THINGS TO COME

THE POSSIBLE FUTURES OF DOCUMENTARY... FROM A HISTORICAL PERSPECTIVE

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History can be a great teacher, if only we put the right questions to it. At a moment when the documentary form continues to diversify, driven equally by changes in technological possibility, user expectation and media infrastructure, history might seem to provide a strange ally. After all, the challenges posed by such new developments as interactivity, live documentary and virtual reality, to name but three, seem to have few precedents. And yet, or so this chapter will argue, we might benefit by taking a closer look at the past and seeing what lessons can be learned. Continuities can reveal long-term sites of cultural fascination; they can help us to anticipate patterns of popular reception; and they can relativise the shock of the new. A somewhat less obvious benefit of the rear-view look also helps to demarcate that which is truly distinctive, even if temporarily camouflaged within the terms of the already familiar. This chapter will draw from the past as a way of reflecting about the future, speculating about the implications for documentaries yet to come.

Let's begin with an example of continuity and end with an instance of the disjunctively new. Some 250 years of efforts evident in the panorama, stereoscope, 3D film, and today's Google Cardboard, yellowBird and Oculus Rift, all underscore a long-term fascination with evoking a sense of immersion in the world around us. They point to a tension between re-presentation (depicting something that exists elsewhere and/or elsewhen) and evocation or even experience (making something felt, 'as if being on the spot' to quote Robert Barker's 1787 patent for the panorama). This long history of precedents offers a vantage point from which to assess on-going preoccupations with Virtual Reality (VR) and to anticipate future developments.

Strategies deployed by mid-nineteenth and early-twentieth century documentarians, evident in their use of 'new' technologies such as photographic and filmed panoramas, suggest similar interests in evoking experience rather than merely representing it and in exposition rather than analysis (Uricchio 2011a). We might frame some of the (as of this writing) latest VR iterations in terms of a long-term fascination with presence, immersion and 'being there' – conditions that images of the real world support more immediately than images of fictional worlds whose rule-sets first have to be established and rehearsed.

On the other hand, history can also help to sort out the disjunctive and truly new, demarcating their contours and suggesting their possible implications. So, for example, the increasingly important roles played by algorithms in domains such as image recognition software, narrative generators and taste recommendation systems all suggest a fundamental break from the forms of agency that have structured the representation systems of the past. As they slowly penetrate existing media elements – from cameras to 3D capture systems – they are often retrofitted to feel familiar and do their work with minimal disruption. And yet, if we look carefully, we can see that something like algorithmic processing intrudes upon and fundamentally reorders the old binaries of maker and artefact, of artefact and viewer, disrupting our representational traditions even while on the surface appearing consistent with them.

After making the case for using historical precedent as a rear-view mirror to help with the orientation process, this chapter will look ahead to consider the possibility of algorithmically generated documentaries, and briefly consider algorithms' roles in VR – roles that require disaggregating different technological strands of VR: one, as noted, familiar; and one quite new.

REFRAMING THE DOCUMENTARY

Before continuing, a few words are in order regarding the term 'documentary'. Deployed variously as a style, a genre and a representational claim, the term harkens back in a narrow sense to a simple genesis, namely its invocation by John Grierson in 1926 to describe Robert Flaherty's *Moana* (1926). That generative reference has proved to have its share of complications, relegating the previous three decades of reality-based film production to the rubric of 'non-fiction'; implicitly shackling the documentary project to narrative; and predicating the documentary form on intentions, treatments and associations. Even if occasionally applied with trepidation to the films produced between 1895 and 1925, the term seems stretched to breaking point when used to describe reality-based representations that took place before the appearance of the film medium. And yet,

somewhat asymmetrically, the post-war period has seen the concept applied to non-film media forms, starting with television (which initially exhibited filmed documentaries and later produced its own on tape and even live, in the process embracing the new medium's expressive capacities). So too digital media, at first a convenient distribution platform for film and video and now a site of innovation as documentary-makers explore the new capacities for interaction and user participation available to them. And we have a rich history of documentary as a radio-format, on the pages of illustrated magazines, and even as theatrical events. These uses may have brought considerable richness to the larger documentary project, but they also invoke the film tradition as analogy. Curiously, this pattern of reference and media agnosticism is rarely applied retrospectively, before Grierson's 1926 comment.

My point is not to go down the rabbit hole of deconstructing the term documentary, although the *Oxford English Dictionary* offers plenty of earlier invocations by the likes of Jeremy Bentham and Thomas Carlyle (using the term to mean, respectively, 'of the nature of or consisting in documents' and 'evidential').[1] Suffice it to say that for the English-language film world, Griersonian medium-specificity is hard-wired into the bibliographic reference system thanks to the *Film Index* (Leonard 1966) which used the term 'documentary' almost exclusively for post-1925 non-fiction film entries and deployed various cognates for pre-1925 counterparts, but not the term documentary. Today, when 100 per cent analogue film productions are an endangered species and digital platforms have blurred the lines between media forms, it doesn't seem like much of a stretch to extend the documentary moniker to a robust spectrum of digital forms; but somehow it seems a step too far to look beyond the historical Griersonian horizon for precedents relevant to today's situation. 'Documentary' is a term that has grown elastic with time, but the closer one comes to its point of origin, the more restrictive are its uses.

Documentary, whether narrowly or, as I prefer, broadly construed, has a certain advantage over its more pointedly fictional counterparts. The role of technique in much of the fictional domain is doubly tasked: it must assert itself as an appropriate expressive form and meanwhile, it must quickly convey the rules of the fictional world – is it a world where wizards have powers, or a time when man and dinosaur co-inhabit the earth? By contrast, documentary's world is generally known. It may be unfamiliar or even unsettling, but there is often no need to establish the rules of physics, or the sequence of natural history, or power of magic wands. Freed as they are from the burden of basic world-building, documentary's makers consequently can have greater stylistic latitude. Or said another way: they can turn their focus away from world-building to the task of *world-revealing*.

The actuality claim, while stylistically liberating, encourages a focus on *what* is represented, on whether it is accurate, and on whether the film's argument has proved to be transformative. This serves to reinforce documentary's functionalist agenda, whether social change or armchair travel, suggesting a form primarily of interest because of what is shown rather than how it is shown. Form and content enjoy a deeply symbiotic relationship, of course, but in the world of documentary, they also enjoy a strictly hierarchical one in which form is in the service of content.

Yet it is precisely documentary's innovative formal tradition that has enabled it to take on radically different realities and to deploy radically different approaches to explore them. And, as just suggested, the documentary tradition's development and deployment of technologies and techniques has gone on to infuse the larger media culture. From this perspective, today's interactive, immersive and participatory developments in documentary demonstrate that innovation and experimentation continue. And, as an added value, we can expect to see these innovations extending beyond documentary's boundaries, where they serve as harbingers of things to come in the double-tasked world of dramatic fiction.

BACK TO THE FUTURE

Today's media buzzwords come backed by deep histories of practice. Take the term 'remix'. Enabled by an abundance of source material and user-friendly tools for the cutting-and-pasting of digitalised text, image and sound, remixing seems to be a condition born of the digital era. In its wake have come challenges to long-held notions of authorship, textual integrity and stability. These questions are familiar from the world of i-docs: what is the nature of the users' (re-mixers') textual activities – collaborative authorship, textual hacking or a radical form of textual navigation?; is there a hierarchy of authorship, perhaps giving primacy of place to the originating creator of the interface and textual database, and secondary credit to those who make choices within them?; does the creation of a through-line and text from a sea of possibilities constitute the defining creative act?; what are we to make of a radically reconfigurable set of textual possibilities – or better said: of the fundamentally unstable text?; and are shared textual experiences and intersubjectivity things of the past?

While these challenges are part of the digital condition, in fact they have been historically posed by the photo-collages that thrived in the 1920s Dada movement and after (Hannah Hoch and John Heartfield's remixing of found photographs come to mind); or by early Soviet compilation films (Esfir Shub's *Fall of the Romanov Dynasty*, 1927); or in mass-marketed pre-glued books designed to aggregate the user's clippings from newspapers, calendars and product packaging

(Sears sold the *Mark Twain* brand). The practices of fragmenting texts and reassembling the shards to make a new one, or indeed, selectively combining elements from a meta-textual environment into a new and unique text, go back to the origins of the book itself, with the commonplace book instantiated in fifteenth-century Florence with the Zibaldone or hodgepodge book and codified by John Locke in his 1685 treatise on the methods for their construction.

The questions provoked by interactive documentaries and their attendant textual remixing have, it turns out, been with us longer than we remember. And yet these early remixing practices peacefully coexisted with the realm of the traditionally authored text, neither posing threat nor generating anxiety. If anything, their long marginalised traces are only now visible thanks to the challenges wrought by their digital counterparts, exacerbated by new copyright regimes and an intensified scale of production and distribution. However, with a little perspective, many of the disruptions enabled by today's technologies – at least with regard to remixed textual systems – can be seen in the light of precedent. These long-term practices suggest an as yet unwritten history of textual production, a spectrum between fixity and malleability, between the canonised texts that we institutionally perpetuate and the far more diverse and eclectic remixed and dynamic texts that have always been there. The history of authorship can also benefit from this tradition, with historical precedent restoring a sense of respectability and creativity to practices like textual hacking.

MIT's Open Documentary Lab and the International Documentary Festival Amsterdam's DocLab joined forces to map this fabric of precedents and conceptually related practices in a web-based project called *Moments of Innovation* (2014). Organised on terms such as 'interactivity', 'immersion', 'locative' and 'participatory', the project traces the long history of endeavour by linking ongoing developments in interactive documentary with pre-digital actuality-based antecedents. As with the remix, the point is not that we have seen it all before, but rather that we can benefit from remembering that many of the uncertainties and even crises provoked by today's changing regimes of representation have ample conceptual precedents. These precedents open up alternate through-lines to our received histories of textual engagements, alerting us to the range of techniques that can be deployed for particular expressive ends. Precedent, in this sense, can also inform and enrich today's documentary deployments, predicated as they are on a new generation of networked digital technologies. What we have learned from the past, together with the affordances of these new technologies, can together create possibilities for greater accessibility, new strategies for meaning creation, and an opportunity for bringing publics together in innovative ways, both with one another and with the issues of the day.

THE UNPRECEDENTED

As scholars such as Brian Winston (1986) have amply demonstrated, even the most innovative technologies and techniques can be traced back to earlier developments of one kind or another. Nevertheless, as Thomas Kuhn (1962) argued with his notion of scientific paradigm shifts, we know that cultural framing and our ideas of causality can change radically; and the history of technologies, from the Bronze Age to the Information Age, suggests that quite dramatic shifts in production and the material affordances of technology also take place from time to time. Unprecedented change, in other words, is possible, even if historical continuities of one kind or another underlie them. History's power at such moments derives less from underscoring continuities than it does from accentuating difference and letting the contours of the new be appreciated without stuffing them back into existing categories. Historians, both in this scenario and in the one discussed in the previous section, have a precarious task: they can easily overlook precedents by hewing too closely to the norms of the day; and conversely, they can try to inscribe the truly new within well-worn categories, in the process missing its radical potentials.

Looking ahead to possible futures for the documentary form, particularly at a moment characterised by widespread access to digital cameras, pervasive connectivity and a culture of audiovisual production, algorithms loom large as a factor that can help to generate and navigate stories, in the process, redefining interactivity. Of course, algorithms as instruments for calculation are not new, going back at least as far as Euclid, but their conditions have changed significantly. And their changed conditions align with those facing documentary makers: ever-accelerating processing power (Moore's Law), ever-more pervasive networked connectivity and an ever-richer data environment. In this setting, despite their continuities with the historical past, algorithms have demonstrated unprecedented capacities including the ability to identify and sort data and transform them into stories. Particularly at a moment when, to use but one measure, some four hundred hours of video are being uploaded to YouTube *per minute*, or 65.7 years' worth of video per day (Bower 2015), we require new organising systems to make material findable, let alone functional in a documentary sense.

At one level, the use of algorithms to help with this task seems commonplace. By initiating a Google search, we deploy configurations of many hundreds of thousands of algorithms to find our particular needle in a haystack. From the perspective of the human initiator, such an act is trivial. Moreover, we probably shrug-off the carefully calculated advertisements that also appear on our search page. And unless we take active steps to mask our identity, we don't usually have

to ask Google to give us results in our language or that relate to our geographical location. A Google search page, including advertisements deemed relevant, stands as an algorithmically composited text, as a responsive text interacting with, on one hand, some notion of the user's profile and needs, and on the other, a massive data set. Beyond entering a search term and pressing 'enter', human interaction is not required (although active intervention is required if one wishes to circumvent these new deployments).

In microseconds, algorithms can search, filter and order results; and meanwhile control for language, location and marketing profile. One may describe the resulting text, the search page, as interactive, even though the interaction that occurred was undertaken by programme elements on behalf of the user rather than by the user. That is, the process of curating and presenting selected elements from an ocean of data reveals quite intricate interactions (including micro-auctions among possible advertisers) that construct a unique text. While these actions 'converse' with the user's previous behaviours, and while the result of human-designed programmes, the interaction takes place in a 'third' space beyond that of the user and the data set.

For a hint at what this might mean for moving images, we can look to Guy Maddin, Evan Johnson, Galen Johnson and the National Film Board of Canada's *Séances* project (2016). The individual instantiations of the project are algorithmically assembled, or as the project's website describes it: 'In a technical feat of data-driven cinematic storytelling, films are dynamically assembled in never-to-be-repeated configurations. Each exists only in the moment, with no pausing, scrubbing or sharing permitted, offering the audience one chance to see this film before it disappears.'

Maddin *et al* are in dialogue with the ephemeral character of early cinema and its emotional registers of loss. But for our purposes, the shots and intertitles are configured within certain rule sets and designed to cohere, rather than just existing as arbitrary assemblages of clips from the larger project's environment.

The algorithmic sorting and arranging carried out by Google searches for purposes of information relevance here takes the form of narrative plausibility, even though *Séances* lacks a Google search's personalisation and made-to-measure specificities. As such, *Séances* offers an early moving image instantiation of something that is currently flourishing in print journalism, where companies such as Narrative Science generate unique on-the-fly stories for news organisations and individuals alike, producing dynamically generated and personalised texts from large bodies of structured data. Since 2012, Narrative Science and its peers have been a growing presence in beats with structured data such as sports and finance, where their algorithms can quickly convert data into publishable stories (Podolny

2015). They have made inroads not only into the newsroom, but as well into such niche markets as reporting on Little League Baseball, a sport for children that rarely receives press coverage and yet includes millions of proud parents who are eager to share news of their offspring's successes. Authoring algorithms can produce a barrage of stories that rework the basic information of a particular game to fit the needs of its individual readers. In this word-based journalistic setting, narrativisation and personalisation combine.

One scenario for future interactive documentaries derives from these processes. Like the examples just discussed, in this setting, interactivity is a textual condition enabled by algorithmic rule sets and data about the user, rather than direct user activity. Users can have a 'sit back' experience, even though it is one uniquely crafted for (and, in a sense, with) them. Imagine a further step, namely enhancing today's existing storytelling algorithms with taste prediction, where the kind of story we see is informed by the calculated extrapolation of our profile, our behaviours, and the anticipation of our desires. The predictive capacities of Pandora's algorithms with music, Amazon's with book recommendations, and Netflix's with film and television programmes show that the state of the game is well-developed, suggesting that such a move is imminent. Imagine combining these narrativising and personalising capacities with image recognition software, a sector that has enjoyed huge advances over the past two years.[2] This is a precondition for image-based stories (unlike Narrative Science's word-based work) and, as processing strategies in this space continue to develop, they will enable far more creative use of the vast image archive available online and growing at a formidable rate. Finally, imagine arming these various processes with the verification software increasingly deployed by journalists seeking to distinguish fact from fiction in user-generated content (Shorenstein Center 2015). Together – and indeed 'together' is the way that most algorithmic ecosystems are deployed – we can see that the conditions for the production of a radically new kind of (documentary) text have reached a tipping point.

This scenario for personalised documentary production represents a relatively new direction in our relationship with media. The text is configured for us, on the basis of information about us, but without our active intervention (and sometimes, despite it). One might describe this as a 'responsive text' since the ordering of textual elements is both dynamic and corresponds to the system's notion of our preferences. Yet it appears to the user as a stable, fixed text. Should we consider this an example of interaction? With algorithmic assembly, the users need not do anything – they are simply offered a text that feels familiar in its old-school solidity and fixity (no clicking or navigation needed). 'Interactivity' occurs at the programme level, where the text is constructed from pre-existing textual elements

and organised on the basis of information gleaned about the user and the textual bits themselves. The process of interaction is occluded from view and rendered into an 'automatic' process.

These developments are already with us, and while they have certain affordances, such as bringing customised documentaries to viewers who prefer to 'sit back' rather than 'lean forward' to navigate their way through an interactive documentary, they raise deeply troubling questions regarding agency, control and ultimately, governance. Seeing that something is coming down the road is different from welcoming it; our task is to see and be prepared, developing critical strategies for assessing and using these new possibilities.

RETHINKING INTERACTIVITY

How might this future scenario fit within our notion of interactive documentaries? To the extent that our definition privileges the text-generating interaction between the user and the pre-authored textual environment, then – recalling the uses of history mentioned earlier in this chapter – historical examples might help to show that this is a long-standing practice. We could look to nineteenth-century serial authors such as Wilkie Collins, tracing the slow interactions with his reading public that resulted in significant changes between serialised chapters and the final novels. Or we could look to the long-term development of various versions of the Bible, finding interactions between interpretive communities and the various textual components that are included or not, or sequenced in particular ways (Uricchio 2016). One might argue that deploying the term 'interactivity' in these settings is a semantic game: other terms could be deployed with equal or better effect to describe these user/text relationships. But the use of the term helps to underscore a common set of behaviours binding today's 'point-and-click' notion of digital interactivity to both historically precedent and algorithmically emergent forms of interactivity. The larger point is that the appearance of textual stability in no way precludes the role of interactivity as a generative process.

Interactivity in our current generation of computer games and interactive documentaries relies on real-time behaviours of the 'cause-effect' variety. Each use of the control interface results in a textual change. But if the term refers to a condition of user-generated textual change and multiplicity, then we can challenge the relevance of several characteristics associated with interactivity. Consider temporality: the real time 'cause-effect' notion of interactivity, I've suggested, can be complemented with temporalities of textual production that are glacially slow (the Bible) and quicker than our fingers can click (algorithmic narrative generators). Consider agency: the individual pointing-and-clicking subject can be com-

plemented by the creative intervention of collectivities (from religious interpretive communities to reading publics) and, controversial though it is, by the work of algorithms (informed by passively generated or actively collected data).

These examples suggest that the term 'agency' is changing. The term's historical antecedents seem clear enough, yet for some, the attribution of agency to non-human actors seems a step too far. And yet this is precisely the change in language – and condition – heralded by today's algorithmic regimes (Uricchio 2011b). Shifts in the meaning and site of agency have appeared in posthumanist discourse (Moravec 1998; Hayles 1999) and in Actor Network Theory (Latour 2005) in reference to non-human actors. Non-human agency has been invoked by the computer industry ('intelligent agents'); and is taking statutory and legal form with self-driving cars and auto-piloted drones. Behind these manifestations is a larger shift in the modern (fifteenth century to the present) subject/object relationship that underpins our philosophical systems and was emblematised by Martin Heidegger's 'world-picture'. As that relationship gives way to an algorithmic intermediary that selectively repurposes multiple subjectivities and the data of the world, we must expand agency's meaning ... or create a new term. The algorithmic mediation increasingly evident in our search, navigation and finance systems, and even in our construction of citizenship and policing, brings with it new dangers (when it is shackled to the power dynamics of the past) and affordances (where it can harness collective ideas and behaviours). But algorithms are neither inherently dictatorial nor amplifiers of the self: they are tools that herald an age of radical contingency. They stand between the subject and object, requiring that we rethink the long-held assumptions of the modern era regarding the construction of the self, certainty, agency and ethical responsibility.

In many of today's digital environments, interactivity leads to textual encounters that tend to be ephemeral and fleeting, although they have consequence (a score in a game, the 'completion' of a documentary) and are capable of being forensically recovered or even recorded in some way. However, the environments from which users carve texts tend to be much more permanent; for example, the data set and interface design that constitute a particular version of a documentary are fixed as intellectual property and distinctly persistent relative to the text-producing interactions that one has while exploring it.

The implications for documentary are significant. If the move from the traditional linear documentary to the i-doc turns in part on shifting agency from an all-controlling author to interaction between the author (as creator of the data set and interface) and the user (as a navigator and constructor of text), then the algorithmic processes just-described shift agency in another direction altogether: to the interactions between a rule set and machine-readable data (Hoelzl and

Marie 2015). The rule sets (algorithms) are in some senses arbitrary. They may be systematic, but they exist as constructions at a distance from the notions of visible evidence that documentary-makers have long relied on. The same can be said of data sets: rule-bound constructions that have expanded from the world 'out there' to included selected behaviours of the human interlocutor.

This represents a dramatic shift from our past encounters with representation. Claims regarding the image's indexicality notwithstanding, we have a rich cultural and institutional tradition of 'reading' film and photography, as well as a legal tradition of accepting certain images as evidence. Rule sets and machine readable data, by contrast, are far more abstracted entities and are only beginning to find evidentiary status in the culture at large (and that, problematically, as debates over such practices as predictive policing suggest).[3] In other words, the anxieties that today's 'point-and-click' interactive documentaries have evoked around traditional sites of authority (of author, of argument, of text) play out in quite different ways when algorithms and machine-readable data enter the picture. Rather than giving form to an experience through the collaboration between creator and user, in this new setting, the designers of the rule sets and definers of data ultimately shape the range of possible user experiences. This deferred and abstracted agency, increasingly common in the organisation of our social lives, requires an active critical framework if we are meaningfully to incorporate it into making stories about the world.

This algorithmically-induced reordering of agency and therefore authority can also be seen in a quite different and emergent area of documentary production: virtual reality. As a term, virtual reality is a claim, an ambition and a material ensemble that papers over two quite different technologies. On one hand, 360-degree-video conceptually replicates the late-eighteenth-century panorama. It is essentially a fixed, pre-recorded video asset in which the user can interact, directing attention where she will. In this sense, it invokes many of the same possibilities and challenges of 'point-and-click' interactive documentaries: the user works in tandem with the creator of a textual environment to explore and construct a text. While fixed in terms of visual and sound assets, the user has extensive latitude in assembling these elements.

On the other hand, 3D capture technologies essentially use data and algorithms to generate textual worlds on demand. Rather than traditional photographic or videographic optical information, these systems use lasers or photogrammetry to generate a fine point cloud of measurements, information that can take numerical form. These measurements have been deemed to have indexical status, as evidenced by their use by insurance companies, engineers and the police. These data points, in turn, need to be re-assembled and put into motion, and that is the work

of algorithms. But because, as noted earlier, these are essentially constructed rule sets, they are in a sense arbitrary. If the point cloud reference to an object must behave the same as that object in the real world – say, subject to the laws of gravity – that behaviour has to be programmed. In other words, although the data points may have a clear correlation to things in the world, their behaviours must be constructed, and with this, 3D capture systems encounter the same dilemma as was just discussed with algorithmically constructed narratives. Agency shifts from being a human-centric affair, and turns instead on the algorithmic constructions of human, rule set and data interactions.

While by no means perfect, the correlation between 'point-and-click' and algorithmic stories on one hand, and the two VR systems (one 360-degrees and fixed and the other algorithmically generated) on the other, is nevertheless good enough for parallels to stand out. The interactivity enabled by 'point-and-click' documentaries, like that of 360-degree VR, has deep historical precedents. The technologies obviously differ, but the implications for user interactions with a fixed domain of sound and image assets, collaborative creativity and challenges to traditional notions of authorship and textual stability are similar. By contrast, algorithmic story generators and 3D-capture VR both introduce a third element into the creator/user binary: a procedural, programming element. While authored in its own right, the algorithmic rule set intermediates between machine readable data and the user, constructing a view of the world that even if indexical in the detail (the data points) is simulated and contingent in its operations.

CONCLUSION

So where does this leave us? We understand and have made good use of historical precedents to help ground the operations of new technologies that in fact hew to old behaviours. Linking today's digital remixing back to the commonplace book, or 'live documentary' to the work of silent film era 'explicateurs', or 360-degree VR systems to the panorama, all offer us fresh and generative readings of the past as well as insights into our latest iterations of these endeavours. But history can also help to distinguish aspects of our media practice that are indeed new, and by so doing, alert us to the need for fresh and critical thinking about their operations and implications. This chapter has sketched two scenarios of likely relevance to the future of the interactive documentary: algorithmic storytelling and 3D-capture virtual reality systems. As noted, algorithmic storytelling has made significant inroads in the world of print journalism; and developments in taste prediction, image recognition and image verification systems are making rapid progress. VR documentaries using 3D-capture systems such as Karim Ben Khelifa's *The*

Enemy (2016) and Oscar Raby's *Assent* (2014) are also appearing with greater frequency.

At one level, these future developments fit well within the expanding contours of the documentary. They make good use of documentary's ability to explore new forms, and with them, new expressive possibilities. Transitional phases tend to be retrospective, with new technologies and techniques tasked with serving old agendas. But we can also expect considerable innovation as our makers grow more familiar with the possibilities of the new.

But on another level, these algorithmic developments pose challenges. As noted, despite appearing fixed in form, these constructions are not only dynamically responsive and unique, but arguably interactive as well. On a terminological level, one can make a historical case for interactivity, but it requires challenging our assumptions regarding the concept's assumed temporality and agency. 'Family resemblances' rather than fixed definitions may be the way to go, opening up new ways of reading old practices – Collins' writing process or the Bible's textual evolution for example. At the same time, these new algorithmic forms exacerbate the anxieties already at play in the shift from traditional notions of author, reader and text (the linear documentary) to the possibilities of collaborative authorship and instable texts that characterises the 'point-and-click' notion of interactive documentary. They displace authorship and agency to a culturally unfamiliar space, that is, to algorithmic rule sets and metadata characteristics of machine-readable data.

'Unfamiliar' is perhaps an overwrought term in this context, since algorithmic agency plays an increasingly important part in our digital lives, where its manifestations in our searches, social networks and navigational systems is routine, despite their profound implications for governance. But for our textual systems, our critical encounters with seeing and re-presenting the world, their implications are deeply profound and they are the site of critical interrogation, as demonstrated by Brett Gaylor's *Do Not Track* (2015) and Sandra Gaudenzi's *Digital Me* (2015).

The reordering of the concept of agency common to these future systems does not fit easily with the notion of the subject as it has developed in the West since the fifteenth century. New wine in old bottles, the implications of this new order of things are not immediately evident. They have been deployed in most aspects of our social lives, and their routine appearance in the world of documentary, like media generally, is already in process. Our task is neither to lament the passing of the old nor grow frantic over the emergence of the new, but rather to assess carefully and critically their capacities and implications for documentary practice and representational literacy more broadly.

NOTES

1 According to the OED (1827) J. Bentham, Rationale Judicial Evid. I. i. iv. 54 Documentary evidence...' and (1843) T. Carlyle, *Past & Present* i. iii. 25: 'It is an authentic fact, quietly documentary of a whole world of such.'

2 For a sense of the progress in this sector, see Imagenet Large Scale Visual Recognition Challenge http://image-net.org/challenges/LSVRC/2015/. Accessed 31 October 2016.

3 For example, see Maurice Chammah, 'Policing the Future, The Marshall Project', 3 February 2016; https://www.themarshallproject.org/2016/02/03/policing-the-future#.tlOncNt0i. Accessed 31 October 2016.

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