

# Re-Imagining the Digital Diorama

## Reflections on the scope of online platforms for cultural applications in relation to the differing needs and desires of artists and organisations

This article is a brief account of findings from a larger investigation – one that set out before the coronavirus outbreak to explore the potential of digital and media spaces for various cultural applications. It looked at the opportunities provided for the production, distribution and preservation of works online, as well as existing and speculative financial models for a digital cultural economy. Now, in the midst of seesawing lockdowns, the pandemic has forced an acceleration of developments, with the necessity for the field to redesign, on many levels, the ways that it operates.

In spite and because of its devastating impact, the pandemic continues to provide a valuable opportunity to revise outdated structural and economic models and to rethink their ethical and political foundations. This account focuses in particular though on the material and aesthetic parameters. It considers a range of possibilities afforded by online platforms for rethinking the basis of the artistic encounter.

As a survey of some of the many development tools and services that are available – from streaming tech to game engines and platforms for locative experiences – it also hopes to act as a springboard to different configurations and to further questioning the structures, systems and standards that are evolving.

On the back of conversations with artists, institutions, designers and technicians, the following is a condensed – and far from exhaustive – account of some of the varied practices, challenges and solutions that are characterising online cultural activities.



*[image A]* Elephant in the Room virtual exhibition floorplan. Designed by The Rodina using Babylon.js.

## ***Towards Dynamic Web Spaces***

Of course, a host of sites have long been exhibiting digital art in its native format and experimenting with online platforms as a means to bring about shared aesthetic experiences among networked audiences. At the outbreak of the pandemic, however, the online presence of most artists and cultural institutions primarily existed as descriptive byproducts of their physical activities. By necessity, many of these sites have now sought to become dynamic web spaces, integrating interactive video, animation and simulation, multi-player game and teleconferencing tools, to stage digital and hybrid programmes and facilitate social gatherings around online events.

For some cultural organisations, the motivation to develop in this direction was already there, not least for the expanded range of possibilities that digital services provide for audience connection, but also as a means of developing a more relevant online counterpart to their programming efforts at large. Yet even for those who weren't interested in negotiating these spaces, a lot of the same developments have lately been made necessary by the demands of engaging an abruptly dispersed audience.

**One of the biggest challenges for many such organisations is that the digital domain is not their natural habitat. It requires: (1) a different technical infrastructure; (2) a different set of competencies; and (3) a rethinking of objective.**

In terms of technical infrastructure, many artists and organisations have taken to using readily available live-streaming technologies, with applications such as the open-source OBS allowing makers to broadcast to countless supporting platform destinations. The ease at which these tools enable their users to connect to social media platforms again highlights one of the obvious advantages of broadcasting work online: the ability to connect to a larger audience.

Another trait is their capacity to expand our perceptual parameters. Despite the absence of material presence – and its wide sensorial spectrum – in sitting behind a computer display, the use of video conferencing applications for activities such as workshops, seminars and panel discussions has extended the gaze beyond the dimensions usually afforded, often with the added ability to see inside someone's home or private surroundings. While this has darker implications when considered in the context of surveillance and machine listening, it has nonetheless provided an added supplement to our perceptions of one another.

## ***Virtual Venues***

Alternatively, numerous festivals and design weeks have been borrowing the delivery tools, media and technical expertise that are at hand in virtual, augmented and mixed reality games. The integration of streaming media with the use of cross-platform game engines to create virtual venues not only increases the field of view for the observer but widens the creative possibilities: it allows for the

### ***Streaming Tools***

**OBS (Open Broadcast Studio):** Free, widely used platform to mix video and audio sources and create live streams. <<https://obsproject.com>>

**Twitch:** Streaming platform of choice in the gaming community that has seen a spike in popularity from musicians and performing artists due to streaming quality. <<https://twitch.tv>>

**Open Streaming Platform (OSP):** Open-source, RTMP streamer software front-end designed as a self-hosted alternative to services such as Twitch. <<https://openstreaming-platform.com>>

**Icecast:** Streaming media server that can be used to create an internet radio station, a privately running jukebox and many things in between. <<https://icecast.org>>

circumventing of physical laws, the construction of non-euclidean spaces, and regard for digital presence not only as an emergency solution but as an autonomous form of expression.<sup>[1]</sup> Live and real-time control options also open up new possibilities for performance.<sup>[2][3]</sup>



*[image B]* Elephant in the Room virtual exhibition environment. Designed by The Rodina using Babylon.js.

There are barriers, though, with certain system requirements and photorealism meaning an audience can be required to have access to certain hardware of its own. Furthermore, some of the most popular game engines are not open-source. That said, there are a number of lighter-weight alternatives in the form of (open-source) platforms that utilise WebGL and WebVR technologies. These platforms usefully allow for the creation of immersive 3D environments that can be experienced directly in a user's web browser.

### ***Immersion & Interaction***

It could be that the more common online programme formats – particularly those built on standard streaming platforms – fall more in line with the aesthetic sensibilities of the museum, with its frequent emphasis on contemplation over participation. On the other hand, the adoption of immersive game environments as art venues and installation architectures, as well as the potential of motion capture techniques and simple avatars to transform individuals into digital representations, reflects a familiar tendency to integrate the viewer into the artwork.

This preservation of the audience's status as 'participant' over 'observer' has been high on the agenda of cultural organisations battling to sustain the attention of an online public.

**Clearly, the ease of turning off, turning away, changing the channel or opening a new tab is at odds with the commitment of attending physical events and is one of the biggest drawbacks of translating these to digital spaces.**

#### ***3D Development Tools***

**Unity:** Most popular development platform for creating 2D and 3D multiplatform games and interactive experiences. [.<https://unity.com>](https://unity.com)

**Unreal Engine:** Real-time 3D creation platform for photoreal visuals and immersive experiences. [.<https://unrealengine.com>](https://unrealengine.com)

**Babylon.js:** Real-time 3D engine using a JavaScript library for displaying 3D graphics in a web browser via HTML5 – source code is available on GitHub. [.<https://babylonjs.com>](https://babylonjs.com)

**Mozilla Hubs:** Online 3D collaboration platform that works for desktop, mobile, and VR platforms. [.<https://hubs.mozilla.com>](https://hubs.mozilla.com)

**New Art City:** Virtual exhibition platform for new media art with a focus on copresence and experiencing digital art together – uses open source 3D library three.js. [.<https://newart.city>](https://newart.city)



Equally, for those whose practices are rooted in genres that are designed to transform the perception of space, such as installation art or multi-channel sound, the essence of the medium itself is that it envelops, surrounds, and implicates the observer in that which is observed.

#### ***Spatial Audio Tools***

**WWwise Spatial Audio:** Spatial audio features that specialise in sound propagation, virtual acoustics and spatially informed audio rendering. <<https://audiokinetic.com/products/wwise-spatial-audio>>

**Resonance Audio:** Powerful spatial audio technology optimised for performance and multi-platform support. <<https://resonance-audio.github.io/resonance-audio>>

**Earshot:** Free and open-source transcoder for live streaming high-order Ambisonics. <<https://envelop.us/software>>

Fortunately, on top of the visual development suites that are available, there is a range of toolsets to enable artists and designers to create immersive audio environments, with the possibility of multi-channel streams for the web or of localising sounds within three-dimensional online space. Spatial audio tools also allow support for users to distribute themselves into small groups and converse based on their position near others in a shared virtual space, allowing for more 'equitable participation'.<sup>[4]</sup> In short, such hyper-real features are enabling the re-imagining of the digital diorama.

**The 'wraparound' representations of immersive 3D environments are providing agreeable substitutes to the in-real-life get-togethers of concerts and festivals that we are accustomed to as sites for public engagement and processes of negotiation.**

But they can also be seen as just that: attempts at maintaining the survival of conventional indicators, ways of interfacing and traversing spaces, and rhythms, customs and myths that have, until now, been gauges of cultural experience.

#### ***Rethinking the Encounter***

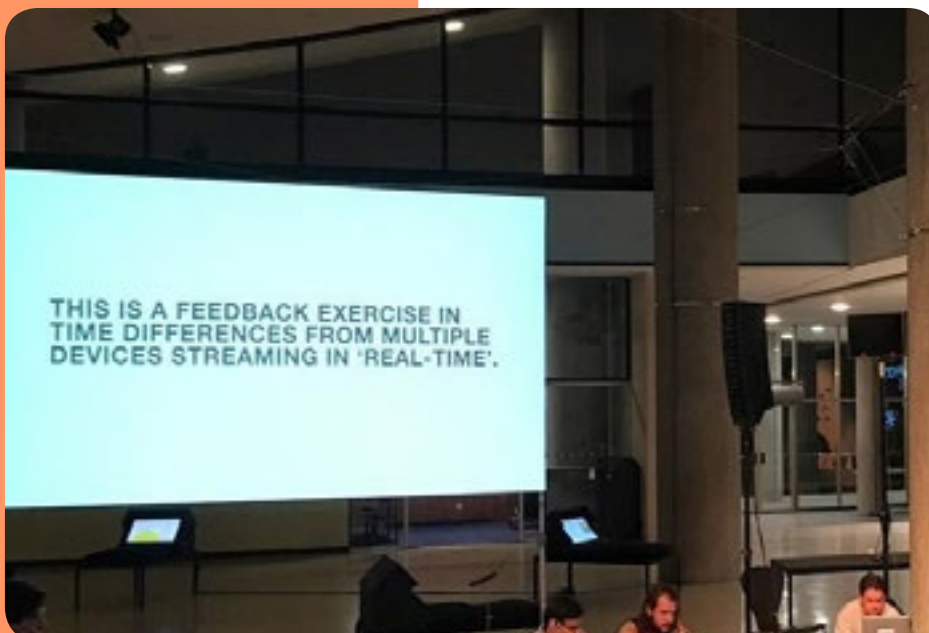
Instead, rather than using them to accommodate reproductions of a particular form of encounter, some artists have been hacking into the peculiar mechanics of online platforms in a way that places more emphasis on the presence of the medium itself. This is illustrated by self-organising performance pieces that manipulate the interactivity of digital services – and their interfacing to chatrooms and various data-processing systems – to

transform networked users into real-time collaborators.<sup>[5]</sup> Others are exploiting the temporal shortcomings of streaming infrastructures by listening in to their latencies and feeding back the distorted temporalities into broadcasts.<sup>[6]</sup>

*"I'm interested in the moment of amplification and the simultaneity of receivers locked into different temporal reproductions"*

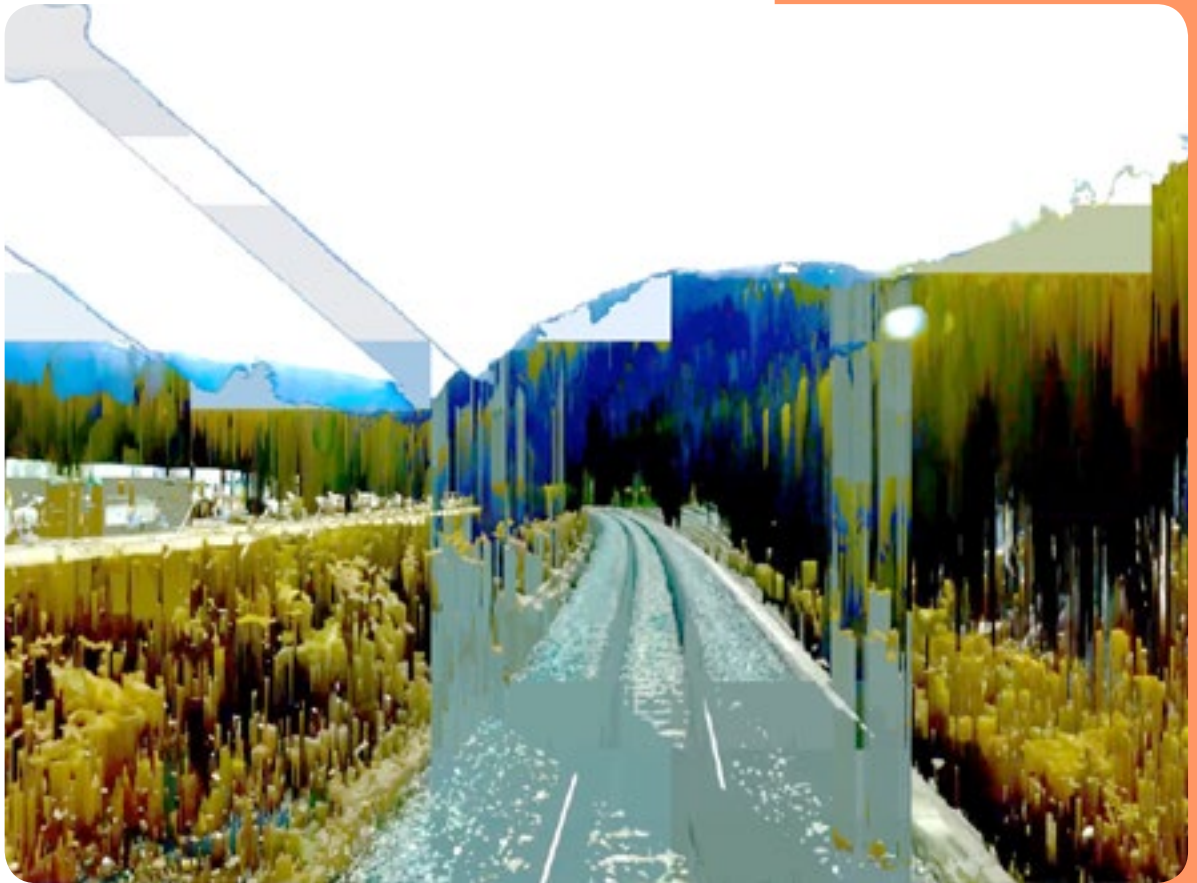
– Hugo Esquinca

*[image C] Hugo Esquinca, untitled (exercise for instants and intervals 1). Photo by Lukas Grundmann.*



These networked performance pieces highlight the capacity of telematic art to blur the distinction between artist and audience, whereby meaning becomes the result of a system of crisscrossing interactions.

This increased fidelity of input and output, however, can also be seen to frustrate the very promise of dispersed authorship and any notion of 'equitable participation' by actually emphasising differences among users' abilities.



*[image D] Matthew Biederman and Pierce Warnecke, Somnifacient Signals, still.*

### ***Expanding the Experience***

Accessibility – including the accessibility of content, interaction techniques, and devices and hardware – appears to remain for a large part an afterthought in cultural applications of streaming and gaming technologies. In some quarters, though, facilities that allow for the rendering of output in alternative modalities, such as sound to text (closed-caption file formats) and image to audio (“alt-text”), as well as haptic rendering technologies, are being used to aid accessibility.<sup>[7]</sup>

**The rapid emergence of new technological standards calls for cultural organisations to address various accessibility concerns in the use and recycling of digital services.**

Beyond these applications, too, multimodal representations have the potential to aid the development of fluid interfaces that are better equipped to apprehend the multiple dimensions of sensorial space.

Put differently: although the increased use of computer networking expands the range of possibilities for human connection on an unprecedented scale, it also inhibits communication by shutting out other routes to the senses. For example, as olfactory and tactile communication channels are repressed behind the partition of the computer screen or mobile app, in their opposite we risk cementing the audio-visual as the ruling regime of sensory values.



After all, the perceptual connotations of artefacts and sound go beyond the visual and the auditory. Regardless of developments in haptic rendering tools, the experience of materiality – the pressure of sonic frequencies, the feel of a game controller, the smell of a printed book or dancing bodies – has already proven its ability to alter our imaginative worlds.

A number of artists have been exploring ways to utilise networked systems to engender



*[image E] Lag OS, Drasland Stretch, at Sonic Acts Academy 2020. Photo by Pieter Kers.*

shared aesthetic experiences that continue to resonate with the more mistakable sensory values. These include digitally mediated sound walk pieces that combine bodily presence and participatory elements, the added integration of GPS services to respond to the listener's position in the real world, and the sharing of artistic narratives through site-specific augmented reality filters.

In these cases, a synthesis of environments, objects and telematic categories – from hypermedia, telemetry and remote sensing, to sound synthesis and image transfer – is informing shared, relational encounters, directing participants into expanded experiences of their individual surroundings.<sup>[8][9]</sup>

An open challenge is for artists and cultural organisations to continue to critically and artistically explore hybrid strategies and develop a more flexible and adaptive technological ecosystem, not only as an aid to accessibility but as a means to test the boundaries that are expressed by the contemporary (virtual) world.

**In periods of social distancing, be it in this crisis, the next one, or simply brought about by the growing influence of technology, how can we continue to explore relations of self to self, and self to world, in ways that are not governed solely by the distance senses?**

**Geolocated Experience Tools**  
**Echoes:** End-to-end platform for creation of geolocated audio walks. <<https://echoes.xyz>>

**Locosonic:** Service enabling the creation of geo-positioned sonic landscapes that can be reproduced on mobile devices inc. smartphones and smart-watches. <<https://locosonic.com>>

**CGeomap:** Platform and open-source software for Geo-Storytelling, allowing simultaneous group creation of spatial narratives and locative writing. <<https://cgeomap.eu>>

These developments, again, are where the sharing of knowledge and the acquiring of multidisciplinary skills and perspectives is required.

Even with the loosening of global lockdowns, the 'telematic embrace' will no doubt continue to tighten its hold. This increasing influence of computing and telecommunications also brings with it the chance to re-imagine the assumptions of cultural engagement.

And with that, a collective goal should be to master the use of technology, or, at least, the use of each others' knowledge of it.<sup>[10]</sup>

By integrating the knowledge of specialists from other fields, including soft- and hardware engineers, interaction designers, broadcast media specialists and architects, the cultural field can make better sense of its changing conditions and be better equipped to imagine its solutions.

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#### footnotes

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