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Apes, skulls and drums: using images to make ethnographic knowledge in imperial Germany

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Abstract. In this paper, I discuss the development and use of images employed by the Dresden Royal Museum for Zoology, Anthropology and Ethnography to resolve debates about how to use visual representation as a means of making ethnographic knowledge. Through experimentation with techniques of visual representation, the founding director, A.B. Meyer (1840–1911), proposed a historical, non-essentialist approach to understanding racial and cultural difference. Director Meyer's approach was inspired by the new knowledge he had gained through field research in Asia-Pacific as well as new forms of imaging that made highly detailed representations of objects possible. Through a combination of various techniques, he developed new visual methods that emphasized intimate familiarity with variations within any one ethnic group, from skull shape to material ornamentation, as integral to the new disciplines of physical and cultural anthropology. It is well known that photographs were a favoured form of visual documentation among the anthropological and ethnographic sciences at the *fin de siècle*. However, in the scholarly journals of the Dresden museum, photographs, drawings, tables and etchings were frequently displayed alongside one another. Meyer sought to train the reader's eye through organized arrangements that represented objects from multiple angles and at various levels of magnification. Focusing on chimpanzees, skulls and kettledrums from Asia-Pacific, I track the development of new modes of making and reading images, from zoology and physical anthropology to ethnography, to demonstrate how the museum visually historicized humankind.

Introduction

The captivating images in the publications of zoologist Ernst Haeckel are often cited in scholarship on Darwinism in German visual culture.[1] Though Haeckel's translation of

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1 See Nick Hopwood, *Haeckel's Embryos: Images, Evolution and Fraud*, Chicago: The University of Chicago Press, 2015; Robert Michael Brain, *The Pulse of Modernism: Physiological Aesthetics in Fin-de-Siècle Europe*, Seattle: University of Washington Press, 2015, pp. 37–62; Marsha Morton, 'From Monera to Man: Ernst Haeckel, *Darwinismus* and nineteenth-century German art', in Barbara Larson and Fae Brauer (eds.), *The Art of Evolution: Darwin, Darwinisms, and Visual Culture*, Hanover, NH: Dartmouth College Press, 2009, pp. 59–91; Robert Richards, *The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought*, Chicago: The University of Chicago Press, 2008; Eve-Marie Engels, Thomas F. Glick and Charles Darwin, *The Reception of Charles Darwin in Europe*, London: Continuum, 2008; Olaf Breidbach, *Visions of Nature: The Art and Science of Ernst Haeckel*, Munich: Prestel, 2006; Olaf Breidbach and Ernst H.P.A. Haeckel, *Art Forms from the Ocean: The Radiolarian Prints of Ernst Haeckel*, Munich: Prestel, 2005; and Christopher Kockerbeck, *Ernst Haeckel's 'Kunstformen der Natur' und ihre Einfluss auf die deutsche bildende Kunst der Jahrhundertwende*, Munich: Peter Lang, 1986.

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Charles Darwin's works and his scientific application of Darwin's theories of natural and sexual selection were widely read, he was not the only German scientist to pursue visual representations as a means of supporting *Darwinismus*. Haeckel's contemporary, the physical and cultural anthropologist A.B. Meyer, received significant scholarly attention in his day both for his development of imaging techniques in the human sciences and for his application of Darwin's theories to the study of humankind. The co-founders of the German Society of Anthropology, Ethnology and Prehistory, Adolf Bastian and Rudolf Virchow, were highly sceptical of Darwin's *Descent of Man* and engaged in a long-running debate with Meyer – a debate which Meyer sought to resolve through his deployment of images.[2] Specifically, Meyer created new methods of visual representation for these object-centred sciences to reform existing analytical methods and introduce a new understanding of the history of humankind.

Meyer's three years of field research in Asia-Pacific significantly contributed to his understanding of racial and cultural difference and motivated him to publish heavily illustrated articles and monographs. When he combined his first-hand experience in the field with methodology established by scholars based in the fatherland, he discovered that their approach was incompatible with the new data he was gathering. The existing methods erased the historical, cultural and social details that these artefacts and human remains carried with them. They were technologies of distancing that only further defamiliarized the peoples under investigation.

The process of two-dimensional reproductions reduced the volume and materiality of the original object, transforming it into ink on paper. The success of this reductive process as an ethnographic tool was due to the production of several representations of a single object – including views from multiple angles and magnifications: the two-dimensional images comprised a training guide to reading the three-dimensional object. In some cases, these images were even included within the museum's displays. For international readers, the hope was to encourage them to visit the museum's collections in person. Dresden's ethnologists sought to correct previous scholarship that fixated on the singularity of the object and stripped away its history of production and use. Dresden scholars published multiple images of an individual object to contextualize that object as part of a particular culture.

2 This is striking given that, in addition to zoologists, German anatomists and embryologists had eagerly accepted Charles Darwin's *Origin of Species* and the majority of German anthropologists were trained in medicine. See Lynn Nyhart, *Biology Takes Form: Animal Morphology and the German Universities, 1800–1900*, Chicago: The University of Chicago Press, 1994; and Paul Weindling, *Health, Race, and German Politics between National Unification and Nazism, 1870–1945*, Cambridge: Cambridge University Press, 1993. A.B. Meyer corresponded directly with Darwin after he completed his doctorate and while he prepared for his field research. Much of this correspondence centred around Meyer's translation and publication of Darwin and Wallace's 1858 essays on the theory of natural selection. Though there were many brands of Darwinism circulating Germany in the second half of the nineteenth century, Meyer went directly to the source. He did agree with Haeckel that anthropology must be connected to zoology. On Darwinism in Germany see Sander Gliboff, *H.G. Bronn, Ernst Haeckel, and the Origins of German Darwinism: A Study in Translation and Transformation*, Cambridge, MA: MIT Press, 2008; Engels, Glick and Darwin, op. cit. (1); and Richards, op. cit. (1).

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In this essay, I discuss the use of images by the Königliches Zoologisches und Anthropologisch-Ethnographisches Museum zu Dresden (Dresden Museum for Zoology, Anthropology and Ethnography, hereafter ZAEM) in scholarly publications. The museum published scholarly articles on its latest technologies and display aesthetics to disseminate the scientific display practices most suited to a site intended for both scientific research and public education.[3] These articles were part of the museum's *Abhandlungen und Berichte* (Notes and Transactions) on zoology, anthropology and ethnography, which was complemented by a series of ethnographic publications on objects, and photograph albums of types. Such in-house publishing was central to the ZAEM's employees' aim to exhibit knowledge of distant cultures to two categories of audience: visitors to the museum and potential visitors from elsewhere.[4] Image-laden scientific publications offered virtual mobility to this small museum, as well as expanded room for display.

I argue that these new image-based ethnographic methods developed out of a critique of physical anthropological methods of representation and analysis.[5] Physical

3 A.B. Meyer to General Direction der Königlichen Sammlungen für Kunst und Wissenschaft, 19 November 1874, Ministerium des Kultus und öffentlichen Unterrichts, Sächsische Hauptstaatsarchiv, Dresden (hereafter SHStAD), Band 19283. Lynn Nyhart and Andreas Daum have pointed out that we must look beyond the power of the university-state model of nineteenth-century German science. See Nyhart, op. cit. (2); and Andreas W. Daum, *Wissenschaftspopularisierung im 19. Jahrhundert: Bürgerliche Kultur, naturwissenschaftliche Bildung und die deutsche Öffentlichkeit, 1848–1914*, Munich: R. Oldenbourg, 1998.

4 The centrality of Meyer's publications to his work and to this essay participates in a broader discussion in history-of-science studies attentive to the importance of scientific publications as primary sources. Analysis of Meyer's publications indicates that he identified a connection between publishing formats and certain ways of understanding and presenting the natural world. Meyer's attention to the publication process as a form of knowledge production coincides with the work of physiologists and palaeontologists who developed genres of writing together with scientific theories. See Gowan Dawson, 'Paleontology in parts', *Isis* (2012) 103, pp. 637–667; Thomas Broman, 'J.C. Reil and the "journalization" of science', in Peter Dear (ed.), *The Literary Structure of Scientific Argument: Historical Studies*, Philadelphia: University of Pennsylvania Press, 1991, pp. 13–42; Nick Hopwood, Simon Schaffer and Jim Secord, 'Seriality and scientific objects in the nineteenth century', *History of Science* (2010) 48, pp. 251–285.

5 Key works in the history of German anthropology include Manfred Gothsch, *Deutsche Völkerkunde und ihr Verhältnis zum Kolonialismus: Ein Beitrag zur kolonialideologischen und kolonialpraktischen Bedeutung der deutschen Völkerkunde in der Zeit von 1870 bis 1975*, Baden-Baden: Nomos, 1983; Weindling, op. cit. (2); Woodruff D. Smith, *Politics and the Sciences of Culture in Germany, 1840–1920*, New York: Oxford University Press, 1991; George W. Stocking (ed.), *Volksgeist as Method and Ethic: Essays on Boasian Ethnography and the German Anthropological Tradition*, Madison: University of Wisconsin Press, 1996; Andrew Zimmerman, *Anthropology and Antihumanism in Imperial Germany*, Chicago: The University of Chicago Press, 2001; H. Glenn Penny, *Objects of Culture: Ethnology and Ethnographic Museums in Imperial Germany*, Chapel Hill: University of North Carolina Press, 2002; John H. Zammito, *Kant, Herder, and the Birth of Anthropology*, Chicago: The University of Chicago Press, 2002; H. Glenn Penny and Matti Bunzl (eds.), *Worldly Provincialism: German Anthropology in the Age of Empire*, Ann Arbor: University of Michigan Press, 2003; Andre Gingrich, 'The German-speaking countries', in Fredrik Barth, Andre Gingrich, Robert Parkin and Sydel Silverman (eds.), *One Discipline, Four Ways: British, German, French, and American Anthropology*, Chicago: The University of Chicago Press, 2005, pp. 61–156; Rainer F. Buschmann, *Anthropology's Global Histories: The Ethnographic Frontier in German New Guinea, 1870–1935*, Honolulu: University of Hawaii Press, 2009; Andrew D. Evans, *Anthropology at War: World War I and the Science of Race in Germany*, Chicago: The University of Chicago Press, 2010; and Han F. Vermeulen, *Before Boas: The Genesis of Ethnography and Ethnology in the German Enlightenment*, Lincoln: University of Nebraska Press, 2015.

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anthropology and ethnology were nascent fields without standardized practices, and Meyer took advantage of their undeveloped state as an opportunity to experiment with visual techniques.[6] My focus on practices reveals that the aim of the museum was to historicize humankind by, first, providing evidence of the descent of man from apes, and second, demonstrating the varied and distinct cultural histories of the indigenes of Asia-Pacific.

It was through producing and reproducing images of three-dimensional objects that Meyer explored the limits of the existing methods of these object-based human sciences. Meyer concluded that new kinds of image were needed to convey this new knowledge of humankind. I argue that his struggle against the dominant methods used in Germany was due to his own acceptance of Darwinian evolution, a minority view among his colleagues. Meyer's travels through South East Asia and Oceania shifted his historicization of humankind from that of the linear evolutionary hierarchy, favoured by fellow anthropologists, to one of random and varied branching.[7] Meyer combined the liberal humanitarian empiricism of the German anthropologists with Darwin's argument for descent and evolutionary diversity. For Meyer, as for Darwin, images were instrumental to explaining evolution in a way that could not be achieved with text alone. Julia Voss has beautifully shown that Darwin analysed images as empirical evidence and then created images for his publications as a way to articulate his theory of random variation.[8] Meyer and his students similarly created techniques of representation to present empirical information. Through their image-based analysis of objects, they found evidence that supported non-purposive cultural variation. They then used these new techniques of representation in scholarly publications to demonstrate this variation to the scientific community.[9]

To follow the trajectory of this image-based methodology and its mobilization as evidence for historicization, I discuss three different cases of the use of images in the ZAEM's scientific publications. First, I examine the case of Mafoka, a chimpanzee

6 As Josh Ellenbogen, Jennifer Tucker, Alan Sekula and Steve Edwards have argued, this period of the nineteenth century marked a turning point in the use of photography in the sciences. The two best-known examples are Bertillon and Galton, who both worked with photography to create visual standards for revealing invisible information.

7 Andrew Zimmerman, Benoit Massin and Hilary Susan Howes have written about the enormous power wielded by Rudolf Virchow, who suppressed open support of biological evolution within the goals of the German Anthropological Society. See Hilary Susan Howes, *The Race Question in Oceania: A.B. Meyer and Otto Finsch between Metropolitan Theory and Field Experience, 1865–1914*, Frankfurt am Main: Peter Lang, 2013; Zimmerman, op. cit. (5); and Benoit Massin, 'From Virchow to Fischer: physical anthropology and modern race theories', in Stocking, op. cit. (5), pp. 79–154.

8 See Julia Voss, *Darwin's Pictures: Views of Evolutionary Theory, 1837–1874*, New Haven, CT: Yale University Press, 2010.

9 As Julia Voss and Nick Hopwood have demonstrated, Darwin's images were different to those of his most popular German supporter, Ernst Haeckel, and their different images present different evolutionary theories: the former are random and the latter are purposive. Meyer was also a published translator of Darwin's thesis of natural selection and Meyer never referenced Haeckel. See Hopwood, op. cit. (1); and Voss, op. cit. (8). For an alternative reading of Darwin's images and Haeckel's visual interpretation of Darwinian evolution see Horst Bredekamp, *Darwins Korallen: Die Frühen Evolutionsdiagramme und die Tradition der Naturgeschichte*, Berlin: Wagenbach, 2005.

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from Gabon displayed in the museum as a representation of an early stage in human development. Mafoka became part of the German Anthropological Society's debate on the relationship between apes and humans, and on scientific practices of observation. Second, I discuss a series of craniometry publications on Papuan skulls in Dresden's collection. Over the course of these sequential articles Meyer first accepted and then rejected the anthropological usefulness of measuring skulls and the commonly favoured imaging device for representing them. Finally, I discuss the use of images in the museum's ethnographic publications. With a focus on ethnographies of Asia-Pacific, I argue that the ZAEM relied on a variety of visual perspectives in different media to gain a complete understanding of any one ethnographic object. I show how this variety of images was intended to facilitate the comparison of decorative styles of artefacts, in order to historicize the development and transfer of material culture among the many islands and indigenous groups of the South Seas.

Descent of man: life and death in the natural-history reform movement

In 1874, the General Administration for the Saxon Royal Collections of Art and Science provided the newly hired Natural History Museum director, A.B. Meyer, with the funding for a new museum of zoology, anthropology and ethnography. The foundational collection for the new museum specialized in specimens and artefacts of the ethnic groups of New Guinea and the Philippines. Such specialization was the product of a long-standing interest in the region amongst Saxon royals and state officials, and of Dr Meyer's three years of field research in Asia-Pacific.

In the first few years of the museum's existence, many of the collections were in storage or undergoing preparation for display. However, articles and representations of these items were published from 1876 to 1878 in the museum's first series of scholarly publications. The review in *Nature* confirmed Meyer's assertions that establishing a journal was one of the best methods of promoting a scientific institution: 'While the institution remains in place its journal travels about the world, makes its most recent acquisitions known to its supporters and correspondents and encourages them to promote its welfare by further donations'.[10]

The second issue of the museum's journal included two articles on the anatomy of apes in the museum's collection. Meyer's article, 'Notes on the anthropomorphic apes of the Dresden Museum' (1876), was heavily illustrated, including thirteen paintings, drawings and photographs of different catalogued specimens. The main goal of his article was to demonstrate that Mafoka, a young female ape from the Dresden Zoological Garden, was in fact a chimpanzee.[11] Such articles on anthropoid apes were part of an

10 Review of A.B. Meyer (ed.), *Mittheilung aus dem Königlichen zoologischen Museum zu Dresden*, *Nature* (1876) 13, p. 464.

11 A.B. Meyer, 'Notizen über die Anthropomorphen Affen des Dresdner Museums', *Mittheilung aus dem Königlichen zoologischen Museum zu Dresden* (1877) 2, pp. 223–247, 238. For debates on the matter of Mafoka's classification see 'Notes', *Nature* (1875) 12, p. 482; and A.B. Meyer, 'The Dresden "gorilla"', *Nature* (1875) 13, p. 106.

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anthropological argument initiated by Thomas H. Huxley and Darwin, claiming that from an evolutionary standpoint, apes and humans were closer than apes and monkeys.[12]

Meyer included humanized portraits of Mafoka to support his argument that she was an ancestor of humans. Mafoka is depicted in six different plates, in seven different images. The first plate is a life-sized facial portrait finished one month before her death (Figure 1). This plate was reproduced for publication as a hand-coloured lithograph, because facial hair and skin colour were considered distinguishing markers between gorillas and chimpanzees (gorillas were believed to have darker hair and skin). On Plate 12 is a lifelike drawing of the entire animal (see Figure 2). For Meyer, the facial portrait was the better imitation of Mafoka, but additional portraits were necessary because of the variability of her colouring due to age, lighting or physical or emotional state, and her status as a captive (rather than wild) chimpanzee.[13]

Long exposure times made it impossible to photograph live animals until the technological developments of Eadweard Muybridge, E.J. Marey and Ottomar Anschuetz in the next decade. Therefore the published photographs of Mafoka were taken after death or taken from her death mask. An enlarged post-mortem photograph of Mafoka is juxtaposed with a photograph of her death mask on a single plate, following the images that depicted her in life.

The three plates of four different images, made from four different media, 'offer[ed] an authentic study of the outer habitus of the face'. Meyer admitted, 'To be sure the photograph of the dead [Mafoka] leaves much to be desired in terms of clarity, and therefore is supplemented by the death mask'.[14] The following two plates in the article depict the mounted female ape placed in a vitrine between two mounted male chimpanzees of different ages. All three chimpanzees are positioned standing upright and apparently bracing themselves by holding on to a tree trunk (see Figure 3). Such imagery was a repeated visual reference to the gorilla, since chimpanzees and orangutans were usually portrayed seated.[15] Meyer's selected positioning of the taxidermized apes in the vitrine indicated that he disagreed with Huxley and Darwin's ranking of the gorilla as the closest ancestor of man. Within the article, the reader was instructed to perceive the photographs of Mafoka in relation to the three-dimensional remains in the display case. Meanwhile, visitors to the museum could view these portraits of Mafoka

12 T.H. Huxley, *Evidence as to Man's Place in Nature*, New York: D. Appleton & Company, 1873; Charles Darwin, *The Descent of Man: And Selection in Relation to Sex*, London: John Murray, 1874; and A.B. Meyer, 'Krao, sowie Namegebung und Titel bei den Siamesen', *Zeitschrift für Ethnologie* (1885) 17, pp. 516–518. See also Stephanie Nestawal, *Monstrosität, Malformation, Mutation: Von Mythologie zu Pathologie*, Frankfurt am Main: Peter Lang, 2010.

13 Meyer, 'Notizen über die anthropomorphen Affen', op. cit. (11), p. 234.

14 Meyer, 'Notizen über die anthropomorphen Affen', op. cit. (11), p. 234.

15 See Isidore du Geoffroy Saint-Hilaire, 'Description des mammifères nouveaux ou imparfaitement connus quatrième mémoire, famille des singes, second supplément', *Archives du Muséum d'histoire naturelle* (1858–1861) 10, Plate I, foll. p. 460. On the stances of taxidermic gorilla mounts see Lynn K. Nyhart, 'Lost and found: life after death: the gorilla family of the Senckenberg Museum (Frankfurt/Main)', *Endeavour* (2013) 37, pp. 235–238.

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Figure 1. Painted portrait of the middle-aged female chimpanzee Mafoka, by J.W. Wegener. Reproduced as a colour lithograph because Mafoka's colouring was part of the debate to classify her. From A.B. Meyer, 'Notes on the anthropomorphic apes of the Dresden Museum', *Mittheilung aus dem k. zoologischen Museum zu Dresden* (1877) 2, pp. 223–247, Plate 11.

made during her lifetime alongside the display case of her taxidermized body.[16] To indicate their relation to humankind, the anthropoid apes were displayed between the museum's zoology and physical anthropology collections.[17]

16 *Führer durch das Königliche zoologische Museum zu Dresden*, Dresden: B.G. Teubner, 1881, p. 7.

17 On nineteenth-century natural-history museum displays see Donna J. Haraway, *Primate Visions: Gender, Race, and Nature in the World of Modern Science*, New York: Routledge, 1989; Carla Yanni, *Nature's Museums: Victorian Science and the Architecture of Display*, Baltimore: Johns Hopkins University Press, 1999; Susanne Köstering, *Natur zum Anschauen: Das Naturkundemuseum des deutschen Kaiserreichs 1871–1914*, Cologne: Böhlau, 2003; Lynn K. Nyhart, *Modern Nature: The Rise of the Biological Perspective in Germany*, Chicago: The University of Chicago Press, 2009; Samuel J.M.M. Alberti, *Nature and Culture: Objects, Disciplines and the Manchester Museum*, Manchester: Manchester University Press, 2009; Victoria E.M. Cain '"The direct medium of the vision": visual education, virtual witnessing and the prehistoric past at the American Museum of Natural History, 1890–1923', *Journal of*

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Figure 2. Drawing of Mafoka by E. Gessner, reproduced as a photograph. From Meyer, 'Notes on the anthropomorphic apes of the Dresden Museum', op. cit., Plate 12.

In the museum's scholarly publications, as in its displays, Meyer sought to train the viewer's eye through organized arrangements that did not overwhelm the viewer with data. Mafoka was dissected into different parts for study and display. The process of this dissection was reproduced in images documenting the progression from life to

Visual Culture (2010) 9, pp. 284–303; Samuel J.M.M. Alberti, *The Afterlives of Animals: A Museum Menagerie*, Charlottesville: University of Virginia Press, 2011; and Kasper Risbjerg Eskildsen, 'The language of objects: Christian Jürgensen Thomsen's science of the past', *Isis* (2012) 103, pp. 24–53.

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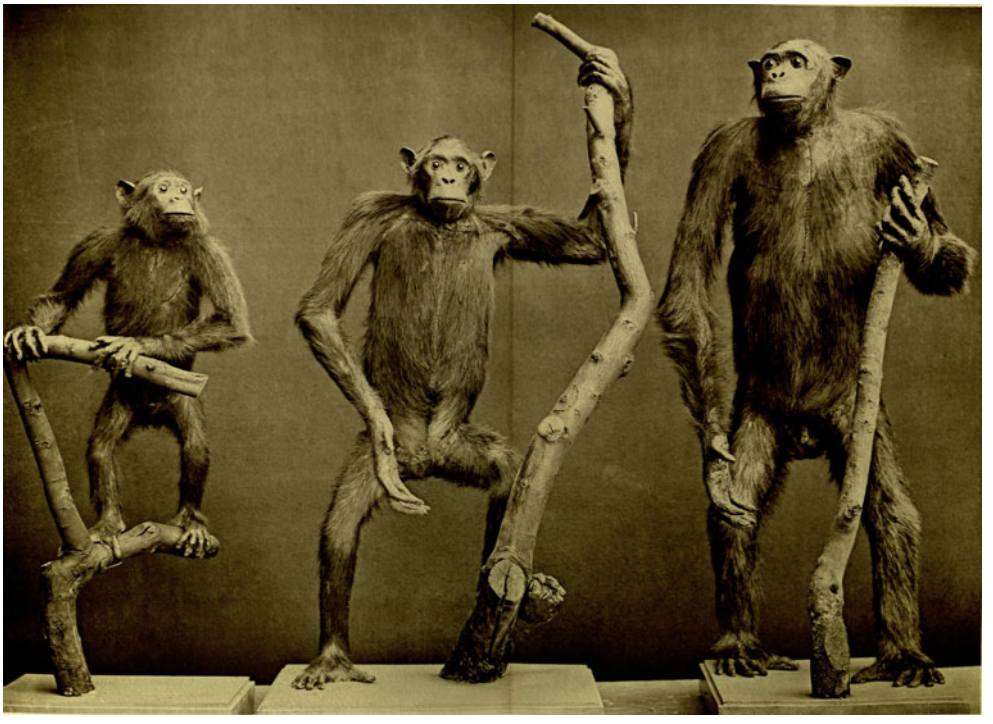


Figure 3. Chimpanzee display from the ZAEM's anthropology collection with Mafoka in the centre. From Meyer, 'Notes on the anthropomorphic apes of the Dresden Museum', op. cit., Plate 14.

multiple catalogued specimens in death. Two plates depicted the plaster casts of Mafoka's right hand and foot from above and from below. The casts were reproduced at actual size, 'making everyone capable of comparing the hands of other anthropoids, in order to make a conclusion as to the variety of the anthropoid'.[18]

Except for the first painted portrait of Mafoka, all the images were reproduced as collotypes for publication. The collodion printing process was a wet-plate photographic process capable of recording microscopically fine detail. The high-quality prints were made from a sheet of light-sensitive gelatine exposed photographically to the image without using a screen. It happened that the publisher for the Saxon court was an early specialist in the process.[19] Though the process was invented in the 1850s, it was not in widespread use because it was too expensive and inconvenient for field and studio portrait photography. However, the process was ideal for printing small

18 Meyer, 'Notizen über die anthropomorphen Affen', op. cit. (11), p. 234.

19 The Picture Gallery also took advantage of this on occasion. See *Gems of the Dresden Gallery: Comprising the Most Famous and Popular Works in the Dresden Collection, Reproduced in Heliotype from the Best Engravings; with Notices of the Works and the Artists*, Boston: J.R. Osgood, 1877.

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batches of inanimate objects, and Meyer took advantage of this to set the small Dresden collection apart.

By the time Meyer published his selected images of Mafoka, pictures of her had already appeared in various periodicals, both popular and scholarly. The debate about Mafoka's classification drew a great deal of attention, and animal artists Paul Meyerheim, Ernst Gessner, E. Reichenheim, Heinrich Leutemann, J.W. Wegener and Gustav Mützel were all sent to the Dresden Zoological Gardens to draw her. These animal painters had shifted away from depicting animals in moral parables and comic human satires after Darwin published *The Origin of Species*.[20] Their portraits of Mafoka participated in a transformation of German visual culture towards examining the implications of Darwin's natural history.

One of Mafoka's visitors and portraitists was anatomy professor Dr Robert Hartmann. Hartmann argued first that Mafoka was actually a gorilla, and later changed his assessment to argue that she was a hybrid. Such interbreeding would mean that the gorilla and chimpanzee were simply varieties of the same type, which is precisely what Meyer was arguing against.[21] Hartmann stood alongside Bastian and Virchow, his fellow co-founders of the Berlin Society for Anthropology, Ethnology and Prehistory, in opposing Darwin's theory of descent. Zoologist Carl Nissle, one of the doctors who had visited Dresden to examine Mafoka, suggested that the 'gorilla theme' was of particular interest among Berlin scholars who had tried but failed to acquire a living gorilla for the local zoo.[22] Few had ever seen a gorilla, and the first reported case of a wild sighting turned out to be a forgery of French formalist Geoffroy St-Hilaire's reconstruction of a jarred specimen, held in the Paris Museum of Natural History.[23] Nissle, an assistant of Hartmann's, observed with some disapproval that though Mafoka was now dead (alive, she would have generated more reliable observations), 'the entire scientific world could participate in determining her species through the evidence in faithful photographs and reported observations of her external characteristics during life'.[24]

20 For more on artists' visual considerations of progressive human perfection through portraits of apes see Morton, op. cit. (1).

21 Robert Hartmann, *Die menschenähnlichen Affen*, Berlin: Habel, 1876, pp. 201–204. The explorer and gorilla hunter Hugo von Koppenfels argued that Mafoka was a chimpanzee–gorilla hybrid and sent skulls from Africa to Meyer which he thought supported the existence of this classification.

22 Rudolf Virchow *et al.*, 'Sitzung vom 20 Nov 1875', *Zeitschrift für Ethnologie* (1875) 7, pp. 231–267. Hartmann agreed with Huxley that humans and apes were closely related. In 1859–1860 Hartmann went on an exploratory mission to north-eastern Africa, which provided extensive material for his subsequent writings on black Africans and anthropoid apes. His publications also supported the widespread interest in the history of pile dwellings in central Europe and their current configurations among *Naturvölker*, or natural peoples, those who supposedly lacked culture and history. The first gorilla to be brought to Europe, M'pungu, would arrive in 1876 and find residence at the Berlin Aquarium.

23 Gowan Dawson, *Darwin, Literature and Victorian Respectability*, Cambridge: Cambridge University Press, 2007, pp. 60–63.

24 Carl Nissle, 'Beiträge zur Kenntniss der sogennanten anthropomorphen Affen: Die Dresdener Mafuka', *Zeitschrift für Ethnologie* (1876) 8, pp. 46–59, 50. Nissle included one plate of different views and positions of Mafoka, drawn after life and lithographed by Gustaf Muetzel. Muetzel was an artist, professional

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Meyer, who also preferred live observation, was critical of Hartmann's limited use of images as evidence. Hartmann used a single drawing he had made of Mafoka in profile to argue that her external features clearly identified her as either a gorilla or a hybrid, but not a chimpanzee. He described Mafoka as irrational, violent, roguish and disobedient – an ape who rejected an anthropoid classification by ripping off the Western clothes she was habitually dressed in.[25] On the other hand, men like Nissle, who argued that Mafoka was the most immediate ancestor of humans, described her as having humanoid emotions, communication, mannerisms, likes and dislikes.[26] Meyer explained that Hartmann's time with the live Mafoka was too short for him to have got an adequate image of her.[27] Thus Meyer claimed that his own images presented the real Mafoka. It was in the multiplicity of images, produced across her lifetime, that the external variability of the real Mafoka could be captured, and the close relationship between chimpanzees and humans could be established.

This disagreement between Meyer and Hartmann played out in the pages of the *Zeitschrift für Ethnologie*, the journal for the Berlin Society for Ethnology, Anthropology and Prehistory. Hartmann himself labelled it 'the fight over Mafuca's [*sic*] corpse'.[28] The debate concerned access to Mafoka's remains, the realism of representations relative to the actual cadaver, and the creature's biological nature.[29] Hartmann insisted that Mafoka's corpse should have been sent to the Berlin anatomical museum for analysis to better clarify her taxonomy. What Hartmann was invoking was the increasing practice among museums in the nation's capital of claiming priority access to objects of scholarly interest nationwide. Meyer, who scoffed at the idea that there was any real scientific disagreement, argued that the Dresden Museum and the Dresden Zoological Garden had a long-standing relationship whereby the museum acquired the zoo's deceased animals at the going rate for such specimens.[30] Meyer explained that the acquisition of Mafoka was part of this long-term relationship and therefore 'more natural' than sending the cadaver to Berlin.[31]

Professor Hartmann went on to attack the scientific status of Meyer's newly opened museum and asserted that the 'material [i.e. Mafoka] should be managed by a specialized museum and thus made available for examination by subject specialists'.[32] Meyer noted

photographer and illustrator of numerous zoological, anthropological and ethnographic works, including some of Meyer's publications.

25 Robert Hartmann, *Die menschenähnlichen Affen und ihre Organisation im Vergleich zur Menschlichen*, Leipzig: Brockhaus, 1883, pp. 90, 203, 223, 252–254; and Nissle, op. cit. (24), pp. 54, 56–57.

26 On Darwin's argument that chimpanzees were less expressive than man and gorilla see Charles Darwin, *Expression of the Emotions in Man and Animals*, London: John Murray, 1872, especially the reproduced drawing of a chimpanzee, 'disappointed and sulky', on p. 144.

27 Meyer, 'Notizen über die anthropomorphen Affen', op. cit. (11), p. 237.

28 Robert Hartmann, 'Beiträge zur Kenntniss der sogenannten anthropomorphen Affen: Von einige Wort für Hrn Dr H. Bolau zu Hamburg', *Zeitschrift für Ethnologie* (1877) 9, pp. 117–128, 118.

29 Though zoologists were much concerned with specific taxonomic names, those involved in the debate over Mafoka continued to use the general term 'nature' in reference to what was at stake.

30 A.B. Meyer, 'Den im Dresdener Zoologischer Garten verstorbenen Chimpanse, Sitzungsbericht 15 Juli 1876', *Zeitschrift für Ethnologie* (1876) 8, pp. 158–160, 159.

31 Meyer, op. cit. (30), p. 159.

32 Quoted in Meyer, op. cit. (30), p. 159.

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in response that Mafoka's presence in Dresden had attracted several renowned specialists, and that the resultant evidence as to her nature had been presented in lectures and publications.[33] Furthermore, Meyer emphasized both the international recognition of his museum and his own willingness to make Mafoka accessible by fulfilling requests from museums across Europe for photographs, cast reproductions and even individual parts of the animal. Hartmann, as a member of the capital's political and scientific community, argued that Meyer was 'obliged' to send him the entire cadaver for a fourteen-day examination – not just the photographs, plaster casts or skeleton ear.[34] His argument prioritized the original, yet dead, specimen over copies, while Meyer asserted that the rest of the anatomical community accepted reproductions as equally scientifically useful. Meyer explained, furthermore, that if another scholar previously had requested to review the remains, Berlin should not oppose that request taking priority: 'Obviously, the objects of a museum do not belong to the staff but to the entirety [*Gesamtheit*] and anyone who does not know that must learn it'.[35] His perspective was that scientific objects were not owned by individuals but rather by the broader community.

The debate over Mafoka shows that this reform was not just about practices of studying the specimen itself but also about representations of that specimen. For Meyer, representations of the living specimen could convey life, even though the images themselves were inert. This ability to convey life made images of the living more informative than autopsy images. Images of the living were accurate analytical tools that could be better used to understand the specimen as a living being. These representations had added value because they could travel to many scholars simultaneously in a way that the corpse could not. They contended with the notion of the importance of locality at the same time that Meyer galvanized the creation and distribution of such representations in order to reinforce local ownership of Mafoka.

The politics of this debate revolved around the struggle of a local museum against a new capital seeking to centralize resources, but also called upon notions of scientific authority, access, mobility and the authenticity of scientific data. Meyer and Hartmann's opposing views on the value of the living specimen place them on opposite sides of what Susanne Köstering, Lynn Nyhart and Oliver Hochadel have identified as a reform movement in nineteenth-century German natural history.[36] This reform movement sought to move away from the zoological emphasis on anatomical and taxonomic studies of cadavers, as practised at the university. The majority of reform movement participants, like Meyer, held PhDs in the sciences and full-time paid positions as museum

33 Meyer, op. cit. (30), p. 159.

34 Meyer, op. cit. (30), p. 160.

35 Meyer, op. cit. (30), p. 159.

36 See Nyhart, op. cit. (17); and Köstering, op. cit. (17). Oliver Hochadel observes that most of the naturalists of the reform movement were Darwinians while the older generation held onto a static and ahistoric understanding of nature. See Oliver Hochadel, 'Watching exotic animals next door: 'scientific' observations at the zoo (ca. 1870–1910)', *Science in Context* (2011) 24, pp. 183–214, 186. This reform movement in US museums is addressed in Victoria E.M. Cain and Karen Rader, *Life on Display: Revolutionizing U.S. Museums of Science and Natural History in the Twentieth Century*, Chicago: The University of Chicago Press, 2014.

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curators or directors. These participants in the rise of the professional curator sought to unify the various collections of their museums according to a synthetic vision of nature. In order to present this clear scientific vision to the public, curators employed the new spatial organization of 'dual arrangement', which divided the museum into public displays and research collections.[37] Nyhart and Köstering have shown how, in competition with popular exhibitions of living organisms and spectacles, some museum reformers replaced the tiresome taxonomic arrangements with 'lively' biological group displays, including imitation natural surroundings and lifelike positions that aimed at realism.[38] Meyer adopted a dual arrangement, yet preferred the realism of the taxonomic display over the artificial design qualities of group displays.[39] His attention to accurate representation in museum displays also echoed his concerns regarding image production of skulls and drums in physical and cultural anthropology.

The failure of craniometry as a science of race

Meyer tried to reform craniometry via an attack on the images that were commonly mobilized in pursuit of this scientific activity. Over a period of several years, Meyer experimented with different imaging techniques for studying human specimens. In the museum's first journal publication, eager to publicize his successful field research, Meyer discussed 135 skulls from Papua New Guinea and Mysore Island. Of the skulls, 112 were Papuan and acquired by Meyer in Oceania. His collecting practices, which had developed out of conversations with Rudolf Virchow and the writings of A.R. Wallace, sought to supplement the few Papuan skulls dispersed across the world's museums. He argued that the large quantity of skulls he had collected from New Guinea would make it possible to determine whether and where there existed a pure Papuan race, a mixed race of Papuan and Malay, and a pure Malaysian race. He sought to answer the 'Negrito question' posed by Virchow's work, which postulated that the dark-skinned people of New Guinea and the Philippines originated in sub-Saharan Africa.

In this first article, Meyer followed the generally accepted measurements by Johann W. Spengel and Hermann von Ihering, which focused on the cephalic index. French anthropologist Paul Broca employed the cephalic index to provide empirical evidence for polygenism and reinforce craniometry as a science of race. The index was measured by calculating the ratio between skull length and breadth and held that the northern Europeans were dolichocephalic (long-headed) while the East Asian and Eastern

37 On dual arrangement see Mary P. Winsor, 'Natural history museums', in P.J. Bowler and J. Pickstone (eds.), *The Cambridge History of Science*, vol. 6, *The Modern Biological and Earth Sciences*, Cambridge: Cambridge University Press, 2009, pp. 60–75; and Nyhart, op. cit. (17), pp. 188–250.

38 See Susanne Köstering, 'Nature and gender in German natural history museums around 1900', in Thomas Lekan and Thomas Zeller (eds.), *Germany's Nature: Cultural Landscapes and Environmental History*, New Brunswick, NJ: Rutgers University Press, 2005, pp. 140–157, 141; Köstering, op. cit. (17), p. 109; and Nyhart op. cit. (17), pp. 225–226, 273.

39 See Adolf B. Meyer, *Über museen des ostens der Vereinigten Staaten von Nord Amerika*, Berlin: A. Friedländer & Sohn, 1901, p. 14.

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European races were brachycephalic (wide-headed). Though the German Anthropological Society was officially monogenist, the society's founder, Rudolf Virchow, was a great admirer of Broca. Both the liberal Virchow and the egalitarian Broca disputed racism, yet used the cephalic index to argue for the superiority of the dolichocephalic races.[40]

Images of the skulls were made from the Spengel-modified Lucaesian drawing apparatus and then reduced with a pantograph, a mechanical duplication instrument used for scaling. Meyer's article included four plates, each picturing five skulls from five angles; each skull is missing its lower jaw as a result of its having been preserved by the indigenous people as a trophy of an enemy (Figure 4).[41]

Meyer's images were consistent with the practices of German anthropologists around the time of unification, which generally accepted drawing over photographs as the most accurate means of representing skulls, because of the control it allowed the expert.[42] The Lucaesian apparatus fixed the skull in relation to a glass plate, and the user viewed the skull through a lens. The skull was drawn in ink directly on the glass plate, and was then transferred onto paper. The Lucaesian apparatus produced a geometric rather than a perspectival projection.[43] Anthropologists, after much debate, agreed that this was preferable to attempting to replicate the way the human eye sees. The naturalist Karl von Baer explained, 'it is true that only geometric drawings, and not perspectival projections, can represent the natural form of these objects'.[44] Meyer's response to von Baer's call for

40 See Paul Broca, 'Sur le volume et le forme du cerveau suivant les individus et suivant les races', *Bulletin Société d'anthropologie Paris* (1861) 2, pp. 139–207; Rudolf Virchow, *Über einige Merkmale niederer Menschenrassen am Schädel*, Berlin: Buchdruckerei der Königl. Akademie der Wissenschaften, 1875; Andrew Zimmerman, 'Three logics of race: theory and exception in the transnational history of empire', *New Global Studies* (2010) 4(1), pp. 409–429, 417; Antje Kühnast, 'Racialising bones and humanity', in Wulf D. Hund, Sabine Ritter and Iris Wigger (eds.), *Racism and Modernity: Festschrift for Wulf D. Hund*, Vienna: Lit, 2011, pp. 162–178.

41 A.B. Meyer, 'Über 135 Papuan Schädeln von Neu Guinea und der Insel Mysore', *Mittheilung des Zoologisches Museum* (1875) 1, pp. 59–84, 62, 64. See also Meyer's collaborator in New Guinea, Richard Parkinson. Parkinson described Buka and Bougainville practices in which chiefs preserved the collected jaws in their houses: Richard Parkinson and Bernhard Ankermann, *Dreissig Jahre in der Südsee: Land und Leute, Sitten und Gebräuche im Bismarckarchipel und auf den Deutschen Salomoinseln*, Stuttgart: Strecker & Schröder, 1907, p. 486.

42 Lorraine Daston and Peter Galison have argued that scientists in this period were committed to mechanical objectivity and self-denial when producing images. For many, elements of mechanical objectivity were associated with the geometric projection when compared to the flat two-dimensional order of photographic images. This is quite unlike the examples presented by Daston and Galison on the preference for photographs in the production of scientific atlases. However, Meyer's considerations support Nick Hopwood's assessment of the Haeckel–His debate over the presentation of visual evidence: mechanical objectivity rhetoric was not prominent, nor the central issue. See Lorraine Daston and Peter Galison, *Objectivity*, New York: Zone Books, 2007; and Hopwood, op. cit. (1), pp. 107, 124, 220. Omar W. Nasim's study of nineteenth-century astronomy examines other examples of expertise associated with drawing. See Omar W. Nasim, *Observing by Hand: Sketching the Nebulae in the Nineteenth Century*, Chicago: The University of Chicago Press, 2013.

43 See Johann C.G. Lucae and Karl E. Baer, *Zur Morphologie der Rassen-Schädel: Einleitende Bemerkungen und Beiträge; ein Sendschreiben an Carl Ernst V. Baer*, Frankfurt am Main: Brönner, 1861.

44 Karl von Baer and Rudolph Wagner, *Bericht über die Zusammenkunft einiger Anthropologen in September 1861 in Goettingen zum Zwecke gemeinsamer Besprechungen*, Leipzig: Leopold Voss, 1861, p. 33.

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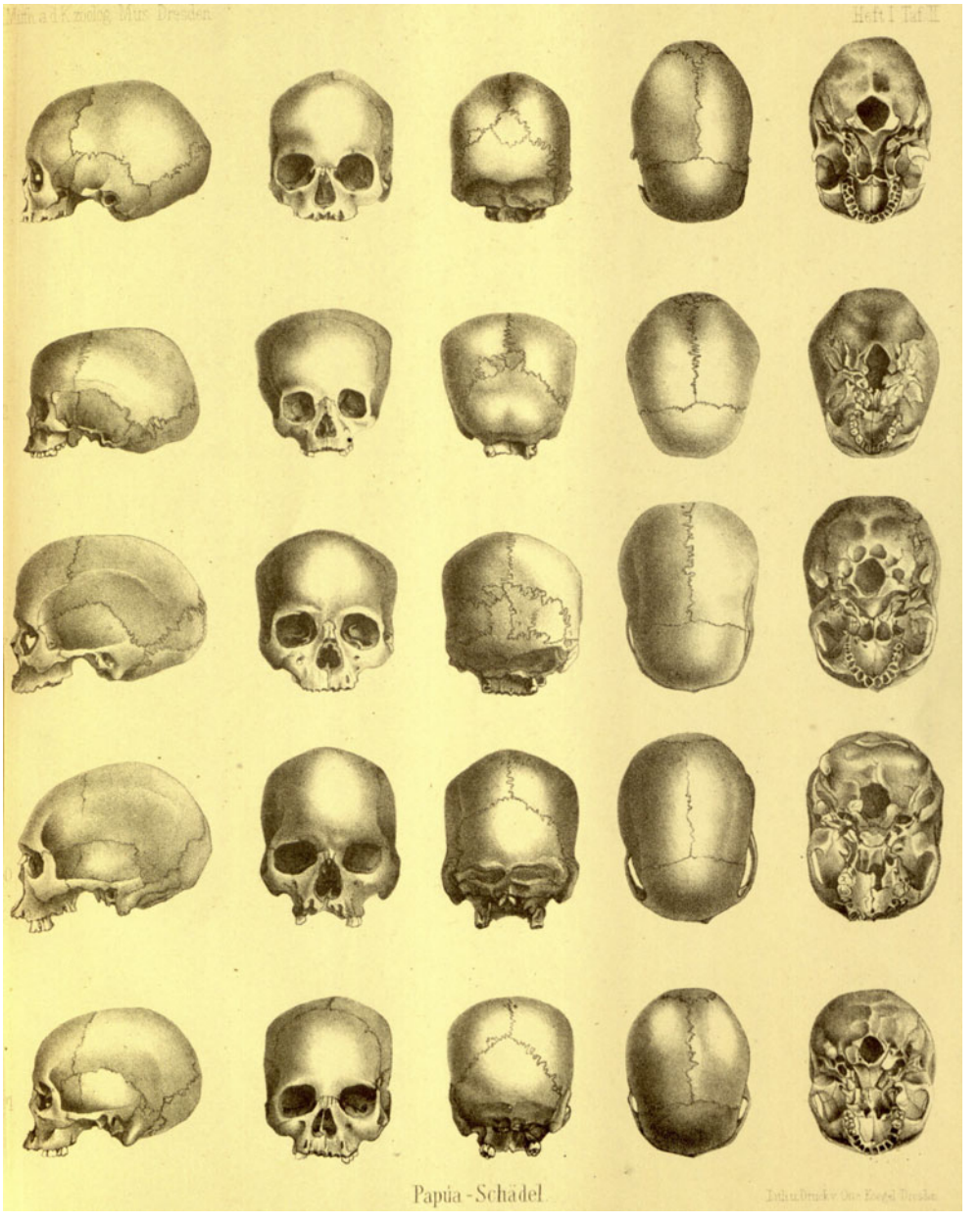


Figure 4. Geometric projections of Papuan skulls, one-quarter original size, reproduced by lithograph. From A.B. Meyer, '135 skulls from Papua, New Guinea and Mysore Island', *Mittheilung aus dem k. zoologischen Museum zu Dresden* (1876) 2, Plate 4.

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'future investigations based on large numbers of skulls and photographs' was the conclusion that Lucae's apparatus itself was a flawed tool for skull analysis, and a flawed basis for any science of race.[45]

Meyer continued his investigations in a second article, which depicted only three skulls per plate, at a larger reproduction (two-thirds of the original size) on larger paper to 'allow for better recognition of anatomical detail'.[46] Meyer was disappointed with the results; the larger size added no detail and made comparison cumbersome. Meyer's skull measurements also followed Paul Broca's method of measuring the prominence of the chin to rank the level of prognathism, comparing different ethnicities against the chimpanzee. Anthropologists identified prognathism as a marker of intelligence – the level of prognathism was inversely proportional to intelligence. Meyer used these measurements to argue that Papuans ranked second to Europeans.[47]

In his effort to reform craniometry, Meyer critiqued the use of ahistorical methods that supported a racial hierarchy. Many German anthropologists divided humankind into two main categories – peoples of culture (*Kulturvölker*) and peoples of nature (*Naturvölker*). Physical anthropologists further demarcated difference through physical attributes by analysing skulls, skeletons, skin and hair, and many explained those differences as evidence of racial difference and as indicators of a racial hierarchy.[48] They reinforced the stasis of such indicators by conveying information in the form of tables. Most anthropologists argued that the identification of static physical types, or races, was necessary for ethnographic analysis – such as determining migration patterns. Meyer contended that many physical differences could be found within one race and that some of those differences could instead be explained by ethnography, or the sociocultural practices that reshape the body during an individual's lifetime. He believed that craniometry could potentially provide information about race, but not ethnicity, and that prior ethnographic knowledge was necessary for the scholar to be able to glean craniometric information from collected skulls. In order to read the skulls, Meyer historicized each as an individual, and the first few pages of his articles focused on the ethnographic information that had guided him in his analysis. For example, when sex (*Geschlecht*) was not clear, it was determined based on ethnographic knowledge of gendered activities of

45 Karl E. von Baer, 'Über Papuas und Alfuren', *Memoires de l'Académie imperiale des sciences de St Petersbourg* (1859) 6, pp. 338–339.

46 A.B. Meyer, 'Über 135 Papuan Schädeln von Neu Guinea und der Insel Mysore, Fortsetzung', *Mittheilung des Zoologisches Museum* (1877) 2, pp. 165–222, 165.

47 Meyer, op. cit. (46), p. 216. This article immediately preceded his article on Mafoka in the journal's second issue.

48 Andrew Zimmerman has argued that anthropologists treated nature, and therefore their objects of study, as ahistorical, and that their very focus on objects was a practice of ahistoricization. See Zimmerman, op. cit. (5). On rethinking the role of objects in anthropological studies see Arjun Appadurai, *The Social Life of Things: Commodities in Cultural Perspective*, Cambridge: Cambridge University Press, 1986; Nicholas Thomas, *Out of Time: History and Evolution in Anthropological Discourse*, Cambridge: Cambridge University Press, 1989; Thomas, *Entangled Objects: Exchange, Material Culture, and Colonialism in the Pacific*, Cambridge, MA: Harvard University Press, 1991; Amiria J.M. Henare, *Museums, Anthropology, and Imperial Exchange*, New York: Cambridge University Press, 2005; and Amiria J.M. Henare, Martin Holbraad and Sari Wastell (eds.), *Thinking through Things: Theorising Artefacts Ethnographically*, London: Routledge/Taylor & Francis, 2007.

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the ethnic group, such as hunting, felling trees, building houses, participating in battles, fishing and participating in activities that generally involve exposure to wind and water.[49] Yet, for the purposes of craniometric research, Meyer's analysis of skulls to deduce the history of the individual was a means to fulfil the discursive standards of his contemporaries – the completion of craniometric tables, tables that identified categories of nature as timeless.

With each publication, Meyer presented a new technique to represent the skulls in the most legible format. In the third issue, Meyer did not follow the same methods of depiction, for various reasons. First, he believed it was more instructive to place twenty-five depictions on a smaller plate so that they could more easily be compared to one another, rather than having only fifteen on a larger plate. Second, the methods of a minimized geometric projection produced unavoidable aberrations just as large as those that accompanied perspectival photographs, and the latter, Meyer argued, were absolutely true to nature.[50] Meyer, incidentally, followed the advice in an 1861 article by Karl von Baer on using photographs for publication. Baer explained that because of the imaging process, geometric projections could not be minimized to an ideal size for comparative purposes. He recommended using photography to minimize the projection.

Meyer went one step further and dispensed with Lucae's apparatus altogether. Using photography, he could reduce the dimensions to 25 per cent of the original size, maintain sharpness of detail, and have adequate space for several skulls on one sheet, allowing for a simultaneous view of all angles of one skull in one row (Figure 5). Meyer noted that 'this allowed the eyes to see easily the smallest differences – a decisive advantage for comparison', which was the purpose of the minimization.[51] Meyer argued that the clarity of the image in the photograph made this comparison possible. He chose the collotype over the lithograph because it created a more 'realistic' (*naturtreue*) representation and it was easier to produce. He explained further that artificial treatment and irregularities of the skull could not be reproduced in a lithograph.[52]

The different colourations of the skulls were made visible in the photographs through light or dark tints. Meyer argued that this was more realistic than cleaning or bleaching the skulls to make them look similar to one another. He pointed out that cleaning or bleaching would 'wash away the authenticity of their origin', by which he meant signs of how the skulls were treated by the ethnic groups they belonged to, such as whether they were preserved in a grave site or in a house as a trophy.[53] For Meyer, the realism of the photograph meant that the history of the skull was made visible. The geometric

49 Meyer explained that, based on his observations in New Guinea, the work of Papuan women was not so hard, such that, in the course of time, no *männlichen Typus* should emerge, 'unlike the case with the women of our labouring classes'. Thus Meyer implied that identifying the sex of a skull depended on knowledge of the particular activities of the community in question and could not be universalized. See Meyer, op. cit. (46), p. 167.

50 Meyer, op. cit. (46), p. 167.

51 A.B. Meyer, 'Über 135 Papuan Schädeln von Neu Guinea und der Insel Mysore, Fortsetzung', *Mittheilung des Zoologisches Museum* (1878) 3, pp. 385–411, 409.

52 Meyer, op. cit. (51), p. 409. Ernst Haeckel, like Meyer's colleagues in physical anthropology, preferred illustrations over photography to 'render structures as they "really" are'. See Richards, op. cit. (1), p. 419.

53 Meyer, op. cit. (51), p. 411.

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Figure 5. Photographs of Papuan skulls, one-quarter original size, reproduced by collotype. From Meyer, '135 skulls from Papua, New Guinea and Mysore Island', op. cit., Plate 35.

projection erased the history of the person to whom the skull had belonged. And yet even these comparative photographic plates could not correct the limitations Meyer found in craniometry's ahistorical basis.

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In 1885 the German Anthropological Society, including Meyer, signed the Frankfurt Craniometric Agreement, which officially standardized German methods for measuring skulls. However, by 1877 Meyer had expressed his frustration with craniometry's failure to produce anything fruitful. Ultimately, he was wary of how much scientific weight should be placed upon the measurement of skulls. Soon after, many other anthropologists would voice their own concerns about craniometry as the central activity of physical anthropology.[54] Aurel Török, a key figure in exposing the limits of craniometry in the late 1880s, dedicated one of his essays on reforming craniometric standards to A.B. Meyer.[55] While Meyer had used images as a means to reform, Török focused on new instruments and categories of measurement.[56]

In addition to the methods and tools of analysis, Meyer questioned the study of the skull as an ahistorical object of inquiry. In the field of craniometry, like all other collection-based disciplines, anthropologists were concerned with provenance. The skull's ease of mobility as an object, and the cultural practices that fostered this mobility, raised significant anthropological uncertainty about which races or ethnic groups were represented in the collected objects. Meyer considered this the largest impediment to a serious, worthwhile craniological study of the Malay archipelago.[57]

Once he had rejected craniometry, Meyer took numerous anthropologists to task, especially Armand de Quatrefages, Ernest Hamy, Virchow and Bastian, for their sloppy work and their rush to theorize the existence of new races based on a few skulls of indeterminate provenance.[58] Though Meyer's collections and written reports from the field convinced Virchow that the physiognomy of Oceanians was heterogeneous, Virchow disputed the existence of transitional forms and based his craniometrical

54 See, for example, the work of Herrmann Schaaffhausen and Massin, op. cit. (7).

55 See Aurel von Török, *Ueber ein Universal-Kraniometer: Zur Reform der kraniometrischen Methodik*, Leipzig: Georg Thieme, 1888.

56 Many of the agreed standardizations were those developed by Hermann von Ihering, which Meyer had also relied on for his studies. Central to this standardized methodology was the *deutsche Horizontalebene* ('German horizontal'): a line running from above the ear hole to beneath the eye socket. See Julius Kollmann, Johannes Ranke and Rudolf Virchow, 'Verständigung über ein gemeinsames craniometrisches Verfahren', *Anthropologisches Archiv* (1884) 15, pp. 1–8. By signing the agreement, Meyer signalled his support of the German scientific community, if not its specific standards.

57 Rudolf Virchow, 'Über Negrito und Igorroten-Schädel von den Philippinen, Sitzungsbericht vom 15 Juni 1872', *Zeitschrift für Ethnologie* (1872) 4, pp. 205–209. In the 1910s Franz Boas argued that if craniofacial features were so malleable in a single generation, then the cephalic index was of little use for defining race and mapping ancestral populations. The Malay archipelago was the area referred to by Alfred Russel Wallace, and other European travellers before him, to cover South East Asia and Oceania. This label assumed the dominance of the Malay race in the region.

58 See Adolf Bastian, *Die Voelker des ostlichen Asien 5: Reisen im Indischen Archipel*, Jena: Constenoble, 1869; Armand Quatrefages and Ernest-Théodore Hamy, *Crania ethnica: Les cranes des races humaines décrits et figurés*, Paris: J.B. Baillière et fils, 1873; and Rudolf Virchow, 'Über einige Merkmale niederer Menschenrassen am Schädel und über die Anwendung der statistischen Methode in der ethnischen Craniologie', *Zeitschrift für Ethnologie* (1880) 12, pp. 1–26. Even though Meyer agreed with some of Virchow's arguments, such as the lack of connection between Negritos of Asia-Pacific and sub-Saharan Africa, he was critical of Virchow's limited use of empirical evidence.

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studies on the assumption that human races were relatively stable. He found support for this in Wallace's *Malay Archipelago*, in which Wallace described the 'large nose rather arched and high', with the 'tip of the nose being elongated', as the identifying characteristic of the Papuan habitus.[59] Though this book had inspired Meyer's research agenda – so much so that he published his German translation of it – Meyer's own investigations disproved the essentialized Papuan form described by Wallace. Meyer countered that, given the 'variability of Papuan body size and skin colour and the irreducible polymorphism of their physiognomy … the form of the skull cannot be regarded as a permanent character in the development of the races'.[60] Similarly, Meyer discouraged the necessity of concluding that such physical diversity should be read as a sign that Papuans were a mixed race. Meyer's critique of static racial typologies, presented using evidence of the instability of human 'race-types', preceded Franz Boas's oft-cited thesis by decades.[61]

Many anthropologists and ethnologists had argued that the dark skin colour of the Negritos indicated an ancestral tie to sub-Saharan Africa. The European labelling of Aetas as Negritos, or 'small black people', perpetuated this theory. Meyer argued that ethnographic study of traditions, practices and aesthetics, as well as the Negritos' own oral histories, failed to provide any supporting evidence of a link to Africa. However, it was his collection of skulls and skeletons from New Guinea and the Philippines that most helped Meyer to persuade Virchow.[62]

Meyer's suggested reforms of craniometric images were not enough to convince him of craniometry's scientific value. The existing imaging practices erased details he found most informative, including social, cultural and historical specificity. Meyer's effort to correct the ahistorical treatment of human remains helped him refine his representation of anthropological objects in ways that demonstrated the importance of ethnography for research into the history of humankind. The use of photographs, rather than other imaging techniques, and the representation of an object from multiple angles were two developments that Meyer would apply to his ethnographic scholarship towards a non-essentialist approach to humankind.

59 Alfred Russel Wallace, *The Malay Archipelago*, London: Macmillan and Co., 1872, p. 586. On Wallace's review of Meyer's field research in New Guinea see Alfred R. Wallace, 'Meyer's exploration of New Guinea', *Nature* (1873) 9, p. 102; and Hilary Susan Howes, 'Anglo-German anthropology in the Malay archipelago, 1869–1910: Adolf Bernhard Meyer, Alfred Russell Wallace and A.C. Haddon', in Heather Ellis and Ulrike Kirchberger (eds.), *Anglo-German Scholarly Networks in the Long Nineteenth Century*, Leiden: Brill, 2014, pp. 126–146.

60 Meyer, op. cit. (51), p. 411; Meyer repeats this argument in Adolf Bernhard Meyer and Alexander Schadenberg, *Die Philippinen II: Negritos*, Dresden: Stengel & Markert, 1893; and Adolf Bernhard Meyer, *The Distribution of the Negritos in the Philippine Islands and Elsewhere*, Dresden: Stengel & Co., 1899, esp. p. 78.

61 The two ethnologists were not only aware of each other's work, but also corresponded, and Franz Boas reviewed A.B. Meyer's *The Distribution of the Negritos in the Philippine Islands and Elsewhere* in *American Anthropologist*, the flagship journal of the American Anthropological Association.

62 Virchow, op. cit. (57).

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'Between science and art': training the eye to historicize non-Western ornamentation

In the 1880s, the museum shifted its focus from anthropology to ethnography and began a series of publications from the Dresden Ethnographic Museum. This series provided a venue to publish beautifully illustrated monographs on ethnographic objects.[63] In his 1886 appeal for a government-funded ethnographic publication series, A.B. Meyer wrote, 'Scientific objects are first accessible when they are represented in a certain size such that one can exactly recognize the style of decoration, construction and uniqueness of the object down to every detail for the comparative methods of ethnography'.[64] The printing techniques Meyer selected for craniometry were also deemed necessary by him for ethnographic scholarship, taking advantage of the clarity and detail of collotype reproductions of photographs to represent their ethnographic collection.

The very first monograph, *Bilderschriften des ostindischen Archipels und der Südsee* (Pictographs of the East Indian Archipelago and the South Pacific) (1881), investigated pictographic writing systems among different islands of Oceania.[65] Meyer paired reproductions of the pictorial writing inscriptions with textual descriptions of myths and origin stories from the different ethnographic groups. The primary question of investigation was: why did pictography, and the practice of record-keeping more generally, have such an uneven distribution across the region? On a more disturbing note he asked in addition, what should be made of the evidence of their decline and disappearance altogether? To Meyer and ethnologist Carl Semper, who had collected or recorded many of the pictographs presented in the article, the patchy existence of pictographs argued against theories of cultural diffusion but also provided material evidence of cultural degeneration through the disappearing practice of record keeping.[66]

Meyer's approach addressed one of the flaws he perceived in Adolf Bastian's ethnology: the absence of efforts by indigenous peoples to document their own histories. Bastian, the founder of Berlin's ethnology museum, based his material-culture approach to studying indigenous groups on the notion that such groups did not have written documents that could be used for historical study. Bastian, in line with contemporary art

63 Some key works on anthropological photographs include Thomas Theye (ed.), *Der geraubte Schatten: Photographie als ethnographsiches Dokument*, Munich: Munchner Stadtmuseum, 1989; Elizabeth Edwards (ed.), *Anthropology and Photography, 1860–1920*, New Haven, CT: Yale University Press in association with the Royal Anthropological Institute, London, 1992; Marcus Banks and Howard Morphy, *Rethinking Visual Anthropology*, New Haven, CT: Yale University Press, 1997; Christopher Pinney, *Camera Indica: The Social Life of Indian Photographs*, Chicago: The University of Chicago Press, 1997; Elizabeth Edwards (ed.), *Raw Histories: Photographs, Anthropology and Museums*, Oxford: Berg, 2001; and Alison Griffiths, *Wondrous Difference: Cinema, Anthropology, & Turn-of-the-Century Visual Culture*, New York: Columbia University Press, 2002.

64 A.B. Meyer to General Direction, December 1885, Ministerium des Kultus und öffentlichen Unterrichts, SHStAD, Band 19300.

65 Carl Semper was an ethnologist who travelled extensively for the Godeffroy Museum in Hamburg. Meyer's article included a photograph of pictographic woodcarvings from the Palau islands that would later inspire the work of the Dresden-based German expressionist group Die Brücke.

66 In Germany, Bismarck was enforcing German cultural unification by commissioning paintings of German founding myths. See Rudy Koshar, *From Monuments to Traces: Artifacts of German Memory, 1870–1990*, Berkeley: University of California Press, 2000.

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historians and archaeologists, proposed this approach as a criticism of what he saw as the elitist, university-centred methods of Leopold Ranke's archival-based approach to history.[67] Several ethnographies published by the ZAEM discussed evidence of record keeping through pictographs and looked at the historical development of ornament to argue that ornament, too, was a process of record keeping, recording its own history as well as historical events.

In order to depict these forms of record keeping most accurately, Meyer specified that representations were to be guided by scientific aims rather than artistic ones. He expressed clear disapproval of the use of representations made by those who were not subject specialists, even if they were specialists in artistic representation. Images should not be reproduced through 'artistic' processes, namely lithography, copper and steel engraving, and the woodcut. The result of these processes was 'capricious and clumsy with a high grade of scientific imperfection', due to the efforts of the draughtsperson to 'deliver something artistic and pleasing when the exact natural-scientific reproduction would be preferred'.[68] For example, representations of pictographic woodcarvings in *Bilderschriften des ostindischen Archipels und der Südsee* included both photographs of the museum's collected woodcarvings and photographs of Carl Semper's watercolours of woodcarvings he observed in the field. Semper's fieldwork and ethnographic publications made his manual documentation credible.

Meyer preferred the collotype over lithography because he believed that the lithographer corrupted the original information held in the image.[69] And Meyer had plenty of evidence that he was not alone in these expectations. American, English, French and German anthropologists and ethnologists consistently reviewed the publications of the Dresden Ethnographic Museum with adjectives like 'superb', 'unusually fine' and 'of the highest standard'.[70] These reviews referred to the quality of reproductions, the clear arrangement of the plates and the organization of the textual ethnography.

67 See Penny, op. cit. (5), p. 25; and Kasper Risbjerg Eskildsen, 'Leopold Ranke's archival turn: location and evidence in modern historiography', *Modern Intellectual History* (2008) 5, pp. 425–453, 429.

68 A.B. Meyer to General Direction, 28 December 1885, Ministerium des Kultus und öffentlichen Unterrichts, SHStAD, Band 19300.

69 On how artists of natural-history illustrations perceived the limitations of engravings and lithographs see Charlotte Sleigh, *The Paper Zoo: 500 Years of Animals in Art*, Chicago and London: The University of Chicago Press, 2017, pp. 20–22, 26.

70 George Grant MacCurdy, review of *Celebes I: Sammlung der Herren Dr Paul und Dr Fritz Sarasin aus den Jahren 1893–1896. Anhang: Die Bogen-, Strich-, Punkt- und Spiralornamentik von Celebes*, by A.B. Meyer and O. Richter, *American Anthropologist* (1904) (New Series) 6, pp. 716–718, 716. See also F.W. Hodge, review of *Album of Papua Types II: North New Guinea, Bismarck Archipelago, German Salomon Islands*, by Dr A.B. Meyer and R. Parkinson, *American Anthropologist* (1901) (New Series) 3, p. 174; Ernest Hamy, review of *Les habitants de Suriname*, by Prince Roland Bonaparte, *Revue d'ethnographie* (1885) 4, pp. 175–176; Hamy, review of *Seltene Waffen aus Afrika, Asien und Amerika*, by A.B. Meyer and M. Uhle, *Revue d'ethnographie* (1886) 5, p. 470; review of *Masken von Neu Guinea und dem Bismarck Archipel* by Adolf B. Meyer, *Nature* (1890) 42, p. 268; G. Gerland, review of *Schnitzereien und Masken vom Bismarck Archipel und Neu Guinea*, by Adolf B. Meyer and R. Parkinson, *Geographisches Jahrbuch* (1894–1895) 18–19, p. 223; and O.T. Mason, review of *Tanzobjekte vom Bismarck Archipel, Nissan und Buka*, by Willy Foy, *American Anthropologist* (1901) (New Series) 3, pp. 172–173.

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Meyer's perspective reflects aspects of what Lorraine Daston and Peter Galison term 'trained judgment', a quality of the confident expert who 'possessed and conveyed to apprentices the means to classify and manipulate'.[71] With respect to photography, Meyer quite encouraged human interference, rather than mechanical objectivity, in the treatment of photographic representations, including manipulation of the size of the object and cropping of the image. Photography's ability to manipulate the size of the representation was an asset. The manipulation created a tool for analysis, such as the comparative craniometric plate and ethnographic plates of objects that present multiple angles of the same object all on one plate.

When the Saxon government used the term 'luxury publication' to label these expensive productions, and cut funding for them, Meyer countered that this type of reproduction of ethnographic objects was an inseparable part of publication.[72] Images were used explicitly to make the scientifically valuable objects of the collection available for general knowledge. He explained further, 'these publications stand between science and art and are bought by a public which has an artistic interest and which is used to, and loves, such a quality and style'.[73] Thus Meyer indicated that, though these publications were directed at the learned, the quality of the images appealed also to the broader public, specifically the growing middle classes that supported the widespread growth of print culture, including special-interest journals.[74]

Indeed, French anthropologist Gustav Dumoutier noted in the *Revue d'ethnographie* that the high quality of black-and-white and colour images represented the objects in 'unsurpassable perfection of details and wealth of tone'.[75] British orientalist H.G. Keane commended both the 'enlightened director' and the government:

> These costly publications, which could scarcely be undertaken without the active cooperation of the General Administration of the Royal Artistic and Scientific Collections of the Saxon capital, will, when completed, prove a great boon, especially to students of eastern antiquities, and of the progress of human culture amongst the people of southern Asia.[76]

71 Daston and Galison, op. cit. (42), p. 322. However, Meyer was not creating scientific atlases, though he was seeking to train his readers, including both specialists and the general public.

72 A.B. Meyer to General Direction, 28 December 1885, Ministerium des Kultus und öffentlichen Unterrichts, SHStAD, Band 19300.

73 A.B. Meyer to General Direction, 28 December 1885, Ministerium des Kultus und öffentlichen Unterrichts, SHStAD, Band 19300. On overlapping histories of art and science see Caroline A. Jones, Peter Galison and Amy E. Slaton, *Picturing Science, Producing Art*, New York: Routledge, 1998; Pamela H. Smith, *The Body of the Artisan: Art and Experience in the Scientific Revolution*, Chicago: The University of Chicago Press, 2004; Lorraine Daston (ed.), *Things That Talk: Object Lessons from Art and Science*, New York: Zone Books, 2004; Daniela Bleichmar, *Visible Empire: Botanical Expeditions and Visual Culture in the Hispanic Enlightenment*, Chicago: The University of Chicago Press, 2012; and Stefanie Klamm, *Bilder des Vergangenen: Visualisierung in der Archäologie im 19. Jahrhundert: Fotografie – Zeichnung – Abguss*, Berlin: Gebr. Mann, 2015.

74 See Matthew Jefferies, *Imperial Culture in Germany, 1871–1918*, New York: Palgrave Macmillan, 2003; and Andreas Daum, 'Science, politics, and religion: Humboldtian thinking and the transformations of civil society in Germany 1830–1870', *Osiris* (2002) 17, pp. 107–140, 113–114.

75 Gustav Dumoutier, review of *Althertümer aus dem Ostindischen Archipel und angrenzenden Gebieten*, by A.B. Meyer, *Revue d'ethnographie* (1885) 4, pp. 169–174.

76 Henry George Keane, review of *Althertümer aus dem Ostindischen Archipel und angrenzenden Gebieten*, by A.B. Meyer, *Nature* (1885) p. 478.

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These publications drew not only a broader audience, but also new donors, including German and Asian ethnologists based in South East Asia. In the competitive world of ethnographic collection, Meyer saw innovative reproduction techniques as a way for the small Dresden Museum to create a niche for itself.

After Meyer had secured government funding through an appeal to the Saxon minister of culture in 1885, he transitioned from publishing hand-coloured, full-plate photographic reproductions of objects to a more complex and explicitly more 'scientific' manipulation of imaging techniques and representations. The development of this process can be traced through Meyer's ethnographic publications on kettledrums of South East Asia. Meyer's *Althertümer aus dem Ostindischen Archipel und angrenzenden Gebieten* (Antiquities from the East Indian Archipelago and Surrounding Areas) (1884) surveyed fifty-two drums of different types located in European museums. European knowledge of the drums was so limited that items were displayed upside down as vases or kettles in the 1883 International Exhibition for Learned Societies in Amsterdam.[77] Meyer corrected the previous scholarship, which argued that these drums originated in Malaysia. Through comparative plates constructed from drawings and photographs that depicted the different drums from multiple angles, he demonstrated that the Karen drums were made in Siam or Burma. The article presented the first analytical study of the Karen drums brought to Europe at the beginning of the decade.

In their 1897 article, Meyer and Willy Foy re-evaluated the classifications of drum types and instead concluded that the bronze kettledrums were made in Cambodia and then travelled across different areas of South East Asia. Meyer and Foy classified the South East Asian drums into six types, each distinct in form and decoration from the others.[78] This article was the first introduction of type V, the Karen drum, as a distinct type. In this article, photographs were again used generously to provide images of the three-dimensional object from multiple angles. The photograph flattened the object, yet the multiple perspectives attempted to reconstitute the object's three-dimensionality (Figure 6).[79] In order to demonstrate the development of these different typologies, the authors included two separate plates of isolated designs. One plate of forty-seven different figures demonstrated the development of bird decorations on kettledrums; a second plate depicted twenty-nine different wave and cloud decorations. Each ornamentation also corresponds to a more general 'type'; for example, number 38 shows a formal characteristic of ornamentation on type IV.

77 Richard M. Cooler, *The Karen Bronze Drums of Burma: Types, Iconography, Manufacture and Use*, New York: E.J. Brill, 1994, p. 15.

78 Austrian ethnologist Franz Heger's work published in 1902 proposed a new classification into four types, Heger types I, II, III, IV. The Karen drum was reclassified as type III, but remained a unique type. Heger examined 165 drums, including the fifty-two discussed by Meyer and the 125 Karen-type drums. The Heger typology, which presents type I, the oldest, giving rise directly to type II, type III and type IV, is the classification system currently accepted. Heger was the director of the anthropological–ethnographic department of Vienna's natural-history museum.

79 On early modern naturalists' practices of flattening collected objects through visual representation see Stephanie Moser, 'Making expert knowledge through the image: connections between antiquarian and early modern scientific illustration', *Isis* (2014) 105, pp. 58–99.

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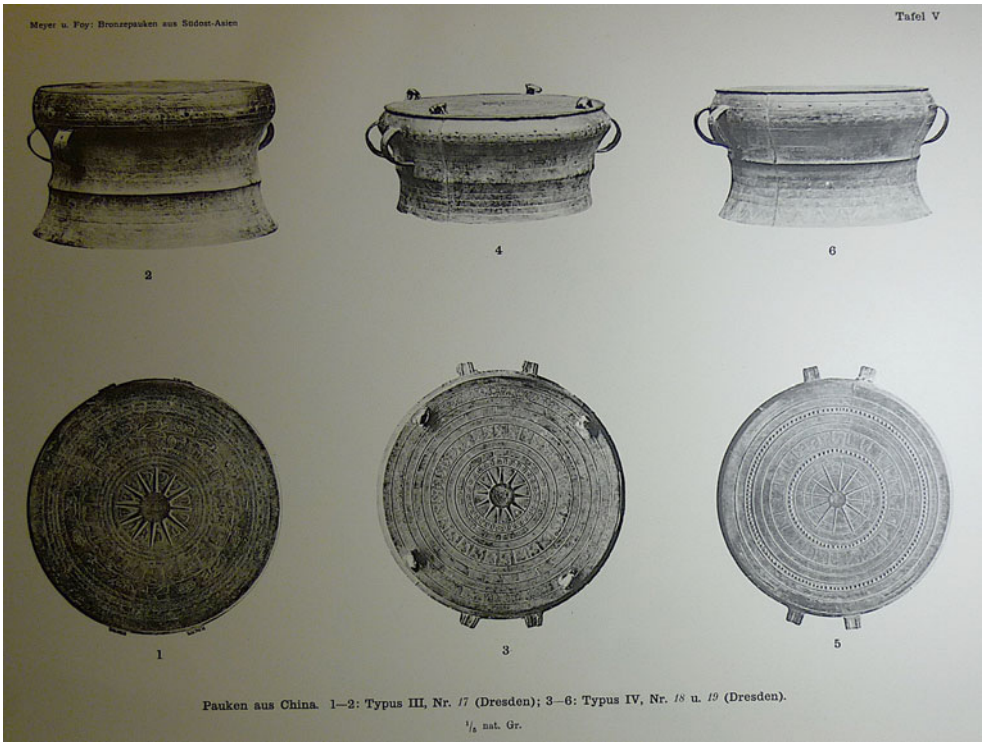


Figure 6. Chinese kettledrums. Drums labeled 1 and 2 are examples of type III; drums labeled 3–6 are examples of type IV. From Willy Foy and A.B. Meyer, *Bronzepauken aus Südost-Asien: Alterthümer aus dem Ostindischen Archipel und angrenzenden Gebieten*, Dresden: Stengel, 1897, Plate V.

The plate that depicts the developmental history of bird ornamentation does not demonstrate the branch-like development in any obvious way. For example, Figures 1 to 10 are different representations of birds in flight. Out of these flying bird figures, artisans developed the decorations labelled 11 to 22. Figure 20 is actually a repeat image of the back wings on bird 4 and it is repeated to show how 21 and 22 emerged from a doubling of style IV. For the second series of ornaments, which depict stationary birds, figures are also repeated as a means of showing development. For example, Figure 30 is a reproduction of Figure 25 intended to show the roots of Figure 31's development. Thus not every number and not every figure actually corresponds to a new style. Instead, the images are arranged and the styles are repeated in order to allow the reader to follow the different stages of development. A rearrangement of the figures according to the textual descriptions reveals the branchlike developmental relationship between the figures. This plate treats the kettledrum as an object to be analysed via dissection of its parts and then reconstruction; it views the object not just on its own, but also as part of a series. In the final image, Meyer and Foy chose not to explicitly show the

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similarity to Darwin's diagram from *The Origin of Species*. It is only through following the plate's textual description that the reader could perceive the relationship between each ornamental figure. Such an obscure presentation of the authors' argument could have been a tool to engage the viewer in active engagement with the data.

Meyer and Foy's article on kettledrums also provides a good example of the incorporation of autotypes in publications in order to reproduce ornamentation designs for in-text illustrations, to complement photographs of artefacts. The autotype was a reproductive process used to increase the visibility of patterns, such as tattoos or ornamentation styles on objects. Such patterns were not consistently captured in high detail through photographic reproductions. Most articles did not explicitly articulate a typology of ornamentation styles for different ethnographic objects. But artefacts were visually dissected and ornamentation was isolated as a means to more sufficiently train the viewer's eye to read decorative styles as documentation of the actual course of events of the settlement of Asia-Pacific islands.

In his monograph *Tanzobjekte vom Bismarck Archipel, Nissan und Buka* (Dance Objects from the Bismarck Archipelago, Nissan and Buka) (1900) Willy Foy used similar representational methods to look at how specific ornament styles developed within a single culture. Foy very explicitly used the term 'developmental history' to describe his analysis and to emphasize this approach as a critique of the prevailing ethnographic methods in 1900:

> It is all very well and good to get lost in the particular ornament of a particular object of a particular culture, to look for an *Urmotif* or earlier state of western civilization, but to do that is entirely speculative. What we need to do is look at these cultures as they are, on their own terms, as a whole culture, with their own history, and not assume that finding the same pattern in one object in a North American culture and an African culture really signals an international phenomenon. When we apply this to the comparative study of masks, it completely disrupts our theories of cultural similarities between Oceania and America and the argued historical diffusion between Africa and Oceania.[80]

The ZAEM work in ethnographic images overlaps with the period in which Virchow's liberal humanitarian approach was countered by various factions. Many, including the diffusionists, embraced biological evolution and racial classification. Meyer and his students, also critical of the limited results of universalism and liberalism, went in a different direction from the Nordic racial biology that would become prevalent in the next decade.[81]

Foy investigated objects of many different kinds, ranging from mouthpieces of masks to decorative facades of mask houses to boat carvings, in order to construct a developmental history of the fish ornament in northern New Mecklenburg. Foy explained that

80 Willy Foy, *Tanzobjekte vom Bismarck Archipel, Nissan und Buka*, Dresden: Stengel, 1900, p. 2. Here the work of Dresden's scholars is consistent with historicism. Per Myers, 'The causal logic of modern historicism dictated that each event be understood as an individual unit, assessed on its own terms and according to its own unique development. Each discrete event had its own distinct properties; the aggregate of such events yielded no coherent design'. See David Myers, *Resisting History: Historicism and Its Discontents in German-Jewish Thought*, Princeton, NJ: Princeton University Press, 2003, p. 2.

81 Massin, op. cit. (7).

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each of the plates was constructed to illuminate the local cultural context of design. The designs on each object constructed a connected, historically developing, series. Yet, as in his previous article with Meyer, Foy did not arrange the isolated patterns in an obvious demonstration of this argument. Instead, the active reader was guided toward independent discovery of this relationship through the accompanying text.

This method of training the eye through visual representations was similar to that used in the museum's early articles on anthropoids. Generally, photographs depicted the construction of the whole object, and autotypes or drawings dissected objects and magnified clues to make them legible. This approach trained the eye by not overwhelming it with a variety of data.[82] The autotype limited the viewer's attention to one particular part of the object. These visual excerpts guided the reader as to how to view the complete object in the photograph and made it possible for images to explain the argument.[83]

An important example of the use of autotypes is found in the ZAEM's publication of ethnographic representations made by indigenous people. Western depictions of humans were largely absent from these articles. Swedish ethnographer Hjalmar Stolpe's article 'Über die Tätowirung der Oster-Insulaner' (On tattooing among the Easter Islanders) (1899) is unique for its inclusion of Western and native depictions of Easter Islanders and their tattoo patterns. The representations were a coproduction between the Europeans and Easter Islanders Stolpe met in Tahiti between 1883 and 1885. Stolpe explained that while his contacts, two police servants in Nukahiva, knew the pattern, they did not know how to draw the necessary curves of the human figure. So Stolpe showed them the contours of a male face and the necessary points like eyes, nose and mouth. Indigenous knowledge and Western knowledge were combined to record indigenous tattoo patterns:

> What stems from my hand is to be understood as an exact copy of the original drawing. All the rest is drawn by Pioeva, with help from Amoi. The drawing process was very slow and thoughtful, because it concerned characteristics which had to be very particular … The two artists agreed in a unified voice that their drawing was a distinction among married men.[84]

Stolpe reproduced the drawing within the text using autotype, which involved a transfer of the patterns onto wood in order to increase their visibility.[85]

Pioeva and Amoi, 'intelligent youths' who knew much about tattoo designs, were not raised in the old traditions; 'they were no Maoris', and therefore could not explain the meanings at length. So instead Stolpe investigated this question further through analysis of *tapas* or statues that depicted the tattoo patterns found on some Easter Islanders.

82 Meyer also wanted to use museum displays to train the eye by paring down the data to which the viewer was exposed. See A.B. Meyer, *Studies of the Museums and Kindred Institutions of New York City, Albany, Buffalo, and Chicago, with notes on some European Institutions*, Washington: Government Printing Office, 1905, p. 325.

83 Since the visual turn in history of science, scholars have worked to develop an epistemology that unites sensory and ideational knowing. See M. Norton Wise, 'Making visible', *Isis* (2006) 97, pp. 75–82. One recent stunning effort to articulate visual epistemology is Bleichmar, op. cit. (74).

84 Hjalmar Stolpe, 'Über die Tätowirung der Oster-Insulaner', *Abhandlungen und Berichte des ZAEM Dresden Festschrift* (1899), pp. 9–11.

85 Stolpe, op. cit. (85), p. 4.

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A discussion of the material culture of the people provided further material evidence for this argument. Stolpe demonstrated that the 'tattoo design has the same basic character, if it is not completely identical to the decorations of the material products of the people'.[86]

Previous scholarship by explorers including James Cook, Georg Forster, Otto von Kotzebue and Adelbert von Chamisso had claimed that the Easter Island tattoo 'designs' were 'limited by the fancy and ability of the artist', meaning the tattoo designer.[87] Such scholarship emphasized the individuality of the tattooist over a common aesthetic of the group. Stolpe proceeded with an opposing observation that highlighted clear, constant patterns across all those who were tattooed:

> The tattoo ornament style of the Easter Islanders is autonomous like the myriad designs of the rest of the Polynesian islands. Like those, it must have had a quite independent development and it must stand in organic connection with the local culture.[88]

The perceived differences in pattern are explained by the different styles for each of the tribes, only a few of which remained after the population was decimated.[89] Though Stolpe wrote a harsh critique of the existing ethnographic literature, he relied on the reproduced tattoo patterns represented in these older works in order to lay out his argument for development in tattoo practice and ornament among the Easter Islanders. For Stolpe, the images provided more reliable evidence than the texts. In order to lay out his argument of the historical development of a distinctly Easter Islander tattoo ornamentation, he included reproductions of the original figures and provided a new reading of them to indicate that though the meaning of the tattoos may have changed, a consistency of design remained.[90]

86 Stolpe, op. cit. (85), p. 10.

87 Stolpe, op. cit. (85), p. 2. Schaffer, writing on the previous scholarship written by British explorers in the 1790s, argues that the Polynesian tattoo was seen as an inscription device symmetrical with the tools and practices of the ship's astronomer. See Simon Schaffer, 'On seeing me write', *Representations* (2007) 97, pp. 90–122.

88 Stolpe, op. cit. (85), p. 3. Stolpe did not describe these earlier explorers as using the term 'individuality' in the modern sense associated for many of his contemporaries with *Kultur* and industrialized nations.

89 Only 150 Easter Islanders were counted in 1882. See Wilhelm Geiseler, *Die Oster-Insel: Eine Stätte prähistorischer Kultur in der Südsee: Bericht des Kommandanten S. M. Kbt. 'hyäne' Kapitänlieutenant Geiseler, über die ethnologische Untersuchung der Oster-Insel (Rapanui) an den Chef der Kaiserlichen Admiralität*, Berlin: Mittler, 1883, p. 6.

90 Stolpe, op. cit. (85), p. 5. Stolpe referred to the Easter Islanders as *Naturvoelker*, a term which was not otherwise used among Dresden's ethnologists by this time. To be sure, contemporary architects and criminologists and some anthropologists saw tattoos as atavistic. See Jimena Canales and Andrew Herscher, 'Criminal skins: tattoos and modern architecture in the work of Adolf Loos', *Architectural History* (2005) 48, pp. 235–256. Furthermore, there was a perceived difference between art and decoration, and an arts and crafts movement in Germany that contested this distinction. Frank Trommler has identified a culture of *Sachlichkeit* at the beginning of the twentieth century. This reform movement reconciled art and industry through applied arts in response to the failed revitalization of German cultural life through elaborately invented historical traditions. See Frank Trommler, 'The creation of a culture of *Sachlichkeit*', in Geoff Eley (ed.), *Society, Culture, and the State in Germany, 1870–1930*, Ann Arbor: University of Michigan Press, 1996, pp. 465–485. On *Technik* see Eric Schatzberg, '*Technik* comes to America: changing meanings of technology before 1930', *Technology and Culture* (2006) 47, pp. 486–512.

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A central piece of evidence for Stolpe was a demonstration of tattoos as a form of record keeping of events on the island. Through analysis of Juan Tepano, 'a living chronicle of Easter Island', Stolpe argued that the Polynesian tattoos were part of the archive of European–Polynesian history. In 1868, Dr J.L. Palmer visited Easter Island with the English warship *Topaze*. Palmer and his crew went to see the statues of Tau-ra-re-n'ga, the large stone house found on the volcano Te Rana Kau. They then carried one of the eight-foot-high, four-tonne statues to the beach, put it on board the ship and took it back to the British Museum. Tepano 'memorialized in his skin … a completely realistic portrayal of a historic event': the English captain and his crew as they carried the giant statue away.[91] Stolpe extrapolated from this that because of the 'relative realism' of ornament and its use as a form of record keeping, ornament should be considered a type of inscription that Easter Islanders carve into objects and ink into their own skin.[92] When ornament is accepted as an inscription, it can also be seen as a record of its own origin.[93] Thus Stolpe's analysis of tattoo design demonstrated that Easter Islanders had a practised means of recording history and that their historical records were still available. Furthermore, Easter Island historical record documented European activities in the region, providing confirmation of the origin of Tau-ra-re-n'ga in the British Museum as well as the evidence of a sense of history commensurate with that of Europe.

Conclusion

A constant refrain of Director Meyer was how ignorant Western scholars were of other ethnic groups, even amidst the piles of collected material. He was in awe of the diversity of New Guinea and the Bismarck Archipelago, which he considered the most ethnographically interesting region of the earth because 'the products of artistic activity are so exceptional and the different regions of this group of islands are so distinct from one another'.[94]

Using in-text autotype illustrations and full plates of photographs, the ZAEM's ethnologists demonstrated that within each culture, patterns had their own developmental history. Various forms of photography predominated in depicting the construction of an object as well as isolating and magnifying particular design or ornamental details. The goal was to train the eye, by not overwhelming it with a variety of data, to understand the history of the ethnic group in question. As such, any method of representation, including photographs, as well as drawings and watercolours, was utilized as long as it aimed at scientific accuracy. Meyer's definition of realism in images incorporated his historical approach to the study of humankind. He sought out processes which would highlight rather than erase historical evidence.

91 Stolpe, op. cit. (85), p. 8.
92 Stolpe, op. cit. (85), p. 8.
93 Stolpe, op. cit. (85), p. 13.
94 Adolf B. Meyer, *Masken von Neu Guinea und dem Bismarck Archipel*, Dresden, Stengel & Markert 1889, 3.

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No single image could provide sufficient representation of the artefact or specimen. For the ZAEM scholars, there was an implicit assumption that the scientific information held in the three-dimensional object was hidden, even if that information was right on the surface. It was hidden by virtue of the fact that the viewer did not know how to read the object. Dresden's ethnologists produced and compiled multiple images of any one object to convey the complexity and multidimensionality of each object under study, in order to present the objects' creators as members of complex, multidimensional ethnic groups.

Building up a discipline around the collection of objects brought to Europe from distant lands relied on the durability of the museum as an institution and the assumed capability of the objects to represent the source community. Yet it was up to the creativity of the ethnologists to reconstruct the broader culture of the source community for a European audience. Dresden resisted uncritical acceptance of the dominant ahistorical mode of understanding non-Western peoples and responded with new methods. The questions these ethnographers asked about the history of the development of material culture are bound up in their own experiments with developing techniques to represent and study ethnographic material. In this way, the practitioners of this new discipline wrote themselves into the same history of humankind that they sought through ethnographic research.

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