

## Essay Review

### Plumed wonders and ornithological passions

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#### **Drawn from Paradise: The Natural History, Art and Discovery of the Birds of Paradise**

**[Hardcover]**

David Attenborough and Errol Fuller, Collins, London, 2012, pp. 256, Price £30.00

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#### **Ten Thousand Birds: Ornithology since Darwin**

Tim Birkhead, Jo Wimpenny & Bob Montgomerie, Princeton University Press, Woodstock, Oxfordshire, 2014, pp. 544, Price £29.95 cloth, ISBN: 9780691151977

Birds have been investigated in Western science more than any other group of vertebrates.

This is partly for practical reasons, such as the relatively manageable numbers of avian species and their vast potential for experimental work. Just as important, however, is the hold that they have had over numerous generations of naturalists, demonstrated by the myriad published accounts of birds, their biology and of those who have studied them (Birkhead *et al.* 2014 p. 425). The dramatic visual signals that birds use in competition for mates are the same colourful plumes and displays that draw the human eye, and the finely-tuned complexity of their feather-light forms and behavioural traits have made birds an enduring passion for numerous people. Any account of the ornithological developments over the past 500 years cannot escape the role of the aesthetic pleasure that birds provide in motivating these

investigations. This is self evident in *Drawn from paradise*, a portrayal of how the birds of paradise have been studied and depicted since the arrival of the first bird of paradise trade skins in Europe in 1522. It also an undercurrent in *Ten thousand birds*, the study of the development of major ornithological ideas from the mid nineteenth century to the present day, in which very human obsessions and passions play just as great a role as intellectual genius and the hard graft of experimental work. These two books speak to different audiences and portray both birds and ornithology in very different ways, but share the sense of the enduring human infatuation with bird life.

*Drawn from paradise* offers virtual cabinet of wonders that display the European fascination with the beautiful birds of paradise. It is a celebration of the artistic interpretation of the birds of paradise from the sixteenth century onwards, and the images in the book do a significant portion of the talking. Fuller and Attenborough have uncovered an impressive array of visual sources, in particular some early modern images that are little-known even to researchers who work on the history of these birds. Gathering images from across five centuries reveals the considerable changes in European experience of the birds of paradise over this period. The curious sketches and paintings of birds of paradise by court artists such as Hans Baldung Grien (c.1484–1545) and Jacob Hoefnagel (1575-c.1630), were based on mutilated trade skins sequestered in the princely *Wunderkammern* of sixteenth and seventeenth century Europe. These skins were traded across the complex commercial networks of South East Asia long before the reached Europe, originating in New Guinea, where hunters prepared them without flesh, wings or feet to preserve them and facilitate their use as ornaments and trade items (Frith & Beehler, 1998, Forward & ch. 2; Swadling, 1996). The nature of the living birds was unknown in Europe except for these mysterious objects in collections and the fragments of mythology that had been carried to Europe with them, describing to the birds'

ethereal floating existence in a terrestrial paradise. The birds were believed to be footless, dew-drinking creatures that never landed and bred in the skies (Massing, 2007, pp. 425-457).

As Attenborough and Fuller show, the sense of wonder which these apparently angelic creatures inspired remains to the present day, undiminished by the uncovering of the biology of the birds. The awe felt by people seeing the plumed skins of paradisiacal creatures kept in cabinets of curiosity in the early modern period was echoed by nineteenth century naturalists such as John Gould perusing their precious *Paradisaeidae* specimens. The birds remained symbols of the exotic, whether they were associated with the Dutch spice trade or worn as ornaments in the hats of well-to-do Victorian women (Frith & Beehler, 1998). The elaborate and precise lithographs of living birds in full courtship display by ornithological artists in the nineteenth and twentieth centuries demonstrate the far stranger and more wonderful reality that was 'discovered' by European collectors and explorers. In particular, the diversity of the different genera and the startling way in which males use their beautiful plumes in courtship dances are at least as fantastical as wingless perpetual flight. Attenborough and Fuller deal with eight of the twelve *Paradisaeidae* genera, excluding four on account of their relative plainness and therefore 'less absorbing' histories (Attenborough & Fuller, 2012, p. 35). These courtship dances are brought to life in the text, just as one would hope from a book by Attenborough, described with all the excitement of an explorer in the forests of New Guinea faced with the sight of a group of spectacular lekking male birds of paradise. The result is a volume that could not but be a pleasure to peruse.

Writing of more recent ornithological developments might seem more rigorously academic, and indeed *Ten thousand birds* is so. However, Birkhead, Wimpenny and Montgomerie portray their material in such a way as to make it of great value to both the ornithological

community and the non-ornithologist. One way in which they manage this is by imbuing their text with the same sense of wonder at the avian world that is so self-evident in *Drawn from paradise*. Apart from the many photographs and artistic plates of birds and their ornithologists, the authors portray the conceptual engagement with birds in a particularly appealing way. They describe the development of eleven major areas in ornithology that are of particular importance today. Stretching from Darwin to the present day, the text unfurls the genesis and gradual development of the key ideas about the evolutionary origins of birds and the adaptive bases of bird behaviour and physiology. The elegance of the ideas and the considerable experimental ingenuity used to test them are almost as extraordinary as the birds themselves. This makes the concluding focus on the current extinction of both a significant portion of global bird life and the freedom of unconstrained 'blue skies research' funding all the more poignant.

*Ten thousand birds* sets out to facilitate new ornithologists' understanding of their the field and its history by clearly portraying the development of the current ornithological paradigms. The authors examine the importance of ornithological work in wider biological theory, such as its role in the Darwinian synthesis and in the development of other biological fields, in particular behavioural ecology (Birkhead *et al.*, 2014, pp. 57-60). For example, the questions about sexual selection that Darwin posed in the nineteenth century were still largely unresolved in the early twentieth century. Experimental work on female choice in birds led to the gradual acknowledgement of the role of female selection in the evolution of secondary sexual traits in males. One of the most conclusive experiments, which is now a classic in the Natural Sciences Tripos at Cambridge, involved the elongating or lengthening of the tails of male long-tailed widow birds. The unfortunate males who had had their tails shortened were, unsurprisingly, far less successful with females than those with the extra-ordinarily long

appendages. This work led to the theory of 'runaway selection', the co-selection of the genes for both female preferences and male sexual traits, causing the evolution of ever-more extreme male behaviours and appearances. This explained the diversity seen amongst the male birds of paradise species that had so perplexed Darwin and Wallace (Birkhead *et al.*, 2014, ch. 9). Research on this subject and other ornithological questions contributed to some of the central evolutionary principles now applied throughout animal biology.

The authors acknowledge that these ornithological concepts are models constructed in a social context. They ensure that the people who created this 'wonderful and extraordinary body of knowledge' are integral to the account. The structure of the book centres around the ideas themselves, with each chapter exploring one area, but the book's emphasis 'is on people' (Birkhead *et al.* 2014 p. xii). Indeed, it is clear that ideas and the people behind them are inseparable, especially in times of controversy. It is certainly not always experimental data that determines whether a theory becomes an entity in its own right or remains tied to the person who developed it. Unlike many discipline histories of written from within, this book is not a purely internalist history of ideas, but a social history of the field, in which the subjective plays a significant role alongside the objective experimental activity.

Ornithologists' career patterns and social lives, their philosophical leanings, and, perhaps most importantly, their colleagues and mentors are all shown to significantly affect ornithological ideas. This not only makes for greater contextual understanding of ornithological theory but a much more engaging narrative.

One particularly compelling example is the debate over the maintenance of population density between Vero Copner Wynne-Edwards and David Lack that raged in discussion, correspondence and print in the 1950's and 60's (Birkhead *et al.*, 2014, ch. 10). Wynne-

Edwards was committed to the idea of selection at the level of the species or group, invoking endogenous population control mechanisms operating ‘for the good of the species,’ while Lack’s devotion to selection at the level of the individual underpinned his development of the idea of exogenous mechanisms regulating animal populations, such as the limiting effects of food availability. The outcome was therefore closely entwined with the fundamental understanding of how evolution operated. The debate was encouraged by some, and many wished to see a public fight, but Lack’s modesty and frustration with the whole affair led him to withdraw from the debate, while Wynne-Edwards continued an outspoken campaign. Lack did not need to continue the fight himself, however, because of the work carried out by the generations of ornithologists whom Lack had mentored that supported and refined his ideas.

The authors exercise a delightful, perhaps tongue-in-cheek, reflexivity in their account, as they turn their ornithological methods back on ornithology and the ornithologists themselves. The ‘characters’ included in the book were the result of the analysis of citations of the publications of 365 ornithologists prominent since the 1960's. The authors also asked a large group of senior ornithologists, selected from as many countries as possible to reduce 'bias,' for their 'top ten' influential figures in the field and influential books. The authors even acknowledge their own sources of 'bias,' as unavoidable influences on the account, such as their own locations and career paths. Scientists such as Ernst Mayer and David Lack were the clear favourites who emerged from this research. The authors speculate that the clustered influence of particular figures may be a result of the way in which key people were able to produce watershed syntheses by relying on the 'substantial foundations provided by generations of ornithological foot soldiers,' and, perhaps, the importance of networking and mentoring in science increasing the footprint of prominent individuals (Birkhead *et al.*, 2014,

p. viii). The ornithological landscape, it seems, is a close-knit one, both intellectually and socially.

The irony here is that, while the authors have used mock-scientific methods to select the subject matter of the book, and rigorously cite references as though from a scientific paper, they infuse the narrative with such warmth that the overriding message is entirely un-clinical. The tireless efforts of these monumental figures are sometimes described in a way echoing the 'romantic' narratives expected of internalist histories (Clarke, 1995). However, it could be seen as less a romantic retelling of the past, and more affection for inspirational colleagues; and the authors attempt to maintain a balance by bringing in relevant strands of many different scientist's work. Consistent with this sociology of ornithologists, interviews with living ornithologists at the end of each chapter are like live sample specimens that demonstrate the considerable impact that inspirational senior ornithologists can have on newcomers to the field as well as the consuming devotion to particular species, topics or areas that characterise ornithological careers. One extreme example is the lifelong work on the Galapagos finches carried out by Peter and Rosemary Grant. They have spent a large portion of their lives in the tough conditions of the Galapagos Islands, and their work has generated numerous evolutionary insights (Birkhead *et al.*, 2014, p. 51).

In *Drawn from paradise*, Attenborough and Fuller narrate from a much less sociological perspective. We see an accumulation of observations, specimens and images, through the efforts of heroic European naturalists, to form an increasingly naturalistic representation of a bird of paradise. At one level, this is the case. The scarce and drastically altered specimens of the sixteenth century revealed far less about the birds' biologies than the field observations and films made of the animals more recently. This is, in essence, an internalist narrative,

adopting a traditional approach of the 'progress' of knowledge, from 'myth' to 'reality', 'ignorance' to 'truth.' For example, the arrangement of the plumes of the twelve-wired bird of paradise, confused in early nineteenth century images by the poorly packed specimens, was eventually elucidated, while the roles of the array of plumes across the various species became clear with greater knowledge of the birds' dances. The greater bird of paradise's long 'wires', initially seen as appendages for hanging from branches or entwining mates during aerial copulation, were later known to be accessories in their dance of shimmering gold plumes.

Nevertheless, given that this book is about the art of the birds of paradise over a broad period of time, the authors give very little space to an exploration of the ideas held about the birds in previous centuries. As is demonstrated by the numerous images of them, the birds gained significant cultural importance from their first arrival in Europe, and this meaning is integral to the artistic works in which they were depicted. Art has been used by historians of science with increasing frequency as a means of accessing historical economic and scientific activity. With respect to the birds of paradise, José Ramón Marcaida has recently explored the bird of paradise panaches in Peter Paul Rubens's 1609 painting, the *Adoration of the Magi* (Marcaida, 2014). However, this approach does not replace the more traditional use of art as a window onto subjectivity; rather they are intimately linked. Simply tracing the increasing naturalism of art from the current biological vantage point, demonstrated by the organisation of the book into chapters on each genera of the birds, limits the possible insight into the material gathered here.

The miniature of a lesser bird of paradise by Giulio Clovio from the *Farnese Hours* (1539-46) that Attenborough and Fuller include, exemplifies the emblematic meanings that the birds of

paradise rapidly acquired within Christian religious symbolism (Mužinić *et al.*, 2009; Eisler, 1995). The legless and floating birds were used in emblems commenting on an ascetic and spiritual life removed from the machinations of earthly matters (Henkel and Schöne, 1978, pp. 798-800). Similarly, Jacques Linard's painting, *The Five Senses and the Four Elements* (1627), is an alchemical allegory rife with symbolism, as were other early modern still life paintings (Attenborough & Fuller, 2012, p. 29; Swan in Smith & Findlen, 2002, p. 126). A bird of paradise skin is depicted as if it is flying out of the window to escape the chaos of the study, and therefore acts as a symbol of the aerial elements. Such period-specific conceptions were integral to the European relationship with the birds and to the artistic depictions of them. The Dutch astronomer Petrus Planchius (1552-1622) even enshrined the bird of paradise in a new Southern constellation, *Paradysvogel Apis Indica* in his 1598 celestial globe (Ridpath, 2006, p. 225). Even in the more 'objective' account by Carolus Clusius in his *Exoticorum libri decem* (1605), in which the birds were granted legs for the first time, there is a strong emblematic undercurrent in his reference to tales of the 'king birds' that were followed by flocks of loyal subjects (Clusius, 1605, p. 362). This symbolism remained in poetry and art well into the eighteenth century.

While the focus of *Drawn from paradise* is on the history of the birds of paradise in Europe the almost complete omission of the New Guinean or South East Asian perspectives is somewhat surprising. Given that, for a significant portion of the period covered, European access to the birds was entirely mediated by New Guinean hunters and the trade networks of South East Asia. In particular, the imagery that reached Europe in the sixteenth and seventeenth centuries was of Islamic origin, resulting from the hundreds of years of trade and high value placed on these skins in many Asian cultures. Tales that first reached Europe told of birds that lived in a terrestrial paradise and only fell to Earth when dead (Pigafetta in

Stanley, 1878, p. 143; Clusius, 1605 pp. 360-362). The search for such a paradise was a very real European endeavour in this period, and the European control of the Moluccan spice islands was seen for a period as the realisation of this search (Eisler, 1995, ch. 4-5). The birds and the spices, both originating from this bountiful region in South East Asia, were closely intertwined symbolically, even as the European trading enterprise in the region turned increasingly bloody in the seventeenth century (Turner in Levenson, 2007, p. 51; Swadling, 1996, ch. 2; Ricklefs, 2008). Similarly, the complex ethnobiology surrounding the birds of paradise and the central cultural roles that the birds play amongst different New Guinean tribes, could arguably be a relevant counterpoint to the European 'discovery' of the birds (Frith & Beehler, 1998; Healey, 1990 & 1993).

Birkhead, Wimpenny and Montgomerie, in contrast, acknowledge that their work is a snapshot of the current state of their field. They express the hope for future solutions to current mysteries, such as the mechanisms behind and evolution of bird migration. This more dynamic perspective might be a result of the greater accessibility of recent history, facilitating the exploration of the intellectual and social foundations of current paradigms. From this book, it seems that such an exploration can be especially rich when carried out by those who both understand a field from within and are not entirely opposed to a constructivist interpretation of science history. The authors also thoroughly contextualise the ideas of previous ornithologists, such as the value of descriptive studies in the early modern the project of establishing a 'natural system' that would echo God's divine plan (Birkhead *et al.*, 2014, p. 203; Sloan, 1976). They identify particular ideas from previous naturalists, such as Darwin's suggestions about sexual selection, as progenitors to modern theoretical developments, but the short time frame of the book reduces the risk of using such ideas anachronistically. The authors do describe a typical scientific progression of 'successive

phases of description, speculation about function and, eventually, by experimental test of hypotheses' (Birkhead *et al.*, 2014). This process is an interesting one to bear in mind while reading the book, as many of the case studies seem to fit the template, and whether this is through narrative hindsight is a question that different readers will answer according to their own interests.

These two books provide very different perspectives on ornithology. One embodies the love of the natural history of a particularly wonderful group of birds, one that both Attenborough and Fuller evidently possess. It is not intended to be a thoroughly academic volume, but a collection conveying the experience of a natural and ornithological paradise. At one point, the authors rhetorically ask which species might win a contest for being the most beautiful bird of paradise. This book would certainly stand a good chance of winning a similar contest (Attenborough & Fuller, 2012, p. 142). *Ten thousand birds* directs a similar affection towards the ornithologists themselves. It provides an astute evaluation of the ornithological developments of the past 150 years, that will be of interest to both professional ornithologists and historians of science. In their concluding remarks, the authors speculate about what makes a good ornithologist. The episodes in this book confirm Darwin's suggestion that most important factors are a 'steady and ardent love' as well as 'the strongest desire' to understand the natural world (Birkhead *et al.*, 2014, p. 426).

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### **References:**

Clark, W. (1995). Narratology and the history of science. Studies in History and Philosophy of Science, 26A, 1-71.

- Clusius, C. (1605). Exoticorum libri decem. Leiden.
- Eisler, W. (1995). The Furthest Shore: Images of Terra Australis from the Middle Ages to Captain Cook. Cambridge: Cambridge University Press.
- Frith, C. B. & Beehler, B. M. (1998). The birds of paradise, *Paradisaeidae*. Oxford: Oxford University Press.
- Healey, C. (1993). Folk taxonomy and mythology of birds of paradise in the New Guinea highlands. Ethology, *32*(1) pp.19-34.
- Healey, C. (1990). Maring hunters and traders: production and exchange in the Papua New Guinea highlands. Berkeley: University of California Press.
- Henkel, A. & Schöne, A. (1978). Emblemata handbuch zur sinnbildkunst des XVI. Und XVII jarhunderts. Stuttgart: J.B. Metzlersche verlagsbuchhandlung.
- Levenson, J. A. (ed.) (2007). Encompassing the globe: Portugal and the world in the 16th and 17th centuries. With contributions by Jack Turner and Diogo Ramada Curto. Washington DC: Arthur M. Sackler Gallery, Smithsonian Institution Press.
- Marcaida, J. R. (2014). Rubens and the bird of paradise: Painting natural knowledge in the early seventeenth century. Renaissance Studies, *28*(1), 112–127.
- Massing, J. M. (2007). Studies in imagery, II: The world discovered. London: The Pindar Press.
- Mužinić, J. Bogdan, J. F. & Beehler, B. (2009). Julije Klović: the first colour drawing of greater bird of paradise *Paradisaea apoda* in Europe and its model. Journal of Ornithology, *150*, 645-649.
- Pigafetta, A. in Henry E. J. Stanley (ed.) (1878). Works issued by the Hakluyt Society: The first voyage round the world by Magellan, translated from the accounts of Pigafetta and other contemporary writers. Cambridge and New York: Cambridge University Press.
- Ricklefs, M. C. (2008). A history of modern Indonesia from c.1200 (4<sup>th</sup> ed). Palgrave Macmillan.
- Ridpath, I. (2006). Astronomy. London: Dorling Kindersley.
- Sloan, P.R. (1976). The Buffon-Linnaeus controversy. Isis, *67*.
- Swan, C. (2002). From blowfish to flower still life paintings. In P. H. Smith & P. Findlen (Eds.), Merchants and marvels: Commerce, science and art in early modern Europe (pp. 109-136). London: Routledge.
- Swadling, P. (1996). Plumes from Paradise: trade cycles in outer South East Asia & Their Impact on New Guinea & Nearby Islands Until 1920. Boroko: Papua New Guinea National Museum & Robert Browne.