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Science Fiction Worldbuilding in Museum Displays of Extinct Life¹

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Will Tattersdill

This is an essay about the narrative power of museums, the ways they incorporate the techniques of fiction into (or help us make fiction out of) the things they tell us. It is widely recognised that museums tell stories, but it is less usual to find literary critics talking about what *kinds* of stories they tell and what their formal mechanisms are.² In seeking to enlighten us about the world, we suggest, museums sometimes deploy techniques similar to the ‘worldbuilding’ tools of science fiction (sf) and fantasy authors, and the following pages present three case studies in which such worldbuilding can be clearly identified. Underlying our argument is the idea that when museums seek to describe the actual world – defined by Marie-Laure Ryan as “the one we live in, what we call reality” – they also construct it, using some of the same processes which informed the development of the worlds of, say, the Imperial Radch trilogy, the Cosmere, Middle Earth, or *The Expanse*.³ Museums at points arguably fit into Ryan’s category of “true fiction” (“a fictional universe [...] deliberately conceived and presented as an accurate image of reality”); they describe the world by creating it, and creation involves imagination.⁴ Crucially, as we discuss towards the end of the essay, the museum visitor is a collaborator in this process: the rhetoric of museums (we use Mieke Bal’s phrase) invites viewers to deploy their own imaginative processes, building a wider world on the basis both of the material on display and their prior experience with museums and fiction.

¹ The authors wish to thank John Acorn, Gillian Wright, Mark Carnall, Kieran Shepherd, Brandon Strilisky, Angela Milner, Sharon Ruston, the Biddulph Café, Beatriz Bartolomé Herrera, and Daniel Atherton. This work was funded by an AHRC grant, AH/R013780/1 and a Research Council of Norway grant, #283523.

² On museums and stories, see e.g. Jane K. Nielsen, ‘Museum Communication and Storytelling: Articulating Understandings within the Museum Structure’, *Museum Management and Curatorship*, 32:5 (2017).

³ Marie-Laure Ryan, *Possible Worlds, Artificial Intelligence, and Narrative Theory* (Bloomington, IN: Indiana University Press, 1991), p.16.

⁴ Ryan, *Possible Worlds* (above, n.4), p.33.

It should be noted at the outset that we have neither a desire to find fault with museums nor a disbelief in their ability to describe the actual world. Our central observation – that the techniques of sf, if not sf itself, are often present in museum design – can be interpreted as a criticism only by somebody who regards ‘science fiction’ pejoratively, as the fanciful opposite of real life, an escapist distraction from serious concerns. This view has, of course, been comprehensively refuted, most eloquently by Ursula Le Guin.⁵ We understand sf as something always connected to the actual world, often intensely in dialogue with it – and inventing things in order to bring parts of it into sharper and surprising relief. Museums are the same.

In this respect, our argument grows from Gillian Beer’s influential use of the word *fictive* to describe how science sometimes works. It is not *fiction*, but it can occasionally behave in some of the same ways.⁶ Beer contends that it is “[w]hen it is first advanced” that science “is at its most fictive”; we follow the invitation of the ‘most’ in this sentence, suggesting that museum displays are another place at which to see this analogy at work.⁷ Of course, the techniques of sf *can* function to contradict established truths – as our case studies attest – but our examination also finds displays doing other kinds of work, supporting and enhancing scientific and historical narratives in ways often far from clear cut. It is with the aim of highlighting this complexity, drawing attention to the inadequacy of the fact/fiction binary when seeking to understand museum displays, that we write.⁸

Our case studies are all from Natural History Museums and, despite considerable ideological, temporal, and geographical differences, are all displays of life which went extinct before humans appeared. This is partly simply to focus our essay, which draws on an otherwise diverse body of

⁵ See, for instance, Ursula K. Le Guin, “Escape Routes,” in *The Language of the Night: Essays on Fantasy and Science Fiction* (London: The Women’s Press, 1989), pp.176–82. Cf. J. R. R. Tolkien, *Tolkien on Fairy-Stories*, ed. Verlyn Flieger and Douglas A. Anderson (London: HarperCollins, 2014), pp.72–73.

⁶ Gillian Beer, *Darwin’s Plots: Evolutionary Narrative in Darwin, George Eliot and Nineteenth-Century Fiction*, 3rd ed. (Cambridge: Cambridge University Press, 2009), p.1.

⁷ Beer, *Darwin’s Plots* (above, n.6), p.1.

⁸ As Spencer Crew and James Sims have pointed out, history museums in particular have struggled with the issues surrounding the ‘authentic’ for some time. The authenticity of objects displayed in the museum has less to do with “truth” than about the authority of the museum’s narrative voice. A socially agreed on reality is only considered “real” for “as long as confidence in the voice of the exhibition holds”. Spencer R. Crew and James E. Sims, “Locating Authenticity: Fragments of a Dialogue,” in *Exhibiting Cultures: The Poetics and Politics of Museum Display*, ed. Ivan Karp and Steven D. Lavine (Washington, DC: Smithsonian Press, 1991), p.163.

sources and examples. It is also, however, because long-extinct life is the low-hanging fruit in our argument: in an environment where nobody has ever seen the thing on display, the operation of the imagination in the construction and reception of an exhibit is easier to notice. A similar logic accounts for the fact that none of our case studies are conventional natural history displays in the sense of wishing to convey only the limited empirical data about a particular specimen. But we posit that the argument we make here is transferable. Even in ‘normal’ displays (should any exist), of animals, art, or industry, we maintain that an element of sf worldbuilding, or something like it, would be discernible at a formal level. This is because the relationship between exhibit and viewer is analogous to that between a reader and a new sf text: a decoding that is also an act of imaginative collaboration.⁹ Our case studies show the virtues of deploying this literary-critical attitude in the museum space. They offer a way of understanding museums – and museum goers – as *active* in deploying a science fictional imagination.

Another thing unites our case studies: they all bear on the creation of life, whether explicitly by a deity or implicitly in the sense of directed evolution. There is an obvious analogy between the creation which is the subject matter of these exhibits and the creation which is their mode of conveying it to the visitor – we recall, here, Tolkien’s word for worldbuilding, ‘subcreation’, with the attendant understanding of secondary creative acts as facets of the divine intelligence which animates the actual world.¹⁰ We do not see our essay as a comment on the godliness of either secondary or primary creation, simply as an argument for understanding the museum and its visitor as active agents in the conversation.

Seeking to theorise the writing and reading of imaginary worlds, Mark J. P. Wolf points out three ways in which they “differ from other media entities”.¹¹ Firstly, he says, imaginary worlds often

⁹ For a discussion of the cognitive and imaginative work done by a reader upon the first encounter with an sf text, see Tom Shippey, “Hard Reading: The Challenges of Science Fiction,” in *A Companion to Science Fiction* (Oxford: Blackwell Publishing, 2005), pp.11–26. We understand a fundamental similarity between Shippey’s account and the experience of a first-time visitor to a particular gallery.

¹⁰ See Tolkien, *Tolkien on Fairy-Stories* (above, n.5).

¹¹ Mark J. P. Wolf, *Building Imaginary Worlds: The Theory and History of Subcreation* (London: Routledge, 2012), p.2.

include details which don't advance the story: they are read not just for the plots and characters they contain but for the pleasure of learning about the world itself. Secondly, they are "transnarrative and transmedia", often written by numerous authors and encompassing a huge variety of forms (novels and films, but also, for instance, "dictionaries, glossaries, atlases, encyclopedias").¹² Finally, they are an interdisciplinary object of study, impossible fully to understand from the fixed perspective of any one of the numerous academic fields which are converging on them. Every one of these statements about sf worldbuilding could also be made of the way museums present, say, the Mesozoic era: they contain stories but are not themselves one story; they are created by many hands and reach the visitor simultaneously in a burst of different media (text, sculpture, video, art, soundscapes, and much besides¹³); and they naturally implicate a large number of disciplines – from the sciences and humanities both – in any attempt fully to understand them. Recognising the provisionality of the museum space, we suggest, may not be about claiming that it *is* fiction so much as claiming that it *works like* fiction – that the principles of sf worldbuilding outlined by Wolf are, sometimes at least, also active in the curation of natural history museums. In our conclusion, we also point out that museums can be considered part of the transmedia landscape which Wolf and others have identified as an increasingly pervasive way of creating worlds across multiple venues and texts.

There are three case studies. We think that they will work individually if you're particularly interested in only one of them, but we also think that they add up to something: a sense of the complexity of the interactions between fact and fiction which take place when museums and their visitors collaborate in the creation of worlds, actual and imagined. Noticing the formal affinity, we contend, might enhance our ability to think about literature and museums together.

The first case study is the Creation Museum in Petersburg, Kentucky, which combines dinosaurs with a literal interpretation of the Bible. Our argument here is that the language of

¹² Wolf, *Building Imaginary Worlds* (above, n.12), p.3.

¹³ For the dinosaur as multimedia art installation, see Lukas Rieppel, "Bringing Dinosaurs Back to Life: Exhibiting Prehistory at the American Museum of Natural History," *Isis* 103:3 (September 2012): 460–90.

museum display is instrumental to the construction of the creationists' young earth. We then travel to Biddulph Grange in Staffordshire, built to support day-age creationism in the nineteenth century, but now a museum of the Victorian era as much as (if not more than) one of natural history. We explore the temporal reframing of this gallery, considering the intersecting worlds in which nineteenth- and twenty-first-century visitors are asked to participate. Our final case study is a thought experiment created at the Canadian Museum of Nature in the early 1980s, but exhibited around the world – a hypothetical descendant of an intelligent dinosaur. Despite its creators' protestations, this counterfactual display is the most overtly science-fictional of our examples, but it too is accorded an actual-world authority with the viewer (unmerited, in the view of most palaeontologists), in part because of its status as a museum object.

Answers in Genesis: Creating the Young Earth

From the outside, the Creation Museum's impressive 75,000-square-foot building evokes the aesthetics of many other museums in the Kentucky area, yet within its walls the museum builds a younger world which contradicts the scientific consensus about deep time. The adoption of the trappings of a museum to promote the Young Earth is telling: the Creation Museum's stance contradicts the ideal espoused by other U.S. museums as research institutions which "house the evidence that helps scientists describe the world's biodiversity and understand the evolution of life",¹⁴ and is especially arresting given that visitors tend to consider museums as guardians of objective knowledge and the represented artefacts as evidence of reality.¹⁵ Despite holding no accessioned collections, a central criterion of accredited status for the American Association of

¹⁴ E. Margaret Evans, Amy N. Spiegel, Wendy Gram, Brandy N. Frazier, Medha Tare, Sarah Thompson, Judy Diamond, 'A Conceptual Guide to Natural History Museum Visitors' Understanding of Evolution', *Journal of Research in Science Teaching*, Vol. 47, No.3 (2010): 326-353.

¹⁵ See Tony Bennett, *The Birth of the Museum: History, Theory Politics* (London: Routledge, 1995); Ivan Karp and Steven D. Lavine, eds., *Exhibiting Cultures: The Poetics and Politics of Museum Display* (Washington, DC: Smithsonian Press, 1991); Dvora Yanow, "Space Stories: Studying Museum Buildings as Organisational Spaces While Reflecting on Interpretative Methods and Their Narration," *Journal of Management Enquiry* 7:3 (1998): 215-239; Klaus Müller, "Museums and Virtuality," *The Curator* 45:1 (2002): 21-33.

Museums, Answers in Genesis (AiG), the creationist organisation behind the museum, adopts both the title 'museum' and contemporary museum features to position a religious project within the framing authority of the natural sciences.¹⁶

Although the traditional objects-based epistemology of museums presents a challenge to a creationist worldview, the Creation Museum's internal narrative seeks to legitimize creationist science by changing the nature of what is accepted evidence. As multiple scholars have argued, AiG use museal signifiers such as the revival of traditional heritage aesthetics (vivid dioramas, fossils labelled with their scientific names, and artefacts exalted in glass cases);¹⁷ the sophisticated graphics used in any large science museum;¹⁸ and multimedia visitor experiences¹⁹ to build an authoritative representation of prehistory. Still others have posited that this authority is achieved through the integration of scientific discourse and rhetorical techniques present in the exhibition narrative.²⁰ Our contention is that the adoption of the recognisable genre markers of the natural history museum also functions analogously to fantasy worldbuilding. By employing the "rhetorical discourses of museumness",²¹ and levelling the playing field between the Bible as both textual witness and material artefact,²² AiG manipulates "evidence" into alternate tales and timelines. In other words, the Creation Museum combats a lack of verifiable proof by creating a fictional world through narrative.

¹⁶ Casey Ryan Kelly and Kristen E. Hoerl, "Genesis in Hyperreality: Legitimizing Disingenuous Controversy at the Creation Museum," *Argumentation and Advocacy* 48:3 (2012): 125.

¹⁷ Kelly and Hoerl, "Genesis in Hyperreality" (above, n.17), p.128.

¹⁸ Jandos Rothstein, "Graphic Displays of Faith," *Print* 61:1 (2008): 96–101; Julie Ann Duncan, "Faith Displayed as Science: The Role of the 'Creation Museum' in the Modern American Creationist Movement". Unpublished Thesis, Harvard University (2009).

¹⁹ David W. Scott, "Dinosaurs on Noah's Ark? Multi-Media Narratives and Natural Science Museum Discourse at the Creation Museum in Kentucky," *Journal of Media and Religion* 13:4 (2014): 226–243.

²⁰ Ella Butler, "God Is in the Data: Epistemologies of Knowledge at the Creation Museum," *Ethnos: Journal of Anthropology* 75:3 (2010): 229–51; John Lynch, "'Prepare to Believe': the Creation Museum as Embodied Conversion Narrative", *Rhetoric & Public Affairs*, 16:1 (2013): 1–27.

²¹ Scott, "Dinosaurs on Noah's Ark?" (above, n.20), p.230.

²² Ella Butler, "God Is in the Data: Epistemologies of Knowledge at the Creation Museum," *Ethnos: Journal of Anthropology* 75:3 (2010): 229–51.

While museums are already recognized as “a form of negotiated reality”, the frequent references in academic literature to the Creation Museum as a fantasy world are suggestive of how overt this practice is.²³ Casey Ryan Kelly and Kristen E. Hoerl note that “embedding simulated fantastical realities within the aesthetic conventions of museum displays” amplifies the authority of the Creation Museum’s presentation of the natural world;²⁴ Stephen T. Asma argues that “the main agenda behind all this pseudoscience is to make the world a much smaller space”, and goes as far as noting a distinction between the different worlds inhabited by Evolutionist and Creationist, for “the world that I live in is ancient and vast”, unlike the “world [which] was created by God 6,000 years ago”;²⁵ Michael Shermer notes displays which inform the reader that the Earth was created in 4004 B.C., around the same time that the Mesopotamians invented beer, but that the age of beer was “on the secular timeline”.²⁶ Creationists also adopt this rhetoric; when Ella Butler interviewed Patrick Marsh, the museum’s exhibition designer, he told her that “he grew up in the ‘educated world’, which Christian youth are so often led to believe is the ‘real’ world”.²⁷ These terms suggest that the creators of the museum explicitly question the primacy of the secular world, and set out to create a Biblical alternative.

Indeed, our assertion that museums in general, and the Creation Museum specifically, use world building techniques and technologies can be clearly identified when we compare it to Wolf’s description of different forms of engagement with fantasy worlds. Wolf notes:

Much has been written about “immersion” in regard to a user’s experience with new media.

The term is typically used to describe three different types of experiences, which exist along a spectrum. On one end, there is the *physical* immersion of a user, as in a theme park ride or

²³ Gaynor Kavanagh, “Making Histories, Making Memories,” in *Making Histories in Museums*, ed. Gaynor Kavanagh (Leicester: Leicester University Press, 1999), pp.1–14.

²⁴ Kelly and Hoerl, “Genesis in Hyperreality” (above, n.17), p.135.

²⁵ Stephen T. Asma, “Dinosaurs on the Ark: The Creation Museum,” *The Chronicle of Higher Education* 53:37 (2007), 16 May 2021 <https://www.chronicle.com/article/Dinosaurs-on-the-Ark-the/29886>.

²⁶ Michael Shermer, “Creationism in 3-D,” *Scientific American* 300:5 (May 1, 2009): 32.

²⁷ Butler, “God Is in the Data” (above, n.23).

walk-in video installation; the user is physically surrounded by the constructed experience, thus the analogue with immersion in water. Moving away from the surrounding of the entire body, there is the *sensual* immersion of the user, as in a virtual-reality-driven head-mounted display that covers the user's eyes and ears. While the user's entire body is not immersed, everything the user sees and hears is part of the controlled experience [...] Finally, on the other end of the spectrum is *conceptual* immersion, which relies on the user's imagination; for example, engaging books like *The Lord of the Rings* are considered "immersive" if they supply sufficient detail and description for the reader to vicariously enter the imagined world.²⁸

Wolf is writing explicitly about science fiction and fantasy, but the Creation Museum's dioramas also encourage engagement across this spectrum, with visitors physically immersed in the museum space and engaged with the objects, sensually immersed through audio and video, and conceptually immersed in associating objects with evidence for a new past for the earth as they walk through a world in which dinosaurs and humans live alongside each other.

The Creation Museum's displays of extinct life are a key site of its sf worldbuilding, as the dinosaur is in some senses uniquely qualified to confer the authority of the scientific museum. Dinosaurs have long been considered the object best placed to uphold the goals of communicating evolutionary science to the broader public,²⁹ despite relying on contested knowledge which neither curator nor scientist can directly observe.³⁰ Extinct life is popularly employed by natural history museums as an educational but crowd-inspiring "spectacle",³¹ an association so enduring that many museums adopt a dinosaur as their mascot – consider the Chicago Field Museum's "Sue" the *T. rex*

²⁸ Wolf, *Building Imaginary Worlds* (above, n.12), p.48.

²⁹ Asma, "Dinosaurs on the Ark" (above, n.26).

³⁰ Lukas Rieppel, "Bringing Dinosaurs Back to Life: Exhibiting Prehistory at the American Museum of Natural History", *Isis*, Vol 103, No 3 (2012), p.461.

³¹ Charity M. Counts, "Spectacular Design in Museum Exhibitions", *Curator*, 52:3 (2009): 273-288.

and the London Natural History Museum's former icon "Dippy" – to represent the institution to the wider world. Mounted dinosaur fossils have the ability to capture public imagination, functioning as "iconic representations of the past, providing visitors with imaginative access to a bygone world".³² As such, they are of particular value to the Creation Museum's Young Earth-building, or, in the words of AiG founder Ken Ham, "our museum uses dinosaurs to help tell their true history according to the Bible".³³

A brief guide to displays of extinct life in the Creation Museum reveals how the adoption of the realist museum genre and scientist characters are integrated into the institution's narrative, and how these in turn contribute to the authority of AiG's Young Earth worldbuilding.³⁴ The visitor's first introduction to the Main Exhibits (subtitled "A Walk Through History") is via a diorama designed to give the impression of walking around a palaeontological dig site – but one in which the fossils are material evidence of a younger Creationist earth, rather than deep time or evolution.³⁵ Two palaeontologists, "Joe" and "Kim", hard at work excavating bones, are the diorama's main protagonists. As well as through the animatronic models which represent them, the palaeontologists appear in a looped video presentation which explains the similarities between secular and creationist science as experts who embody the supposed debate between the two competing

³² Rieppel, "Bringing Dinosaurs Back to Life", (above, n. 31), p.461.

³³ Ian Johnston, "Walking with Dinosaurs at Kentucky's Creation Museum", *The Independent*, 23 May 2014. <https://www.independent.co.uk/news/world/americas/walking-dinosaurs-kentucky-s-creation-museum-9422096.html> Accessed 3 May 2021.

³⁴ See "A Tour of the Creation Museum: Starting Points", Answers in Genesis Blog, accessed 16 May 2021. <https://answersingenesis.org/ministry-news/creation-museum/a-tour-of-the-creation-museum-starting-points/>, and "Dinosaur Dig Site", Creation Museum Website, <https://creationmuseum.org/blog/2006/09/04/dinosaur-dig-site/> accessed 1 May 2021. See "A Tour of the Creation Museum Series" for additional galleries. Answers in Genesis Blog, accessed 16 May 2021. <https://answersingenesis.org/ministry-news/creation-museum/tour-of-creation-museum-series/>. A map of the Creation Museum's galleries can be consulted on its webpage: "Inside the Museum", Creation Museum Website, accessed 22 July 2019. <https://creationmuseum.org/maps/>

³⁵ Prior to this are lobby dioramas which feature children playing amongst peaceful predators including *Tyrannosaurus rex* and *Utahraptor*. In a prelapsarian world, these animals used their teeth and claws for cracking open coconuts, a claim which could be more easily derived from the plot of an alternate history or science fiction novel than a natural history museum. It is only after Eve partakes of the fruit of knowledge that these dinosaurs, like many other animals, become the carnivorous creatures posited by accepted palaeontological theory. The fruit of knowledge becomes associated therefore with the contemporary scientific consensus: poisonous, dangerous, and better rejected, developing the trope of the connection between secular science and representations of a deteriorating, faithless world.

worldviews. As though inviting visitors to inspect the results of Joe and Kim's work, the museum displays a wooden storage crate with the invitation to "touch a real fossil!", fracturing the "do not touch" discourse of the traditional museum in favour of a more immersive world while echoing contemporary immersive display praxis which presents viewers with tactile hands-on displays comprised of genuine collection items.³⁶ Yet the interpretation pairs this object with a quote from Genesis, asking the visitor whether this fossil can really be millions of years old before answering an emphatic "NO!". The fossilized bone is displayed in "real world" surroundings, in which visitors are semi-included in palaeontological procedures (such as handling and analyzing fossils), but with museum media which direct them to answers which run contrary to the contemporary scientific consensus.

Located approximately halfway through the Main Exhibits is a more recent addition: a vaguely-defined "world-class" *Allosaurus fragilis* which was donated to AiG in 2014. Standing in contrast to the model fossils excavated by "Joe" and "Kim", and unlike the animatronic dinosaurs which populate many of the other displays at the Creation Museum, "Ebenezer" is a genuine fossil specimen. As AiG founder Ken Ham explicitly notes, "for decades I've walked through many leading secular museums, like the Smithsonian in Washington, D.C., and have seen their impressive dinosaur skeletons, but they were used for evolution. Now we have one of that class for our museum."³⁷ As in the museum's other displays, the exhibit dedicated to AiG's allosaur puts empirical data in the service of the institution's wider narrative of a younger earth, in which Ebenezer perished in Noah's flood. The fossil's materiality is key to authenticating the surrounding narrative, capitalising upon the role of the dinosaur in museum iconography and palaeontological deep time.

Despite a sequence of subsequent galleries advocating the literal truth of the Biblical timeline, it is telling that AiG chooses to conclude its tour with displays of extinct life. The "Dinosaur

³⁶ Scott, "Dinosaurs on Noah's Ark?" (above, n.20), p.235.

³⁷ Abby Ohlheiser, "Why the Creation Museum Is So Excited About Ebenezer, Its New Dinosaur Skeleton", *The Atlantic*, 23 May 2014. Accessed 4 May 2021. <https://www.theatlantic.com/politics/archive/2014/05/why-the-creation-museum-is-so-excited-about-ebenezer-its-new-dinosaur-skeleton/371526/>

Den” forms the conclusion to the museum’s display narrative, reverting to animatronic models as evidence for a Young Earth. Authoritative exhibition texts state that dinosaur fossils are only as old as Noah’s flood, a recent extinction which proves the physical existence of dinosaurs may also represent dragons, the ultimate animal of the fantasy genre. As Kelly and Hoerl note, “employing scientific aesthetics enables dragons to take on material, even hyperreal qualities”, in which “the museum’s design logics have obliterated the distinction between fantasy and reality”.³⁸ By the conclusion of the museum’s tour, “visitors are left to decide in which reality it is more desirable to live.”³⁹

In addition to the immersive worldbuilding within the museum, AiG is overtly constructing a younger earth outside the institution’s walls. Built worlds, within and beyond the museum, are multimedia and intermedial, often extending beyond a single site. Museum ephemera can figure both an extension of and a prelude to the world constructed within the physical institution. Much as sf worlds exist across episodes, movies, merchandise and other tie-in media, the museum world is also developed across individual exhibits articulated into a broader narrative order. Beyond this, the museum’s world establishes a textual presence in/with media packs, website, educational resources, visitor information, maps and event series, to take just a few examples of materials published by the Creation Museum.⁴⁰ Although ephemera is often represented as solely conveying important information (opening hours, prices, location), it is rarely without institutional branding which participates in the construction of the museum’s world. Such media sets expectations long before visitors arrive and operate even if the visitor never sets foot in the institution proper.

To close this section, we will focus on the techniques at play in one extension of this world in particular: the Creation Museum’s website. Although the website attempts to convert the digital visitor into one that attends the physical attraction, it simultaneously functions as an extension to the built world of the museum. The museum’s homepage is a portal into an edenic scene; the

³⁸ Kelly and Hoerl, “Genesis in Hyperreality” (above, n.17), pp.137–38.

³⁹ Kelly and Hoerl, “Genesis in Hyperreality” (above, n.17), p.138.

⁴⁰ Wolf, *Building Imaginary Worlds*, (above, n.12), p.2.

header image features a dinosaur emerging from foliage, as though escaping from a pre-lapsarian world hidden just behind the doors of the ark-like wooden building. Displayed prominently over the header is the tagline “Prepare to Believe”, a direct instruction which functions both to magnify the institution’s desired conversion of both physical and web visitors, and to add a speculative weight to the evidence the museum proposes to present.⁴¹ The range of events offered on the Creation Museum’s website are similar to those organized in mainstream natural history museums, ranging from speaker series, educational programs and tours, down to the sleepovers popularized by institutions such as the London’s Natural History Museum and the American Museum of Natural History (AMNH). Visitors are invited to take a “flashlight tour of the exhibits” where they must “watch out for dinosaurs”, representing the museum world as fully immersive, with a day and night which overlap with the primary world.⁴²

Unlike the linear narratives represented within the museum, where “each subsequent room expands upon material presented in previous rooms”,⁴³ the website presents a non-linear series of pages designed to undermine secular science and elevate creationist beliefs, centring the dinosaur as the linchpin in Young Earth worldbuilding. Dinosaur-related content and the museum’s claim that a scientific examination of extinct life prove the veracity of a Young Earth occupy a significant proportion of the website’s pages. Almost every sub-paragraph on the Creation Museum’s website begins with at least one question, slowly breaking down the previously unquestioned reality of the actual world from whence we digitally visit. Most pages ostensibly presenting AiG’s dinosaurs also reference dragons, compelling the digital visitor to “investigate dragon legends”, before wondering “what is a dragon, anyway, and could we even imagine that dragons might actually be real?”, covertly masking the statement that “dragons might actually be real”.⁴⁴ Similar slippage occurs

⁴¹ “Creation Museum Homepage”, accessed 16 May 2021. <https://creationmuseum.org/>

⁴² “Overnights”, Creation Museum Website, accessed 16 May 2021. <https://creationmuseum.org/overnights/>

⁴³ Kelly and Hoerl, “Genesis in Hyperreality” (above, n.17), p.128.

⁴⁴ “Dinosaurs and Dragons”, Creation Museum Website, accessed 16 May 2021. <https://creationmuseum.org/dinosaurs-dragons/>

around advertisements for the museum's "life-size" dinosaur bones, the phrase obscuring the difference between these and *real life* dinosaur bones and reframing the model dinosaur as material evidence for creationist theory.⁴⁵ Such distinctions are further broken down through the link present on most dinosaur-related pages to "Ebenezer, our stunning full-size Allosaurus", who is cast as "a testimony to a catastrophic, rapid burial, which is confirmation of the global Flood a few thousand years ago as recorded in the Bible",⁴⁶ and the sole artefact spotlighted for a 360 degree virtual visit.

While the Creation Museum borrows institutional 'tropes' of museal authority to construct a fantasy world within its walls and through its wider media presence, our next case study, the Geological Gallery at Biddulph Grange, more complex as regards worldbuilding. This is because of its longer history. An abandoned creationist project restored with an eye on both scientific and historical accuracy, Biddulph is a place where the many stories which fossils can tell flow into each other. Ostensibly a return to both the prehistoric and Victorian past, the re-opened gallery creates another world entirely.

Biddulph Grange: Worlds Within Worlds

In some senses, Biddulph Grange's Geological Gallery, opened in 1862 as part of an effort to evidence a biblical version of Earth's history, is a prototype of the Creation Museum. The gallery fell into a dilapidated state in the twentieth century when it was used as a workshop during the time when the Grange itself was an Orthopaedic Hospital, and it was not until the 1970s that its historic importance was recognised. The property and its grounds are currently managed by the National Trust (an organisation for heritage conservation in the UK), its gardens carefully maintained as a kind of living museum and its gallery restored to exemplify the original vision of its creator, James Bateman. Biddulph differs from the Creation Museum in that the Trust is not interested in asserting

⁴⁵ "Dinosaur Exhibit", Creation Museum Website, accessed 16 May 2021.

<https://creationmuseum.org/dinosaurs-dragons/dino-den/>

⁴⁶ "Allosaurus Skeleton", Creation Museum Website, accessed 16 May 2021.

<https://creationmuseum.org/dinosaurs-dragons/allosaurus/>

the literal truth of the biblical narrative: although “the gallery is the only one of its kind in the world”, it is now presented as “a real statement of its time, a real snapshot of history”.⁴⁷ Rather than claiming that the current secular view is misconceived, Biddulph’s interpretation and publicity material focusses on the authenticity of the gallery’s portrait of the dialogue between Victorian religion and science: it is an arm’s-length anachronism, a museum of itself. In other words, the Geological Gallery figures a world within a world. This section will first look at how the gallery’s layout figures an attempt at semi-literal worldbuilding in its nineteenth-century interpretation of a geological record which follows the seven days of creation; subsequently, we will consider the construction of a nineteenth-century world represented by its present-day restoration.

Bateman, a renowned horticulturalist and landowner, moved in to Biddulph Grange in the 1840s. He set about developing the Grange’s gardens with his wife – the gardener Maria Egerton-Warburton – and his friend Edward Cooke, the famed botanical painter and landscape architect. Under their care, the grounds of a farmhouse-vicarage became a world tour.⁴⁸ The gardens were an

⁴⁷ “Discover the Story of Science and Religion”, Biddulph Grange Geological Gallery Webpage, accessed 16 May 2021. <https://www.nationaltrust.org.uk/biddulph-grange-garden/features/geological-gallery-at-biddulph-grange-garden>

⁴⁸ Stephen Anderton, *Biddulph Grange Garden Staffordshire: A Souvenir Guide* (Rotherham: National Trust, 2018), pp.6–10.



Figure 1. Biddulph Grange's Geological Gallery at an early point in the restorations - note the shaped impressions where fossils (now casts) fit literally into the walls, becoming part of the building. The long horizontal line is for sequential rock strata, and the sections above divide the gallery into Biblical days of creation - Day VI, in the foreground, has space for a mammoth tusk. (Image: National Trust)

almost literal exercise in worldbuilding, carefully designed to evoke in miniature diverse regions from China to Italy, a series of microcosms through which visitors could wander without knowing what part of the world is round the next corner. To enter, public visitors had to walk through the Geological Gallery (Fig. 1), a long tunnel-like room with a chronological timeline depicting the seven days of creation, before emerging into the Edenic gardens. The timeline's fossil evidence reflected the intersections between the religious and scientific creation of the earth in the nineteenth century, arranged not to display geological epochs but rather chronologically through the Biblical seven days of creation (a metaphorical interpretation now called day-age creationism). Fish, for example, were displayed together to reflect the fifth day, in which God created life in the oceans. These fossils were embedded in the walls, evoking in miniature the tension over whether a museum is formed by its objects or its architecture and making the narrative trajectory of the space almost impossible to redirect. Today, this same inflexibility provides a point of reference for the National Trust as the imprints left behind by the original artefacts suggest possibilities for their replacements.

A present-day visitor to the now reconstructed gallery travels through both space and time. Secular prehistory and the original creationist vision are on display in the same place, the Victorian world overlaid by (and recreated in) twenty-first century restoration efforts. Biddulph Grange is in many ways a natural history museum – certainly if we judge by its objects – but it also functions as both a history museum and as an alternate history; the worlds it builds are many, the lines between them blurred. Barbara Kleiser, a geographer with a special interest in historical geology who, as a volunteer at Biddulph Grange, partially narrates the National Trust’s video tour of the gallery, considers how the single fossil which remains in situ from the original gallery – most of the artefacts were lost during the twentieth century – makes us “imagine what else the Victorians would have been able to see and wonder at”.⁴⁹ For all the framing of the gallery as a “*real* snapshot of history”, Kleiser’s statement underscores how contemporary visitors are seeing a different gallery than did the Victorians.

The absence of the fossils which were so prominently displayed in the original gallery have left the National Trust little material with which to interpret Bateman’s original layout. Instead, researchers turned to newspaper articles, a textual fossil record of one period of the gallery’s history through which the Trust attempted to excavate extinct iterations of the exhibition. Authentic though the new gallery appears, both the newspaper articles and the Trust’s own interpretation subtly indicate that the experience has changed since the nineteenth century; the world which visitors enter (and come from) is both different and differently-constructed. The original entrance is now sealed for accessibility reasons, with visitors commencing their tour from the opposite end of the corridor, walking backwards in time from Eden to chaos. This new entrance, and the route it obliges visitors to take, underscores the fact that the gallery’s reconstruction returns us neither to a display which genuinely advocates for creationism, nor to the exact experience of the Victorian visitor.

⁴⁹ “Discover the Story of Science and Religion”, Biddulph Grange Geological Gallery Webpage, accessed 16 May 2021. <https://www.nationaltrust.org.uk/biddulph-grange-garden/features/geological-gallery-at-biddulph-grange-garden>

A walk down the gallery's timeline, from Day 0, featuring the primordial chaos of fossil-less stone, to our exit into the surrounding gardens, illustrates these overlapping worlds. Day III, on which earth-based forms were created, is represented by tree and plant fossils, and returns us to the *Lepidodendron* mentioned by Kleiser. The sign beneath the botanical specimen announces that "this fossil is the only original in the Geological Gallery", momentarily fracturing viewers' sense that they are experiencing the same gallery as a nineteenth-century visitor. The interpretation further reveals the multiple layers of time in its represented worlds, warning visitors that the "*Lepidodendron* does not like to be stroked" both because it is "very fragile and has been on the wall for over 150 years" but also because "it is approximately 300 million years old and was fossilized during the Carboniferous period, so we can forgive it for being rather delicate".⁵⁰

Despite this nudge reminding the visitor that we are not, after all, looking at the 'original' gallery, the provenance of the other fossils remains opaque: is a given specimen original to the gallery, original to life, or neither? If it is a cast, does it resemble something which we know Bateman displayed, or is it just something which seems, to us, as if it would have fitted into the original plan? For different objects in the wall, these questions have different answers. The situation has required present-day fossil experts imaginatively to project their professional knowledge into Bateman's seven-day framework, also deploying historical knowledge of when certain specimens and facts were discovered and likely to be available. During our visit, gaps in Days V and VI were being filled by the conservator Nigel Larkin based on the detective work of matching correctly-shaped fossils to the gaps in the wall – a process which has included reshaping a cast of a mammoth tusk so that it fit the space in the wall left by an authentic specimen. This new object is neither original to the gallery nor a direct cast of individual fossil material: re-shaped into a new object altogether, it belongs only in the narrative and world of the restored gallery.

Much of this worldbuilding becomes doubly apparent (and takes place) in the ephemera and media pertaining to the gallery. Biddulph Grange's website plays a central part in constructing

⁵⁰ Object label, Geological Gallery, Biddulph Grange and Gardens, Stoke-on-Trent, Staffordshire.

its heritage, enticing readers to “discover the story of science and religion” rather than overtly titling the page to introduce the Geological Gallery; visitors are invited to envisage their visit not to a historical landmark but into a narrative.⁵¹ Unlike the fossils of the Creation Museum, which are appropriated to lend authenticity to AiG’s biblical perspective on Earth history, the Grange’s webpage pairs geology with religion less to tell the story of creation and more to introduce visitors to the gallery’s nineteenth-century context. The site also features a video which functions in part as a peripatetic tour but also reveals an additional layer to the gallery’s built world, featuring short soundbites from people associated with the gallery who provide additional narrative direction. Kleiser outlines the nineteenth-century gallery’s intention to take visitors on “a journey through time”, “from the entrance through several bays that were meant to represent the days of creation”, while Kevin Dale, a volunteer historian, argues that “Bateman was relating this to Genesis”.⁵² The video highlights how for Victorian visitors, “Bateman [was] almost *building* his theory, rather than a written theory” (italics ours), marrying the fossil record with the Genesis version of creation.⁵³ Contemporary visitors, meanwhile, seek access to the world in which Bateman hypothesised as much as the world about which he hypothesised.

Much of the ephemera about both grounds and gallery deviates from the National Trust’s onsite signage, which focuses largely on the interplay between Victorian science and religion, and instead reveals the processes that went into originally building, and then rebuilding this world. In doing so, it exposes the palimpsestual overlap between the Victorian gallery and the one which can be seen today. Despite stating how Biddulph Grange “stands today very much as Bateman left it”, official souvenir guides largely acknowledge the National Trust’s awareness of multiple strata of

⁵¹ “Discover the Story of Science and Religion”, Biddulph Grange Geological Gallery Webpage, accessed 16 May 2021, <https://www.nationaltrust.org.uk/biddulph-grange-garden/features/geological-gallery-at-biddulph-grange-garden>

⁵² “Discover the Story of Science and Religion”, Biddulph Grange Geological Gallery Webpage, accessed 16 May 2021. <https://www.nationaltrust.org.uk/biddulph-grange-garden/features/geological-gallery-at-biddulph-grange-garden>

⁵³ “Discover the Story of Science and Religion”, Biddulph Grange Geological Gallery Webpage, accessed 16 May 2021. <https://www.nationaltrust.org.uk/biddulph-grange-garden/features/geological-gallery-at-biddulph-grange-garden>

history, repeatedly noting that restoration works chose to repair Bateman's schemes "where practicable, and working within the spirit of his creation where that was no longer possible".⁵⁴

How exactly is the garden to be restored? Will the structure be preserved as found with all its patina of historic alteration and gentle decay? Will only those features be recreated for which absolute evidence exists and strictly to the period of its first creator? Or will it be faithfully recreated in the spirit of its times, using the available records as a broad guide?⁵⁵

These questions strikingly parallel those faced by palaeoartists seeking to restore the life-appearance of extinct animals, which are only partially understood from remains in the fossil record.⁵⁶ Because of this, they connect the restoration of both natural and human history implicitly with imaginative processes: "the spirit of" an original animal or display (note the repetition of this phrase) is something beyond the physical remains left by the past, less preferable than material remains but still somehow accessible to the expert. The best way of communicating this spirit, it is implied, is by the construction of *new* artistic objects – a tusk which never belonged to a mammoth alongside a genuine fossil tree trunk.

Even before the Gallery's reconstruction, news articles understood Biddulph as an exercise in fantasy world-creation, claiming that "it looks as if a dozen dinosaurs have crawled up here and died"; the garden "could easily be a scene from *Alice in Wonderland*", in which the protagonist travels through a tunnel between her own world and another, even while the article acknowledges that "the real world is only 500 metres away".⁵⁷ The connection between physical heritage and textual narrative is still emphasized, for "today the Geological Gallery is the centrepiece [sic] of the

⁵⁴ Anderton, *Biddulph Grange Garden* (above, n.48), p.27; p.21; p.23.

⁵⁵ Anderton, *Biddulph Grange Garden* (above, n.48), p.23.

⁵⁶ See Jordan Kistler and Will Tattersdill, "What's Your Dinosaur? Or, Imaginative Reconstruction and Absolute Truth in the Museum Space," *Museum and Society* 17:3 (2019): 377–89.

⁵⁷ Chris Upton, 'Around the world in 80 acres', *Birmingham Post*, 28 June 2003, n.pag.

restored garden (and also of this guidebook)", as a pull-out centrefold timeline.⁵⁸ As with the interpretation in the physical gallery, the souvenir guide blends contemporary science with Victorian geological terminology and Biddulph's biblical storyline:

Primary Chaos, that saw Earth's creation, reckoned by scientists to be 4.6 billion years ago, also called Pre-Cambrian [...] Mesozoic [...] used to be known as "Secondary", in turn divided into: Triassic (251-199 million years ago); Jurassic (199-145 million years ago); Cretaceous (145-65 million years ago) [...] Cenozoic, "kainos" and "zoe", "new life", 65 million years ago to the present day; used to be known as "Tertiary", in other words, everything that comes after "Secondary".⁵⁹

While this modern timeline depicts a palimpsest of terms and times, it folds out to reveal the Biddulph Grange day-age timeline beneath this modern explanation, the original gallery literally enclosed within the updated interpretation, layering the gallery's creationist perspective with contemporary science, but without changing the actual 'world' of the gallery.

The nineteenth-century iteration of the gallery was developed when geology's popularizers were not "necessarily hampered by contradictions between [the] worlds" of iconography, religion and science.⁶⁰ Similarly, the present-day Grange emphasizes how exhibitions of extinct life do not conform to the expectation that "one reality lives at the expense of countless others", instead building iterative worlds through both narrative and material strata.⁶¹ This was the case in both the Victorian and present day iterations of the Grange, as the case of Biddulph's monkey puzzle tree, or *Araucaria araucana*, suggests. While still in their youth, the trees were the perfect size for a section

⁵⁸ Sara Burdett and Anna Groves, *Biddulph Grange Garden and Geological Gallery, Staffordshire: A Souvenir Guide* (Warrington, National Trust), p.8.

⁵⁹ Burdett and Groves, *Biddulph Grange Garden* (above, n.58), n.pag.

⁶⁰ Ralph O'Connor, *The Earth on Show: Fossils and the Poetics of Popular Science, 1802-1856* (Chicago: University of Chicago Press, 2007), p.3.

⁶¹ Kenneth L. Ames, "Introduction," in *The Colonial Revival in America*, ed. Alan Axelrod (Wilmington, DE: Henry Francis du Pont Winterthur Museum, 1985), p.7.

of the garden designated the Araucaria Parterre, but once they outgrew their purpose and began to overshadow the garden's design, they would be removed and replanted in alternate areas of the Grange, and the cycle would begin again, creating iterations of design; a practice which continues to this day. One present-day souvenir guide ends its discussion thus:

It is also with monkey puzzles that a circle closes, for Bateman, for Biddulph Grange and for Waterhouse Hawkins and his dinosaurs [...], because ancient members of the genus *Araucaria* have been found in Mesozoic fossils, and even grew in the northern hemisphere some 70 million years ago. Bateman was simply putting them back. Food for dinosaurs indeed.⁶²

Contemporary interest in prehistoric life allows these strata to continue to accumulate at Biddulph, connecting both actual and imaginary worlds, writing (and rewriting) chapters of the Grange's story.

Our discussion of the worlds created by these two very different institutions – the Creation Museum and the 'creation museum museum' – has so far kept genre sf at a distance, emphasising the formal similarity between museal worldbuilding processes and those familiarly deployed in fiction. To close this gap, we turn now to our final example: a museum exhibit which directly constructs an alternate world, and whose science-fictionality continues to make it both scientifically problematic and imaginatively irresistible.

The Dinosauroid: Museum Rhetoric and the Visitor's Imagination

What if the dinosaurs hadn't died? It's a question which has provoked numerous science-fictional responses, from Arthur Conan Doyle's *The Lost World* (1912), with its mysterious plateau of antediluvian survivors, to Pixar's animated film *The Good Dinosaur* (2015), which shows the fatal K-Pg asteroid narrowly missing Earth in its opening seconds. Sometimes, though, the question is taken as an incitement to serious speculation rather than as the establishing move in a more outright piece

⁶² Anderton, *Biddulph Grange Garden* (above, n.48), 55.



Figure 2. Dale Russell and Ron Séguin's Dinosauroid, with its 'ancestor' Stenonychosaurus in the background (Image: Canadian Museum of Nature).

of worldbuilding. Probably the most famous example of this speculation was published in 1982, when the asteroid hypothesis was new and tenuous. The Canadian palaeontologist Dale Russell, working with the sculptor Ron Séguin, created a hypothetical descendent of a real Cretaceous theropod, *Stenonychosaurus*. *Stenonychosaurus* was an animal which, Russell's research had helped to reveal, was unusually intelligent by dinosaur standards. What if it had not fallen victim to the mass extinction? What would sixty-five million more years of evolution have made out of it?

Russell and Séguin's answer to this question was a sculpture of a seaweed-green biped, 1.3 metres high, with three-fingered hands, reptilian eyes, and a meditative, alien expression (Fig. 2). From the beginning, palaeontologists have taken issue with the value and plausibility of this extrapolation, a fact which has not impeded its popularity. It has appeared in dinosaur encyclopaedias, BBC documentaries, and even in a deck of Top Trumps, where it is rated 10/10 for

intelligence against rivals of a more recognisably saurian aspect.⁶³ Robert Bakker's *The Dinosaur Heresies* (1988), the popular science book explicitly acknowledged as a central influence by the *Jurassic Park* movie (1993), calls the idea "probably correct in general".⁶⁴ As recently as 2019, the *Daily Star* made it the subject of a piece declaring that 'Dinosaurs "could have made CIVILISATION like humans" had asteroid not wiped them out', filed under their 'weird news' section online.⁶⁵ Yet this was not news, not at all: the dinosauroid has had huge media exposure since the moment it was published – arrestingly, almost at the same time in the science journal *Sylogus* and the popular science magazine *Omni*.

One of Russell's early detractors rebuffed the dinosauroid with the line "anyone can write science fiction if he wishes"; though it was always pitched as a thought experiment rather than as a work of sf, the proximity of Russell's idea to a long tradition of speculative writing has never been difficult to spot.⁶⁶ The dinosauroid has also served as an sf influence in more recent years. In the third season of *Star Trek: Voyager* (1995-2001), for example, humanoid descendants of hadrosaurs are found living amongst the stars in the far-off Delta Quadrant. The Earthly origins of these creatures are proven when Captain Janeway asks the ship's computer to "run a genome projection algorithm" on a *Parasaurolophus*: apparently raring to function as an on-board Russell/Séguin, the computer instantly displays a humanoid identical to the 'aliens' the crew have just encountered. "That creature napping in sick bay is a dinosaur", declares the astonished Doctor. "The question is", Janeway replies, "why have we never seen him in the Natural History Museums?"⁶⁷

⁶³ See, for instance, David Norman, *The Illustrated Encyclopaedia of Dinosaurs* (London: Salamander, 1985), 54–55; Everest, Mark. "My Pet Dinosaur." *Horizon*. BBC, 2007. The Top Trumps card is in the 'Dinosaurs' deck (London: Winning Moves International Ltd., 2001) – on this card, the word 'dinosauroid' does not appear and the creature is described as "*Stenonychosaurus*" and aged at "76 million years", a gesture which erases the distinction between the reconstructed historical animal and the 'thought experiment'.

⁶⁴ Robert Bakker, *The Dinosaur Heresies* (London: Penguin, 1988), 372.

⁶⁵ Michael Moran, "Dinosaurs 'could Have Made CIVILISATION like Humans' Had Asteroid Not Wiped Them Out," *Daily Star*, May 6, 2019, accessed May 13, 2021, <https://www.dailystar.co.uk/news/weird-news/dinosaur-evolution-civilisation-human-race-16767278>.

⁶⁶ Dale A. Russell, "Models and Paintings of North American Dinosaurs," in *Dinosaurs Past and Present*, ed. Sylvia J. Czerkas and Everett C. Olson, vol. 1 (Seattle and London: University of Washington Press, 1987), p.128.

⁶⁷ David Livingston, "Distant Origin," *Star Trek: Voyager*, April 30, 1997. In an earlier scene, a hadrosauroid ('Voth') scientist has engaged in speculation about the possibility of an intelligent mammal-descendent – for

We have, of course – many times. Though the Russell/Séguin hypothesis is discussed frequently in both popular and specialist media – by the science writer Riley Black, by the cultural critic W. J. T. Mitchell, by the anthropologist Brian Noble, and by the evolutionary biologist Jonathan Losos, for instance – its commentators, like Janeway, tend to forget that it began life not as an abstract hypothesis but as a *museum object*.⁶⁸ Russell and Séguin were both, at the time of the dinosauroid’s creation, employees of the National Museum of Natural Sciences (now the Canadian Museum of Nature or CMN), working in the museum workshop towards the goal of public display. “I am [...] grateful to my colleagues in our Museum”, Russell later wrote, “for their firm support on what at the time seemed to me a rather dubious venture”.⁶⁹ After construction, the sculptures (dinsauroid and *Stenonychosaurus*) toured the anglosphere as part of the influential *Dinosaurs Past and Present* exhibition (1986-1991), visiting (among other places) the Field, the Smithsonian, the Tyrell, and London’s Natural History Museum – many of the world’s most prestigious institutions.⁷⁰ Despite no longer being on public display, the dinosauroid is still in the CMN – it lives in the staff coffee room, where employees affectionately know it as ‘Herman’ and sometimes dress it in seasonal clothing.⁷¹ This latter point attests to the fact that the dinosauroid is enculturated, as well as devised and executed, as a museum object. It is not a product either of peer-reviewed science or unrestrained artistic imagination, but rather of an institution where both can work productively together: the natural history museum.

which he is pilloried by the Voth scientific establishment. His 2D rendering bears strong resemblance to Russell’s dinosauroid.

⁶⁸ Brian Switek [Riley Black], “Troodon Sapiens?: Thoughts on the ‘Dinosauroid,’” Science Blogs, October 23, 2007, accessed May 13, 2021, <https://scienceblogs.com/laelaps/2007/10/23/troodon-sapiens-thoughts-on-th>; W. J. T. Mitchell, *The Last Dinosaur Book: The Life and Times of a Cultural Icon* (Chicago: University of Chicago Press, 1998), pp.2–3; Brian Noble, *Articulating Dinosaurs: A Political Anthropology* (Toronto: University of Toronto Press, 2016), pp.42–44; Jonathan Losos, *Improbable Destinies: How Predictable is Evolution?* (London: Penguin, 2017), pp.320-25.

⁶⁹ Russell, “Models and Paintings” (above, n.66), p.125.

⁷⁰ The dinosauroid’s catalogue number in the exhibition was 142, the *Stenonychosaurus* 141. Sylvia J. Czerkas and Everett C. Olson, eds., *Dinosaurs Past and Present*, vol. 1 (Seattle and London: University of Washington Press, 1987), p.34.

⁷¹ We thank Kieran Shepherd and Jordan Mallon (CMN) for telling us in private correspondence about the present status of the dinosauroid. There are at least two other copies of the model: one in the stores of the University of Alberta, and one apparently in private hands, possibly in Japan.

The wider intellectual history and implications of the dinosauroid project are therefore set aside here in favour of a discussion about what it means to exhibit it in the museum space particularly.⁷² The key characteristic for our present discussion is its conjectural or counterfactual status. The dinosauroid was never intended to be a confident prediction (“We invite our colleagues to identify alternate solutions”, Russell and Séguin wrote) so much as a foray into possibility.⁷³ “[I]t might be entertaining to speculate in a qualitative manner...” is the language of the original paper, proposing a blend of whimsy (‘entertaining’) and empiricism (‘qualitative’) which the idea’s detractors found annoying, but which could reasonably be claimed to match the spirit of the average museum-goer.⁷⁴

The problem, of course, is that the museum authorises as well as displays. Whilst the most common photographs of the dinosauroid show it against a neutral, white background, the display in the *Dinosaurs Past and Present* exhibition was more like that seen in Fig. 2: “[I]arge potted plants (including parlour palms and cycads) were arranged around the models to create a slightly greener vibe”.⁷⁵ The language here is that of the diorama, an established format in which most museum-goers would be highly literate, one which draws its authority from the colonial mastery of the wilderness.⁷⁶ Even though the exhibit was presumably labelled as conjectural, its material solidity and the confidence of the diorama as a form will have negated, for many visitors, Russell’s caution and playfulness – the waters are further muddied here by the presence of the *Stenonychosaurus* model, which is scrupulous and, by the standards of the day, quite accurate.⁷⁷ In the rhetoric of

⁷² A broader review of the dinosauroid project is to be found in Darren Naish and Will Tattersdill, “Art, Anatomy, and the Stars: Russell and Séguin’s Dinosauroid,” *Canadian Journal of Earth Sciences* 58:9 (September 2021): 968-979.

⁷³ D. A. Russell and R. Séguin, “Reconstructions of the Small Cretaceous Theropod *Stenonychosaurus Inequalis* and a Hypothetical Dinosauroid,” *Syllogeus* 37 (1982): 36.

⁷⁴ Russell and Séguin, “Reconstructions of the Small Cretaceous Theropod” (above, n.73), p.22.

⁷⁵ Darren Naish, “Recollections of Dinosaurs Past and Present, the 1980s Exhibition,” *Tetrapod Zoology*, February 25, 2019, accessed May 13, 2021, <http://tetzoo.com/blog/2019/2/25/recollections-of-dinosaurs-past-and-present-the-1980s-exhibition>.

⁷⁶ For more on the politics of diorama, see Donna Haraway, “Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, New York City, 1908-1936,” *Social Text* 11 (Winter 1984): 20–64.

⁷⁷ Naish and Tattersdill, “Art, Anatomy, and the Stars” (above, n.72), p.970.

natural history displays, Mieke Bal tells us, “one particular element [...] prevails: the tendency to believe in the truth of the knowledge represented through fiction”.⁷⁸

Bal’s attention to the presence of fiction in museums – even in displays which do not seek to create counterfactual worlds – is crucial for our understanding of the dinosauroid. She was writing in 1992, in particular about the AMNH in New York (which the dinosauroid visited from October-December 1987). In her analysis, the AMNH - “this microworld between West Eighty-First and Seventy-Seventh” – fails in its decolonial work precisely because it does not fully acknowledge the various spatial and temporal narratives which its displays continue to weave.⁷⁹ “[V]isual realism”, she writes, “where the hand of the maker obscures itself and the words informing the visual make themselves invisible, is as strongly discursive as the scientific diagrams, figures, and explanations, where discursivity is foregrounded”.⁸⁰ In the case of the dinosauroid, the discourse is between the familiar and the strange: the familiarity of the space, the format and the *Stenonychosaurus*; the strangeness of the figure itself, human and yet other. This is an exaggerated form of the admixture of common and exotic which Bal identifies in all AMNH displays; every diorama builds a world, and does so precisely by erasing the thought processes which go into its design.⁸¹ Possibly this explains what makes the form ill-suited to a hypothesis like the dinosauroid: Russell and Séguin may have wanted attention on underlying questions and the model’s strengths as an answer to them, but the genre of museum diorama places the focus elsewhere.

The scenes staged by dioramas are usually relatively small in terms of square footage, but each is meant to imply a larger world. This can only be done, of course, with the complicity of a viewer who instinctively understands the rhetoric of museum displays. The dinosauroid, then, is not just (somewhat despite itself) an appeal to the imagination – it is an appeal to the *same* imaginative faculty that a visitor is asked to display elsewhere in the museum space, animating a taxidermized

⁷⁸ Mieke Bal, “Telling, Showing, Showing Off,” *Critical Inquiry* 18, no. 3 (Spring 1992): 594.

⁷⁹ Bal, “Telling, Showing, Showing Off” (above, n.78), p.561.

⁸⁰ Bal, “Telling, Showing, Showing Off” (above, n.78), p.591.

⁸¹ Bal, “Telling, Showing, Showing Off” (above, n.78), pp.562–63.

lion, restoring an encased toucan to the jungle, or clothing an articulated skeleton in muscle and skin. Museum studies has long understood the role played by the visitor in generating the meaning of the exhibit.⁸² For Marianne Achiam, the key concept in understanding this is that of *repertoires*: “visitors’ repositories of meaning making, that is, the knowledge, experience, assumptions, and conjectures that underlie their interpretation of objects and exhibitions”.⁸³ Achiam posits that the repertoires brought by the visitor work together with scientific and presentational details to create the total meaning of the exhibit – a meaning that will be slightly different for each visitor precisely because their starting repertoires will not be the same.⁸⁴ We submit that the function here is analogous to what Umberto Eco calls *overcoding*, the aspect of a written text which relies upon or changes with the reader’s competence in text more broadly – including genre competence.⁸⁵ In order to process the dinosauroid in the museum space, a visitor will deploy their experience with other exhibits and other exhibitions, but they will also deploy knowledge from further afield, including (if they have it) knowledge of the many sf texts which offer a way of understanding something that looks like the dinosauroid. Crucially, this reconciliation of the display with prior factual knowledge and genre experience is highly comparable to the process of encountering a science-fictional world for the first time.⁸⁶ In both sf works and museum exhibits, the visitor creates their own world based on the provocations, factual and otherwise, offered to them by the text. How closely this world resembles the author’s ideas will vary according to (among other things) the reader’s literacy in similar situations, the repertoire they bring with them.

Seeing the dinosauroid as a museum object can thus help us to understand Russell’s naivety in hoping that the idea would not become entangled in the long history of overtly science-fictional dinosaur-descendants and reptiloid monsters.⁸⁷ The museum display, Bal writes, is “a sign system

⁸² Kavanagh, “Making Histories, Making Memories,” (above, n.24).

⁸³ Marianne Achiam, “The Role of the Imagination in Museum Visits,” *Nordisk Museologi* 1 (2016): 95.

⁸⁴ Achiam, “The Role of the Imagination”, pp.90–91.

⁸⁵ Umberto Eco, *The Role of the Reader* (London: Hutchinson, 1979), pp.19–20.

⁸⁶ See Shippey, “Hard Reading” (above, n.9).

⁸⁷ Naish and Tattersdill, “Art, Anatomy, and the Stars” (above, n.72), p.976.

working in the realm between the visual and the verbal, and between information and persuasion, as it produces the viewer's knowledge".⁸⁸ Even a less *outré* diorama undertakes not only the building of an imaginative world, but the involvement of the reader in that building; the ends and materials may be different, but the formal procedures in science fiction and the museum are very similar. The dinosauroid model not only embodies a hypothesis, it invites the viewer to collaborate in its imaginative realisation.

Conclusion: The Transmedia Landscape

If there is a common view of sf worldbuilding, it is probably that it is something done deliberately and with great care. The sf/fantasy author Brandon Sanderson, for instance, employs a full-time assistant whose job it is to maintain a private encyclopaedia of his fictitious worlds.⁸⁹ But thanks to the imaginative faculties and genre literacies of readers (and museum goers), there is also a sense in which creating a world is surprisingly easy – a couple of sculptures and some suggestive plants will do the job. It can even be done inadvertently, and arguably is every time a visitor encounters a provocative combination of unrelated objects, or moves through a gallery in the 'wrong' direction.⁹⁰

The dinosauroid is a superb example of how an individual idea expressed in a museum context can create itself as a world: though Russell and Séguin stick strictly to the biology of the creature in their original paper, by the late 1980s another of Russell's artistic collaborators, Ely Kisch, was creating works in which dinosauroids (plural now) were shown in a society, raising their young and giving lectures about their own stone age.⁹¹ Though Russell's invitation for rival scientific proposals of speculative dinosaur evolution was largely ignored, recent years have seen artists, some

⁸⁸ Bal, "Telling, Showing, Showing Off" (above, n.78), 561.

⁸⁹ Brandon Sanderson, "How Do You Remember All The Details To Keep All The Little Bits And Pieces Consistent?," October 14, 2018, accessed May 13, 2021, <https://faq.brandonsanderson.com/knowledge-base/how-do-you-remember-all-the-details-to-keep-all-the-little-bits-and-pieces-consistent/>

⁹⁰ See Yanow, "Space Stories" (above, n.16).

⁹¹ Reproduced as figure 8 of Naish and Tattersdill, "Art, Anatomy, and the Stars" (above, n.72), p.977.

of them knowledgeable palaeoartists, creating their own dinosauroids online.⁹² Many of these are more birdlike than Russell's, recognising a bias in Russell's work towards the humanoid body plan.⁹³ Probably the most well-developed is C. M. Kosemen and Simon Roy's, a substantial project which imagines not just the '*Avisapiens*' but the world they live in, the other species which share it, and even details of their art and culture. Tellingly, Kosemen and Roy originally intended this work to lead up to a sf publication, "[b]ut we soon realised that we enjoyed world-building more than writing a story, or putting a book together".⁹⁴ Kosemen and Roy's dinosauroid is discernible in the 'bird men' of Adrian Tchaikovsky's *Doors of Eden* (2020), an sf novel which imagines a collision between various possible evolutionary histories of Earth (and namechecks Kosemen and Roy in the acknowledgements).⁹⁵ Static and circumscribed, the original dinosauroid statue was – and is – an invitation for future, collaborative imaginings, whether on paper, for *Star Trek*, or in the coffee room of the CMN.

This invitation is something that we see, in a variety of forms, in all the case studies in this article. The stone walls of Biddulph Grange reach out into the gardens beyond, conditioning the original visitor's imaginative sense of the relationship between the Earth's past and present; for the twenty-first century visitor this sense is complicated and enriched by the restored Victorian 'present' which the National Trust has worked to (re)create. In Kentucky, the rhetoric of the museum invites visitors to forge imaginative alliances between scientific objects and scripture – the world is not just displayed but created, and not just created but co-created with the visitor's participation. It goes

⁹² Some are summarized in Darren Naish, "Alternative Timeline Dinosaurs, the View From 2019 (Part 3): The Dinosauroid and Its Chums," Tetrapod Zoology, accessed April 19, 2021, <http://tetzoo.com/blog/2019/12/13/alternative-timeline-dinosaurs-the-view-from-2019-part-3-the-dinosauroid-and-its-chums>.

⁹³ This humanoid bias and the dinosauroid's role as a forerunner to the later debate between Simon Conway Morris and Stephen Jay Gould about the role of contingency in evolution are discussed at length in Losos, *Improbable Destinies* (above, n.68).

⁹⁴ C. M. Kosemen, "Dinosauroids," August 2019, accessed May 13, 2021, <http://www.cmkosemen.com/dinosauroids.html>.

⁹⁵ Adrian Tchaikovsky, *Doors of Eden* (Basingstoke: Pan Macmillan, 2020), p.598.

without saying that one does not have to subscribe to present-day or day-age creationism (or the plausibility of the dinosauroid) in order to go on these imaginative journeys.

The proximity of the museum-goer to the reader of speculative fiction is also hinted at by the quite literal crossovers between museums and science fiction/fantasy franchises: consider the London Natural History Museum's historical collusion with the *Jurassic Park* movies, for instance, or its current (at the time of writing) exhibition combining specimens with props from J. K. Rowling's *Fantastic Beasts* series ("[d]iscover where the real world and Wizarding World intertwine").⁹⁶ Both *Jurassic Park* and *Fantastic Beasts* are 'transmedia' franchises: they involve movies and novels but also all sorts of other media – comics, video games, reference works, and much besides – inviting the active reader to pursue in different texts the task of building a world which (like Mesozoic Earth) is bigger than any one story set in it. Of the transmedia phenomenon, Marta Boni has written that:

The growing "world building trend" [...] reveals that media truly are complex systems, since they are aggregations of technologies, forms, characters, institutions, and cultures. Within the current, interconnected panorama, they do not only transmit worlds, they become worlds themselves, individually or thanks to their networking.⁹⁷

Our article proposes a place for museums and museum displays in Boni's list. Not only are they themselves transmedial – consider the dinosauroid's existence between sculpture, scientific paper, popular media, and the internet, or the paratextual ephemera which extend the world of the creation museum beyond its walls – but they are part of the wider economy in which media franchises can establish themselves. The connections can be made explicitly, as in the case of

⁹⁶ "Fantastic Beasts™: The Wonder of Nature," Natural History Museum, accessed April 20, 2021, <https://www.nhm.ac.uk/visit/exhibitions/fantastic-beasts-the-wonder-of-nature.html>.

⁹⁷ Marta Boni, "Introduction: Worlds, Today," in *World Building: Transmedia, Fans, Industries*, ed. Marta Boni (Amsterdam: Amsterdam University Press, 2017), p.24.

Fantastic Beasts. More commonly, however, sf – as a technique as much as subject matter – is part of the visitor's repertoire, and we bring it in with us.