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FCT Fundação para a Ciência e a Tecnologia

HoST - Journal of History of Science and Technology
Vol. 17, no. 1, June 2023, pp. 4-16
10.2478/host-2023-0002

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The Dinosaur Renaissance 1960s-80s: A Foundational Episode for the Historiography of Paleoart

Victor Monnin

Archives Henri-Poincaré, Strasbourg, France

victor.monnin@gmail.com

Abstract: The "Dinosaur Renaissance" is known as a crucial event in the study of dinosaurs. From sluggish and lizard-like, they came to be conceived and represented as more dynamic animals. This paper argues that the "Dinosaur Renaissance" did not only constitute a significant scientific and artistic shift. Indeed, it can also be interpreted as a foundational episode for the historiography of paleoart. During the "Dinosaur Renaissance," a growing community of artists and paleontologists promoted the integration of artistic processes in paleontology. They began to actively discuss the historical legacy and future of such integration. The itinerant paleoart exhibition *Dinosaurs Past and Present*, hosted in eight major cities across North America at the end of the 1980s, can be identified as having played a significant role in setting the foundation for the historiography of paleoart. The "Dinosaur Renaissance" did not only result in revised visual representations of dinosaurs, but also spurred some of the first investigations on the historical relationship between visual arts and paleontology. This article concludes by offering some remarks on how the present historiography of paleoart can continue to build on the efforts made during the "Dinosaur Renaissance" while remaining cognizant of their context. To effectively answer the needs of historians, as well as of paleontologists and paleoartists alike, the growing historiography of paleoart has much to gain in clarifying its own history.

Keywords: paleontology; dinosaurs; paleoart; "Dinosaur Renaissance"; historiography

Introduction

The "Dinosaur Renaissance" refers to a key episode in the recent history of the scientific study of dinosaurs, which occurred between the 1960s and the 1980s.[1] Its beginnings are associated with the discovery made in 1964 by John H. Ostrom of fossils belonging to a dinosaur baptized *Deinonychus*. Based on these remains, Ostrom described an agile animal, in clear contrast to the then consensual understanding of dinosaurs as slow reptiles. This thesis sparked an important debate on the physiology, behavior, evolution, and taxonomy of dinosaurs. The debate led to a symposium in 1978, organized by the American Association for the Advancement of Science (AAAS), whose title, "A Cold Look at the Warm-Blooded Dinosaurs," testifies to the internal crisis that the community of paleontologists interested in dinosaurs was going through at the time.

Early on, the "Dinosaur Renaissance" addressed the artistic reconstruction of dinosaurs and saw it being used as a powerful tool of communication and heuristic. Robert T. Bakker, Ostrom's student at the time, proposed a now iconic visual reconstruction of the *Deinonychus* in 1969.[2] To give life to his mentor's vision, Bakker made the strategic choice to depict the dinosaur running. This reconstruction highlights the athletic physiognomy and capabilities of the animal. The artist/paleontologist succeeded in creating an impression of liveliness and immediacy perfectly in tune with the kind of ideas Ostrom and himself were putting forward in their publications. Bakker is also the one who coined the expression "Dinosaur Renaissance" in an eponymous *Scientific American* article published in 1975.[3] The choice of the term "Renaissance" was obviously strategic, equating the argument for dynamic dinosaurs with intellectual progress going against dogmatism. Both the dinosaurs and the science studying them were presented by Bakker as being revived from presumed "Dark Ages." By instrumentalizing the notion of "Renaissance," Bakker unambiguously situated the debate on both scientific and artistic grounds. Indeed, the Renaissance has been customarily celebrated not only for scientific breakthroughs and explorations, but also for the invention of linear perspective and the modern concept of the individual artist.

The article begins by discussing Bakker's historical and visual rhetoric. Bakker forged the "Dinosaur Renaissance" phrase and used his artistic skills to effectively publicize his and

[1] John N. Wilford, *The Riddle of the Dinosaur* (New York: Vintage Books, 1987), 197-216. See also the argument made by Darren Naish about the "Dinosaur Renaissance" as a cultural event: Darren Naish, *Dinopedia. A Brief Compendium of Dinosaur Lore* (Princeton: Princeton University Press, 2021).

[2] John H. Ostrom, "Osteology of *Deinonychus antirrhopus*, an Unusual Theropod from the Lower Cretaceous of Montana," *Peabody Museum of Natural History Bulletin* 30 (New Haven, Connecticut: Yale University Press, 1969). A reproduction of Bakker's *Deinonychus* can also be found in Wilford, *The Riddle*, 203.

[3] Robert T. Bakker, "Dinosaur Renaissance," *Scientific American* 232, no. 4 (1975): 58-78.

his mentor's views. By addressing himself to a larger audience through richly illustrated publications like his seminal *Dinosaur Heresies* (1986), he performed a communication powerplay and outflanked a more cautious paleontological community. Despite the strong rhetorical dimension of Bakker's both artwork and historical discourse, they still contributed to opening a conversation on the sequencing of paleoart history, as well as on the constitutive role of artistic practices in paleontology. In other words, Bakker's highly controversial rhetoric contributed to change what used to be a commonly shared awareness of paleoart historicity into a more urgent topic of intellectual research and debate. This shift from historical awareness to historical investigation is most clearly illustrated by the first paleoart retrospective exhibition, *Dinosaur Past and Present*, inaugurated in 1986 at the Natural History Museum of Los Angeles County. On that occasion, several artists and paleontologists, Bakker among them, were invited to discuss the past, present and future of the relationship between paleoart and paleontology. The article proceeds by reviewing some of the main arguments that were made and how they consolidated the need for a systematic historical inquiry into paleoart. The article concludes by explaining how clarifying the history of the historiography of paleoart is essential to ensure (1) the coherent development of paleoart history as a field of research and (2) the ability of paleoart history to serve as a resource for the rapidly evolving community of paleoartists.

Robert T. Bakker's Historical and Visual Rhetoric

The "Dinosaur Renaissance" debate revolved around the questions of the dinosaurs' physiology, behaviors, taxonomy, and evolution. Ostrom's publications following his discovery of the *Deinonychus* had cast doubts on the traditional interpretation of dinosaurs as reptilian, cold-blooded (ectotherm) animals. He and Bakker argued that the hypothesis of warm-blooded (endotherm) dinosaurs was better suited to explain the most recent ichnologic, anatomical and ecological data. This position was not without encountering resistance and reservations from other actors in the field.[4]

The AAAS 1978 symposium, "A Cold Look at Warm-Blooded Dinosaurs," brought paleontologists around the table to exchange the latest arguments on these issues. Could these animals be compared to modern reptiles, or were they capable of regulating their body temperature in similar ways to those of modern birds and mammals? The symposium did not reach any positive consensus. While no revolutionary shift in paradigm occurred, the symposium concluded that the traditional understanding of dinosaurs as cold-blooded reptiles was not satisfactory anymore and that an open-minded approach needed to be adopted to tackle the questions of dinosaurs' physiology, ethology and evolution. As the authors of the introduction to the symposium proceedings cautiously wrote:

[4] John H. Ostrom, "Reply to 'Dinosaurs as Reptiles'," *Evolution* 28, no. 3 (1974): 491-93.

> The studies in this book give some indication of the variety of kinds of data and inference that can be brought to bear on the problems of dinosaur bioenergetics. By the same token, it is clear that a full understanding of dinosaur population structures, ecology, behavior, biogeography and evolution is critically dependent upon a resolution of the complex problems of dinosaur thermal physiology. No such resolution of the controversy over whether dinosaurs were scale-up, cold-blooded reptiles or warm-blooded surrogate "mammals" is reached here, although the weight of current opinion lies between these extremes.[5]

The 1978 symposium did not end in the adoption of Ostrom and Bakker's views on dinosaurs' endothermy, but its call to transcend the cold/warm-blooded dichotomy left the door opened for renewed interpretations of the available data.

Robert T. Bakker made a name for himself by being one of the most colorful and influential advocates for warm-blooded dinosaurs. As a paleontologist gifted with literary and artistic skills, Bakker took full advantage of the door left open in 1978 and seized the opportunity to capture the public's attention. In 1986, he published a richly illustrated book, *The Dinosaur Heresies*. The title blatantly echoes his 1975 article, "Dinosaur Renaissance," and adopts the same rhetorical strategy based on historical analogy and evangelic undertone. Using heavily connoted words such as "Renaissance" and "heresies" allowed Bakker to equate the warm-blooded dinosaur hypothesis with the heliocentric model, which Galileo had to famously deny in front of the Catholic Inquisition. Relying on a heroic and most popular narrative of scientific progress clashing with religious dogma, Bakker powerfully presented his views on dinosaurs as both intimate and well-grounded convictions challenging an outdated establishment. In that regard, the opening of the first chapter of his book deserves a closer look:

> I remember the first time the thought struck me! "There's something very wrong with our dinosaurs." I was standing in the Great Hall of Yale's Peabody Museum, at the foot of the *Brontosaurus* skeleton. It was 3:00 A.M., the hall was dark, no one else was in the building. "There's something wrong with our dinosaurs. " The entire Great Hall seemed to say that. I had grown up with the dinosaurian orthodoxy about dinosaur ways—how they were swamp-bound monsters of sluggish disposition, plodding with somnolent strides through the sodden terrain of the Mesozoic Era. Bizarre and exotic shapes ornamented their heads and bodies like the decadent opulence of a Byzantine palace.[6]

The way the author depicts this moment of revelation is what matters here. The scene is quite cinematographic: the loneliness, the late hour, the museum full of fossil bones. Bakker paints a mysterious atmosphere perfectly suited for the emergence of uncanny thoughts. A *je-ne-sais-*

[5] Everett C. Olson and Roger D. K. Thomas, eds., *A Cold Look at the Warm-blooded Dinosaurs*, vol. 1 (Washington: Westview Press for the American Association for the Advancement of Science, 1980), 14.
[6] Robert T. Bakker, *The Dinosaur Heresies. New Theories Unlocking the Mystery of the Dinosaurs and Their Extinction* (New York: William Morrow and Company, 1986), 15.

quoi seizes the young narrator's mind as he stands in front of the *Brontosaurus* skeleton. The clarity of the impression and the indetermination of its source effectively capture the attention of the reader, who feels as if he or she is on the verge of witnessing a significant breakthrough. The narrator describes his inner thought process in an esoteric fashion by exteriorizing it: "The entire Great Hall seemed to say that." An undisputed call seems to rise from the room itself, putting the narrator in a position to uncover what should have been recognized long ago as an obvious mistake.

If this short passage mentions the *Brontosaurus* skeleton exhibited in the Peabody Museum's Great Hall, it also implicitly refers to one of the greatest pictorial representations of the dinosaurs' reign, a thirty meter-long and five-meter-high fresco decorating the paleontological gallery of the museum: *The Age of Reptiles* (1943-1947) by Rudoph Zallinger. This monument of paleoart tackled the challenge of summarizing millions of years of evolution on a single wall.[7] It rapidly became iconic, and some of its details served to illustrate all sorts of popular publications on dinosaurs. It even made the cover of *Life* magazine in the early 1950s. Bakker himself confesses that the reproductions of Zallinger's fresco had sparked his early passion for paleontology.[8] In referring even indirectly to this major artwork, Bakker outlines the necessity to reflect on the unsuspected power of paleoart. When Bakker acknowledges the fundamental role that Zallinger's depictions of dinosaurs have played in his own upbringing as a paleontologist, he encourages to criticize the very models they provided him with.

Indeed, *The Age of Reptiles* couldn't stand in greater contrast to Bakker's depiction of the running and agile *Deinonychus* we mentioned earlier. Zallinger represented the dinosaurs as sublime reptiles whose mobility was essentially infringed by their weight. The contrast is as great as it is unfair, since Zallinger's vision was far from setting the bar in the 1980s. Within such a strategic comparison, Zallinger's dinosaurs inevitably evoked, according to Bakker, the "decadent opulence of a Byzantine palace."[9] By reflecting on how past artworks, like Zallinger's, do not only embody scientific theories of their times but also inform present standards of credibility and possibility, Bakker introduces the necessity to examine the long legacy of paleoart from a critical lens. However distorted Bakker's own lens might appear, it still called attention to the importance of actively investigating the history of paleoart and its implications for present paleontological research.

From this perspective, we can really appreciate the key role reserved to illustrations in *The Dinosaur Heresies*. It is certainly not a coincidence if one of the first artworks in the book

[7] For more information regarding the context surrounding the making of *The Age of Reptiles* see Rosemary Volpe, ed., *The Age of Reptiles. The Art and Science of Rudolph Zallinger's Great Dinosaur Mural at Yale* (New Haven and London: The Yale Peabody Museum, 2010).

[8] Bakker, *The Dinosaur Heresies,* 9.

[9] Ibid., 15.

presents two *Brontosaurus* raised on their back legs and confronting each other. Their size and weight are not anymore conceived as inherent obstacles to acrobatic postures and dynamic behaviors. Suggesting complex rituals of aggression between members of the same species, this visual reconstruction aims at offering a credible alternative to the interpretation displayed in the Great Hall of Yale's Peabody Museum. Most of Bakker's drawings portray pairs of dinosaurs engaged in dramatic confrontations. The artist privileges curved lines, entangled bodies, and postures on the verge of losing balance. On the extreme end of that pattern, one illustration presents a *Deinonychus* seizing a prey: none of the protagonists, caught up in the momentum of the attack, touches the ground. Paraphrasing one of Bakker's own publications, his dinosaurs are almost always caught "dancing,"[10] as if in the middle of a refined choreography of predation, evasion or aggression.

More than simple illustrations embellishing his writing, Bakker's reconstructions constitute a powerful visual rhetoric speaking to the reader's imagination learning about dinosaurs' physiology and behaviors. If the dramatic scenes and acrobatic poses can easily be criticized as exaggerated, it is mainly because they do not serve as plain decoration to the written argumentation. On the contrary, their apparent exaggeration serves to create an even clearer contrast between a "traditional" dinosaur iconography and the author's own vision of dinosaurs as warm-blooded animals. Bakker's imperative as a visual artist seems to be to expand the spectrum of possibilities and credible hypothesis.

In a sense, the gravity-defying dinosaurs play a heuristic role. The number and intensity of the visual reconstructions repeatedly challenge the reader's acquired mental picture of these animals. The different tests to which the artist puts these dinosaur bodies explore the range of flexibility and agility allowed by their respective anatomies. Here, drawing is not only supporting a hypothesis; it is also a valuable proxy for experimenting with long-extinct animals that nobody will ever see in action. As the art critic John Berger wrote, it is "the actual act of drawing that forces the artist to look at the object in front of him, to dissect it in his mind's eye and put it together again."[11] Graphically exploring the anatomies and behaviors of his dinosaurs, Bakker's artistic practice should not be reduced to a simple provocation but should be thought as an experimental use of drawing actively contributing to the scientific process. For Bakker, the process of artistic reconstruction serves both as another form of historical commentary on paleoart and as an experimenting tool for paleontology.

[10] Sylvia Czerkas and Everett C. Olson, eds., *Dinosaurs Past and Present*, vol. 1. (Seattle and London: University of Washington Press, 1987), 39-69.
[11] John Berger, *Landscapes: John Berger on Art* (London and Brooklyn: Verso, 2016), 87.

Engaging with the History and Future of Paleoart

Our succinct analysis of Bakker's historical and visual rhetoric in *The Dinosaur Heresies* allows us to see that while the warm/cold-blooded debate remained unresolved, it provided Bakker with an opportunity to question, even if in a disputable way, the influence of artistic reconstructions on paleontological thinking through time. Two interrelated, critical tasks were now beginning to emerge as necessary: first, studying historical cases of the two-way relationship between paleoart and paleontology, and second, imagining productive models of collaboration between paleo-artists and paleontologists for the future. Far from having mechanically inspired new visual representations of dinosaurs following a change in scientific paradigm, the "Dinosaur Renaissance" is a much more intriguing episode during which artistic practices were being recognized as an historically integrative part of the research on extinct animals and environments. Something more complex than the upgrading of the dinosaurs' visual aspect occurred between the 1960s and 1980s. It was the whole understanding of paleoart that shifted during these decades. The almost two centuries of paleoart history were revealing themselves as one problematic object that required to be systematically studied, or at least seriously discussed within the paleontological community.

In 1986, the same year as the publication of Bakker's *Dinosaurs Heresies*, the Natural History Museum of Los Angeles County inaugurated the first major retrospective exhibition of paleoart, *Dinosaurs Past and Present*. The exhibition was curated by the paleo-sculptor Sylvia Czerkas, who had already begun to investigate the history of paleoart and had published in 1982 a monography on the key figure of Charles R. Knight.[12] This exhibition was an opportunity for some paleontologists and artists to reflect on the history and future of their collaboration considering the events that unfolded in dinosaur studies since the 1960s. Like Bakker, some of its protagonists had equally been present to the AAAS 1978 symposium. As indicated by its title, the exhibition had for ambition to consider the depiction of dinosaurs in its historicity. Studying the history of the visual reconstructions of these animals was now being recognized and advertised as a task susceptible to assist the paleontologists in the interpretation of new data and the building of innovative theories.

The two-volume exhibition catalogue contains a series of fascinating papers discussing such history and its epistemic implications. For instance, Kevin Padian, Professor of Biology at the University of California, Berkeley, laid out an historical case study on the evolution of the Pterosaur's depiction in a presentation titled, "The Case of the Bat-Winged Pterosaur. Typological Taxonomy and the Influence of Pictorial Representation on Scientific Perception." Padian argued for the necessity to reflect on the destinies of visual reconstructions produced in

[12] Sylvia Czerkas and Donald Glut, *Dinosaurs, Mammoths, and Cavemen. The Art of Charles R. Knight* (New York: E.P. Dutton, 1982).

paleontology, for they can inform the perception and reasoning of the scientist in unexpected ways. According to the author: "Typological taxonomy is a powerful determinant of how we associate features of functional morphology, ecology, and physiology; an equally powerful determinant of perception is pictorial representation, which need only be plausible, not accurate, to become fixed in the mind's eye."[13] Recognizing that paleontological reconstruction is not solely guided by direct observations and inductions, Padian was working on bringing some nuance to the powerful method developed by Georges Cuvier, who argued for the possibility of reconstructing any extinct animal from a single fragment of its skeleton.[14] While Cuvier's idea to apply the principles of comparative anatomy has obvious advantages, it seems to have feed the myth of a reconstructive process in which only observation and reason would play a part. The introduction of the "mind's eye," shaped by the subject's exposition to pictorial representations, challenges the assumed purity of Cuvier's method and acknowledges that other "organs" of the mind, such as the imagination, are to be accounted for when paleontologists work on reconstructing extinct animals. The seminal essay *Art and Illusion*,[15] by the art historian Ernst Gombrich, was the authority that Padian relied on to assert his point on how the depiction of extinct animals always carries within itself elements of other living animals that the artists, the scientists, or the public are more accustomed to see. The more unfamiliar the animals are (and dinosaurs are undeniably on the highest end of that spectrum), the more familiar features are conveyed in their representation. Such a reference to one of the most prominent figures of art history is one more clue pointing toward the fact that the "Dinosaur Renaissance" saw the artistic dimension of paleontology and its history become serious topics to address to improve the epistemic transparency of the paleontological method.

The recognition of the historical and inevitable interplay between artistic process, anatomical observation and taxonomy raised a subsequent issue: how should paleontologists and artists collaborate and communicate moving forward? Different approaches were suggested during the symposium held at the occasion of the exhibition. For example, paleo-artist Mark Hallett optimistically suggested to see in the rise of computerized protocols in paleontology a neutral ground for paleontologists and artists, who, through the acquisition of a common language could get better acquainted with each other's methods.[16] Paleontologist and pioneer in the field of Speculative Biology, Dale A. Russell, put forward the idea that the collaboration between artists and paleontologists should be primarily project-based.[17] Instead of having artists illustrate

[13] Sylvia Czerkas and Everett C. Olson, eds., *Dinosaurs Past and Present*, vol. 2. (Seattle and London: University of Washington Press, 1987), 65.

[14] Georges Cuvier, *Discours sur les Revolutions de la Surface du Globe, et sur les Changemens qu'elles ont Produits dans le Règne Animal* (Paris: G. Dufour et Ed. D'Ocagne, 1826), 49.

[15] Ernst Gombrich, *Art and Illusion: A Study in the Psychology of Pictorial Representation* (New York: Bollingen Foundation, 1960).

[16] Czerkas and Olson, *Dinosaurs Past and Present*, vol. 1, 103-11.

[17] Ibid., 115-21.

already-written scientific papers, the research phase should include both written and visual mediums in its development. From Russell's perspective, the verbal communication between paleontologists and artists is too often failing, due in part to the differences in technical vocabulary. Gathered around a clay model of the animal in question, Russell argued that they would both have the chance to share their knowledge and methods while modifying the model in real time. The communication would be made not only through words, but mainly through tactile and visual impressions during a collaborative sculpting exercise. Both Hallett's and Russell's suggestions were imagining the invention of a language shared by artists and paleontologists alike, whether this language might be found in between the lines of computer codes or through the plasticity of clay.

While imagining future collaborative frameworks between artists and paleontologists, the symposium and exhibition of 1987 aimed at better understanding the past and present interrelations of the visual arts with paleontological research. The formidable powers of depiction needed to be acknowledged, effectively articulated with the research process, and carefully watched. The "Dinosaur Renaissance" doesn't, of course, mark the beginning of the integration of visual arts within paleontology. More accurately, it marks the beginning of a critical awareness of the necessity of paleoart within the scientific process. To this point, self-taught paleontologist and influential paleo-artist Gregory S. Paul underscored, during the *Dinosaurs Past and Present* symposium, the ambivalent nature of paleoart pieces as both works of science and works of art. In his opinion, paleo-artists should refrain from giving a hyperrealist look to their reconstructions because of the irreducible, speculative dimension of the paleo-artistic process.[18] This position was based on a principle of epistemic precaution derived from the closer attention given to paleoart as an historical phenomenon. Since the history of paleoart teaches about the credulity of the "mind's eye," paleo-artists in the future should aim at striking a balance between creating insightful reconstructions and reminding their audience that these are not snapshots of the deep past but of the current state of scientific knowledge.

Toward a Critical History of Paleoart

On the one hand, the "Dinosaur Renaissance" constitutes a turning point in the history of paleoart because dinosaurs began to be depicted as more vibrant creatures in its aftermaths. On the other hand, it also represents a foundational episode for the historiography of paleoart because paleoart came to be recognized not simply as having a past, a fact already well acknowledged,[19] but as a historical object, which systematic and careful study would help improve the practice

[18] Czerkas and Olson, *Dinosaurs Past and Present*, vol. 2, 42.

[19] See for example: Othenio Abel, *Geschichte und Methode der Rekonstruktion Vorzeitlicher Wirbeltiere* (Jena: Gustav Fisher, 1925).

of paleontology. It is not surprising then to see that it is between the 1960s and the 1980s that the very terms of "paleoart" and "paleo-artist" were coined. While artists and scientists had already collaborated since the nineteenth century to reconstruct extinct animals, the coinage of such denominations favored the integration of past works and previous artists scattered across different times, places and cultures within a common historical framework. They also gave a status and a scientific legitimacy to the artists and their works. In this regard, the Renaissance rhetoric used by Bakker, although controversial and motivated, had the merit of encouraging the adoption of an historical point of view on paleoart, which in turn allowed to see paleoart as a field with a legacy and, more importantly, a future within paleontological research.

It would be tempting to expand the Renaissance analogy and try to identify the Classic or Mannerist periods of paleoart and so forth. Indeed, the Renaissance in the arts is generally understood as this inflexion point when artists ceased be seen as artisans to be recognized as intellectual workers. In his famous handbook *De Pictura*, Leon Battista Alberti highlighted that only the ones mastering the principles of geometry could call themselves artists.[20] Analogous to the fifteenth century Renaissance, the "Dinosaur Renaissance" saw paleoart being explicitly brought forward as both an artistic and scientific practice. But we should not forget the limits of this analogy proposed by Bakker. The analysis of Bakker's historical and visual rhetoric proved useful in two ways. First, it allowed to identify when the history of paleoart became a topic of discussion and debate. Second, it brought to light some of the context and motivations surrounding the beginnings of the historiography of paleoart. This last point is of great importance. If such an historiography cannot ignore Bakker's contribution, it cannot readily adopt his interpretation and sequencing of the history of paleoart either. It would be as if art historians aligned their discourse with the *Lives* of Giorgio Vasari without critically engaging with the motivations of their author, or as if historians of science adopted Charles Lyell's views on the history of geology without considering his agenda at the time.[21] The sequencing of paleoart history should therefore not be *a priori* built on the historical analogy put forward by Bakker, although it contributed to raise the question of such sequencing in the first place. It is not the intention of this paper to suggest an alternative sequencing, but to stress the benefits of continuing to clarify the circumstances around the foundation of the historiography of paleoart. These benefits pertain equally to the development of the history of paleoart into a field of study and to the ability of this field to play the role of a useful resource for the paleoart industry and community, who have been rapidly evolving since the "Dinosaur Renaissance," due in large part to the 1990s "dinomania" that followed the release of *Jurassic Park*.

[20] Leon Battista Alberti, *On Painting* (Cambridge: Cambridge University Press, 2011), 22-3.

[21] Alexander M. Ospovat, "The Distortion of Werner in Lyell's Principles of Geology," *The British Journal for the History of Science* 9, no. 2 (1976): 190-98.

Despite the historiography of paleoart being only a few decades old, substantial contributions have already been made since the "Dinosaur Renaissance." Among some of the most noticeable milestones, one must mention the *Scenes of Deep Time* published in 1992 by historian of science Martin Rudwick.[22] This monography, mostly centered around paleoart in nineteenth-century popular science publications, represents the first serious attempt at analyzing the history of paleo-artistic conventions. The year 2000 saw the publication of the first catalogue of a private paleoart collection, *Dinosaur Imagery*.[23] The catalogue retraces the story of John J. Lanzendorf, one of the most influential patrons of paleoart during the 1990s. Although focusing on paleontological illustration and not specifically on paleoart, the *History of Paleontology Illustration* published by art historian Jane P. Davidson in 2008 deserves to be mentioned for the valuable survey it provides from the Renaissance to the early twentieth-century.[24] In 2017, artist Walton Ford and writer Zoë Lescaze proposed an updated sequencing of the early history of paleoart while bringing in a single volume a lore of visual material.[25] More recent publications illustrate the vitality of the historiography of paleoart, such as the collection of essays *The Evolution of Paleontological Art*,[26] and the *Art and Science of the Crystal Palace Dinosaurs* co-written by paleo-artist Mark Witton and evolutionary biologist Ellinor Michel.[27] Philosophers of science, such as Derek Turner and Adrian Currie, have also been exploring the role of aesthetics and imagination in paleontological reasoning.[28] The great diversity of expertise and background that has contributed and continues to contribute to the historiography of paleoart has obvious advantages, but it also makes even more pressing the need to clarify the history of this field of research to better coordinate and keep track of its future advancements.

An active discussion around the foundation of the historiography of paleoart would most benefit the paleoart community, which has gone through redefining changes since the "Dinosaur Renaissance."[29] If the percentage of paleoartists who can afford to live from their practice remains small, the community of artists producing and selling works of paleoart has

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[22] Martin J. S. Rudwick, *Scenes from Deep Time. Early Pictorial Representations of the Prehistoric World* (Chicago: The University of Chicago Press, 1992).

[23] John J. Lanzendorf, *Dinosaur Imagery. The Science of Lost Worlds and Jurassic Art. The Lanzendorf Collection* (San Diego: Academic Press, 2000).

[24] Jane P. Davidson, *A History of Paleontology Illustration* (Bloomington: Indiana University Press, 2008).

[25] Zoë Lescaze and Walton Ford, *Paleoart. Visions of the Prehistoric Past* (Köln: TASCHEN, 2017).

[26] Renee M. Clary, Gary D. Rosenberg, and Dallas C. Evans, eds., *The Evolution of Paleontological Art* (Boulder: The Geological Society of America, 2022).

[27] Mark Witton and Ellinor Michel, *Art and Science of the Crystal Palace Dinosaurs* (Wiltshire: The Crowood Press, 2022).

[28] Derek Turner, *Paleoaesthetics and the Practice of Paleontology* (Cambridge: Cambridge University Press, 2019); Adrian Currie, *Rock, Bone and Ruin: An Optimist's Guide to the Historical Sciences* (Cambridge, MA: MIT Press, 2018).

[29] One of them being the reevaluation of the decisive role of informed speculation in paleoart. See in particular: John Conway, C.M. Kosemen, and Darren Naish, *All Yesterdays* (Irregular Books, 2012).

dramatically increased,[30] especially in recent years due to the development of social media platforms, which have enabled practitioners to communicate more easily. As an example, one can quote the live streaming sessions *#paleostream* on YouTube[31] and Twitch,[32] during which paleoartist Joschua Knüppe creates original works and receives live feedbacks and requests from the audience. This sort of new forum is profoundly transforming the dynamic of the paleoart community, encouraging vocations and generating fresh perspectives. A more concerning side of the current context is the continuing problem of amateurism and plagiarism in paleoart. In 2014 and 2015, two publications addressed these challenges and how they limit the ability of paleoart to be an integrant part in the scientific process.[33] Plagiarism and amateurism thrive in part because a still significant portion of the paleontological community is not necessarily well-informed on paleoart and continues to rely on the most affordable option to illustrate their publications. As plagiarism increases, the scientific value and integrity of paleoart risk being severely crippled. A recent publication proposing a template for paleoartists to publish their creative process and raise awareness among the paleontological community on the scientific value of their work is evidence of the many efforts that remain to be made.[34] Considering this specific issue, as well as others related to the training of future paleoartists, the over-representation of dinosaurs and vertebrates in paleoart in proportion to other groups, the education of the public to distinguish actual paleoart from fictional and popular representations of prehistoric life, etc., a consolidated field of paleoart history could serve as a valuable resource for the needs of the paleoart community.

While this article has presented arguments for the recognition of the "Dinosaur Renaissance" as a foundational episode for the historiography of paleoart, its main ambition was to promote an active discussion on the origins of such historiography, or when, why and how the need for a history of paleoart arose and grew. Indeed, the recent proliferation of ambitious publications and the various challenges faced by the paleoart community both call for the consolidation of paleoart history into a field of research. Such a consolidation can be achieved in part through the making of a community of contributors who, although coming from different fields, engage with the same history.

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[30] For more information on various aspects of the global community of paleoartists, visit the following website for the results of the 2017 and 2019 editions of "The Survey of Paleoartists": https://chasmosaurs.com/survey/.

[31] https://www.youtube.com/@joschuaknuppe5849/videos/.

[32] https://www.twitch.tv/paleostream/.

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Acknowledgments

Many thanks to my former doctoral advisor, Catherine Allamel-Raffin, who encouraged me to present the early stages of my research for this paper during a conference on the topic of objectivity and graphic design at the University of Strasbourg. I am most grateful for the inspiring conversations I have had with numerous paleoartists, paleontologists and other researchers on the topic of paleoart during the past few years. My gratitude goes to my two reviewers, who provided me with most valuable remarks and suggestions for this paper and future research. Finally, I am greatly indebted to the editorial team at *HoST* for their time and consideration.

Competing Interests

The author has declared that no competing interests exist.