Pursuit of Progressive Truths: Cognitive Functionalism

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ABSTRACT
Cognitive Science is an up-and-coming field of research which has already identified the need for integration between philosophers, neuroscientists, biochemists, radiologists, linguistics, psychologists, and many more. One such need for this field of research is from the acceptance of the consequences of neurological functionality. Society and individuals interact with the cognitively unstable, impaired, and the dysfunctional on a regular basis. These instabilities, dysfunctions, deficiencies, etc. have relational consequences such as irrational behavior and attitudes which stem from such defective cognitions. Seemingly “normal” or “regular” cognitions experience a sequence of events which will be referred to as “cognitive functionalism.” This process often times behaves in ways which can misallocate, mistransmit, or group information causing a final result of phenomenal experience and understanding, which varies from the external information. Allowing irrationality to survive in a society can damage progression and understanding of truth. It is not easy to acknowledge seemingly “average normal everyday people” in our society are not functioning properly or to a potentially higher capability. In a society allowing liberty and autonomy, people must recognize a lack of understanding and practice with regards to cognitive science and its direct relation to attitudes and behaviors of everyday life. This essay briefly addresses the idea of cognitive functionalism and it’s relation to belief formation as well as the logical, ethical, and aesthetic consequences of such beliefs. The aim of Cognitive Functionalism is to identify cognitive processes which may disallow an individual to accurately process or access truths about an external world.

Keywords: Cognitive-Science, Cognitive-Functionalism, Neuro-Ethics, Rational-Logic, Aesthetics, Truth
INTRODUCTION

There are two unavoidable gaps in any behavioral account: one between the stimulating action of the environment and the response of the organism and one between consequences and the resulting change in behavior. Only brain science can fill those gaps.

—B. F. Skinner (1989, 18)

The phenomena of thaumazein consumes both philosophers and scientists alike. Variation between defining the two is simple. Scientists observe, experiment, and make conclusions about relations held among various properties and phenomena occurring in the world. Such research and investigations for empirical data occurs when current knowledge is insufficient and cannot answer all questions and/or problems which arise. Although the scientist prepares, gathers, and reports the evidence of relations, a philosopher is needed to inquire about the nature of such relations and develop additional questions of concern. The symbiotic relationship between the scientist and the philosopher is one of checks and balances; a necessary team. True philosophers of science are not ones of a first-hand nature, but rather second-hand nature; those who are rationalistic and critically analyze by investigating problems as opposed to merely developing an idea or theory. “The checking of their proposed solutions should parallel the corresponding operations in science – that is, the method of philosophizing should be scientific” Bunge (1998, 246).

The second-hand philosopher, unlike the first, follows through and compares theories to empirical data. An expectation which needs to be put upon a philosopher before analyzing a theory related to science is that s/he must be acquainted and well versed in such area of science which responds to the field which is being examined. Without such knowledge set, a philosopher could find his/herself aimlessly throwing a dart blindfolded. The ambition is appreciated, but his/her theories are not always in correspondence with a scientific reality. The objective for the philosopher and scientist team is to overcome an anthropocentric viewpoint; a shallow
interpretation and conclusion about knowledge of the world. Such limitations handicap human potentiality and progress.
—Provenzano (2013)

Science has a graveyard of deceased theories of thought. Fritz Machlup suggested that as anything else in this world, knowledge dies or evolves. Knowledge has been estimated to have a half-life of only five years in psychological studies. “Knowing” this, it can be assumed there is a causation for such error and redevelopment of theories.

Epistemology, the study of knowledge; what it is, how it is derived, and how it can be accessed, is a branch of philosophy which needs development in order to propel neuroscientific research forward into new domains which over cross relational boundaries concerning society, logic, morality, and aesthetic judgment. Several theories in Perceptual Epistemology have addressed raw feelings via sensory modalities (organs/part which interpret external stimuli—for example the eyes), which can vary. What is the meaning for such variance and how does it alter the perceptual interpretation of the world? Do these isolated experiences of qualia, the phenomenal experience and internal interpretation of stimuli, truly represent information about the external world from our own mind? What are the effects of superior and slow cognition in response to stimuli? In order to answer such questions, localized studies on deficiencies can give insight as to what sensory experiences are vacant or disturbed and the effects on conscious perceptual experience. If it is identified that particular deficiencies do cause variance in perceptual consciousness and interpretation of qualia, it can be hypothesized deficiencies or abnormalities can affect moral and logical cognition affecting an individual’s ability to rationalize and/or empathize effectively; different cognitions cause different beliefs.

“Although notable exceptions exist amongst highly dedicated neurologists, neurosurgeons and rehabilitation specialists, the vast majority of patients with disorders of consciousness are a population who remain out of our gaze” (Neurology of Consciousness 2009, 235). Although this particular group is often ignored, what of those who appear “normal” yet have deficiencies or defects which are not as extreme? These minor errors could disrupt the authoritative stance of science of those with a higher ability to interpret sensory stimulation and prefrontal cognition with regards to rationality and emotional regulation. Issues which can arise from ignoring the proper recovery or acceleration of cognition can result negatively not only for the patient and family, but also society.
COGNITIVE FUNCTIONALISM EXPLAINED

This section will discuss a theory of Cognitive Functionalism which I have developed based off of empirical evidence provided both through the sciences as well as philosophical inquiry. In philosophy of mind, functionalism the idea that internal experience alone does not explain why the experience is occurring, rather a systematic explanation provides insight as to how particular functions of parts within the system cause variance in experience. Functionalism is what makes something a thought, feeling, experience, etc. Cognition defined in philosophy, is the process of knowing. Cognition as defined in regards to neurobiology is the awareness and appropriate behavior as the result of an interpretation of stimuli and internal motivations. Stimuli can be experienced both externally through sensory modalities as well as internally (for example, a hallucination). Oftentimes internal stimuli is dependent upon what is referred to as “brain states” or a type of process occurring within the brain which can be observed externally via the use of tools as well as an observation on behavior. These brain states reflect phenomenal experiences such as mood, emotion, memory, appetite, desires, disabilities, etc. If a combination of both definitions were to occur it would suggest that the neurobiological process of cognition is what causes the notion of “knowing.”

Behavior and final interpretation of the cognition would lead to an understanding of an external stimuli or internal stimuli. The result of the cognitive process is what appears to be highly misunderstood because the final product of cognition is not necessarily accurate in relation to the experienced situation, which can lead to detrimental consequences on personal psyche as well as societal beliefs which will be discussed in later essays.

There are relations between a phenomenal experience and the reaction held within a cognitive system. One of the largest mistakes in epistemology and philosophy of mind is the assumption that a phenomenal feel and the higher order cognitive function are of one singular phenomena as opposed to a complex string of cause and effects; the reactions of synapses, dendrites, and other biological/electrical/chemical components of the brain. If someone experiences pain, it has a cause which can be either internal or external. Accepting this viewpoint can eliminate skepticism and concern about phenomenal experiences such as phantom limbs where the person experiences feelings such as pain or movement which is internally relational to having an appendage which is no longer attached (which will be discussed in depth in a later essay) but is not directly relational. There are variances in the cognitive system during such experience which explains why the
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relational feeling is not the same as the directly relational feeling. Easier accounts of understanding on such experience are those of hallucination and illusion (which will be discussed in depth in a later essay).

Cognitive functionalism is a cognitive processes including neurochemical, electrical and biological functions all work in conjunction with one another to form a perceptual experience. The end resulting experience is dependent upon cognitive processes; therefore, a change in one area of the process can alter the end result into a perceptual experience which is not aligned with the inputs received via sensory modalities from the external world. The following diagrams are meant to aid in understanding of how inputs and outputs can differentiate during cognition without any abrupt disturbances (which too can cause changes in allocation of information which will be discussed in a later essay).

Diagram 1.1

Each symbol represents an external input stimuli. The numbers in the beginning picture accurately label the symbols in accordance to shape. The top two shapes are the exact same but have difference positioning; they are the same shape but rotated at different degrees on the focal point. The bottom two shapes are different than the top shapes and are also different than each other. In this case let us assume a visual stimuli of the symbol’s shape (as you actually are viewing it on the document). Symbols 1 (which there are two of), 2, and 3 all hold similar, yet different shapes.

In the second stage of this sequence, the symbols are visually perceived (are assigned as holding a certain shape) via a sensory modality (eyes). In the first step, the sensory modality (eyes) saw the stimuli as top 1,1 and bottom 2,3 but the interpretation of that information changed to top 1,1 and bottom 3,3. This change occurred because of the cognitive process, not because there was a change in stimuli. During this experience, the symbol with the shape of 2 and 3 are interpreted as holding the same shape which is not what the original input indicated, therefore a flaw of cognition occurred in the second step and the process continues with
inaccurate information. This misinterpretation of the external data in this stage is due to a defect, deficiency, etc. in the sensory modality. Another example of this occurrence would be an instance of colorblindness, there may be a problem with the optic nerve causing a change in what the brain perceives the color to be which is not reflective of the actual color of the object.

Sequence 3 of the diagram represents the cognitive processing of the visual input. During this process, the images are distributed and “understood” by cognitive functions. During this process in this example, the symbols 1 were not successfully “understood;” the cognition failed to perform a mental rotation and therefore, now interprets a symbol 1 as a different symbol which holds different shape than symbol 1. The person engaged in this experience then can formulate a belief which differs from not only the true symbols in the external world, but also from the visual input (inability to mentally rotate). In this situation, it is apparent that the belief formed about the symbols is not true to the actual external properties of the symbols, yet, this belief could be acceptable as a belief of epistemic ought. The person “ought” to believe that both symbol 1s are not the same symbols and that symbols 2 and 3 are the same symbols because the person’s cognition and visual inputs gave evidence to believe so, however as seen in the diagram above that evidence was not presented and was skewed during a cognitive process.

**FIXING/IDENTIFYING DEFECTS DURING COGNITION AND THE EFFECTS OF BELIEF FORMATION**

Identifying areas of cognition and sensory modality deficiency can lead to more accurate belief forming practices. For example, if the above participant were to undergo a surgical procedure to correct a defect in his/her eye, then the belief forming process would appear as follows in diagram 1.2 where symbols 2 and 3 are no longer visually perceived as the same object and thus can be processed differently during cognition. This correction in stage 2 can lead to a higher chance of accurate belief formation about the input; the final stage is more likely to reproduce the first stage.
Although the sensory modality was corrected by a surgical procedure in this example, it can still be shown that despite (once again) receiving the proper information via a sensory modality, cognition can modify this information. In this diagram stage 3 determines the output belief formulation which can be accurate or faulty. Accepting this information can lead to higher level questioning and theory development in epistemology, ethics, metaphysics, and logic.

At the level of the whole person, this neuronal goal reveals itself, in part, as the pursuit of knowledge or, more generally, the pursuit of stimulation. Of crucial importance in this process is the habituation mechanism. Without it, redundant stimuli could satisfy the neuron. Novel stimuli would not be sought knowledge would not be acquired, and the survival of the species would be unlikely...In the context of the present theory, knowledge is a collection of casual relations encoded in the form of synaptic transmittance values...it is only from the viewpoint of the whole brain that strings of excitatory and inhibitory impulses take on more complex meaning. (Klopf 1982, 89)

VARIANCES IN COGNITIVE ABILITY AND OUTPUT

The purpose of this section is to present information which suggests that all minds are not created equally, and discrepancy exist in cognitive abilities. As presented in the section above, problems of understanding information can occur
compos mentis
during stage 3 or the “understanding”/cognition stage. The differences result in different outputs/beliefs. It is possible for the mind to be overwhelmed and/or malfunction. During cognition, information can be grouped and then signaled as a cluster. It is possible that individuals of this cluster (individual pieces of the information) are rerouted inappropriately. This body of evidence can easily be missed due to the lack of observation and/or underdeveloped technology. This grouped information processing is created for efficiency, but when a mind’s quotient for information retention and processing is lowered, variance in output occurs; a variance in behavioral, attitudes, mood, etc.

Take for example functional IQ, a score assigned from standardized tests which reflect a cognition’s ability to identify and accurately solve pattern related puzzles. A person with a higher IQ score can identify more patterns accurately in a shorter period of time than that of a person who scored lower on the same test. For example, if I have an IQ of 186 and BOB has an IQ of 101, then I identified more patterns accurately in a shorter period of time than BOB on the standardized test. Hypothetically, the person with the higher IQ should be able to problem solve better than the lower IQ. This suggests that the person with the higher IQ has a better cognitive functionalism because the output of the cognition utilized when taking the test produces a more accurate outcome. (In this example neither individuals have any other mental disturbances or issues- no Asperger’s, etc). Oftentimes, a person with the higher IQ finds the lower IQ individual to be irrational or less moral because the person with the higher IQ has the preset ability to process and retain more information appropriately than the lower IQ which may be grouping information and not accurately processing the information. The belief formation (output) of the higher IQ individual is different than that of the lower IQ individual because of the mental capacity differences.

Additional types of intelligence have been recognized by the neuroscientific community such as general intelligence and fluid intelligence. General intelligence is the understanding of the correlations between cognitive tasks. General intelligence, if higher oftentimes results in an output of higher/accurate performance/understanding in social situations and acedemics. General Intelligence is often broken down into abilities in relation to spacial, numerical, social, verbal, logical, and casual intelligences. General intelligence is the totality of all of those categories. Granted a person with a higher general intelligence generally reacts appropriately, it must be recognized that deficiencies in any of the areas results in inappropriate outputs in that specific group. For example, if BOB scores low in the
area of logic, then his cognitive outcomes in relation to logic may be flawed more often than those who score higher, however, without testing, BOB would not know of this. Fluid intelligence concerns the ability to solve problems logically without previous information. It is linked with the logic and numerical domains of general intelligence. Higher IQs also oftentimes result in higher fluid intelligence. Inductive reasoning and deductive reasoning are abilities gained through fluid intelligence. Without these types of inference, appropriate behavior, mood, emotion, etc cannot be achieved. Therefore, if someone has a low fluid intelligence, than s/he will oftentimes have an inappropriate cognitive output.

Images of the brain have indicated that fluid intelligence and general intelligence is recognizable and quantifiable. Functional Magnetic Response Imaging (fMRI) is a tool used to analyze cognitive states via imaging which records variances in blood oxygen levels, neural activity, etc. Color differences in the images represent what is occurring biologically, electrical, and chemically in the brain. These color reactions are located on the brain and change depending upon the conditions which the person is undergoing. During cognition, parts of the brain are recognized as being activated or deactivated. Activation or deactivation of certain areas of the brain give insight to an individual’s cognitive functionalism. The activations/deactivations recorded are compared to other studies and normalcies which consistently result in a particular output. For example, higher levels of grey matter (a part of the central nervous system composed of intra-level biological parts of the brain such as capillaries, dendrites, axons, etc) in the front of the brain are linked to higher levels of general intelligence, whereas the totality of grey matter does not have a direct link to general intelligence. Localization is needed to determine what location of the brain regulates and analyzes logical and rational information. A localized section of the brain, the prefrontal cortex for example, is noted as one of the main final processors of information in the brain. It determines behavioral response, planning, and expression—turning “thoughts” (input) into action (output). The parietal cortex has also been linked to problem solving activities. It has also been observed that the rear brain if damaged results in a lower IQ, whereas damage to the front of the brain appears to have no effect on IQ.

Putting aside a question of dualism of the brain and the mind (which to some is viewed as a problem in philosophy of mind for cognitive functionalism), there is evidence that processes in the brain directly correlate to phenomenal experiences. Particular brain structures and processes must be aligned in order for general intelligence and fluid intelligence to be functional and reliable. Without acceptance
and recognition of what I will call “cognitive functionalism,” further development could remain stagnant due to illogical beliefs formulated during this process about the validity of such possibilities in the research field of cognitive science.

**COGNITIVE FUNCTIONALISM EFFECTS ON LOGICAL BELIEF DEDUCTION AND FORMATION**

One must conclude, as a firmly fixed scientific generalization, that the properties of the external world are rarely represented in a straight-forward way in the human responses triggered in that world. Should perception therefore be expected to be disorganized and chaotic? Not at all... The reason for the apparent disjunction between external stimulus properties and those of the final percept is not hard to find. (Geldard 1975)

Mathematics can be used as a metaphorical (and quite literal) representational tool when analyzing rationality and cognitive functionalism. BOB has access to external information. The totality of the information acquired and utilized by BOB is that of a specific domain, not of the totality of all the information in the external world. Because of this, BOB can only use a filter as opposed to an ultra-filter. In an ultra-filter, all real world truths are available, but in the non-ultra-filter, the domain BOB filter, only some truths are accessible and even possible. BOB’s beliefs about a truth then can in reality be inaccessible. In addition, BOB’s beliefs can become unaligned with the real truths (held in the ultra-filter). Higher ability and recognition (along with the desire for attention toward inputs) in cognitive functionalism would allow a larger domain. Fine tuning BOB’s cognitive functionalism would in turn, allow BOB to access more potential truths. BOB’s default is not the ideal, not for BOB or for society as a whole. Without a larger filter, with greater access to real truths, BOB can formulate invalid and unsound beliefs when compared to a real world truth.
In diagram 2.1 BOB filter’s domain is smaller than BOB filter’s domain in diagram 2.2. In this basic example, BOB belief domain in diagram 2.1 are not as accurate with real world truths as BOB belief domain in diagram 2.2. The increased accuracy in this example in diagram 2.2 is caused by BOB’s access to additional real world truths. Ideally, if BOB had perfect cognitive functionalism, this would ring true, however, as discussed previously in this essay the chances of a person having such an ability (without technological, surgical, or performance enhancing supplements), this is improbable.

What kind of attitude is holding something to be true? What kind of mental function do beliefs serve? First of all, if I believe that A is the case, I normally act as if A were the case. For instance, since I believe that the weather will be nice tomorrow, I might make plans for a hike tomorrow with a couple of friends. So one role that beliefs play in our mental lives, is that decisions for action are based upon them. (Leitgeb 2013)
BOB’s filter domain dictates the attitudes and behaviors of BOB’s beliefs with regards to certain propositions. There can be several instances in which BOB acts rationally, he acts as though the propositions and information he has access to be true. However, because of the possibilities in the ultra-filter, those which contain additional evidence and information which would add additional premises, ones which BOB is not accessing, a change to the conclusive truth-bearing quality can occur. BOB may come to a conclusion through deductive inference using a rational methodology, yet the conclusion could still not be true. BOB’s aim for the truth is acceptable, but it needs to be recognized that BOB’s domain filter does not equate to a necessary truth, something which often bewilders many.

Belief aims at the truth, just as science aims at the truth. In abstract terms, my aim is that if I believe the proposition X, then the actual world a member of that said X. My aim is for X to be true. Or in more concrete terms, if I learn a new piece of evidence, then if I am rational, I turn that piece of evidence into a belief of mine simply because I take that piece of evidence to be true. Moreover, if I am rational, my reason on the basis of beliefs to new beliefs on the rules of inference that I take to be truth preserving, that is logically valid because these rules are truth preserving and I am interested in the conclusion. (Leitgeb 2013)

For example, I believe the weather will be clear of rain tomorrow because the prediction of a meteorologist concluded the weather would be clear of rain tomorrow. Therefore, I can logically conclude using a rational methodology that the weather will be clear of rain tomorrow if the evidence is true and it is rational to accept this belief.

So,

- X belief weather will be clear of rain
- Y prediction of meteorologist says it will be clear of rain tomorrow
  Believe: X because Y is True
- Also Believe: -X, if Y is false or negated

However, I may be ignorant toward information in the ultra-filter such as, the meteorologist is a pathological liar and the cloud formations suggest it will downpour tomorrow. If I were to include this information into my domain filter, I then could not rationally conclude that X, the weather will be clear of rain tomorrow.
It must also be noted, is possible to abandon or change our beliefs irrationally. This is performed by ignoring evidence although it would be taken to be true. Another irrational belief process is to believe something to be true without any "good" reasoning, without aiming at the truth. This type of cognitive attitude is considered to violate a rational ought by philosophers—engaging in activity of what you rational not ought to do. Cognitive science is interested in these failures, whereas philosophers are interested in how we ought to reason, an idea of normative standards. Combining both desires of academia allow further progression. Identifying failures or insufficient processes during cognitive functionalism is supported by both scientists and philosophers desires and methodologies when determining cognitive relations to rationality and phenomenal experience.

APPLICATION OF COGNITIVE FUNCTIONALISM: AESTHETIC JUDGMENT

Aesthetics judgment is a final output of belief formation during "cognitive functionalism." Oftentimes, it is argued that aesthetic judgment is that of a subjective manner. This subjectivity of interpretation of the qualia is caused by cognition. If a person has a higher capacity to interpret the stimuli, then s/he has the ability to truly experience the stimuli accurately in alignment with the external world. Phenomenal feelings associated with an aesthetic experience is oftentimes caused during the “understanding” stage of “cognitive functionalism.” A person can engage in projection which does not represent the piece of input at all, but rather an association of feeling/mood/emotion which is internalized and personal. In this section, aesthetic judgment will be analyzed from a non-subjective, non-biased perspective which will adopt “cognitive functionalism.”

This section of the essay was written in a separate essay discussing the perceptual experience of Aesthetics and will also be used for this essay. Can one see something for what is really is? If so, why would individuals continually seek out their infatuation? If s/he knows it to be truthfully something s/he loves and understands, it is contradictory to the journey in itself. Does the initial impression give enough evidence to justify such a belief—something as profound or ideal as an ideal aesthetic beauty? What if overtime, after investigation, an inspection of all dynamics, the once beloved dissipates into a disturbing and disappointing conclusion of disgust. Why wouldn’t this be known from the beginning? Is this all due to a misinterpretation of the facts presented at first; do we, humanity have the
compos mentis
capacity to make such a grand accurate phenomenal intuitive assessment?

“… we have an experience when the material experienced runs its course to fulfillment. Then and then only is it integrated within and demarcated in the general stream of experience from other experiences” Dewey (1934, p. 36)

What if mental capacity limited the amount of information which could be received and interpreted at one given time? Let us say a person, Sally, visually perceives a few paintings while wandering around an art museum.

Painting Green One         Painting Green Two

It would not be absurd to assume Sally’s impression, reaction, and evaluation of painting green one was more immediate than painting green two. The logic behind such an assumption is simple, there are more components to painting green two than there is to painting green one; more color, varying depth of paint strokes, frame detailing, non-symmetrical shapes, etc. The amount of mental activity required to interpret painting green two is greater than painting green one due to all of the additional components.

\[ t^n = \text{time to interpret stimuli} \]

\[ x^\text{subscript} = \text{stimuli with a subscript of corresponding complexity value (the higher the number of subscript, the more complexity). For example:} \]

\[ t^n = x^3 \text{ will be greater than } t^n=x^{1/4} \]

The increase in complexity directly correlates to an increase in time to fully interpret (perceive and place understanding) the stimuli via cognitive functionalism.
Using this scale, I will explain how painting green two holds higher time to interpret stimuli than painting green two for Sally.

Premise 1: Sally interprets painting green one of complexity $x^1$

P2: Sally interprets painting green two of complexity $x^{23}$

P3: It holds true that $t^n$ is dependent upon the amount of $x^n$ and an increase in $t^n$ results from an increase in $x^n$

P4: $x^1$ is less than $x^{23}$

Therefore, the $t^n$ for $x^1$ is less than $t^n$ of $x^{23}$

Therefore, the time to interpret the information for Sally for $x^{23}$ is longer than that of $x^1$

Therefore, the time to interpret the information of painting green two for Sally is longer than the amount of time for her to interpret painting green one

Although at first glance this information of aesthetic valuing may seem misplaced, it is in actuality essential for properly understanding and applying an epistemological approach to perception for a second-hand philosopher. Empirical data must be considered when determining what theories allow accommodations of the information/evidence. Is painting green one what it presents itself to be or is there something which is not seen by Sally’s eye? If this theory rings true, painting green one would have to contain less complex properties received through her sensory modalities. Theories advocating ideas of unknown modalities and senses would also have to subscribe to the theory because this theory is calculated off of an entire experience. “Not knowing and understanding” how one sees does not disqualify the actual experience and mental process experienced by Sally. It is possible for Sally never to fully understand either painting, however, she will “understand” painting green one more than painting green two. To eliminate any concerns of assumption on my claims, experimental data as empirical evidence will be provided to eliminate such skepticism.

In an experiment conducted by Sillman University, *Judgments of Time,*
Aesthetics, and Complexity as a Function of The Fractal Dimension of Images formed by Chaotic Attractors, Aesthetic judgments were assigned in correlation with a calculated complexity. Three-dimensional images of structures which are build off of a programmed algorithm or fractal can be calculated as less or more complex in mathematical structure. A chaotic attractor is a specific type of algorithm. Below are images (as merely only an example for understanding) of a “basic” type of chaotic attractor and a more “complex” chaotic attractor.

The theory of perceptual time exposure correlating with aesthetic judgment/assignment and complexity presented above is complimentary to the results of the experiment conducted at Sillman University. Results include: “the three lower levels of the fractal dimension, the participants scaled the aesthetics as increasing with increased complexity” and “The one difference compared to the results for the complexity judgments were that the 3-way interaction was also significant, a result difficult to interpret”—this could be due to the participants not having a full interpretation because the exposure time was limited.” “The mathematical complexity (fractal dimension, D2) was positively correlated to both the complexity ratings (r = .37) and the aesthetic ratings (r = .46), but not the time estimations (r = .03). The highest correlation was between the aesthetic and complexity ratings (r = .64). The remaining two correlations were remarkably unremarkable, the one between time estimation and complexity ratings (r = .07), and the one between time and aesthetics judgments (r = .05). Thus, the three correlations involving relationships among fractal dimension, complexity judgments, and aesthetic judgments were strong.”

Additional published studies, which were noted in the above study case, have shown similar evidence such as: “Randomly constructed polygons were frequently used for studies of complexity during the 1950s to the 1970s. Some studies found that the number of sides of random polygons were a major determinant of perceived complexity (Arnoult 1960; Attneave 1957; Attneave & Arnoult 1956; Day
Generally, these studies showed complexity judgments as an increasing monotonic function of the number of sides, considered a measure of complexity, of the judged images (Day 1967). Attneave (1957) also showed that $P2/A$ (P is perimeter/ A area of a polygon) and angular variability also contributed to judgments of complexity.” These studies once again suggest that an increase in the amount of visual stimuli (sides of polygons) are directly correlated with the perceived valuing of complexity. (Provenzano 2013).

Accepting this information could lead to a conclusion that aesthetic judgment could be analyzed on a quantifiable scale. Some individuals with a higher functioning cognition could perceive and accurately analyze information which is more complex and thus could make an aesthetic judgment which would be marginally “more complete” than an individual who has a lower functioning cognition. An area of philosophy which has often been ignored could in turn, teach cognitive scientists about the emotional and phenomenal assessments of qualia. Several studies suggest merely looking at art or listening to music can influence emotion and mood which are a fraction of cognitive functionalism.

CONCLUSION

The brain is composed of neurological responses which can be related to emotional responses and belief formation. Beliefs which are formed via cognitive functionalism are dependent upon a limited domain filter which contains a set number of possible truths. Additional truths are available in an ultra-filter, aka the external world. Information processing occurs during multiple processes in the brain. When particular processes are disrupted or inaccurate, an inaccurate belief can form. This conclusion however is viewed as rational if the individual’s conclusion is logically derived from the domain filter. Expanding an individual’s domain filter will result in more accurate truths. Accurate truth conclusions allow individuals to formulate moral attitudes and behaviors better than inaccurate conclusions. Higher levels of general intelligence, fluid intelligence, and IQ can result in more accurate aesthetic judgments. All in all, acceptance of empirical evidence provided by the neuro and cognitive studies can allow progression in multiple branches of philosophy including aesthetics, epistemology, philosophy of mind, and ethics.
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RESOURCES


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compos mentis


