

Nuts and bolts of digital heritage

Bringing the past into the virtual present

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Abstract: *In this introductory essay to the special issue, we identify key common themes that are developed in the article contributions. We start by attending to the qualities of what we call “digital heritage ecosystems”, and we reflect on the varied affordances that digital tools and platforms offer. We go on to address the complex political dimensions of digital heritage, and how structures of authority relating to heritage are constructed and can be destabilised by the digital. Finally, we take a look at what goes on behind the scenes of digital heritage initiatives, what is involved in setting up digital platforms and keeping the systems running. This involves bringing to light the materiality of the digital, what it implies in terms of materials, costs and labour. We put forward these perspectives as a way of domesticating the digital and dispelling some of its mystery to make it more adapted to the needs of heritage work.*

Keywords: Digitalisation, digital heritage, post-colonial museology, source communities, affordances.

The articles in this special issue address a common question: what is the place of the digital in our efforts to document and disseminate knowledge about heritage? The diversity of cases presented here show the complexity, and complex ramifications, of the answer to this apparently straightforward question.

New technologies render obsolete old ways of life, artefacts, materials and skills. Yet digital technologies, tools and platforms are also allowing unprecedented possibilities to retrieve, collect and access knowledge about the past. Online, discussion forums contribute crowd-sourced information about archaeological sites or museum artefacts, museums make their databases available online, and old photographs

circulate on social media platforms in search of information about them. Increasingly complex databases and digital maps enable the correlation of different aspects of the past thereby generating new insights about history.

As more digitised material relating to heritage is made available – in the form of images, datapoints on maps, scanned and transcribed notebooks, or text-based information shared online – heritage institutions, local communities and private citizens alike are confronted with the question of how best to engage with these digital resources in ways that are relevant to their concerns, not least the concern for cultural sustainability. If the short- and mid-term advantages of the rapidly growing corpus of data

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that technology is enabling is clear, its longer-term destiny is uncertain: what happens to digitised heritage and related knowledge once a certain tool or platform becomes obsolete, and where does one store it to ensure that future generations can access it? These questions bring us to reconsider the technological optimism that many of the digital efforts of heritage institutions so clearly display. To do so, in this introduction and in the article contributions to this special issue, we take a closer look at what goes on behind the scene of digital heritage projects. We ask in various ways: What does this interaction between the digital and heritage look like in practice? How can the technological possibilities of the digital better articulate with the concerns of heritage?

The articles collected here address heritage and the digital from various vantage points. We learn about sharing databases with source communities, exhibiting heritage using digital technologies, the use of digital maps in heritage research, and the creation of new forms of heritage documentation.

In order to navigate and bring together some of the strands that are developed in the articles, we offer in this introductory section three keys to think about digital heritage, about what the term might mean, and what it looks like in the “real” world. In the first section, we attend to the qualities of what we call “digital heritage ecosystems”, what they look like, or maybe more precisely, what they afford. We suggest that the digital creates new kinds of relationships, between artefacts and people, and between museums and its audiences.

The notion of digital ecosystems might sound rather technical, yet they also have complex political dimensions. In the second section, we turn to a post-colonial critique of digital heritage, and consider how structures of authority relating to heritage are constructed

and can potentially be destabilised by the digital.

In our third section, we zoom in to the particulars to consider the nuts and bolts of producing digitised heritage and keeping the systems running. This involves bringing to light the materiality of the digital – what it implies in terms of materials, costs, time involvement, and labour – and the political consequences of the many kinds of choices that the digital offers. We put forward this perspective as a way of domesticating the digital, making sense of it, dispelling some of its mystery and making it more adapted to the needs of heritage work.

DIGITAL HERITAGE ECOSYSTEMS

The term “digital” is multifaceted and ambivalent; it may refer to various types of digital objects (photographs of artefacts and from field research, documents, and metadata), digital solutions (3D scanning and printing, mapping, photometry), and digital platforms (museum-generated, or commercial ones such as Facebook and Youtube). By digital heritage, we might mean either data relating to heritage artefacts or intangible heritage performances, or digital forms that are considered heritage in themselves.

In consideration of this complexity, the digital might be imagined as heterogeneous and fragmented ecosystems (c.f. Feijóo *et al.* 2009). Indeed, boundaries in the digital world tend to be fuzzy, and rather than simply considering individual digital tools, platforms or databases, it is useful to have a sense of how they interact. Digitised heritage can for instance circulate on different platforms: images or knowledge that originate in the online catalogues of a museum might be reproduced and modified on Facebook and accrue new meanings, and new knowledge about them can return to the museum catalogue

as a result of crowd-sourcing efforts relating to an artefact. Conversely, incompatibilities and rights protection restrictions might slow down this flow of information, or digital objects might get lost in the ever-growing amount of data. The fact that text and images are easily linked, attached, copied and pasted, has repercussions in terms of the viability of digital heritage, and for instance data might easily be copied from an obsolete platform and transferred to a new one. Digital artefacts can also “land back” into the material world, as for instance digitised photographs from early expeditions to the Arctic that end up printed out, framed and displayed in the private living rooms of contemporary Inuit source communities Appelt *et al.*, this issue), or 3D scans of heritage artefacts that can be printed out and offer new experiences to visitors (Falkenburg, this issue).

The complexity of digital heritage ecosystems raise a number of issues of scholarly concern – such as the definition of “digital heritage” or understandings of the biographies of digital objects as they move between ecosystems – and of concern to communities – including issues of ownership and copyright, management and control over personal or sensitive knowledge, verifiability and veracity of crowd-sourced knowledge, and more generally their cultural sustainability (understood as endurance and cultural regeneration).

In heritage studies, we are used to working with material objects, whether museum artefacts or monuments. But what is a “digital object”, if one can use the term? It might be useful to recognise that digital objects have a different *ontological* status than material artefacts, defined in terms not of substance but relationships: they are “relational objects” (Herle 2008, Hui 2012, Ngata *et al.* 2012.), in that they are made up of relations between bits of data, but also exist in a web of social relations, between museums and

source communities, and within communities as objects of ownership, knowledge and information. One might thus consider them particular kinds of “distributed objects” (Gell 1998), that is, singular objects whose parts exist in different places and different times. This distribution poses challenges to heritage preservation and management that are unique to the digital.

Different forms of digital distribution lead to different ways of engaging with digital objects. Material objects that surround us have particular *affordances* (Gibson 1979, Ingold 2000:166–8, Turner 2005), they offer us ways of grasping or using them. The same can be said of digital objects: different manifestations of the digital bring us to engage in different ways. Compared to physical heritage objects, digital heritage objects can offer new opportunities for interaction. Under some conditions it is possible that digital representations may offer better conditions for engaging, and possibly owning an artefact than a physical object can (Skrydstrup 2015). One important dimension of digital objects is their ability to circulate. The circulation of many digital versions of a physical heritage object can lead to the accumulation of meanings. We can then ask, what do the characteristics of digital heritage objects – availability in multiple locations, potential to be manipulated through use of software, or portability (use on mobile phones or laptops) – *enable* in the circulation and creation of knowledge?

Heritage is not fixed, but a fluid concept shaped by communities, often co-produced as part of interactions with different national and global structures such as international heritage institutions and museums. Anthropological descriptions of societies with oral history traditions point to ways in which a fluid conception of history is often necessary for the

6 creation of family, kin group, and place. We also know that the construction of larger units such as nations depends upon histories and heritage becoming increasingly fixed, as written down in books, taught at schools and displayed in national museums. The digital can obviously help spread static understandings of history and heritage, but its fluidity can also mirror the fluidity of culture. The rapid changes of the digital, in contrast to for instance museum practices of conservation, are bringing museums to respond more than ever to the realities of rapidly changing culture. The fluidity of the digital is another of its affordances, allowing fast change, the integration of novel information, and rapid dissemination.

In their contribution to this issue, Gro Ween and Nancy Wachowich reflect on the different affordances of two contrasting digital initiatives: a large scale, “universalising” museum initiative aiming to scan in 3D and high definition furs in the Arctic collections of Nordic museums, and a grassroots, local initiative aimed at documenting the knowledge of Inuit seamstresses. Both initiatives are concerned with building knowledge about the same category of artefacts, yet as the authors note, it might be that the only type of initiative to provide appropriate affordances for craft learning are local initiatives involving the community, and with an intended audience limited to the community itself.

Researchers are particular kinds of users of digital material. In her contribution to this issue, Kristina Skåden documents the efforts of an academic project aimed at using digital mapping technologies to open up new avenues for research on folklore. The project consists in developing maps based on the movements and field research of Norwegian folklore researchers of the nineteenth century. Skåden explains how digital cartography can create new ways of visualising heritage, and the digital maps that

are developed as part of the project are to be seen not only as the outcome of research, but as affording new ways of conducting research, and generating new knowledge about the past.

In museum gallery spaces, digital affordances can inform new approaches to the display and representation of heritage. Jason Falkenburg, in his contribution, reflects on his experimental exhibition exploring the iconic, intricately carved, Norwegian stave-church portals. He reflects on the way digital technologies can bring audiences to see these familiar (to Norwegian audiences) artefacts in a new light. Falkenburg points to ways in which, in an exhibition, the digital has the power to suggest, in contrast to text that interprets and explains. In gallery spaces, the immaterial and fleeting digital can take substance and offer new experiences to visitors.

Taran Wold and Gro Ween, in their contribution documenting heritage digitalisation policies and practices in the Nordic countries, point out how little museums know about their audiences, how they engage with museum digital resources and what they expect from them. The authors raise a point that might appear obvious but is often overlooked by museums, that different users interact with digital services in different ways. Visitors to online resources have various aims and motivations, whether to search for information about a specific item, or, in the words of one survey responder, feed an “addiction” to knowledge about history. In other words, digitised heritage offers many affordances that users engage with in different ways. What is novel and refreshing about Wold and Ween’s article is how it strives to move beyond the grand statements of national museums about the digital to look at the actual practices, issues, and failures of existing digital platforms and policies.

DIGITAL POST-COLONIALISM

Several contributors to this issue are concerned with digital initiatives relating to the heritage of Indigenous Peoples. Many of the issues that Indigenous People encounter in relation to heritage are amplified by their often weak positioning in relations of power with the nation-state and in relation to heritage institutions. The structures of digital heritage systems can contribute to worsening these unequal relations when they relate notably to ownership of knowledge, management of digital heritage, and imposition of inappropriate classification systems. Because these are issues that all digital heritage initiatives encounter, what we can learn from the digital heritage collaborations with Indigenous People has implications for the broader field of heritage studies.

In the post-colonial period, collaborative museology projects (see Peers & Brown 2003) have given voice to source communities' perspectives on, and dissatisfaction with, the colonial nature of past (and sometimes present) practices, as well as museological activities such as collection, conservation, interpretation, and exhibition. In the past two decades digital practices have become central to the interactions between museums and source communities, often Indigenous communities. Notably, the digitalisation of museum collections is key in museum initiatives aiming to engage communities as equal partners in knowledge creation, and sharing rights and responsibilities surrounding their cultural heritage. These digitalisation projects are presented by museums as acts of reconciliation with Indigenous Peoples, implicitly acknowledging the unequal colonial processes that have informed the gathering, interpretation and management of collections, and signalling

the willingness to take new museological directions inspired by a collaborative ethos. Digitalisation, understood as a technology and as a process of knowledge sharing, has been heralded as a new form of access to cultural heritage for source communities (e.g. Ngata *et al.* 2012; Tythacott & Arvanitis 2014; Basu 2015). However, digitalisation initiatives have also been cast as potentially problematic: in cases where mainstream institutions, rather than Indigenous communities, retain exclusive control of the digital data and their circulation, digitalisation projects continue to be prone to the pitfalls of the colonial legacies of museums, and can perpetuate colonial unequal practices (Boast & Enot 2013).

What has been termed "digital repatriation" is often the only choice when museums either have strict non-repatriation policies, or impose conditions on repatriation (Skrydstrup 2015) that either cannot be immediately met by Indigenous communities or Indigenous museums or that involve limitations of rights of ownership. But we have to acknowledge that "digital repatriation" is an euphemism and a mystification, and can at worst constitute a new kind of colonisation (Ess 2004). Digitalisation does not necessarily provide the kinds of access, knowledge transfer, and material, sensory, intellectual, spiritual and cultural re-appropriation of cultural heritage that Indigenous People long for.

Scholars point out the challenges involved in overcoming the specific cultural values and communicative preferences of the repatriating museum (Srinivasan *et al.* 2009a and b), and in devising more respectful and culturally sensitive modes of interaction with source communities. Digital museum platforms may strive to become contact zones (Clifford 1997, Boast 2011), that is, sites of dialogue and cultural mediation and translation, but they are

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often (rightly) assessed in terms of what they *do not* provide, namely “physical” repatriation. However digital and material objects may take up different meanings for different source communities. For instance, digitally repatriated objects can be re-integrated in webs of social relations, in a sense re-connecting the artefact to a history (Ngata *et al.* 2012), or it might be that communities value completeness of a collection, often only possible as a digital collection, over issues of authenticity or material presence (Were 2015). Exchanges on an equal footing between national cultural institutions and Indigenous institutions and individuals can lead to the generation of new knowledge of value to all parties, and influence Indigenous heritage revitalisation projects. Online platforms can be made available to Indigenous experts, including elders, leaders, activists, and artists. This allows for exchanges between different kinds of expertise and for destabilising existing knowledge hierarchies, notably the divide between scientific and local knowledge.

These considerations point to the importance of site-specific ethnographic studies in order to understand *local* perceptions of digital objects, which are explored in various ways in the contributions to this issue.

In their contribution, Martin Appelt and co-authors discuss ongoing cooperation between their institution, the National Museum of Denmark, and Inuit people in Canada. Collaborative projects with source communities, the article suggests, can lead to potentially uncomfortable situations in which issues of ownership and colonialism are raised, bringing museum staff to question their assumptions about the role of museums as cultural institutions. The authors insist that such collaborations are not only necessary, but can lead to the creation of important

new international cultural communities that bridge continents. In the case they discuss, the collaboration serves both the Danish public, by contributing knowledge about a piece of Danish history, the fifth Thule expedition to the Arctic, and source communities who gain access to knowledge about their past in the form of digitised artefacts, old photographs and written material dating from the expedition. In these collaborations, digital platforms are also what provide the means through which the dialogue with source communities can take place, and the creation of international cultural communities can happen.

A problematic aspect of many current digital tools aiming to foster dialogue between museums and Indigenous People is that they tend to reflect the values of the museum rather than those of the source communities. For instance, museum databases tend to categorise and describe artefacts using a universalising reference system, based on a Euro-American understandings of the world that favours clear distinctions between persons and things, the natural and supernatural, or tangible and intangible. Similarly, mainstream museum conservation efforts tend to privilege maintenance of the original state of artefacts over continued use or relevance. These approaches often do not reflect Indigenous People’s views and values, which remain therefore silent or marginalised. To an untrained eye, such micro-acts of power are not visible, and for many professional users they become taken-for-granted inconsistencies or absurdities. A striking example of how classification systems fail to do justice to artefacts, or even demean the culture from where they originate, comes from the Cultural History Museum in Oslo. The infrastructure of the ethnographic database is based on the Outline of Cultural Materials (HRAF

Manuals) 5th edition from 1987. In this, shamanic drums for example are classified under the category “psychoanalysis”. In this way, the shaman drums of the Sami, one of their most significant and sacred artefacts, are yet again inscribed in the colonial and often violent history of repression of Sami culture. Similarly, Tone Wang (this issue) points out how in museum online interfaces, such as apparently simple issues as web-page design practices, for instance relating to the number and definition of categories in drop-down menus, impact on source communities’ ease of access to information about their heritage.

Not just classification systems, but the entire structures of digital platforms and distribution models can reveal power inequalities between national museums and source communities. The contribution by Ween and Wachowich highlights how the format of digital tools impacts on how they are used. They contrast two digital initiatives in terms of modes of management, “close” and “far”, and reveal the different possibilities that these management systems enable and their different potentials to enable learning. One issue that is at stake in the digital initiatives relating to Indigenous Peoples, illustrated in the article, is the ownership and copyright of data. More broadly, this issue relates to the question of who is in the position to manage data, and by what means.

In his contribution, Geoffrey Gowlland takes a different look at the relationship between museums and source communities. In a reflection on the images that contextualise the making and acquisition of new artefacts collected by museums, he provides illustrations that point to unexpected ways in which source community members might try to shape the way the artefacts are understood in the recipient museums. Using three different

examples from his fieldworks, Gowlland explores how accompanying digital images become agentive in shaping what artefacts become. In creating specific events and framings for the ethnographer to document digitally, makers shape how their work will be received by geographically distant audiences. The study of contemporary cases might well bring us to take a second look at the now digitised images of explorers and collectors of the past, and rather than thinking of such images as “contextualising” artefacts, one might think about how they continue to exert the power of the people from whom artefacts were collected.

The issue of power relations between museums and the public is not limited to source communities. This is highlighted in the contribution by Irmelin Axelsen. Axelsen tells us about how a Facebook page, originally intended to crowd-source knowledge about archaeological material, morphed into a platform to debate the role of amateur archaeologists and the nature of their contribution to the discipline. It seems that Facebook as a platform affords such open conversations, that might not be available in the strict and one-way “comment boxes” one typically finds on a state-funded digital project such as digitaltmuseum.no. As Axelsen’s contribution illustrates, digital platforms, including commercial ones, enable new kinds of conversations that would have been difficult in the past, and can be used to question existing academic authority structures. In the digital age, more than ever it seems, the authority of academics and museums relating to knowledge about the past is being destabilised. What this might point to is how necessary grassroots digital initiatives are (see Ween & Wachowich, this issue) to avoid the pitfalls of universalising museum projects.

10 **DIGITAL NUTS AND VIRTUAL BOLTS**

We tend to forget that digitalisation is a social and material practice, that is, a practice made up of complex procedures and interactions between producers and consumers of data. In various ways, contributors to this issue take a frank and curious look at the opportunities and limits of the digital, and an honest and humble evaluation of their own work. Digital objects, it seems, are circulated, exchanged, transformed, and used just as their “material” counterparts. An attention to these movements can bring us to look beyond the finished products of digitalisation – the polished and carefully designed user interfaces – to the material and social stuff that they are made of, including the costs, skills and labour, or sheer materiality, involved in developing digital solutions, digitising objects and documents, delivering data, and keeping the systems running. An attention to these inner workings leads to a deeper comprehension of digital tools and platforms, how they come into being, how they are maintained and abandoned, through human agency as well as the agency (Gell 1998, Latour 2005) of the digital.

An overall issue in studies of digital solutions is the strong presence of technological optimism. The museal digital revolution continuously offers new opportunities for expansion. 3D scanning enables the copying and reproduction of any kind of object. New platforms can connect all knowledge onto GIS maps, and provide channels for all kinds of knowledge transfer and collaborative virtual exhibitions, offering promise of more dialogues across knowledge boundaries (Srinivasan *et al.* 2009a and b). As in the rest of the digital world, there is an inherent drive to create larger platforms, connecting all of a museum’s activities, all national museums, or even all collections relating to a particular region

distributed across museums internationally. Driven by technological optimism, new platforms and systems are continuously being introduced, leading previous ones to quickly become obsolete and turn into “digital ruins”.

This inherent drive for technological development may be alienating for communities that lack the adequate technical resources and knowledge needed to access these features. There is an uncertain viability of digital platforms in remote communities, where digital access can be compromised by lack of the required hardware or powerful Internet connection. Digital solutions might also be at odds with the values and worldviews of communities (Verran & Christie 2007, Lyons *et al.* 2016). In contrast with the innovation driven, all-encompassing solutions of the powerful museums, grassroots initiatives might serve one or several smaller purposes. It may well be that we should resist the desire to “connect the dots”, and consider that heritage circulates more successfully, and offers more opportunities for sharing, on the social media platforms that people actually use (Verran & Christie 2007). With mobile phones and the Internet increasingly available, Facebook, Vimeo and Youtube have for instance become platforms that are used to circulate images of cultural heritage and generate knowledge about such heritage. Commercial platforms are geared towards reaching as many users as possible, compared to museum websites that are concerned with quality, for instance high-resolution images, which might not reach some intended audiences.

A feature of a number of the contributions collected here is an honesty in talking about digital initiatives. Authors are aware of the limits of what the digital can offer in its current state, and suggest ways in which one can work within these limits. For instance,

this issue's contributions by Skåden, by Ween and Wachowich, and by Wang, provide us with almost ethnographic accounts of what is involved in setting up a web portal or database. Through these accounts, we get a sense of the mundane, practical, time-intensive, and quite simply "manual" (as Skåden identifies) processes involved in digital initiatives, which might involve the tasks of translating text, coding bits of data, or scanning pages of handwritten diaries.

Skåden shows us the human and collaborative side of initiatives that bring together technicians and humanities academics. She points to how these uncommon collaborations can bring to the fore differing conceptions and ideas about the digital, such as different understandings of what constitutes "data". Similarly, Wang documents the collaborative process she pursued with university IT designers as part of the development of a web portal regrouping images of artefacts in the Roald Amundsen collections of the Cultural History Museum in Oslo, alongside the digitised photographs and diaries of the polar explorer, with the main aim of sharing this material with the Inuit source community of Gjoa Haven. Wang talks about some of the compromises that were necessary to bring the project forward. These relate to the different aims of the IT department and the researcher, including different ideas of what a "successful" page looks like – the IT department was measuring this in number of page clicks, yet the small community of Gjoa Haven is unlikely to contribute much to these numbers. Wang discusses struggles to make a webpage usable and meaningful for those with the most at stake, namely source communities. In the end, as Wang explains, it is the availability of resources – money and time – that lead to the compromises necessary to get the web portal up and running.

The limits of a digital project might not just be limits of resources: Ween and Wachowich ask whether large projects can ever satisfactorily address some of the demands of users, and whether low scale and low budget but flexible and locally managed projects can better serve the needs of community members. The authors note that it might be that the larger a project is – and the more it is driven by concerns for universality, thoroughness, and size of audience – the less it might be able to address the interests of those who have the most to benefit, in particular source communities.

Once a web portal or platform is up and running, they need maintenance. As Wold and Ween show, there might be a mismatch between the ambitions of the digital and what institutions can actually deliver. National museum websites include comment fields to encourage visitors to contribute knowledge about the artefacts available in the museum databases. Museums provide such comment fields with the dual aim of offering new means of communication with users, and gaining knowledge about the collections. Yet even when museums manage to get audiences to engage with available material, they might not take full advantage of what people have to offer. Wold and Ween note how often highly relevant comments provided by users on national museum platforms are left without response or follow-up. This points to how many museums struggle with the task of monitoring the systems they have set in motion, perhaps due to changing institutional priorities or lack of clearly defined staff responsibilities. It might also be due to the volume of comments received: it is easy to underestimate the work involved in trawling through comments, many of which of little relevance, to get to the nuggets that might provide invaluable knowledge or even change how an object is classified or understood.

12 CONCLUSION

This attention to the mundane that we get from the contributions to this special issue is important to ground digital initiatives in the “real” world. We might want to temper some of our enthusiasm for the digital long enough to ask some critical questions about how digital solutions can serve what ultimately is the aim of all digital heritage initiatives: cultural sustainability. The digital is still in its infancy, and issues of sustainability have not yet been fully addressed, which poses issues for heritage projects. Sustainability does not simply imply proper storage of data. Among other things, we need to have plans for what happens at the end of a project, to think about how to keep knowledge and data alive and relevant, how to integrate new insights, and how to act when today’s technologically advanced digital tools eventually become obsolete.

The solutions we come up with ultimately will be composite, complex, and vary from project to project. The digital offers a variety of affordances, some of which are not yet discovered. As per the theory of affordances, one size does not fit all, and different audiences, intended or not by digital initiatives, will engage in different ways with digital material. One might question the viability of a platform such as Facebook for hosting digital heritage, but depending on the project it might be important to use a platform that many people are familiar with. For other projects, taking time to think of the long-term will ensure that the knowledge generated from enthusiasm around a particular project is not lost when this enthusiasm turns to other matters – in short, we need to be careful that our notoriously short digital attention-spans do not threaten the long-term potential of the heritage work of the present.

Articles collected here document some opportunities and challenges to sustainable heritage practices presented by the current state of the ecosystems of digital tools and platforms. These discussions can inform the development of existing and future digital initiatives – not by presenting solve-all approaches, but by being frank about what the digital can mean in specific situations, advise through example, and provide lessons derived from mistakes. There is strength in looking at the particular, opening up to scrutiny the inner workings of digital initiatives that end-users do not usually have access to. As often, each individual project will need to be addressed on its own terms, but there is much to learn from examples.

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