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This paper explores the concept of the “holobiont” (the host plus its network of symbionts) and sets out how historic environments might similarly be reconsidered as hosts made more complete and effective through the inclusion of symbionts undesigned or little anticipated by their original designers. It is an approach which considers the whole space, eschewing the idea of the original, authentic site, embracing the holobiontic qualities of site + time to suggest new ways of considering the wider qualities of place.

SLIDE 1 – TITLE PAGE

SLIDE 2 – BOBTAIL SQUID

The Hawaiian bobtail squid is camouflaged from below through the action of a light organ, which matches the amount of light striking it from above – this way, the silhouette of the squid is reduced when viewed from below. In particular, this night-time predator is camouflaged by emitting light which matches light levels from the Moon and stars above. The squid is born without this ability, although special pores admit a bacterium* which triggers changes to cell structures, enabling the light organ to function.

This symbiosis has been described as “one of the best studied systems that demonstrate how a bacterial symbiont can play a role in the development of an animal organ.” [Rosenberg and Zilber-Rosenberg 2011, p59].

Slide 3

This isn't the only example of animal-bacterial symbiosis. Another celebrated example is the bacteria, *Hodgkinia cicadicola*.

Hodgkinia infected a cicada ancestor tens of millions of years ago and now supplements these insects with essential amino acids missing in their plant sap diet. In other words, cicadas cannot survive, or thrive, without hosting the *Hodgkinia* bacterium.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3267394/>

Studies of bacteria and their symbiotic relationships with host organisms reveal that plants and animals are often enabled by, or even fundamentally depend on, the presence of micro-organisms. It's estimated that more than 10% of insect species carry bacterial symbionts, which supply nutrients essential for growth.

<https://www.nature.com/articles/nrmicro2214>

Biological systems are analogous to the world of designed things and our relationships with them. Concepts such as host, symbiont and ecosystem can be useful in considering our relationships with things, buildings and cities - even if the application is cultural or one of interpretation. Within the architectural practice of adaptive re-use, the term “host building” is commonly used, but biological systems can help us think about the designed environment at a much deeper level than that. Such

systems prompt us to reconsider terms and concepts such as authenticity, any sense of the original and agency. These systems cause us to ask the question “what is a thing?”, and is “thing-ness” circumscribed by its material dimensions and properties, or extended culturally and by association into the thingness of other things?

In considering life, biologists tell us that we need to take full account of the symbiotic relationships between different organisms and their genetic information. These networked fields of host plus symbionts are known as “holobionts”.

SLIDE 4 – DIAGRAM AND ATKINS’ TREE

Imperial College London offers the following definition:

“A holobiont can be thought of as a complex and interconnected system of organisms living in close association with each other... These microorganisms are not just passive inhabitants but are actively involved in various aspects of the host's biology, including their digestion, immune responses, and even behaviour.”

<https://www.imperial.ac.uk/holobiont/blogs/holobiont--a-general-perspective/#:~:text=A%20holobiont%20is%20not%20a,and%20on%20the%20host%20organism.>

Seth Bordenstein, one of the key researchers and early pioneers in the field, offers the following: “Animals and plants,” he says, “are no longer heralded as autonomous entities but rather as biomolecular networks composed of the host plus its associated microbes, ie ‘holobionts.’ As such, their collective genomes forge a ‘hologenome,’ and *models of animal and plant biology that do not account for these intergenomic associations are incomplete.*”

Bordenstein SR, Theis KR (2015) Host Biology in Light of the Microbiome: Ten Principles of Holobionts and Hologenomes. PLoS Biol 13(8): e1002226. doi:10.1371/journal.pbio.1002226

What we’re faced with, and this includes human beings as well as squid and cicadas, is that any sense of a pure or authentic organism - germ-free, dirt-free – is naïve. Germ-free organisms under-perform their peers, or fail completely. The genetic material in us humans is not just human, and we are more effective because of that.

We are already familiar with a similar principle in terms of the eco-system. As Thomas Halliday writes in his 2022 book “Otherlands”, what the eco-system does is create and preserve *function*.

He writes:

“What is important in conserving an ecosystem is conserving the functions, the connections between organisms that form a complete, interacting whole.” [Thomas Halliday [2022]. *Otherlands, a world in the making*. Allen Lane. 67.]

What we learn from this work is that relationships between organic matter enhance the performance and integrity of any supposed “original”. What was not original to the host finds a place for itself, for mutual benefit, and the wider system is enhanced – the host, in fact, changes yet retains its authenticity.

Authenticity is not the same thing as purity and originality; symbiosis, the acceptance of what was not there in the first place, develops and enables the thing, whatever the thing is – a cicada, a human, or a human object such as an artefact or a place. Human artefacts can be considered as hosts in which symbionts are usefully and productively embedded to preserve and enhance function. The object can be considered as occupying a space at the centre of a complex network of physical change and abstract association. The object, in order to have a higher order of *function*, becomes dispersed.

Marc Atkins' black and white photo of a London cemetery offers a salutary example of such symbiosis. The image, which appears in Iain Sinclair's book *Liquid City* [1999], shows a funereal sculpture of a standing angel, arms folded, wings at rest. The sculpture, however, becomes a supporting framework for a tree which extends the reach of the original host. Certainly in the way this assembly is captured by Atkins, the tree appears to be springing directly from the stonework, extending upwards and outwards in a way that animates the statue, adding a level of dynamism to the static solemnity of the original form. The relationship between sculpture and tree can be seen as truly symbiotic: certainly the tree depends on the statue as a supporting frame, while the otherwise unremarkable statue would lose its vivacity and pathos if the tree were absent. Together – at least, as represented by Atkins – the sculpture/tree operates as a single entity, host + symbiont, each diminished in the other's absence.

SLIDE 5 - KANAKA

A masters student of mine, Kanaka Thakker, is exploring these ideas in relation to the body – in particular, her own body. Providing a counterpoint to the diagrammatic purity of the ergonomic body as seen in design guides, Kanaka is mapping the body in space over time, observing gesture, movement and the full range of lived possibility when engaged in different functions, such as watching TV. Moreover, she is paying attention to the things which prompt or facilitate these activities and movements, often recording the body and external object, such as a laptop, as a combined thing. Body and remote control are represented as a single dynamic, *extended* object. Her planned next stage is to consider the body within the urban environment, looking for the ways that the one reaches into and extends the other.

Slide 6 - LACOCK

Atkins' tree-sculpture-photo, and Kanaka's body studies, are good examples of the emergent, extended and dispersed object. That is, the object doesn't begin and end with its material dimensions; an artefact combines with physical change, associated narratives and representations to assemble itself into a system which far exceeds the source. It's the object *as host* which is the true object; a holobiontic phenomenon of network functions. It also exemplifies the problematic nature of any sense of the "original", authentic or autonomous object. Change, adaptation and symbiotic relationships are an integral part of any sense of authenticity, and any attempt to return, or restore, the host to a pre-intergenomic condition is arguably naïve.

Consider the window which formed the subject of the first photographic negative, created by William Fox-Talbot in Wiltshire, in 1835.

The oriel window in Lacock Abbey is a well-wrought, picturesque opening in a grade 1 listed property; however, its real significance, and perhaps even presence, is its reverse image on a small piece of paper which is the founding artefact in modern photography. Any significance of the physical window is in its relationship with that piece of paper; in other words, it is the representation of the window that affords the window meaning. This window as host is a cultural thing as much as a physical one, enhanced and perpetuated by the meanings, narratives and histories which cling to it.

SLIDE 7 – JOLIFFE LEDGERS

What especially interests me are the ways in which places, objects and surfaces change, and the ways in which those changes are considered within any concept of the authentic. What we would normally consider to be the true or “real thing” is, in fact, a node within a network in which relationships become the locator of meaning. The “real thing” might, in fact, be the network.

This is a burial stone located in the floor of Bath Abbey. It records the age, date of death and status of Frances Jolliffe – the “relict” or widow of William Jolliffe. The stone has, however, been moved at least once in its history; the human remains memorialised by the stone have also been moved – and now removed.

The image on the left is not a photograph – it's an image from a 3D digital model, capturing the surface conditions of the stone prior to its recent removal, repair and relocation in the Abbey. The image on the right is a photograph of the conserved and relocated stone. You will notice that the two images show the object in very different conditions: the complex topography of the version on the left has been smoothed; the version on the right is smaller than its earlier form, as the joints between the fragments are narrower and more refined; and the rust-coloured stain on the stone to the left, a trace of its former location, has been removed.

The image on the left shows the stone as it authentically *was*. The image on the right, the stone as it authentically *is*. What the left-hand image, the replica, does is reveal the biography of the stone; it explains the stone as story, that all is not what it seems. There is a sense of the authentic in each of these two images. The stone memorialising the life and death of Mrs Jolliffe exists authentically in different versions, in different places, in different media.

Any authenticity, then, is ambiguous, plural, and dispersed. The authenticity of this fragment of heritage zigzags between the physical artefact as found today, its digital variant recording a previous moment in its timeline, and the narratives which bind these things together. The image on the left has what Cornelius Holtorf would call “pastness”; the replica, in fact, captures a greater sense of pastness than the photograph on the right. The replica might be said to embody a greater degree of authenticity than any imagined “original”.

SLIDE 8 – HERBERT AND PHOENIX

Authenticity shifts somewhat with this stone to Margareta Herbert, shown here on the left as a digital model. The physical stone was not returned to the Abbey floor. Instead, due to its fragility, it is unseen, in long-term storage.

The authenticity of the fragment shown on the right (a phoenix on a five-pointed crown), shown as photograph and digital model, shifts and disperses itself further – as far as I am aware, the original stone, from which the model was derived, no longer exists. Or at least, its whereabouts is unknown.

In all these cases, the meaning and biography of the stones rests on the relationships between physical artefact and digital twin. Authenticity shifts between them, and the sense of “thingness” comes to reside in the replica once the original is lost. In this sense, we are reminded of Halliday’s definition of an ecosystem as a network which preserves function – if the function of the network between stone and replica at Bath Abbey is to preserve and transmit information, this function is shared equally between elements within the system.

SLIDE 9 - TIEPOLO

This is an image of *The Holy House of Nazareth*, by the Venetian artist Tiepolo.

Tiepolo is representing the legend that the house of Mary – the place where she received the annunciation visit from the angel Gabriel - was miraculously removed from its site in Nazareth to prevent it from being claimed by Islamic armies in the 13th century.

Having prepared different versions of the painting – shown here on the left, as exhibited in the Gallerie dell’Accademia in Venice, and in the centre, exhibited in the Getty Museum in Los Angeles - Tiepolo applied it to the barrel-vaulted roof of the church Chiesa di Santa Maria di Nazareth, also in Venice, shown here on the right.

SLIDE 10 – BOMB DAMAGE AND FRAGMENTS

Unfortunately, you can’t see the fresco for yourselves, because it was destroyed by a bomb in 1915. The church has since been restored, with a different ceiling fresco. The fragments which survived this damage can be found in the same Venetian museum as one of the preparatory studies - though not in the same room.

SLIDE 11 – COMPOSITE PICS

Jane Jacobs, borrowing from Deleuze and Guattari, would call this an “assemblage”: an emergent condition formed by dispersed material - the paintings, the fragments, the locations, the narratives and (importantly) *the networks between them*.

Once this dispersed series of artefacts is recognised as a network, its constituent elements can be seen not as isolated, self-contained and autonomous, but as a set of inter-dependent relationships that itself operates as a thing on an entirely different level.

This constellation of material generates a narrative-artefact-place condition that exists as a web of connections. The holobiontic “thing” is an extended, dispersed cultural construct of story-telling and physical evidence.

Slide 12 – ELGIN MARBLES

Many of us will be acutely aware of the tensions over the Parthenon Sculptures, or Elgin Marbles, in the British Museum. Created around 440BC, these decorative elements were bought and transported to the UK around 1805, entering the museum’s collection in 1816. The Greek government requested the return of these objects in 1983, and this remains its hope.

These precious, contested objects must surely be considered as more than a finite and autonomous collection of physical artefacts. The sculptures sit at the centre of a holobiontic web of narratives, times, locations and representations which, cumulatively, comprise a dispersed or extended object. What is the “thing-ness” of the Parthenon sculptures?

If the term “host”, in its holobiontic sense, is applied to these marbles, we have to consider the non-marble, non-Classical elements that attach to these artefacts to form something more complex and dynamic than the designed original.

Robert Harbison, in his 1977 book *Eccentric Spaces*, describes how these sculptures which once faced outwards, now face inwards; that to view them we position ourselves in the centre of the imagined building; that the sculptures, in fact, regard each other. He also argues that our proximity to the marbles diminishes them; that we the museum-goer are violators, and that the implied building (inversed) becomes a ghost.

Even if returned to Athens, the marbles will not return to the Parthenon itself, but to the interior of a museum designed especially for them. If returned, it is a fact of their history that they *were* in London; their absence in London will be felt, and the history of their journeys across Europe is a permanent

element of their biography. The Elgin marbles are not, in fact, things. What history has created is a composite of artefacts, stories, associations, claims, interpretations and curatorial decisions from which cumulatively emerges a phenomenon. The phenomenon is the thing.

I suggest we enjoy the Elgin Marbles as a dispersed object, a cluster of symbiotic reference points; not limiting our attention to the physical artefact but enjoying the sculptures as an assemblage of objects, narratives, representations and places. If the sculptures are returned to Athens, that they were once located in the British Museum is an integral part of that assemblage.

Slide 13

Within the terms of this conference sub-theme, *Shuffling the Narrations*, I suggest that we can learn from models of biology to understand that the thing is not the artefact, but the relationship. That adaptation and symbiotic health facilitates function, and that function is takes precedence over assumptions concerning originality, authenticity or form.

The thing can be more phenomenon than object, and what we value might be more intangible than is immediately obvious. In terms of survival, we can privilege the relationships within the system over the artefacts themselves, because it's the functions of systems that do the work we require. Some of these functions are narrative-based, and support the identities and sense of belonging that is important to human need. We can take confidence from natural systems that we ought not be hidebound by an artificial sense of original or authentic, and that hybridity, plurality and ambiguity are foundational properties of effectiveness. The thing, or by extension the place, has a remarkable ability to form unexpected relationships which ensure survival and longevity; indeed, the thing can be considered as synonymous with those relationships.

In contemplating a thing – whether a painting, a fragment, a burial stone or a television, we don't observe a material object so much as participate in a phenomenon – what Richard Wollheim in his 1968 book *Art and its Objects* called not *seeing*, but “seeing as”.

In architectural terms, is the “thing” the building or the community it serves? Architecture might be better considered as a holobiotic endeavour in which building and occupant form a symbiotic relationship; the relationship is the thing that ought to be most highly prized. Building as literal and holobiotic host requires the occupant in order to be effective. Cities, too, are phenomena rather than things and their survival, their function, is a property of relationships between the designed and the undesigned. Any notion of the original fades away, and the thing emerges over time, different to what it was, but more effective because of it.

Thank you.

Xxxx words

* *Vibrio Fischeri*