been sent (see Figure 3). Users could choose to re-cast any artcast, including ones they encountered in physical locations. Each new location would become part of the imagined journey of the chosen artwork.

[Figure 3]

[Figure 3 caption] Figure 3: image of Artcasting 'encounters' notifications.

While the pilot was too small in scope for this design element to be experienced by many users (there were limited numbers of users and infinite places to which artcasts could be sent), the re-encountering functionality generated some particular conceptual tensions which can be best understood through trajectory thinking. In effect, user-generated selections of space and time became potential exhibition spaces in their own right: and walking into an artcasting 'geofence'⁶ and receiving a notification

⁶ 'a virtual perimeter for real-world geographic areas. ...When the location-aware device of a location-based service user enters or exits a geo-fence, the device receives a...notification.' <http://en.wikipedia.org/wiki/Geo-fence>

would mean performing the role of exhibition visitor, wherever or whenever that occurred. This power, to create virtual exhibition spaces for other users, in any location, which may outlast the original exhibition of the artworks being re-encountered, was intended as a form of co-production. Perhaps because it was more conceptual than realised, partners' shifting relations of hospitality – including of being a 'guest' of this new exhibition – were not a matter of extensive discussion during the project period. However, for at least one partner the project has led directly to the design and early development of engagement projects which are keyed into new relations of anonymity, power and interpretation. Co-production projects and activities have tended to limit the activity of participants – often for well-intentioned reasons like making the experience accessible and avoiding asking too much of them. However, there is considerable scope in digital environments for considering how to take account of the unpredictability of hospitality and its possible continuing movement and future trajectories. This project indicated one way this might be accomplished.

[A-Head] Conclusion

This article has explored *digital co-production*, and how theories of mobility and hospitality – exemplified by *trajectories of hospitality* – can give useful insights into these processes. It introduced four key elements of digital co-production, and the example of the Artcasting research project showed how these elements played out in one particular context, and with a focus on evaluating visitor engagement with art.

Two main implications for practice flow from these key elements of digital co-production. First, digital co-production can be unstable in multiple ways: hospitality means taking account of such instability. Second, and related to this, we should *expect* digital cultural heritage users to take the hospitality that has been offered and do something new with it. Fundamentally, this means that digital co-production does not begin and end with space officially created for this purpose. The meanings, engagements and circulations of power around objects, collections and exhibitions may appear in unexpected, and sometimes unauthorised, spaces, and continue to move. Digital and mobile engagement platforms and projects may generate unpredictable new 'exhibitions', potentially reaching people who have never been visitors to the museum, but who are tapping into the movement and trajectory of exhibitions and objects.

These realities can be both problematic and generative for the museum, and its responsibilities to make visitors welcome and to support their engagement with its collections are shifting and will continue to shift as digital objects, visitors and museum content circulate within and beyond locations where host and guest positions and roles are clear. Going further, collaborative creation of new meanings, partnerships and experiences in digital contexts can be temporally and spatially disjointed, unstable, and involve stranger and more diverse encounters than current understandings of co-production can easily account for. Understanding and working with hospitality as a trajectory of relations and practices will help support museums' digital and co-productive aspirations and innovations.

These observations are theoretically compatible with relational and sociomaterial

claims about the nature of co-production and the involvement of both human and non-human actors. As we saw from the example of Artcasting, digital co-production shifts, rather than resolves, tensions of participation, power and control generated by co-production as it is often practiced in cultural heritage settings. When participation becomes less controllable, and less predictable, in digital spaces, museums and galleries may struggle to assert their authority or position themselves as welcoming hosts. Who is understood to be a guest in such encounters is a matter of considerable uncertainty, as shown by ongoing debates about how museums should position themselves in relation to authorised and unauthorised use of digital resources (Eschenfelder and Caswell 2010). Nevertheless, this shift in perspective and the inclusion of these types of interactions under the conceptual umbrella of co-production gives us new insights for working productively with these tensions. In particular, the trajectory is a useful concept for both planning and analysing the co-production work that is being done by museum digital engagement activities that are spatially and temporally out-of-joint, and that invite the participation of ‘the other’ in new and unexpected ways.

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[A-Head] References

- Ashley, Susan L. T. 2014. ““Engage the World”: Examining Conflicts of Engagement in Public Museums’. *International Journal of Cultural Policy* 20 (3): 261–80. <https://doi.org/10.1080/10286632.2013.808630>.
- Belfiore, Eleonora, and Oliver Bennett. 2010. ‘Beyond the “Toolkit Approach”: Arts Impact Evaluation Research and the Realities of Cultural Policy-Making’. *Journal for Cultural Research* 14 (2): 121–42. <https://doi.org/10.1080/14797580903481280>.
- Bell, David. 2012. ‘Moments of Hospitality’. In *Mobilizing Hospitality: The Ethics of Social Relations in a Mobile World*, edited by Jennie Germann Molz and Sarah Gibson. Ashgate Publishing, Ltd.
- Berger, John. 1986. *Ways of Seeing*. London: BBC.
- boyd, danah. 2010. ‘Social Network Sites as Networked Publics: Affordances, Dynamics, and Implications’. In *A Networked Self*, 47–66. Routledge.
- Charitonos, Koula, Canan Blake, Eileen Scanlon, and Ann Jones. 2012. ‘Museum Learning via Social and Mobile Technologies: (How) Can Online Interactions

- Enhance the Visitor Experience?’ *British Journal of Educational Technology* 43 (5): 802–19. <https://doi.org/10.1111/j.1467-8535.2012.01360.x>.
- Cresswell, Tim. 2011. ‘Mobilities I: Catching Up’. *Progress in Human Geography* 35 (4): 550–58. <https://doi.org/10.1177/0309132510383348>.
- Derrida, Jacques. 2000. ‘Hostipitality’. *Angelaki* 5 (3): 3–18. <https://doi.org/10.1080/09697250020034706>.
- . 2005. ‘The Principle of Hospitality’. *Parallax* 11 (1): 6–9. <https://doi.org/10.1080/1353464052000321056>.
- Derrida, Jacques, and Anne Dufourmantelle. 2000. *Of Hospitality*. Stanford University Press.
- de Souza e Silva, Adriana. 2006. ‘From Cyber to Hybrid Mobile Technologies as Interfaces of Hybrid Spaces’. *Space and Culture* 9 (3): 261–78. <https://doi.org/10.1177/1206331206289022>.
- Dikeç, Mustafa, Nigel Clark, and Clive Barnett. 2009. ‘Extending Hospitality: Giving Space, Taking Time’. *Paragraph*, 1–14.
- Doron, Edith. 2009. ‘At Hospitality’s Threshold: From Social Inclusion to Exilic Education’. *Curator: The Museum Journal* 52 (2): 169–182.
- Dowler, Lorraine. 2013. ‘Waging Hospitality: Feminist Geopolitics and Tourism in West Belfast Northern Ireland’. *Geopolitics* 18 (4): 779–99. <https://doi.org/10.1080/14650045.2013.811643>.
- Eschenfelder, Kristin R., and Michelle Caswell. 2010. ‘Digital Cultural Collections in an Age of Reuse and Remixes’. *Proceedings of the American Society for Information Science and Technology* 47 (1): 1–10. <https://doi.org/10.1002/meet.14504701045>.
- Falk, John H., and Lynn D. Dierking. 2000. *Learning from Museums: Visitor Experiences and the Making of Meaning*. AltaMira Press.
- Foster, Hal. 2012. *The First Pop Age*. Princeton: Princeton University Press.
- Graham, Helen. 2016. ‘The “co” in Co-Production: Museums, Community Participation and Science and Technology Studies’. *Science Museum Group Journal* 5 (5). <https://doi.org/10.15180/160502>.
- Grit, Alexander. 2013. ‘Embodied Houses and the Initiation of Hospitality Experiences in the Zuiderzee Museum’. *Research in Hospitality Management* 2 (1/2). <http://nisconline-com.win9temp.helm4.co.za/index.php/rhm/article/view/207>.
- Henning, Michelle. 2007. ‘Legibility and Affect: Museums as New Media’. In *Exhibition Experiments*, 25–46. Blackwell.
- Hogsden, Carl, and Emma K. Poulter. 2012. ‘The Real Other? Museum Objects in Digital Contact Networks’. *Journal of Material Culture* 17 (3): 265–86. <https://doi.org/10.1177/1359183512453809>.
- Hooper-Greenhill, Eilean. 2000. *Museums and the Interpretation of Visual Culture*. Abingdon: Routledge.
- Illeris, Helene. 2006. ‘Museums and Galleries as Performative Sites for Lifelong Learning’. *Museum and Society* 4 (1): 15–26.
- Kidd, Jenny. 2014. *Museums in the New Mediascape: Transmedia, Participation, Ethics*. Ashgate Publishing, Ltd.
- Lashley, Conrad, and Alison J. Morrison. 2000. *In Search of Hospitality: Theoretical Perspectives and Debates*. Routledge.
- Lynch, Bernadette. 2009. ‘Whose Cake Is It Anyway?: A Collaborative Investigation into Engagement and Participation in Twelve Museums and Galleries in the UK’. Paul Hamlyn Foundation.

- <http://www.collectionstrust.org.uk/home/whose-cake-is-it-anyway-a-collaborative-investigation-into-engagement-and-participation-in-twelve-museums-and-galleries-in-the-uk>.
- Mason, Rhiannon, Chris Whitehead, and Helen Graham. 2013. 'One Voice to Many Voices? Displaying Polyvocality in an Art Gallery'. In *Museums and Communities : Curators, Collections, and Collaboration*, edited by Viv Golding and Wayne Modest. Bloomsbury Academic.
<https://doi.org/10.5040/9781474215299>.
- Molz, Jennie Germann, and Sarah Gibson. 2007. 'Introduction: Mobilizing and Mooring Hospitality'. In *Mobilizing Hospitality: The Ethics of Social Relations in a Mobile World*, 1–26. Aldershot: Ashgate.
- Morse, Nuala, Morag Macpherson, and Sophie Robinson. 2013. 'Developing Dialogue in Co-Produced Exhibitions: Between Rhetoric, Intentions and Realities'. *Museum Management and Curatorship* 28 (1): 91–106.
<https://doi.org/10.1080/09647775.2012.754632>.
- Prior, Nick. 2011. 'Speed, Rhythm, and Time-Space: Museums and Cities'. *Space and Culture* 14 (2): 197–213. <https://doi.org/10.1177/1206331210392701>.
- Ross, Jen, Jeremy Knox, Claire Sowton, and Chris Speed. 2018. 'Mobilising Connections with Art: Artcasting and the Digital Articulation of Visitor Engagement with Cultural Heritage'. *International Journal of Heritage Studies* 0 (0): 1–20. <https://doi.org/10.1080/13527258.2018.1493698>.
- Ross, Jen, Claire Sowton, Jeremy Knox, and Chris Speed. 2017. 'Artcasting, Mobilities, and Inventiveness: Engaging with New Approaches to Arts Evaluation'. In *Cultural Heritage Communities: Technologies and Challenges*, edited by Luigina Ciolfi, Areti Damala, Eva Hornecker, Monika Lechner, and Laura Maye. Abingdon: Routledge.
- Ruitenbergh, Claudia. 2011. 'The Empty Chair: Education in an Ethic of Hospitality'. *Philosophy of Education Archive* 0 (0): 28–36.
- . 2015. *Unlocking the World: Education in an Ethic of Hospitality*. Routledge.
- Russo, Angelina, Jerry Watkins, Lynda Kelly, and Sebastian Chan. 2008. 'Participatory Communication with Social Media'. *Curator: The Museum Journal* 51 (1): 21–31. <https://doi.org/10.1111/j.2151-6952.2008.tb00292.x>.
- Sheller, Mimi. 2011. 'Mobility'. *Sociopedia. Isa*, 12.
- Sheller, Mimi, and John Urry. 2006. 'The New Mobilities Paradigm'. *Environment and Planning A* 38 (2): 207 – 226. <https://doi.org/10.1068/a37268>.
- . 2016. 'Mobilizing the New Mobilities Paradigm'. *Applied Mobilities* 1 (1): 10–25. <https://doi.org/10.1080/23800127.2016.1151216>.
- Simons, Helen, and Brendan McCormack. 2007. 'Integrating Arts-Based Inquiry in Evaluation Methodology Opportunities and Challenges'. *Qualitative Inquiry* 13 (2): 292–311. <https://doi.org/10.1177/1077800406295622>.
- Weibel, Peter, and Bruno Latour. 2008. 'Experimenting with Representation: Iconoclasm and Making Things Public'. In *Exhibition Experiments*, edited by Sharon Macdonald and Paul Basu. John Wiley & Sons.