

## Theoretical aesthetics

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### ABSTRACT

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This paper explores Theoretical Aesthetics: the subjecting of aesthetics to the scientific method. Specifically, the experimental verification of theories via repeatable measurements. Though not an original idea, it is an underexplored topic. The difficulty in subjecting aesthetics to the scientific method is determining what to measure. We are able to measure many things but those tell us little about the aesthetic perception (the monetary value, the number of viewers, the size, the material, the date of completion, the author, etc.). Theoretical aesthetics is a vehicle to start imagining scenarios where aesthetics could be rightfully subjected to the process of science, much as theoretical physics does for physics. This paper outlines these questions, their histories, and examines related work that can be leveraged towards a discussion of a quantifiable aesthetic discourse that may be used to more clearly articulate and compare aesthetic objects.

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**A**rt and science are approaches to human inquiry. Science is merely the search for knowledge through a process that yields repeatable results, which can be used to further our understanding. While art is use of aesthetics to the artist's purpose, be that expression, communication, aesthetic stimulation, or any other motivation. What is yet to be done is to apply the method of measurement to aesthetics. Can we develop a definitive quantitative model of aesthetics? Can aesthetics be measured in a meaningful way?

The origins of this work come from a collaborative art project where the author was creating work to accompany a performance of classical music. The dialogue quickly focused around balancing the weight of an established canonized work with a new work in a medium that had not yet been established in

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the time of the accompanying work. Most often ideas of techniques and aesthetic choices were exchanged for how to achieve the balance. However, there was no way to agree upon how to measure the success of the relationship, other than polling people.

This gave rise to many questions. Could a scale be developed that would allow collaborators to know when they've achieved aesthetic success in their collaborator's aesthetic judgments while working alone in their studios? Could an aggregate scale of aesthetic judgments be created to simulate audience response? How many people would need to be polled in order to reach agreement on the aesthetic judgment? If asked again in the future, would the aesthetic response differ? Would it be possible to aggregate or abstract the parameters of these judgments in such a way that future polling would be unnecessary?

What of aesthetics? The original definition of aesthetics was posed to explore sensual pleasure, where the pleasure of beauty and art were a subset of considerations of the discipline. Hegel confined and confused the definition to refer to only the philosophy of art (Hegel, 1998). There is surely a relationship between the philosophy of art and classical aesthetics, though not a simple relationship. This work will attempt to deal with aesthetics, which cannot be complete without a reference or a discussion of art.

The remainder of this paper is concerned with measuring aesthetics directly, and of the difficulties therein. What is not completely understood is whether aesthetics are dependent upon humans, and if so, then how do we measure humans and not just the effects or actions of humans, a domain well covered by the social sciences. This is not to dismiss the work of social scientists but to suggest that there are potentials for new discovery by utilizing alternative methodologies.

What is known is that humans make aesthetic judgments. These judgments are of many kinds but the essence of them may be 'discretized.' The discretization may be binary or it may have a higher resolution but it does allow for measurement. The question is how might we be able to discretize these spaces and how dimensional are they?

## Of definitions

Let us now move through a history of thought and argument on the nature of aesthetics. We will explore the main conjectures and fulcrums of aesthetics. From this history we will identify the main difficulties in moving

forward to a quantized and measurable aesthetic space.

Aesthetics is possibly the only area of philosophy that lacks an exact definition of the field. There is conjecture as to whether aesthetics refers to affect, beauty, art or a conflation of the three or something else altogether. Primarily, is aesthetics of humans or is of living things or is it a priori? Before we can measure aesthetics we must be able to define the object of measurement, so as to create a concept or instrument with which to measure.

The difficulty in studying and measuring aesthetics is that it is not a simple one to one mapping of a sense organ to a response. The sense of smell allows us the possibility of examining every molecule entering the nose, analyzing the molecules, and determining the components of the resulting sensation. However, a response that provides an aesthetic experience may be elicited through any sense or without any sensual input at all. One may merely think of something and elicit an aesthetic response, whether it be in response to a remembered or imagined stimulus. This peculiarity leads to the brain, which is the likely candidate to be the aesthetic sense organ.

For the purposes of definitions aesthetics applies not simply a theory of art. An object, corporeal or not, unto which an aesthetic may apply will be referred to as an aesthetic object. All aesthetic objects are subjects of aesthetics in this context and are to be quantifiably measured. This is not to say that the aesthetics lie in the object, but rather that aesthetics is the study of relationship between object and receiver of the stimulus of an aesthetic experience. If aesthetics is subsequently found to be the domain of experience then there is still value in the measurements of the object to provide more metadata about the measurements of experience.

The question of art has largely been tackled by artists, philosophers, as well as those inside the system of art. As yet, we do not have an agreeable definition of art. By virtue of this state, artists have become comfortable working in an undefined discipline. To ease their discomfort, artists often create a definition of art for themselves to function.

What is necessary is a true account of art: a prescriptive definition. Every definition offered for art describes properties of art. The expression "I know it when I see it" is often applied in reference to art. Our use of the term is entirely individual, and therefore subjective. One may include or exclude a work of art into one's own ontology based on any number of uninspected personal criteria.

Another expression of this idea is autopoiesis, referring to a self-replicating system. Luhmann (1996) expressed the idea of autopoiesis with respects to social systems, indicating that the system and environment must be separate.

In this context, we would be the environment of aesthetics, and the system, while separate, is indecipherable from our viewpoint. De Carvalho (2001) discusses many 20th century classical music composers who created systems for composing that yielded the individual works. Malcolm Gladwell (2000) recently reiterated this point when discussing tennis players: to determine how to do a backhand stroke asking tennis players is counterproductive - consulting a person who studies tennis players gives one the answer.

Who could define aesthetics? If we are to believe Gladwell then we must leave the study of aesthetics to someone outside of its purview. Perhaps our confusion of aesthetics comes from the set of definitions offered by all of the artists defining art as the confines in which they make art.

What of the individual? Thomas Aquinas espoused a definition of aesthetics referring to sensual pleasure. That is the experience of pleasure of the senses in response to a stimulus (Aquinas, 2005). Aquinas did not propose that works were of universal appeal but rather of general tendencies towards conformity. He did allow that individuals had preferences towards 'perversion' where they may receive pleasure by stimulus that offends the senses. Further, Aquinas provides two words for pleasure: *voluptas* (strictly for pleasures of the senses) and *delectatio* (strictly for non-sensual pleasures, often referring to enjoyment in the widest sense).

Immanuel Kant furthered the refining of aesthetics in the *Critique of Judgment* (Kant, 1987). Kant asserted that things cannot be beautiful in and of themselves; they do not contain a single property of beauty or a set of properties from which beauty emerges or is assembled. Though Kant does argue that the degree of perfection of an object does inspire or constitute beauty, reminiscent of Plato's ideal forms. Of course, the obvious problem being the comparison of an instantiated object against a form that has not corporeally existed. Kant does refer to the aesthetic experience as being immediate pleasure. Further pleasures from reflection or intellect provide another form of pleasure and basis for judgment; the aesthetic experience for Kant is definitive in its immediacy. Reflection may allow an individual to refine their tastes and thus alter their aesthetic response upon repeated stimulations. This is important, for we know that people have different aesthetic responses and that any one individual's response has the capacity to change, be it from a change in sensory faculties or from a modification of preferences through experience or reflection. This modification is the definition or refinement of taste, or preference for characteristics of objects or stimuli.

George Santayana's *The Sense of Beauty* (1896) further refined the individual aesthetic demonstrating that it is irrational and cannot be understood

otherwise. He rejects any theory of aesthetics that appeals to the absolute, citing Plato's ideals and its descendant theories as enticing but ultimately misleading. Santayana asserts that this individual experience is a fundamental to human experience.

The domain of art has long been dominated by humans, but recently activities in the animal kingdom by species other than humans have demonstrated some potential acts of art. An article in *Wired* magazine chronicles some of these creations by animals (Keim, 2012). This begs the question of aesthetic experience being a solely human endeavor. If animals are making art are they experiencing aesthetics? Are they making other decisions based on these aesthetic sensations? Bogue, in his book on Deleuze (Bogue, 2003) demonstrates that animals do, in fact, utilize aesthetics as a method of selecting mates and postulates that their aesthetic lives may extend further. Again, would that they had an aesthetic sense organ, these questions would be easily answered.

The parameterization of the aesthetic space is of great debate. In the early 20th century Hegel confined his discussion of aesthetics to refer specifically to art. Through the discussion Hegel described aesthetics as being more than pure affect. "The idea that music or art is or should be more than hedonistic pleasure is common place after Hegel's lectures on Aesthetics" (Bandur, 2001). Hegel described an intellectual pleasure as being a component or having a relationship to aesthetic experience.

Later in the century artists began to describe their experiences in this way. Steve Reich describes his process of composition and performance and introduces a term to refer to his intellectual stimulation in the aesthetic context. "Everything is worked out, there is no improvisation whatsoever, but the psychology of performance, what really happens when you play, it total involvement with the sound; total sensuous-intellectual involvement," (Reich, 1974, p. 52).

While parameters of aesthetics are important, context is another important consideration in aesthetics. Urmson discusses the aesthetic in terms of context (Urmson, 1957). An object becomes the subject of aesthetics once the context of aesthetics is invoked upon the object. Urmson argues that pleasure is multifaceted and we require criteria to clearly delineate the pleasures where multiples are present. This definition does contrast Hegel in that pleasure is divisible into the various components. However, in confining the scope of study to art, Hegel is effectively arguing that art is leveraging pleasure beyond the aesthetic, that other senses and sensations are engaged in art. This may be a convenience to resolve this incongruence and simplify the scope of studying aesthetic pleasure.

In his article on the possibility of theoretical aesthetics, Snoeyenbos (1972) discusses the definition of gold with the goal of illustrating the difficulty of terms. The term gold when discussed by scientists refers to the atomic number 79; a substance composed of atoms containing exactly and only 79 protons. However, the term is generally used to describe a material of a certain colour, hardness, shininess, etc. – a collection of properties that are not exclusive to the term's definitions as posed by scientists. As such, materials that are not atomic gold may be labeled as gold if they possess these properties. Snoeyenbos points to this confusion with respect to Waismann's notion of open-textured definitions (Waismann, 1945).

Snoeyenbos declares that since materials with the properties of gold may not be exclusively atomic gold that the possibility of the term being useful, as such, is impossible. This discussion is implied to be transposed onto art, however there is no agreed upon prescriptive definition of art, yet there is agreement on a material composed of 79 protons. The transposition of this discussion onto art seems dubious.

A descriptive definition is inadequate, as it needs comparison points. An atomic definition is a measurable definition: a prescriptive definition. A descriptive definition may masquerade as a prescriptive definition by being composed of measurable true statements relying on inadequate ontologies. A brown, billed, mammal is not always a duck; these properties are measurably true of a duck, though not exclusive to the duck.

León argues that it is possible to make aesthetic judgments without a resolution to the aesthetic ontology debate (León, 2008). Since there are many factors in aesthetic judgments and that these factors change over time then our understanding will likely change as well. Therefore, a resolved ontology may only be an ontology for a period of time and not a complete ontology. It may be the disagreements about aesthetic judgments that illustrate the changing ontologies. This argument also works well into a possibility of quantization, where disagreements upon aesthetic experiences need not preclude one another, but are each subject to study in their own rights.

For the purposes of this study an initial definition of aesthetics is the study of aesthetic experience, which encompasses the study of the effect on the experiencer and the study of the stimulus objects (corporeal or virtual). This is a deliberately open and reflexive definition. For a starting point we must consider those cases that are currently difficult or borderline. Through study the bounds of aesthetics can be refined to define conclusively that which is and is not aesthetic.

## Of measurement

Philosophers, in defining theories of aesthetics often talk of one idea, form, or method being of more value than another. Everyone who encounters an aesthetic passes judgment on it, but is this measurement or is independent? Is the judgment of one person more or less correct than another person's? Is it more or less valid?

Of great importance is the development of an aesthetic measurement device: an aesthetic ruler, of sorts. A ruler is a sufficient tool for measuring small distances. What an aesthetic measurement device would constitute is unclear. The conjecture is where the measureable properties lie, if in fact it is summation of an array of properties. If the properties are manifest in an object, then the difficulty arises when measuring non-corporeal objects. If the properties are manifest in an individual's perception, then the difficulty arises in measuring perception. However, the measurement may turn out to be dependent on the correlation between the object and the subject, which would only be localized to the instance of measure and would shift over time, as many things do, thus further complicating the task of measurement.

Scientific naturalism is the view that all things can come to be known. With respect to theoretical aesthetics what is not known is whether the questions posed in its domain are things that are possible. Currently there is little to no groundwork upon which to build the foundations of a quantitative model of aesthetics.

While considering individual definitions of aesthetics it is useful to consider the potential for measurement. For an individual, aesthetics is a set of preferences or criteria whereby an aesthetic object is compared. In this scenario it would be possible to measure the range of responses of an individual in order to create a model of response by the individual. Supplemental measurements would be necessary to verify if the model had sufficient data to accurately represent the individual's response to stimuli. Once this was complete a computer, or similar tool, could correlate objects with the model to present the individual with the most preferable aesthetic objects that lay outside of the individual's experience.

While measurement is the current goal, a subsequent goal is to subject the measurements to the process of science. Experimental philosophy is new movement in philosophy that uses the scientific method to explore and substantiate philosophical claims.

Noble and Nichols (2008) articulate the core of experimental philosophy as such:

Like philosophers of centuries past, we are concerned with questions about how human beings actually happen to be. We recognize that such an inquiry will involve us in the study of phenomena that are messy, contingent, and highly variable across times and places, but we don't see how that fact is supposed to make the inquiry any less genuinely philosophical. On the contrary, we think that many of the deepest questions of philosophy can only be properly addressed by immersing oneself in the messy, contingent, highly variable truths about how human beings really are. (p. 3)

Experimental philosophy has explored every major discipline of philosophy except aesthetics. Theoretical aesthetics is the vehicle to develop a quantitative model of aesthetics that can then be used a basis with which to conduct experiments. Theoretical aesthetics, as such, is temporary and will become experimental aesthetics as the aesthetic ruler is developed.

In the interim, there are numerous studies that have measured the brain and its response to aesthetic stimulus. For a number of decades researchers in the area of empirical aesthetics have been conducting research focusing on the brain in order to demonstrate the consistency of the relationship between the brain and aesthetic response. Neuroaesthetics, on the other hand, investigates the brain as the source of aesthetic response and aims to completely describe the response of the brain to aesthetic stimuli.

Lehrer (2011) presents a short survey of studies that measure the response of subjects utilizing fMRI. Ishizu and Zeki (2011) demonstrated a direct link between the intensity of activation of medial orbito-frontal cortex and the experience of beauty in works of art. Another paper with Semir Zeki provides brain measurements that support the effect on context (Kirk, Skov, Hulme, Christensen & Zeki, 2009). Munar et al. (2012) present a study using magnetoencephalography technology that reinforces that fMRI does not present the complete story of aesthetic response. The cascading response of the brain is measured across various areas of the brain in response to aesthetic stimuli, something not possible with current fMRI technology. While many of these studies are fascinating, few of them provide more than 20 subjects so it is untested as to whether their conclusions reach as far as the authors aim.

There are many more studies that have been conducted that are equally rigorous and interesting. The problem is that while these are correlations between humans and aesthetic objects, what is not known is if this is the aesthetic relationship implicit in aesthetics.

Is there an aesthetic sense organ? It would be poetic if the brain were the aesthetic sense organ. While it is mostly likely the case that the brain is the

aesthetic sense organ, I cannot make the assertion without contradicting my earlier statement regarding who is best to make the assertion. The neuroaesthetic studies showing correlation between aesthetic stimuli and brain activation may well be the first steps towards a measurement tool, especially if this relationship is proved to be complete and casual.

## Of future experiments

The goal of the foundation for theoretical aesthetics is to determine a basis to begin conducting experiments. Specifically, the goal is to determine the first sets of experiments to conduct.

A first experiment is predicated on a quantitative model of aesthetics. Given a quantitative model, an aesthetic object is chosen that is easily measured. The aesthetic object is experienced by a subject and an aesthetic measurement device is used to measure the response of the subject. If the response measured then the quantitative model of aesthetics receives a piece of evidence to substantiate its validity.

Aesthetic philosophers often point to the rose as an aesthetic object that always elicits a positive aesthetic response in people. If a rose were to have a positive response in most people and an anti-positive in aesthetic deviants then this intuition can be substantiated through measurement. Even further, the frequency and intensity of these deviant responses could be measured. Are these aesthetic deviants common? Is the deviation complete or limited to specific stimuli or a mix thereof?

A potential experiment would be to collect every aesthetic object, have each one experienced by a subject, and then measure each response by the subject. There is the obvious logistical difficulty of exposing the subject to every aesthetic object in their lifetime. Further, the subject will not have experienced every object before the experiment. To what extent does familiarity play a role in the aesthetic response? If so, then should the subject only be shown objects that they are unfamiliar with or should they be given multiple exposures of works in order to balance the measurements?

Comparing the resulting data set with the aesthetic canon would be a first comparison point. Would the responses of the subject reflect the generalized ranking of objects? Would the Mona Lisa be among the top rated objects? What if it weren't? Would the measurements be discounted? Would this validate the extra-aesthetic qualities of the works as being factors in their societal and economic value?

Another experiment would be subject every person to the above experiment. The resulting data set would potentially provide a clear ranking of aesthetic objects. Given that the responses were multi-dimensional, an analysis of the contributions of each dimension would lead to an understanding of the basis of aesthetic judgment and the variation of these contributions between people. A complete data set would also have the benefit of revealing the amount, and degree, of aesthetic deviants

This experiment has the same logistical problem as the last but expanded on a larger scale. If we supposed that it would take longer than one person's life to experience every aesthetic object and have the response measured then the whole of humanity would cease other tasks for the duration of the experiment. This does beg a question about the aesthetic measurement device: does it require an operator?

If we were to measure all of humanity's responses, what would that data be used for? Reflecting back to art would be interesting at this point. Could it be that art might become more or less valuable as the process of individuals and their values were quantified, measured and correlated. We could quantify how pieces of art's cumulative value changed over time with respect to the responses of living individuals. This, however, does not preclude the idea that aesthetics may be a priori. If every person's response to aesthetic objects were to differ then as the population changed over generations it would make sense that art objects would fluctuate in value, both aesthetically and financially. Of course, there is a historical factor in the financial value of the art object over time. What this would allow is for us to track the aesthetic and financial values with respect to time.

For Wittgenstein, linguistics was the tool for understanding. His definition of aesthetics was a summation of the whole culture, that aesthetics was so interconnected that it could not be separated into pieces describable by language. Measurement of a whole culture would provide a method of understanding outside of the linguistic domain.

An experiment of a different variety would be to measure the proficiency or expertise of aesthetic activities. These activities could be the generation of art objects but may also be other activities.

Proficiency does elicit response, but is it an aesthetic response? The aesthetic value of a work of art is often discussed in terms of the proficiency of the artist on display in the work. The study of proficiency in the aesthetic context provides framing for colloquial discussions and their relevance to the aesthetic domain. Racecar driving is often called art by an expert observer. Where is the art in racecar driving? The driver does aim to create art in the

traditional sense, yet they will sometimes refer to a beautiful race; beautiful being a common descriptor in the aesthetic domain. Might proficiency be a factor in beauty and thus the aesthetic experience? With respect to racecar drivers, the proficiency may rise to an art comparison when the proficiency of the driver is sufficiently higher than the average person. Proficiency would then be a ratio rather than an absolute. The threshold of proficiency required to stimulate an aesthetic response might then be used as a measure to delineate experts from non-experts, which would be quite interesting.

## Conclusion

I have argued that there is a possibility to quantitatively measure the aesthetic experience. The primary difficulty in this measurement is that there isn't, as of yet, an agreed upon definition of the aesthetic experience. There is agreement that it can be described and that it is not directly the result of a sensual stimulus but rather a mode of pleasure, albeit a very particular mode of pleasure..

The definition of aesthetics in this context is to explore all situations where the aesthetic experience exists. In these context there is an aesthetic object and a receiver. Both the object and receiver may be measured though as of yet we do not have a complete model of either or a model of where the aesthetics may directly lie. While aesthetics are almost always present in art, they are also present in some things that are not art, hence the scope of theoretical aesthetics is beyond the study art.

Initially, the data yielded from the measurements will be insufficient to accurately measure aesthetics. It may be inadequate to measure an aspect of the aesthetic experience. Yet, the summation of these studies will hopefully illuminate an aspect of the aesthetic debate. Various discussions of the types of results from experiments have been conducted throughout this paper.

Throughout this paper aesthetics has been discussed primarily from the perspective of the audience since this has been the primary interest of the field. However, artists have utilized these ideas for creation, most notably the serial composers who aim to discretize every parameter of music to its most minute perceivable difference in order to create the most extensive palette of sound for composition. While this is an interesting way that artists may use these concepts to further their aesthetic creations there is the issue of individual perceptions: we all perceive differently. The serialist composers create scales based on their levels of perception and then present it to an audience with

differing sensitivities to the parameters they are manipulating. Perhaps a more thorough understand of individual aesthetic perceptions via a measurement model would allow a future serialist music that would be optimally effective for all audiences, rather than being specifically made for audiences with acute musical perception.

In a sense, this whole work is a precedent to experimental aesthetics, a school of experimental philosophy that is notably absent. Until such a time that meaningful experiments can be conducted and reproduced, the move from the theoretical to the experimental cannot take place.

The theory presented in this paper allows us to understand new possibilities of aesthetics, without negating any current views in the field. Santayana observes this as a quality of a valid theory:

If when a theory is bad it narrows our capacity for observation and makes all appreciation vicarious and formal, when it is good it reacts favourably upon our powers, guides the attention to what is really capable of affording entertainment, and increases, by force of new analogies, the range of our interests. (Santayana, 1876)

A quantitative model of aesthetics does not preclude a rational model, an objective model, or a phenomenological model of aesthetics. Each of these models has factors that may be measured. The data yielded from the measurements may or may not be useful in the advancement of the models but this is independent of the ability to measure. When walking a long distance the number of trees along the walk may be measured, which is of little use to communicating the distance of the walk, but nonetheless provides some information about the walk itself.

Measurement does not imply meaning. Having quantitative data for aesthetics will only provide additional material for the ongoing discussion of aesthetics, it will not be the end of aesthetic philosophy. At best, the measurements will agree with our intuitions about aesthetics and the question will still remain as to why it is this way.

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