

## Bowerbirds, art and aesthetics

### Are bowerbirds artists and do they have an aesthetic sense?

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**M**ale bowerbirds create and decorate a structure called a bower which serves only to attract females for mating, and females visit and choose one among many bower owners before deciding which male to mate with. Is what they do art, and do they have an aesthetic sense? I propose operational definitions of art, judgement, and an aesthetic sense which depend upon communication theory which allow one to get explicit answers to this question. By these definitions Great Bowerbirds are artists, judge art, and therefore have an aesthetic sense.

the court sets up perfect conditions for a geometric optical illusion known as forced perspective.<sup>3</sup> The forced perspective has several possible consequences<sup>3,4</sup> including creating a more regular gesso pattern as seen by the female within the avenue, altering the perceived sizes of court and displayed objects, and creating further illusions which attract the female's attention.<sup>3,4</sup> We now know that males which create better forced perspective gain more mates.<sup>4</sup> Is this art, and do great bowerbirds have an aesthetic sense?

#### Do Bowerbirds Produce Art?

#### Introduction

Male bowerbirds create and decorate a structure called a bower which is used only for attracting and mating with females; females then go off and make their own nests and raise their offspring by themselves.<sup>1</sup> Female bowerbirds choose which male to mate with on the basis of various bower and male characteristics (1, references in ref. 2–3). Male great bowerbirds (*Ptilonorhynchus nuchalis*) build a large (0.6 m long) avenue of densely thatched sticks opening into two slightly larger flat areas or courts which are covered with colorless objects (gesso), and decorated with colored objects. From within the avenue, females watch the male display his head and lilac-pink nuchal crest, and colored objects in his bill, over the gesso.<sup>1–3</sup> Great bowerbirds go further, and arrange the gesso objects in increasing size with distance from the avenue entrances.<sup>3</sup> The combined effect of the geometric gesso pattern and the fact that the avenue creates a predictable direction and field of view of

To decide whether or not what bowerbirds do is art, in principle all that one would have to do would be to compare it to the definition of art. Unfortunately, the definition of art as a human activity is problematic; no two dictionaries define it the same and controversy rages. Here are some examples. “Skill, esp. human skill as opposed to nature; (ability in) skilled execution as an object in itself; cunning; imitative or imaginative skill applied to design” and “thing in which skill may be exercised”.<sup>5</sup> “Skill acquired by experience, study, or observation,” and “the conscious use of skill and creative imagination”.<sup>6</sup> “The production or expression of what is beautiful (especially visually), appealing, or of more than ordinary significance,” and “a method of doing a thing, especially if it is difficult”.<sup>7</sup> “The process or product of deliberately arranging elements in a way to affect the senses or emotions,” and “Fine art means that a skill is being used to express the artist's creativity, or to engage the audience's aesthetic sensibilities, or to draw the audience towards consideration

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of the finer things.<sup>8</sup> “the use of skill and imagination in the creation of aesthetic objects, environments, or experiences that can be shared with others.”<sup>9</sup> “The conscious production or arrangement of sounds, colors, forms, movements, or other elements in a manner that affects the sense of beauty.”<sup>10</sup>

Note that some definitions depend upon other problematic definitions (e.g., production of beauty). Not only is the definition of Art variable and controversial, but to some merely defining it is thought to restrict artistic creativity. For a thorough discussion of definitions and their problems see the art section of the Stanford Encyclopaedia of Philosophy website.<sup>11</sup>

One way to minimize confusion is to simply create an operational definition which attempts to capture most of the ideas. This also has the advantage of allowing testable hypotheses. For this reason I suggest that *visual art can be defined as the creation of an external visual pattern by one individual in order to influence the behavior of others, and an artistic skill is the ability to create art*. Influencing behavior can range from attraction to and voluntary viewing of the art by others to viewers mating with the artist (modified from the online supplemental material of reference 3). This definition equates art with conventional signals<sup>3</sup> and aligns it with signaling theory, including that in animals.<sup>12,13</sup> Art objects are conventional signals that are not part of the artist’s body but have the same function as signals originating from the body. By this definition both bowerbirds and humans produce and react to art, and the practitioners of art can be called artists.

### **Do Bowerbirds have an Aesthetic Sense?**

Darwin<sup>14</sup> and Diamond<sup>15,16</sup> first suggested that an aesthetic sense underlies sexual selection for bowerbird art, but most discussions of animal aesthetics seem to be anthropomorphic or use human-style standards (e.g., symmetry or ‘beauty’) in tests,<sup>17,18</sup> measure human neural correlates of “beauty”,<sup>19</sup> or test animals with human

paintings.<sup>20,21</sup> Although these papers are interesting, it is difficult to know how to interpret them, although putting aesthetics in a sexual selection context is a good first step.<sup>17</sup>

The general concept of aesthetics and the definition of aesthetic sense is at least as controversial as the definition and concept of art, and even more controversial when applied to animals.<sup>11,22,23</sup> What does seem to be generally agreed upon by philosophers is that aesthetics involves judgement;<sup>23</sup> the assessor (the one with an aesthetic sense) must be able to judge and perhaps even rank the quality of different art objects or individuals. But, just what is judgement? The Darwinian approach<sup>17</sup> suggests an operational definition: *judgement is the active choice among different art objects or individuals leading to change of fitness in both artist and judge*. Therefore *aesthetics is the exercise of judgement leading to mutual fitness changes*. These definitions implicitly include cases where both artist and judge benefit as well as cases of deception<sup>12</sup> which lead to fitness gain in the artist but fitness loss in the judge.

Variation in judgement is widespread in humans, but also found in animals. For example, individual female guppies vary in mating preferences.<sup>24</sup> In humans, variation in judgement probably encourages variation in art, and this may well work in animals. It would be illuminating to examine the theoretical relationship between variation in judgement and variation in art and other signals to investigate whether one leads to variation in the other, and vice versa, and what processes jointly maintain variation in judgement and judged.

The operational definitions of art, judgement and aesthetics suggest that Great Bowerbirds are artists and have an aesthetic sense. Males create art because their created bower is voluntarily viewed by females, leading to changes in their behavior up to and including mating with the artist. Males have an aesthetic sense in that they have to create the bowers and forced perspective, and appear to constantly maintaining and improving the bower geometry.<sup>3</sup> Individual males vary in

the quality of the art (forced perspective and associated geometric patterns) that they produce.<sup>3,4</sup> There is much stronger evidence for aesthetics in females than males. Females judge the art and mate with those males which produce the best art,<sup>4</sup> and both benefit by producing offspring. Males may judge their own work but females certainly judge that of the males.

One complication for bowerbirds is that there is a possibility that females choose males producing the best perspective not because the particular perspective pattern is best for that particular male, but because a more even pattern of court objects makes his displayed objects more conspicuous or generates more attention-grabbing illusions.<sup>3,4</sup> However, the quality, conspicuousness and attention-grabbing aspects of the bower are not mutually exclusive and all of these factors affect the female’s judgement. As in humans, the target of aesthetics is not always straightforward or even unimodal. Seeking single explanations for things is a vestige of our monotheistic past.

Other animals build and decorate structures, for examples sticklebacks,<sup>25,26</sup> cichlids,<sup>27</sup> chubb,<sup>28</sup> sand gobies,<sup>29</sup> raptors and owls.<sup>30,31</sup> However, in these cases the structure (a nest) is also used for reproduction as well as signaling quality or breeding status so it has utility. Many people insist that art objects should not have a direct function. So, for example, by that more restricted art definition the colorfully decorated stickleback nests<sup>25</sup> are not art. However, by the operational definitions given here, these species do exhibit art, judgement and aesthetics. So far, only the Great Bowerbird<sup>3,4</sup> exhibits art which has no direct function other than to modify the behavior of its viewer. Many of these ideas need further clarification. The use of operational definitions of art, judgement and aesthetics should help to test hypotheses about these phenomena in other animals.

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