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# IS IT REAL? [DOES IT MATTER?]: PRACTISING AUTHENTICITY IN THE NATURAL SCIENCES

## IS IT REAL?

The title of this paper is inspired by an object in Manchester Museum's »Fossils Gallery«: a life-size *T. rex* skeleton, fondly known as »Stan« (**fig. 1, 1**). So is it real? If real is taken to mean natural or »unintentional«[1] then »Stan« is not real; rather, it is »cast in durable urethane and hand-painted in realistic colours«[2]. Likewise, if real is taken to mean »true to life«[3], while a mounted skeleton is more familiar than un-mounted bones[4], an encounter with a dinosaur (or even a skeleton) is itself unrealistic[5]. Nonetheless, there is a general assumption among visitors that »Stan« is indeed real. Why else would it be on display in a museum? But at Manchester Museum, a text panel clearly states that »Stan« is a cast and not the original skeleton (**fig. 1, 2**). So if real is about being what you say you are[6], perhaps »Stan« is indeed real.

The question: »Is it real?« is not limited to »Stan«, and at Manchester Museum visitors regularly ask this question throughout the natural science galleries where they may encounter live animals, rocks, minerals, fossils, pinned insects, spirit collections, herbarium sheets, bird and animal skins, skeletons and taxidermy specimens as well as casts, models, murals and various other props (**fig. 2, 1-14**). This seemingly innocent question is revealing as it highlights the challenges of approaching authenticity as a matter of what is real, particularly for the range of objects and techniques used to display nature in museums. Using examples from Manchester Museum, this paper will suggest that the traditional approaches to authenticity fail to capture the nuances of contemporary natural science objects and displays, or their value for the museum. Rather than focusing on authenticity as a quality, this paper will reveal some of the insights that may be gained from a practice-based approach.

## NATURE ON DISPLAY

When visitors ask: »Is it real?«, the question may be approached from what S. Jones refers to as a materialist perspective, in which authenticity is »something inherent in the object to be measured in an objective fashion«[7]. Applied to natural science objects, material authenticity is about physical naturalness whereby authentic objects are the same as they were in nature, while inauthentic objects are entirely artificial in composition. In practice, to account for the range of items displayed at Manchester Museum, it is apparent that material authenticity is not an absolute quality, but instead corresponds to degrees of naturalness (**tab. 1**).

The authenticity of natural science objects and displays is also about their visual naturalness – their presentation in an accurate, familiar and realistic manner: being true to life. Based on the displays at Manchester Museum, visual authenticity also refers to a continuum (**tab. 2**) whereby the most authentic displays present natural science objects as either living or lifelike within their natural surroundings, and the least authentic displays make no reference to the natural context of the objects. While naturalness is central to both the material and visual authenticity of natural science objects, the two do not necessarily correspond.

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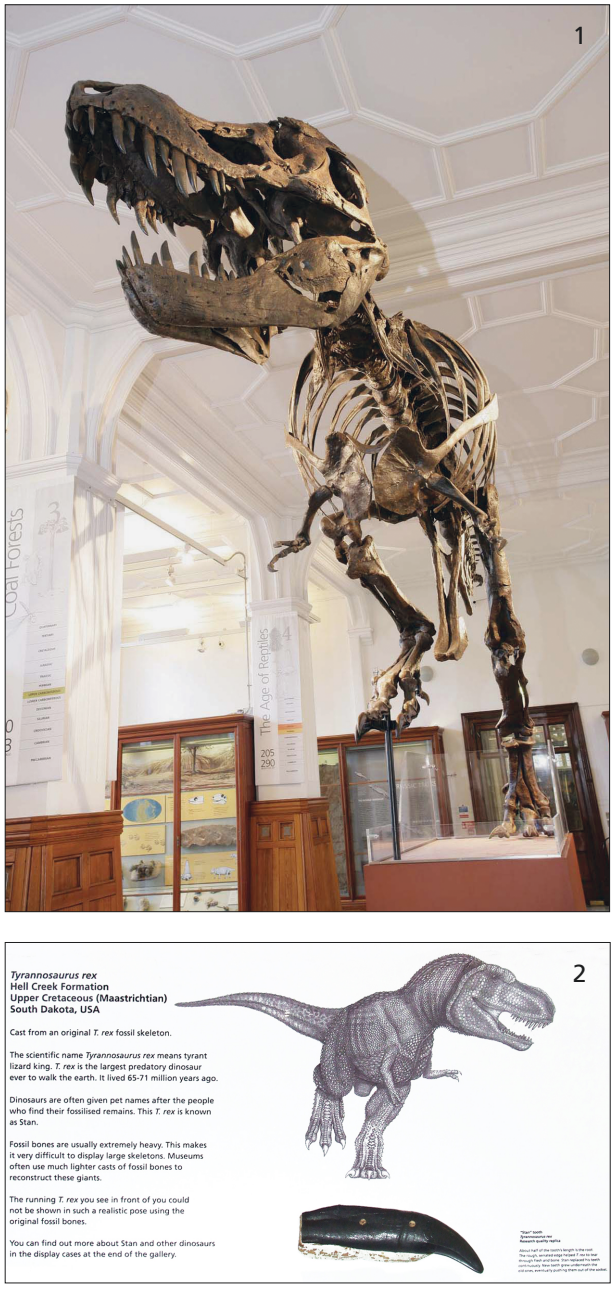


**Fig. 1** »Stan« the *Tyrannosaurus rex* on display in Manchester Museum's »Fossils Gallery«: **1** Mounted cast of »Stan« displayed on a raised platform surrounded by a transparent barrier. – **2** Text panel located in front of »Stan« providing visitors with information about the use of fossil casts. – (1 Photo S. Devine © Manchester Museum; 2 Photo H.-L. Chalk).

Indeed, materially authentic objects such as rocks may lack visual authenticity when displayed in rows behind glass (**fig. 2, 2**). Likewise, visually authentic objects such as models may lack material authenticity (**fig. 2, 9**).

If authenticity is about neither material nor visual naturalness, then an alternative is the constructivist approach whereby authenticity »is a quality that is culturally constructed and varies according to who is observing an object and in what context«[8]. While the individual context in which objects are encountered[9] necessarily shapes the visitor experience of authenticity[10], as S. Jones warns, constructivism implies that »layers of authenticity can be simply wrapped around *any* object irrespective of its unique history and materiality«[11]. By excluding the object from the equation, the constructivist approach provides little insight into the visitor experience of natural science objects, and is equally problematic when their other functions are taken into account.

While museum visitors tend to encounter natural science objects through displays and exhibitions, this is just one of many functions that these things may serve. Natural science objects, particularly those in university museums and collections, are also encountered by curators, registrars, educators, scientists, researchers and students, to name but a few, and may therefore also be used for research, teaching, or reference purposes, or may simply be kept in storage. As part of a research infrastructure, »a scientific collection is simultaneously the object, tool and product of science. The materiality of the objects lends collections a special intrinsic value that is used particularly by universities in research and teaching, and for transfer to the public[12]«. On one hand, it follows that authenticity must be understood as something that is fluid and flexible in order to account for the ability of natural science objects to fulfil multiple functions[13]. On the other hand, since material authenticity is fundamental to the value of natural science objects within a research infrastructure, it must equally be understood as something that is robust and resilient.

The value of natural science objects lies in their naturalness: herein lies the problem. In collecting pieces of nature and bringing them into a museum, natural science objects lose their naturalness, which is precisely what makes them valuable in the first place. Any attempt to use these things to represent nature will therefore require artificial interventions. In treating authenticity as a quality, the traditional approaches provide

| Authenticity *Natural Features* | | | | Type of item *Explanation of natural features and artificial interventions* | Inauthenticity *Artificial Interventions* | | | |
|---|---|---|---|---|---|---|---|---|
| Natural composition | Individual | Complete | Unchanged | **MOST AUTHENTIC** | Loss of life | Loss of parts | Artificial materials | Typical |
| + | + | + | + | Live Animals<br>*Whole living individuals* | | | | |
| + | + | + | | Rocks / Minerals / Fossils<br>*Whole individual things ex situ* | | | | |
| + | + | + | | Insects<br>*Whole dead individuals* | - | | | |
| + | + | + | | Spirit Specimens<br>*Whole dead individuals in container with fluid* | - | | - | |
| + | + | + | | Herbarium Sheets<br>*Whole dead individuals dried and attached to sheets* | - | | - | |
| + | + | | | Animal / Bird Skins<br>*External parts of dead individuals* | - | - | | |
| + | + | | | Skeletons<br>*Hard-parts of dead individuals* | - | - | | |
| + | | | | Taxidermy<br>*Parts of dead individuals with artificial replacements* | - | - | - | |
| | + | + | | Fossil Casts<br>*Artificial versions of complete individual things ex situ* | | | - | |
| | | + | | Models<br>*Artificial versions of complete typical things* | | | - | - |
| | | | | **LEAST AUTHENTIC** | | | | |

**Tab. 1** The material authenticity of items displayed in Manchester Museum's natural science galleries, presented as a continuum based on the positive effects of natural features (+) and the negative effects of artificial interventions (-).

| Authenticity *Natural Features* | | | Type of Display *Description of natural and artificial features* | Inauthenticity *Artificial Features* | | |
|---|---|---|---|---|---|---|
| Living | Natural(istic) surroundings | Life-like | **MOST AUTHENTIC** | Unnatural context | Museum work visible | Incomplete |
| + | + | + | Live Animals<br>*Creatures living in reconstructed environment (including living vegetation, temperature and humidity)* | | | |
| | + | + | Dioramas<br>*Life-like representations (taxidermy / models) presented in natural context (represented by murals / photographs and models / props)* | | | |
| | | + | Complete creatures<br>*Life-like representations of whole creatures presented out of context (taxidermy or models)* | - | | |
| | | | Incomplete creatures<br>*Parts of creatures presented out of context, made familiar by invisible museum work (mounted skeletons)* | - | | - |
| | | | Preserved organisms<br>*Complete organisms presented out of context, made unfamiliar by the visibility of the preservation method (spirit specimens / herbarium sheets)* | - | - | |
| | | | Specimens<br>*Samples of nature, collected as scientific evidence and displayed out of context (rocks / minerals / fossils / bird and animal skins)* | - | | - |
| | | | **LEAST AUTHENTIC** | | | |

**Tab. 2** The visual authenticity of natural science displays at Manchester Museum, presented as a continuum based on the positive effects of natural features (+) and the negative effects of artificial features (-).


**Fig. 2** Examples of objects and techniques used to display nature at Manchester Museum: Day Gecko (**1**) in the »Live Animals« gallery. – Igneous rocks and sediments (**2**), and »Colour in Minerals«-display (**3**), both in the »Rocks and Minerals« gallery, – Fossil trilobites (**4**), pinned stick insects (**5**), sea stars preserved in spirit (**6**), herbarium sheets (**7**), animal skins (**8**), and model showing inside a lizard (**9**), all on display in the »Nature's Library« gallery. – Animal and bird skeletons (**10**), taxidermied tiger (**11**), and origami cranes (**12**) used as props to symbolise peace, all on display in the »Living Worlds« gallery. – Cast of bony armoured plates of Ankylosaur (**13**) and hand-painted mural of a Carboniferous coal forest (**14**), both in the »Fossils« gallery. – (1 Photo S. Devine © Manchester Museum; 2-3. 13-14 Photos H.-L. Chalk; 4-9 Photos P. Cliff © Manchester Museum; 10-12 Photos A. Clausen © Manchester Museum).

little insight into this paradox. If authenticity resides in the objects themselves, then natural science objects can never be authentic, since they lose their naturalness (and, therefore, their authenticity) through the collecting process. If, on the other hand, authenticity and naturalness are culturally constructed, then these concepts become meaningless.

While both the naturalness and the visitor experience of natural science objects are indeed of relevance to authenticity, this paper will suggest that it is the practices that enact objects as natural and authentic that require explanation, rather than the qualities of naturalness and authenticity themselves. This way of

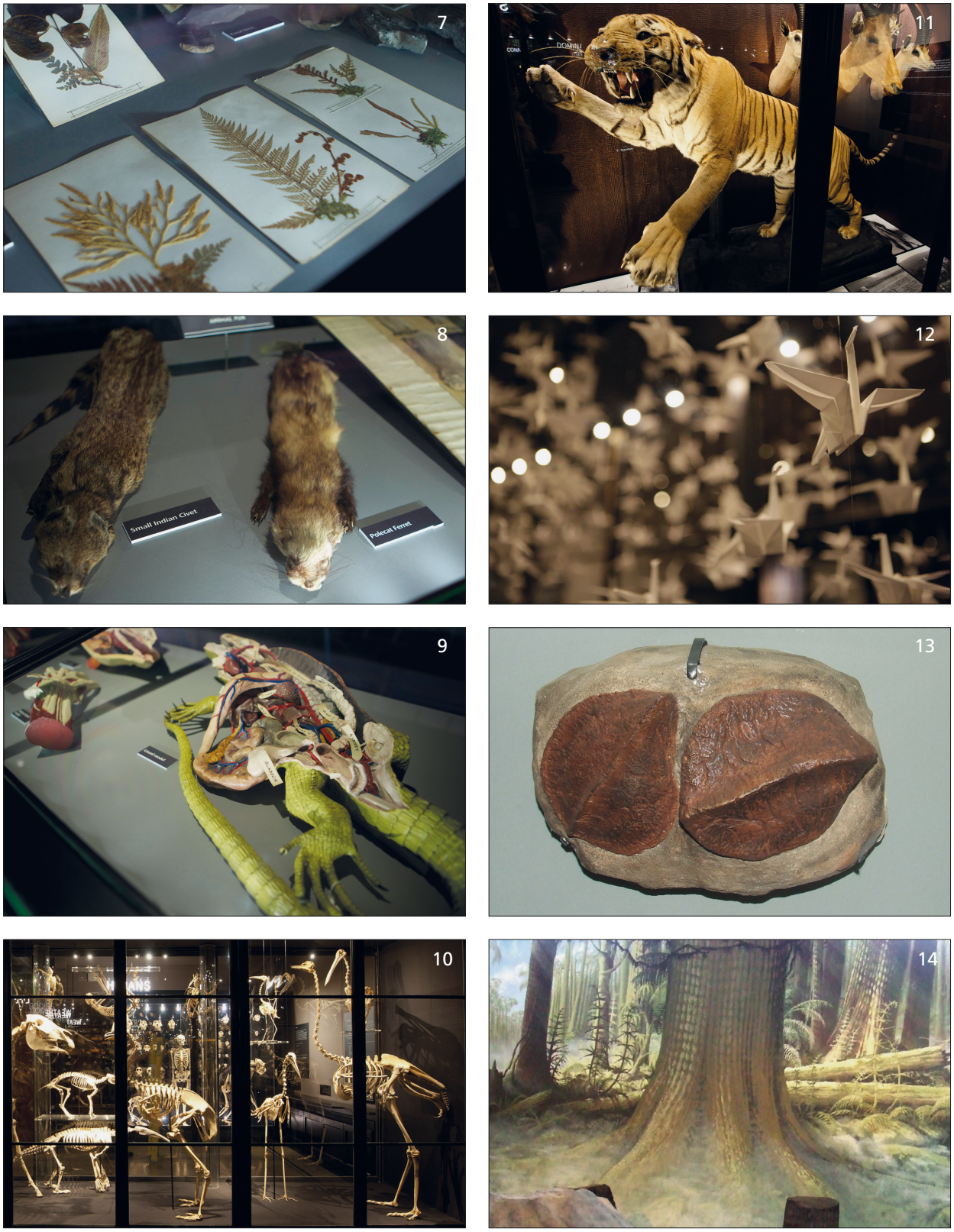


**Fig. 2** (continued)

thinking is concerned with how things are done, rather than focusing on what things are[14], and as such, follows A. Maurstad[15] and S. Jones / T. Yarrow[16] in deviating from the »representational impulse«[17] that has underpinned much of the thinking about authenticity within heritage, museum and material culture studies.

## PRACTISING AUTHENTICITY

The practice-based approach presented below draws from scholars of science studies, in particular the works of J. Law and A. Mol[18]. The thrust of this work is that it treats »everything in the social and natural worlds as a continuously generated effect of the webs of relations within which they are located«[19], and that knowledge, realities and, indeed, authenticity are »produced in thoroughly non-arbitrary ways, in dense and extended sets of relations […] [and] with considerable effort«[20]. A. Mol's concept of »enactment« also captures the active and performative nature of practices without implying that the actors involved are necessarily humans[21]. From this perspective, authenticity and naturalness are enacted in practices; they are relational effects that emerge when human and non-human actors come together and interact.
Grounded in case studies[22], a practice-based approach is in line with the growing body of empirical studies into the visitor experience of authenticity both for museums in general[23] and with particular reference to natural history museums[24]. Therefore, by exploring some of the practices that enact natural science objects as authentic at Manchester Museum, this paper aims to introduce a valuable tool for understanding authenticity in the museum. Using »Stan« as an example, the following two sections will attend to the ways in which objects are enacted as natural and authentic, both for the museum through practices of finding and keeping, and, for the visitor, through practices of display.

### Practices of finding and keeping

For museums, the practices that enact natural science objects as natural and authentic originate in the field. On one hand, the benefits of collecting natural science objects are clear, whether they are used for research, display or reference. The realities of nature are messy and complex, and as T. Gieryn observes, »a lack of precision and control, peculiarities of a site that make generalisations impossible, [and] endless distractions and contaminations« make fieldwork a challenging activity[25]. By collecting »tangible representatives«[26] from nature and bringing them inside, natural objects can be stabilised, preserved, ordered, arranged, accessed by others, and studied at leisure, in relative comfort and using equipment, resources and techniques that would otherwise be unavailable[27]. The neutral and controlled conditions into which they enter empower objects to act as »guarantors« for the knowledge that becomes bound to them[28], and as such, these things gain credibility through their association with an institution[29]. This is particularly important when natural science objects are used for scientific research.
In order to overcome the unavoidable loss of naturalness that occurs when natural science objects are collected, collectors substitute natural context with their own accounts thereof through practices of observing, recording, describing, measuring, sketching and photographing[30]. However, information alone is not enough to guarantee the successful transition of pieces of nature into a museum. Collectors must ensure that the information gathered remains associated with the object to which it refers: traceability is vital[31]. This is achieved through the use of a shared reference which is marked onto the object, its packaging, or a label that has been securely attached to it, and recorded alongside the contextual information that is gathered, most often in a field notebook[32]. This link between an object and its information

is vital as it represents all that has gone before in nature outside.

While the specific materials and methods involved in field collecting may vary according to disciplinary conventions, for natural science objects, the collecting process can be broadly understood as a series of practices that establish a chain of evidence between an object and the natural context from which it was collected. As well as transforming pieces of nature into natural science objects, practices of selecting, removing, recording and inscribing enact these things as natural and authentic in the context of the museum.

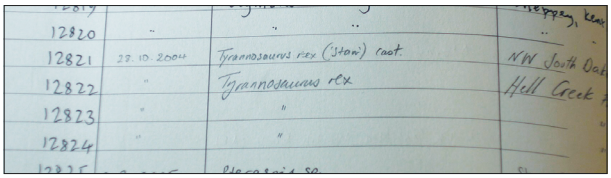


**Fig. 3** Manchester Museum's accession register showing the hand-written entry for »Stan«, fossil casts of *Tyrannosaurus rex* skeleton, added on 20 October 2004 and assigned the reference LL.12821. – (Photo H.-L. Chalk).

Entry into a museum does not, however, guarantee the authenticity of natural science objects; as J. Law explains: »if things seem solid, prior, independent, definite and single, then perhaps this is because they are being enacted, and re-enacted, and re-enacted, in practices«[33]. In the museum, it takes work, effort and vigilance to maintain both the object itself and the all-important link to its information. For natural science objects, practices of cleaning, consolidating, degreasing, drying, extracting, freezing, mounting, pickling, pinning, pressing and stuffing are fundamental as they enact these objects as stable within the museum. However, authenticity is not simply about the preservation, preparation and conservation of objects: a specimen that has lost its label has also lost its authenticity. Thus, through practices of accessioning, naming, numbering, classifying, describing, labelling, recording, cataloguing, and storing, museums continually enact their collections of natural science objects as authentic by maintaining their traceability. Indeed, such practices are just as important for replica objects such as »Stan« as they are for other types of material.

In the first instance, the authenticity of »Stan« is concerned with the practices of fieldwork, excavation and preparation that took place when the original fossil material was collected[34]. By accessioning the fossils – allocating the reference BHI 3033[35] – the Black Hills Institute ensured that the material was traceable back to its natural origins. The »Stan« belonging to Manchester Museum was created through practices of casting[36] that generated exact copies of the original fossils; these fossil casts are linked to the original material through the catalogue number BHI#126378[37].

For Manchester Museum, the authenticity of »Stan« is an effect of practices of accessioning, documenting and cataloguing[38] that, through the reference LL.12921, extend and strengthen the chain of evidence linking the replica BHI#126378 to the original fossil BHI 3033 and back to nature. Indeed, the decision to accession »Stan« – both giving the material an accession number and entering its details into the museum's accession register (**fig. 3**) – transforms this cast into a legitimate museum object, a status that further reinforces its authenticity.

## PRACTICES OF DISPLAYING

In the museum, there are numerous practices that enact displayed objects as authentic in a general sense – what C. Hampp and S. Schwan refer to as »staging«[39]. For example, practices of labelling enact objects as authentic through the use of factual information and scientific nomenclature. Likewise, the long tradition of displaying objects behind glass has a similar effect of reinforcing the importance, value and authenticity of museum objects[40]. While such practices are common to all types of museums, for natural science objects

and displays in particular, the practices that enact these things as authentic for the visitor are distinct in their concern with naturalness. Based on the displays at Manchester Museum, five basic strategies have been identified that present natural science objects as authentic for the visitor.

Firstly, practices of recontextualising enact objects as authentic by adding a realistic backdrop or surroundings to natural science objects in order to make things more recognisable to the visitor, as with the live animals at Manchester Museum (**fig. 4, 1**). Secondly, practices of revitalising are concerned with adding artificial components and form to natural science objects in order to bring them back to life, as is the case with taxidermied animals (**fig. 4, 2**). Thirdly, practices of reassembling are about arranging component parts or groups of objects to enable their recognition or present them to visitors in a more familiar way, as with mounted skeletons (**fig. 4, 3**). The fourth strategy is concerned with practices of reconstructing that use artificial materials to present organisms that are either extinct or too rare, fragile or large to be brought into a museum, as is the case with models of prehistoric creatures (**fig. 4, 4**). Finally, practices of reproduction are concerned with making physical copies of real things, such as the fossil casts on display at Manchester Museum (**fig. 4, 5**). While the five strategies are described here in isolation, it is important to note that in practice, they are often combined and used in conjunction with the more generic staging practices, as is apparent with »Stan«.

At Manchester Museum, while »Stan« owes its existence to the practice of reproduction whereby the individual replica bones were created, these are carefully arranged and mounted (reassembly) to present an extinct creature in a recognisable form (reconstruction). Furthermore, the transparent barrier surrounding »Stan« (**fig. 1, 1**), and the presence of a text panel (**fig. 1, 2**) containing facts and contextual details about the object (staging), also contribute to the perceived authenticity of »Stan«. Finally, these practices of display do not occur in isolation from those of finding and keeping. Indeed, such practices are fundamental to the authority of museums as trustworthy institutions, and for »Stan«, the fact that it is displayed in a museum automatically enacts it as authentic.

## DOES IT MATTER?

In conclusion, it is useful to return to the questions posed in the title and ask: Does it matter whether museum objects are real? For natural science objects, if we limit our understanding of authenticity to what *is* real, then the answer is that perhaps it does not matter. As this paper has shown, in treating authenticity as a quality – whether material, visual or culturally constructed – the traditional perspectives create a false dichotomy between people and things, which inadequately account for the complexity of natural science objects. However, and in line with the practice-based approach to authenticity presented in this paper, it would be more appropriate to ask whether it matters *how* museum objects are enacted as real. In response to this question, the brief overview of a practice-based approach to authenticity would suggest that it does indeed matter.

This paper has revealed some of the insights that may be gained by adopting a practice-based approach to authenticity. By attending to the practices that enact natural science objects as authentic, it is apparent that the authenticity that matters to museums as keepers of the material culture of science is not necessarily the same as the authenticity that they attempt to present to visitors. This is particularly apparent in university museums where collections are part of a research infrastructure and natural science objects were therefore collected for research, teaching or reference purposes and not for their use in displays. As such, the collections tend to reflect one sphere of interest – material authenticity and traceability – while the displays are concerned with another – experiential authenticity and familiarity.


**Fig. 4** Strategies used to display natural science objects at Manchester Museum that enact objects as natural and authentic for the visitor: **1** live chameleon amongst vegetation in the »Vivarium«, illustrating how natural surroundings are used to recontextualise creatures (for live animals, this strategy is essential for the creatures to survive). – **2** boxing hares on display in the »From the War of Nature« temporary exhibition (2014), illustrating the use of taxidermy to revitalise dead animals. – **3** elephant skeleton in the »Manchester Gallery«, illustrating the use of reassembly as a way of displaying individual components in a recognisable form. – **4** model ammonites in the »Fossils« gallery, illustrating how extinct creatures are displayed through the strategy of reconstruction. – **5** cast of *Pterodactylus crassirotris* fossil on display in the »Fossils« gallery, illustrating how the strategy of reproduction allows museums to display copies of real objects. – (1-2 Photos A. Seabright © Manchester Museum; 3-4 Photos S. Devine © Manchester Museum; 5 Photo H.-L. Chalk).

As well as the conventions of finding and keeping that enact these things as natural, stable and authentic for the museum, when visitors encounter nature on display in museums, the way in which they experience authenticity is crafted by the museum through practices such as recontextualising, revitalising, reassembling, reconstructing and reproducing. Thus, while authenticity and naturalness may appear to be achieved effortlessly in the museum, this is because the practices that enact natural science objects as authentic and natural have become embedded within these institutions as the standard ways of working.

## Notes

1) Evans/Mull/Poling 2002, 64.
2) BHIGR 2007, 2.
3) Nyhart 2004, 330.
4) Gurian 1999, 170.
5) Lindsay 2007, 23.
6) Gilmore/Pine 2007, 97.
7) Jones 2009, 136.
8) Jones 2009, 135.
9) Cf. Falk/Dierking 1992; Falk/Storksdieck 2005.
10) Cf. Chang 2016.
11) Jones 2010, 183.
12) Wissenschaftsrat 2011, 11.
13) Wissenschaftsrat 2011, 11.
14) Abram/Lien 2011, 7.
15) Maurstad 2012.
16) Jones/Yarrow 2013.
17) Hicks 2010, 81.
18) Law 1999; 2009; 2010. – Mol 2002.
19) Law 2009, 141.
20) Law/Urry 2004, 395-396.
21) Mol 2002, 143.
22) Law 2009, 141.
23) Hampp/Schwan 2014. – Latham 2015.
24) Bunce 2016.
25) Gieryn 2006, 6.
26) Griesemer 1990, 20.
27) Latour 1999.
28) Latour 1999, 38.
29) Gieryn 2002.
30) Chalk 2011, 151-152; 2012, 20-24.
31) Latour 1999, 46.
32) Jenkins 1994, 253. – Latour 1999, 46.
33) Law 2004, 56.
34) BHIGR 1998a-d.
35) BHIGR 2005.
36) BHIGR 1998e.
37) BHIGR 2011.
38) Manchester Museum 2004.
39) Hampp/Schwan 2014, 363-364.
40) Cf. Latham 2015, 16.

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*Zusammenfassung / Summary*

**Ist das echt? [Und spielt das eine Rolle?]: Zum Gebrauch von Authentizität in den Naturwissenschaften**

Der Beitrag behandelt die Authentizität von naturwissenschaftlichen Objekten und Sammlungen. Er basiert auf den Erfahrungen der Autorin als Museumskuratorin und als Vermittlerin, die als solche mit Authentizität als Wirkung des Museums und als Besuchererfahrung befasst ist. Darüber hinaus beruht der Beitrag auf Promotionsforschungen zu geowissenschaftlichen Sammlungen an Universitäten und betrachtet Authentizität daher als Form wissenschaftlicher Glaubwürdigkeit. Anhand von Beispielen aus dem Manchester Museum zeigt der Beitrag, dass gängige Herangehensweisen keine ausreichende Erklärung für die Natürlichkeit naturwissenschaftlicher Objekte liefern und daher wenig dazu beitragen ihre Verwendung im der musealen Präsentation zu verstehen. Statt Authentizität als Eigenschaft zu verstehen – die physisch, visuell oder kulturell konstruiert wurde – wird angeregt, Authentizität naturwissenschaftlicher Objekte besser als das Ergebnis ausgewählter Praktiken zu verstehen. Übersetzung: A. Kleuser

**Is it Real? [Does it matter?]: Practising Authenticity in the Natural Sciences**

This paper is about the authenticity of natural science objects and collections. It is a response to the author's experience of working as a museum curator and as an educator and as such is concerned with authenticity both as an effect of the museum and as experienced by the visitor. It also draws on PhD research into university earth science collections and considers authenticity as a form of scientific credibility. Using examples from Manchester Museum, this paper will reveal that the traditional approaches fail to account for the naturalness of natural science objects and so add little to our understanding of their use in museum displays. Instead of approaching authenticity as a quality – whether physical, visual or culturally constructed – this paper will suggest that for natural science objects, authenticity may be more usefully understood as an effect of particular practices.