



TITLE: Art and Design: An Evolutionary and Cognitive Approach'

Today I am going to talk about an evolutionary and cognitive approach to art and design

ABSTRACT: Human beings are pattern-making reality constructors, and all societies engage in that form of cognitive play that we broadly term 'art': the deep history of this universal human characteristic is discussed by Brian Boyd in 'Evolutionary Theories of Art' (2005). **My paper looks first at the convergences of art and design in terms of hardwiring,** and then focuses on the cultural distinctions between what we term 'fine art' and 'design' in the contemporary world. A broad definition of 'art' using the twelve-cluster criteria identified by Denis Dutton in his book *The Art Instinct: Beauty, Pleasure, and Human Evolution* (2009) provides a starting point for examining the differences between art and design, and for the development of a co-operative model in the twenty-first century.

*"Not only is art everywhere, it would seem we have always had art"*

(Chatterjee, 2014, p.123)

#### Biology and Art

*"Evolutionary theories of art consider art in the light of the first fully scientific attempt to understand human nature. They can ask why art exists at all, [...] why it is so prevalent in human behavior".*

[Boyd 2005, p.149]

**"Not only is art everywhere, it would seem we have always had art"** (Chatterjee, 2014, p. 123)

In every culture some form of pattern-making activity that we term "art" is found.

**In this paper** I am going to look specifically at **visual art and design**, particularly in terms of **current evolutionary theories** that address **why we universally take great pleasure in art**, when ostensibly it fulfils **no useful purpose**. How did it help us survive as a species when it does not physically contribute to our on-going survival in the direct way that sex, and finding food did?

Brian Boyd suggests: "Evolutionary theories of art consider art in the light of the first fully scientific attempt to understand human nature. They can ask why art exists at all, [...] why it is so prevalent in human behavior." (Boyd 2005, p. 149)

### Biology

- An essential pre-requisite of **aesthetic appreciation** is the evolutionary development of **stereo colour vision**
- “in the evolution of human colour vision, spotting fruit from a distance was a [...] selective advantage”  
(Bompas, Kendall, & Sumner 2013, p. 84).
- Adaptations such as **language, tool making, and our proportionately large brain size**, set in place the necessary biological equipment needed for **art and design** to develop, as did **our highly developed ability to learn by imitation**.

In terms of **Biology**,

One of the essential pre-requisite of aesthetic appreciation of art is the evolutionary development of **stereo colour vision**, which is largely seen only in the higher primates., and uniquely advanced in humans. It has been suggested that – “in the evolution of human colour vision, spotting fruit from a distance was a [...] selective advantage” (Bompas, Kendall, & Sumner 2013, p. 84). Along **with language, tool making, and our proportionately large brain size, which allows us to engage in symbolic thinking**, these attributes aided the biological success and survival of our species. They also set in place **the necessary biological equipment** needed for **art and design** to develop, as did our highly developed ability **to learn by imitation**

“Mimesis” or the representation or imitation of the real world – in a work of art, literature, etc. is a philosophical concept used in relation to the arts dating back to ancient times.

Aristotle in his *Poetics*, or Plato in *Republic* use “mimesis” to refer generally to the imitation of nature in art

“Mimesis” or the representation or imitation of the real world – in a work of art. **is a philosophical concept used in relation to the arts dating back to ancient times.** Aristotle in his *Poetics*, or Plato in *Republic* use ‘mimesis’ to refer generally to the imitation of nature in art, though both also use the term more specifically.

- the science of psychology has been applied to our understanding of the origins and nature of art for over two thousand years.
- Aristotle suggests in *Politics* that necessity taught men the inventions that were absolutely required and once basic needs were fulfilled it was natural that other adornments that enrich life would develop.
- Late twentieth century theorists moved away from interpreting art as **a universal aspect of human nature** and moved to interpretations based on historical or cultural production. **“Cultural constructivism”** in aesthetics entailed a denial of Aristotle’s universalism
- Today, a renewed interest in the universal and cross-cultural aspects of art suggested by evolutionary psychologists

Indeed, **the science of psychology** has been applied to our understanding of the origins and nature of art **for over two thousand years**.

**Aristotle** suggests in *Politics* that **necessity taught men the inventions that were absolutely required and once basic needs were fulfilled** it was natural that other **adornments that enrich life, such as art, would develop** (Dutton 2003).

However in the **late twentieth century, theorists** moved away from interpreting art as a universal aspect of human nature and moved to interpretations based on historical or cultural production.

**‘Cultural constructivism’ in aesthetics entailed a denial of Aristotle’s universalism.**

However today there is a renewed interest in **the universal and cross-cultural aspects of art** suggested by evolutionary psychologists.

We have a new understanding of the **biological roots** of “mimesis”

- A fascinating discovery in the early 1990s of the existence of mirror neurons, made it clear how humans are able to learn automatically just by watching an action performed.
- “Mirror neurons in the brain’s prefrontal cortex fire not only when an animal performs an action but when it sees another [...] perform the same action.” We have a unique ability of being able to put ourselves in the mind of another, to empathise, and infer the intentions, beliefs and thoughts of another. We have what is termed ‘Theory of mind’. “Mirror neurons [...] allow an effortless, automatic understanding of the intentions of others through an almost reflex inner imitation” (Boyd 2009, p. 142)

We have a new understanding of the **biological roots of ‘mimesis’**.

A fascinating discovery in the early 1990s of **the existence of *mirror neurons***, (first in macaque monkeys and then in chimps and humans) **made it clear how humans are able to learn automatically** just by **watching** an action performed.

“Mirror neurons in the brain’s prefrontal cortex fire not only when an animal performs an action but when it sees another [...] perform the same action.” (Boyd 2009, p. 142). We have a unique ability of being able to put ourselves in the mind of another, to empathize, and infer the intentions, beliefs and thoughts of another. We have what is termed ‘Theory of mind’. “Mirror neurons [...] allow an effortless, automatic understanding of the intentions of others through an **almost reflex inner imitation**” (p. 142)

For example, If you watch a YouTube video on how to a knot, **you will learn by watching much more quickly** and effectively than if you **read a set of written instructions**, because your mirror neurons do the work for you. The **neural pathways needed to perform the hand movements to tie a knot** are established in **your** brain just by watching someone else do it.

Ellen Dissanayake lists some of the functions of art and design

They are:

- **art as direct, immediate experience or as mimesis**, as the imitation of experience
- **as training for the unfamiliar**
- as a source of **individual “mastery, security, and relief from anxiety”**
- as a mode of individual display, or an assertion of individual prestige
- **as communication with others** or a means of group identification
- **as providing a sense of meaning or order to the world** or access to a supra-mundane world.

(Dissanayake cited in Boyd 2005, p. 162)

Ellen Dissanayake is a key interdisciplinary theorist looking at art in a global context with an evolutionary perspective. She **lists some of the functions of art and design** proposed by anthropologists, ethnologists, psychologists, and aestheticians.

They are:

- art as direct, immediate experience or as mimesis, as the imitation of experience;
  - as training for the unfamiliar (we can test out situations in our imagination)
  - as a source of individual “mastery, security, and relief from anxiety,”
  - as a mode of individual display, or an assertion of individual prestige;
  - as communication with others or a means of group identification;
  - as providing a sense of meaning or order to the world or access to a supramundane world.
- (Dissanayake

cited in Boyd 2005, p. 162)

### What are the origins of art?

The four main arguments are:

**1) art is not an adaptation but a byproduct of the evolution of human brains by natural selection (Steven Pinker)**

2) art is a product not of natural selection but of sexual selection (Geoffrey Miller)

3) art is an adaptation, its chief function social cohesion and “making special” (Ellen Dissanayake & Brian Boyd)

4) art is an adaptation, its chief function individual mental organization (John Tooby and Leda Cosmides)”

(Boyd, 2005, p. 150)

### SO What are the origins of art?

The four main arguments are:

**1] Steven Pinker suggests that: art is not an adaptation but a byproduct of the evolution of human brains by natural selection. Art is like “Cheesecake” – we love it but it is not essential for survival, our inclination to decorate, adorn and to create art has developed as “a by-product of three other adaptations:**

**1] the hunger for status,**

**2] the aesthetic pleasure of experiencing adaptive objects and environments, and**

**3] the ability to design artefacts to achieve desired ends.**

On this view art is a pleasure technology, like drugs, erotica or fine cuisine.” (Pinker 2002, p. 405)

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- (2) art is a product not of natural selection but of sexual selection (Geoffrey Miller)**
- 3) art is an adaptation, its chief function social cohesion and “making special” (Ellen Dissanayake & Brian Boyd)
- 4) art is an adaptation, its chief function individual mental organization (John Tooby and Leda Cosmides)

(Boyd, 2005, p. 150)

**2]** Geoffrey Miller in *The Mating Mind* (2000) argues that the impulse to create art is a mating tactic.

**art is a product not of natural selection but of sexual selection.**

Art is like the peacocks tail that hinders its movement and ability to survive except in that it attracts mates and therefore increases it's biological success.

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- 3) **art is an adaptation, its chief function social cohesion and “making special” (Ellen Dissanayake & Brian Boyd)**
- 4) or individual mental organization (John Tooby and Leda Cosmides)

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3] Ellen Dissanayake argues **that art is an *adaptation*, its chief function *social cohesion***. In *What is art for* (1990) she discusses art along with play and ritual as human behaviours that **“make special,”** which she suggests is an inherited ability intrinsic to all human beings as a means of making key social activities important and memorable.

Brian Boyd concurs – “The more skilled and successful is the attempt to engage attention and evoke a rich response, the more centrally it will be art.” (Boyd 2005, p. 148)

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- 1) art is not an adaptation but a byproduct of the evolution of human brains by natural selection (Steven Pinker)
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- 3) art is an adaptation, its chief function social cohesion and “making special” (Ellen Dissanayake & Brian Boyd)
- 4) **art is individual mental organization (John Tooby and Leda Cosmides)**

(Boyd, 2005, p. 150)

The fourth main argument for the origins of art

### **4] art is individual mental organization (John Tooby and Leda Cosmides)**

Leda Cosmides and John Tooby (2013) suggest that “**The brain was designed by natural selection to be a computer.** [...] sculpted over evolutionary time by the ancestral environments and selection pressures experienced by the hunter-gatherers from whom we are descended.

They **stress art’s role in developing the imaginative scope of decoupled human thought** and extending the space in which we think, imagine, and feel.

Denis Dutton in *The Art Instinct: Beauty, Pleasure, and Human Evolution* (2009)

- Historical theories to account for art and design
- first define what we mean by “art”
- problematic because:

“Aesthetic theories may claim universality but they are normally conditioned by the aesthetic issues and debates of their time”

(Dutton 2009, p. 48).

However Dutton suggests that **core items** found cross-culturally in the arts can be reduced to twelve cluster criteria.

(Dutton 2009, p. 51)

**Denis Dutton** in *The Art Instinct: Beauty, Pleasure, and Human Evolution* (2009)

**examines the various historical theories that have been put forward to account for art and design**, but suggests we need to **first define what we mean by “art”**, which is problematic as “Aesthetic theories may claim universality but they are normally conditioned by the aesthetic issues and debates of their time” (Dutton 2009, p. 48).

However **Dutton suggests that core items found cross-culturally in the arts can be reduced to twelve cluster criteria.** (Dutton 2009 p. 51)

12 Cluster Criteria: an evolutionary approach to  
"what is art"?

Chapter 3 in Denis Dutton (2009). *The Art Instinct: Beauty  
Pleasure and Human Evolution*. NY: Bloomsbury Press

1. Direct pleasure
2. Skill and virtuosity
3. Style
4. Novelty and creativity
5. Criticism
6. Representation
7. Special focus
8. Expressive Individuality
9. Emotional saturation
10. Intellectual challenge
11. Art tradition and institutions
12. Imaginative experience

When considering these 12 criteria for what is art,

The differences and similarities between **art** and **design** are also considered

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**The first Cluster Criteria to the question "what is art?" is**

**1. Direct pleasure:** "The art object [...] is valued as a source of immediate experiential pleasure in itself, and **not essentially for it's utility**" (Dutton 2009, p. 52) . It is visually appealing to our senses.

This would seem to a characteristic of Fine Art as we DO appreciate designed objects for their utility

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**Twelve Cluster Criteria: an evolutionary approach to "what is art?"**

**2. Skill and virtuosity.** "The **demonstration of skill is one of the most moving and pleasurable aspects of art**", and "high skill is a source of pleasure and admiration in every human activity" (Dutton 2009, p. 53)

True of both Art and Design

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**Twelve Cluster Criteria: an evolutionary approach to "what is art?"**

**3. Style. "Objects and performances in all art forms are made in recognizable styles, according to rules of form, composition, or expression.,"**

which **"provides a stable background against which artists may create elements of novelty and expressive surprise."** [...]

**"Style and culture are virtually coterminous"** (p. 53)

Both art and Design have "Styles" associated with them

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**Twelve Cluster Criteria: an evolutionary approach to "what is art?"**

**4. Novelty and creativity.** "Art is valued, and praised, for its novelty, creativity, originality, and capacity to surprise its audience" (p. 54)

More true of Fine art than design, though innovative design is also valued

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**Twelve Cluster Criteria: an evolutionary approach to "what is art?"**

**5. Criticism. "Wherever artistic forms are found they exist alongside some kind of critical language of judgement and appreciation" (p. 54)**

Art much more so than design

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**Twelve Cluster Criteria: an evolutionary approach to "what is art?"**

**6. Representation** "As Aristotle first observed, human beings

**1] take irreducible pleasure in representation" for its own sake** (The colours. the patterns)

**2] we take pleasure in terms of skill** or "how well a representation is accomplished"

**3] "we can also take pleasure in the object or scene itself"** as an evolutionary ideal  
environment as in a calendar rendering of a beautiful landscape

**"Delight in imitation and representation in any medium, including words, may involve the  
combined impact of all three pleasures"** p. 55

Both art and design

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**Twelve Cluster Criteria: an evolutionary approach to "what is art?"**

**7. Special focus.** "Works of art and artistic performances tend to be bracketed off from ordinary life, made a separate and dramatic focus of experience. In every known culture, art involves what art theorist Ellen Dissanayake calls 'making special' " p. 55

More true of art than design

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**Twelve Cluster Criteria: an evolutionary approach to "what is art?"**

**8. Expressive Individuality.** "the potential to express individuality is generally latent in art practices, whether or not it is fully achieved"

Individual expression and "authorship" is not found in design as much as in art.

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**Twelve Cluster Criteria: an evolutionary approach to "what is art?"**

**9. Emotional saturation.** "In varying degrees, the experience of works of art is shot through with emotion" and individual artists give a particular tone or emotional colour to their works p. 56

Again true of Art whereas design is more functional

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**Twelve Cluster Criteria: an evolutionary approach to "what is art?"**

**10. Intellectual challenge**

**"Works of art tend to be designed to utilize the combined variety of human perceptual and intellectual capacities to the full extent;** indeed the best works stretch them beyond ordinary limits. **The full exercise of mental capacities is in itself a source of aesthetic pleasure.**" e.g. Duchamps readymades.

More than design

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**Twelve Cluster Criteria: an evolutionary approach to "what is art?"**

**11. Art tradition and institutions**

**Art objects in all cultures "are created and to a degree given significance by their place in the history and traditions of their art. [...] [W]orks of art gain meaning by being produced in an art world, in what are essentially socially constructed art institutions"**

Design is not normally MADE for exhibition, as art tends to be, rather design is primarily or utilitarian uses

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**Twelve Cluster Criteria: an evolutionary approach to “what is art?”**

**12. Imaginative experience**

**Finally, and perhaps most important of all characteristics on the list, objects of art provide an imaginative experience for both producers and audiences.” “Kant insisted “that a work of art is a ‘presentation’ offered up to the imagination that appreciates it irrespective of the existence of a represented object: for Kant works of art are imaginative objects subject to disinterested contemplation. All art, in this way, happens in a make-believe world.**

**Artistic experience takes place in the theater of the imagination” decoupled from practical concerns and freed from “the constraints of logic and rational understanding”**

Design more centered in functional logic

The major criticism of Dutton's *The Art Instinct* is that it does not deal with **art making**, nor does it show art as an evolutionary adaption, and it is very much from a contemporary Western perspective.

(Dissanayake, 2014, p. A26)

The major criticism of Dutton's *The Art Instinct* and his cluster criteria above, is that it does not deal with **art making**, nor does it show art as an evolutionary adaption, and it is very much from a contemporary Western perspective:

*Delete for 20 mins talk*

“it does not succeed in its stated purpose of showing that art has been evolutionary adaptive. The book is more about aesthetic experience or response (pleasure and beauty) than art making or participation, and the author's twelve “cluster criteria” are too general for understanding why a particular behavior (or behavioral predisposition) of art might have originated and evolved. Advocacy of the sexual selection argument is inadequate: participation in the arts is good for everyone, not just a few (male) virtuosos.”

(Dissanayake, 2014, p. A26)

### Art, Craft and Design

Denis Dutton doesn't specifically talk about **design** but **dismisses craft**, which he characterizes as showing only competence and made with a preconceived end in view.

Earlier Dutton has cited Collingwood's distinction between artist and craftsman: "**the craftsman knows in advance what the end product will look like. Artists do not**"

[Dutton, cited in Boyd, Brian. "Art and Selection". Philosophy and Literature, Volume 33, Number 1, April 2009, p. 218 (Review)].

Dissanayake rightly points out that this is an inadequate interpretation.

So where does Design sit in relation to Art?

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Dissanayake rightly points out that this is an inadequate interpretation.

So where does Design sit in relation to Art?

In the twenty-first century, the distinction between art and design is indeed very **Blurry**, and the roles of designer and artist increasingly overlap, and merge in some areas.

**Batya Friedman** speaks of the two different worlds:

“...the designer is intentionally interventionist with a goal of effecting change of some sort, be it imagining a new “thing”, a new technology, or a new social structure; in contrast the artist is accountable to form and beauty — magic in the universe. Artists may or may not choose to engage with social or political change. Both designers and artists typically remain open throughout their processes to the direction their work may take them. They are often surprised by what emerges in the end. ”

[“Design, and Intention – All to What End”. Batya Friedman as cited by Carl Nelson, in *Sculpture North West*, Nov/Dec, 2014 p.3]

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Creative processes involve both “open” and “closed” phases of imaginative free play, and art and design overlap in this respect in terms of degree.

Brian Boyd suggests that: “**the ability to share and shape the attention of others** by appeals to common cognitive preferences led **to the development of art**: to behaviors that focus not on the immediate needs of the here and now but on **directing attention and engaging emotion** for its own sake, even toward distant realities and new possibilities.”

“Art therefore has an immediate *individual* function, since **keeping up with attention** is essential to us.” [Boyd 2005, p. 152]

**Cognitive Play and Ritual** are fundamental to **the attention focusing functions of art and design**, and are found in to all human interaction in all cultures.

Creative processes involve both “open” and “closed” phases of imaginative free play, and art and design overlap in this respect in terms, but differ in terms of of degree.

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“Art therefore has an immediate *individual* function, since **keeping up with attention** is essential to us.” (Boyd 2005, p. 152)

**Cognitive Play and Ritual** are fundamental to **the attention focusing functions of art and design**, and are found in to all human interaction in all cultures.

#### Conclusion

“The rise of the artistic avant-garde in the West in the last century and a half further **obscures an understanding of art as a human universal** because it involves an unprecedented degree of specialization, innovation, mechanical reproduction, and, therefore, exposure to examples of specialized artistic innovation”. [Boyd 2005, p. 161]

‘**Cultural constructivism**’ in aesthetics entailed a denial of Aristotle’ universalism. However, this is changing in the 21st Century, as there is a renewed interest in the timeless and **universal and cross-cultural aspects of art and design**, as suggested by evolutionary psychologists. Art and Design are increasingly seen in terms of creative co-operation as part of the suite of ancient pattern-making activities and ultrasocial behaviour that all human beings delight in.

#### Conclusion

“The rise of the artistic avant-garde in the West, in the last century and a half, further **obscures an understanding of art as a human universal** because it involves an unprecedented degree of specialization, innovation, mechanical reproduction, and, therefore, exposure to examples of specialized artistic innovation”. (Boyd 2005, p. 161)

‘**Cultural constructivism**’ in aesthetics entailed a denial of Aristotle’ universalism. However, this is changing in the 21st Century, as there is a renewed interest in the timeless and **universal and cross-cultural aspects of art and design**, as suggested by evolutionary psychologists. Art and Design are increasingly seen in terms of creative co-operation as part of the suite of ancient pattern-making activities and ultrasocial behaviour that all human beings delight in.

#### Reference List

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*The End*