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John Dewey's Theory of Aesthetic Experience and the Confluence of Art and Science

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Abstract

In this dissertation, I examine the relationship between art and science through aesthetic experiencing. The topic is discussed from the viewpoint of philosophical naturalism and in the specific framework of John Dewey's philosophical pragmatism. In this context, the evolutionary and organic underpinnings of life are seen as giving rise to all forms of human aspiration, activity, and experience. More specifically, an experiential link between various human endeavours – such as the artistic and the scientific, for example – is established in Dewey's works.

The motivation for this dissertation arises from the fact that while Dewey examines in detail the common ground of art and science, he does not extensively explore the possibilities and the consequences of further alignments between the two disciplines. Against this backdrop – and on the basis of the Deweyan foundation – I put forth specific suggestions about such further connections and developments. Accordingly, this work builds upon and augments Dewey's philosophical project.

This dissertation consists of four parts: an introduction, followed by three scientific articles published in academic journals. In the introduction and in the first article, I introduce Dewey's philosophical stance and explain the way it has been interpreted in this dissertation. Moreover, based on this interpretation, I posit that Dewey's conception of aesthetic experience can be seen as bridging the gap between art and science. In the following two articles, I focus on specific instances that illuminate this convergence. First, I examine conceptual art and inquire how the human capacity for conceptualisation can potentially incorporate into an aesthetic experience of art. Second, I explore the experiential phenomenon of vagueness and the aesthetic similarity of managing it in the contexts of fine art and mathematics.

The present-day relevance of this dissertation stems from developments that have taken place in arts and sciences during the last century. Contemporary art especially incorporates expansions that fundamentally depart from the traditions of art that have persisted for millennia. Uncovering shared experiential factors that influence and possibly align various novel expansions across different fields of interest is relevant for understanding the broader forefront of human innovation and advancement in contemporary times.

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Dedicated to Inga

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The publications are referred to in the text by their roman numerals.

1 Introduction

1.1 A General Overview

In this dissertation, I examine the ways in which the basic foundations of human life give rise to both art and science. More specifically, I investigate how this shared basis connects the artistic and the intellectual through the aesthetic quality of experience. As an introduction to these issues, I will first define a broad outline for the research approach – including the philosophical framework, the structure of the dissertation, and the aims of this investigation. This broad outline is then further specified as I demarcate topics that fall outside this dissertation. After these initial remarks, I discuss the main source material and explain the way it has been interpreted in this study. This analysis of the source material comprises the most extensive part of this opening section. It consists of examples that illuminate the premises and the background assumptions applied in this dissertation. These, in turn, assist the reader to orientate to the lines of thinking and argumentation present in the articles that comprise the scientific contribution of this research. The opening section concludes with a short overview of the main arguments put forward in these articles.

The research topic of this dissertation consists of the general relationship between art and science, as well as the particular relationship between fine art and mathematics. I approach both of these relationships through the concept of aesthetic experience. Furthermore, the aesthetic, the artistic, and the scientific are discussed in the context of John Dewey's philosophical pragmatism, which comprises the overarching framework for this inquiry. Dewey's theorisation provides definitions for these key concepts and the frame of reference for the evaluation of the arguments I put forth based on them. Overall, the main objective of this dissertation is to apply Dewey's philosophical ideas to specific issues that he himself did not discuss beyond occasional remarks, the central one being the aesthetic relationship between fine art and mathematics, which he mentions but

does not extensively investigate.[1] In short, I posit a way to tie up certain loose ends that Dewey left in his work and I do so in a manner that fits the ethos of his philosophical project.

The present-day relevance of this Deweyan approach to the relationship between art and science stems in considerable part from the developments that took place in these two modes of human endeavour during the twentieth century. Especially in fine art, the advancements have not only been substantial but also fundamentally transformative to the discipline itself. For instance, I examine conceptual art, which saw its advent in Dewey's time during the first half of the twentieth century but to which Dewey hardly pays any attention in his writings. He does examine fine art and the constitution of concepts separately but does not explore the possibilities and the consequences of conjoining the two into a unique artistic orientation. I nonetheless deem Dewey's theorisation of fine art and concepts exceptionally potent for precisely this type of unification and also for gaining a more profound understanding of conceptual art as it exists today. On that account, I present a way to perceive conceptual art from a Deweyan point of view. From that perspective, I subsequently offer a discourse on the convergence of contemporary art and the more analytical modes of thought found in mathematical sciences. An increased understanding of the ways in which conceptual matters can be incorporated as a key element into an aesthetic experience of fine art helps to uncover often unnoticed deep relations between art and science. These relations, in turn, illuminate the continuity of human thought and its external manifestations from the primordial origins to the present-day aspirations that define the human endeavours of the twenty-first century.

1.2 Framing the Research

In order to further specify the approach to Deweyan aesthetics that I have applied in this dissertation, it is crucial to demarcate certain points of discussion that fall outside this position. First of all, this research does not incorporate extensive comparisons between Dewey and other philosophers. I do discuss the foundational difference between Dewey's thinking and the general line of classic pre-Darwinian philosophies, but no one philosopher or specific school of thought is singled out. To the extent that names – such as Kant, for example – are mentioned in the articles, it is without exception only to highlight certain key aspects of Dewey's thinking relevant to the particular issue under discussion.

[1] See, for example, Dewey, *The Middle Works of John Dewey, 1899–1924, Volume 12: 1920, Reconstruction in Philosophy* (MW12), 120; Dewey, *The Later Works of John Dewey, 1925–1953, Volume 10: 1934, Art as Experience* (LW10), 45.

Overall, the subject matter of this dissertation remains solely within the Deweyan framework and all juxtapositions function simply as contrasting explanatory examples. That is, even though other philosophers – including neopragmatists – are mentioned in the articles, the full extent of their relation to Dewey's thinking remains outside the scope of this dissertation.

Another outline for this research concerns the period and the topical focus point of Dewey's academic work that I use as the main source material. His writings comprise an exceptionally voluminous multitopic ensemble, stretching from the latter half of the nineteenth century all the way to the mid-twentieth century. In this dissertation, I have decided to rely mainly on the latter part of Dewey's literary works and specifically on texts that discuss the subject matters of art and knowledge. In my view, it was during these later years that Dewey put forth the most refined versions of his main ideas regarding art, aesthetics, science, and knowledge. Notably, this opinion is widely shared among Dewey scholars. Accordingly, books from this later era, such as *The Quest for Certainty* and *Art as Experience*, for example, are commonly regarded as his principal works.[2] On that account, I do not believe that the decision to use works from this period as the main source material is controversial. Therefore, I will not go into further discussions about the different phases of Dewey's philosophical thinking or their relation to one another. Additionally, in this dissertation, I do not discuss Dewey's theorisation of issues related to political studies or social sciences, for example. All such topics are excluded from this dissertation.[3]

One more key line needs to be drawn, and it concerns Dewey's relation to the general line of academic discussions in contemporary aesthetics. This dissertation is structured neither as a defence of Dewey against other scholars – past or present – nor as an attempt to challenge any particular philosopher by employing Dewey's theorisation. Of course, the classic pre-Darwinian philosophies and their present-day derivatives are resolutely rejected throughout the dissertation.[4] However, I will not use this stance to challenge any particular ongoing debate in contemporary aesthetics. Instead, I concentrate on explaining certain phenomena that remain under-investigated in philosophical pragmatism and that can be seen as relevant for current cultural and intellectual engagements.

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[2] Dewey, *The Later Works of John Dewey, 1925–1953, Volume 4: 1929, The Quest for Certainty* (LW4), Dewey, LW10.

[3] I do acknowledge social issues and matters of society whenever they should be noted in the context of a particular aspect of art or science. Nonetheless, the discourse of this research does not divert from aesthetics to social sciences or political studies. Topics related to the latter two are not debated in this dissertation.

[4] Here, 'pre-Darwinian' refers to a wide range of orientations of thought, in which notions such as the eternal, the immutable, and the transcendent hold a key position, as in Platonism, for example.

Despite not being aimed at stirring or settling existing disputes in academic aesthetics, this dissertation does not stand totally apart from them either. For instance, Dewey has been called 'Evolution's First Philosopher'.[5] Thus, his connection to contemporary naturalist orientations of aesthetics – such as evolutionary aesthetics and enactivism, for example – is an obvious one.[6] Admittedly, Dewey did not possess the same level of insight into the details of evolutionary mechanics as we do today. For instance, the discovery of the double helix of DNA was published the year following Dewey's passing. Nonetheless, his descriptions regarding general evolutionary developments and the factors contributing to them have not been falsified by subsequent discoveries. If anything, natural scientific findings of our time have provided further support to Dewey's overall argumentation.[7] Thus, on the one hand, I believe that certain details of Dewey's aesthetic theories could benefit from the ongoing developments in contemporary evolutionary aesthetics. On other hand, I see that an adherence to Deweyan pragmatist principles can potentially aid evolutionary aestheticians of our time. If the current evolutionary aestheticians try to use their biological or cognitive findings to align with, for example, classic transcendent definitions of the aesthetic phenomenon, then the analysis, as well as the results, will most likely contain severe inherent contradictions that reduce the value of such efforts. In contrast, Dewey's naturalistic approach to the aesthetic phenomenon is inherently more in line with contemporary – and, importantly, scientifically more justifiable – accounts of human ontology.

[5] Popp, *Evolution's First Philosopher: John Dewey and The Continuity of Nature*.
[6] See Portera, "Aesthetics as a Habit: Between Constraints and Freedom, Nudges and Creativity"; Kiianlinna, "What Is Evolutionary Aesthetics? Three Waves"; Sanchez, "Rhythm 'n' Dewey: an Adverbialist Ontology of Art."
[7] Franks, *Neurosociology: The Nexus Between Neuroscience and Social Psychology*, 10, 86–88, 99–102, 204; see also Popp, *Evolution's First Philosopher*.

2 Theoretical Framework

2.1 The Human Condition According to Dewey

Dewey's unwavering intellectual commitment to the main principles of evolutionary theory helps him to avoid the types of excesses regarding the human condition that unfortunately still remain prevalent in many philosophical discussions of our time. As a personal example, I attended an introductory course in epistemology, in which Dewey's pragmatist conception of truth was put forth as an example of a 'bad' theory of the structure of knowledge. The reason for this unfavourable characterisation was stated to be the fact that Dewey is unable to explain how we can obtain assured knowledge about immutable eternal truths. This statement is correct in the sense that, indeed, Dewey does not disclose in his writings how such an accomplishment can be achieved. However, it would have been prudent for the lecturer to mention that Dewey does explain why such a view of the relationship between knowledge and truth is erroneous, both conceptually and practically. Dewey sets out from – and, importantly, keeps within – a framework of philosophical naturalism that views human beings as products of natural and cultural evolution that operate in physical, sociocultural, and abstract environments. This starting point helps him to avoid the blatant excesses of classic pre-Darwinian philosophies – including the idea that it is possible for a human being to confirm immutability and eternality in existences of any kind.

Overall, Dewey views the core principles of the theory of natural evolution as more profound than the biological processes through which they were initially discovered. For him, the Darwinian revolution is not only about animal – and consequently human – ontology, but importantly, also about the composition of nature's reality. This means that things, structures, and processes come into being in, through, and according to varying environmental and situational conditions, not by any forces external to nature and not towards any predestined transcendent forms or categories.[8] This naturalist stance affects Dewey's understanding of the

[8] Dewey, *The Later Works of John Dewey, 1925–1953, Volume 1: 1925, Experience and Nature* (LW1), 217–218.

object of knowledge in general and the goal of the sciences in particular.[9] Of course, Dewey is not alone in his views of the foundational position of the theory of natural evolution within the overall human enterprise of science. For example, Karl Popper suggests, somewhat similarly, that Darwinism provides "a possible framework for testable scientific theories."[10]

On the whole, Dewey's philosophical pragmatism is founded upon the premises that only the one reality of nature is justifiably known to exist and this reality is based on physical processes.[11] This, however, does not amount to Dewey being a physical reductionist. He does not believe that studies of the most elementary particles and forces *alone* are sufficient; in order to gain comprehensive insight into the complex constellations of these foundational elements – such as human beings, for example – a broader view based on a variety of observations is required. That being said, it is equally important to note that Dewey rejects going too far in the other direction; explanations regarding the activities and motives of biological agents should not transcend the limitations imposed upon them by physical reality. Overall, for Dewey, human complexity is beyond the scope of formal mathematical explanations, but this is a limitation of mathematics as a tool and should not be taken to mean that human beings transcend physical nature. In short, in the context of understanding the human phenomenon, mathematically oriented natural sciences are inadequate whereas supernatural premises and explanations are unjustified. Accordingly, the Deweyan humanities find their scientific standing in between these two extremes as an approach which is firmly grounded in empirically confirmed aspects of the observable reality.[12] Importantly, for Dewey, 'observable' is not confined to sensory stimulation, as it is in certain accounts of philosophical empiricism, but it also incorporates the acts and intentions of agents.[13] These are included in the cognitive constitution of the meaning of actors other than ourselves as components of the surrounding environment.

From the standpoint discussed above, it is possible to counter arguments such as the naturalistic fallacy, according to which terms charged with moral values – such as 'good', for example – cannot be founded upon natural properties alone.[14]

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[9] Dewey, LW1, 120, 170, 319–320; Määttänen "Emotions, values, and aesthetic perception," 93; Määttänen, *Mind in Action: Experience and Embodied Cognition in Pragmatism*, 85.

[10] Popper, *Unended Quest – An Intellectual Autobiography*, 168.

[11] This does not mean that human beings know – or are even necessarily capable of knowing in practice – the full extent and spectrum of nature's interactions, forces, and dimensions.

[12] Again, somewhat similar beginnings – even if not necessarily the same conclusions – are articulated in Popper, *Unended Quest – An Intellectual Autobiography*, 187.

[13] Määttänen, "Emotionally Charged Aesthetic Experience," 95; Määttänen, *Mind in Action: Experience and Embodied Cognition in Pragmatism*, 69; Dewey, LW4, 156; Dewey, *The Later Works of John Dewey, 1925–1953, Volume 12: 1938, Logic: The Theory of Inquiry* (LW12), 250.

[14] Määttänen, *Mind in Action: Experience and Embodied Cognition in Pragmatism*, 70.

If the naturalistic premise that only the one reality of nature exists is accepted, then the logical conclusion is that all concepts – including those related to human morals – *do* arise from natural processes. The question then becomes: How and through which mechanisms of nature does this emergence occur? Notably, it is possible to give an answer to this question because in the Deweyan framework objects are not defined solely according to their direct impact on our sensory organs.[15] That is, a ball, for example, can be seen as red but it can also be deemed bouncy or destructive, according to the way it interacts with its broader surroundings. It is particularly these kinds of produced effects and outcomes as experienced – and thereafter presumed in similar circumstances – that constitute the meaning of a ball. Furthermore, the same applies to the meaning of all objects, including human beings, who can produce, for example, similar destructive or constructive outcomes in the material and social environments in which they operate. Such consequences affect other beings, as these outcomes may support or hinder the efforts of various individuals and groups in their struggles to reach ends-in-view. Perception of the value of a meaningful outcome is thus based on the effects of that outcome upon further affordances and aspirations.

Overall, the value that human beings assign to objects, such as things, agents, events, and acts, originates from their experienced consequences, which are perceived to affect the attempts to arrive at desirable goals of life. In short, the meaning of an object is comprised of the effects it produces in specific circumstances and the value of that meaningful object is evaluated according to the role these effects possess in the struggle to reach ends-in-view. In general, the values human beings hold are based on what is deemed valuable according to specific goals of life while the goals of life themselves arise in an organism-environment interaction. Some goals, such as the continuity of one's own life, have arisen very early on in the evolutionary struggles. These types of goals set in the primordial environment of the past remain as the basis for the most widely shared human values. Human social culture emerged in considerable part as a response to the demands of the harsh surrounding physical environment. However, this development produced a social environment with a harshness of its own. Consequently, the emergent social environment brought demands that needed to be addressed through increasingly subtle and complicated interactions. In addition to physical objects and physiological beings, it became necessary to interact with – and survive among – other highly cognisant minds.

This unprecedented complexity of human social existence gave rise to a diversity of goals and associated values, around which it was increasingly difficult to form a unified consensus; it was not impossible, but often notably laborious.

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[15] Määttänen, *Mind in Action: Experience and Embodied Cognition in Pragmatism*, 69.

Overall, in any environment, goal-oriented activity arises in accordance with the capability to perceive affordances and to make justified estimates about the environmental and experiential consequences of those affordances being acted upon. Commonly, such contemplations take the form of an 'if–then' relation, as in 'if' I do *this*, 'then' most likely *that* will be the outcome. However, before they take place in the concrete, such scenarios remain hypothetical, but they are nonetheless emotional. The prospects of future failure are usually felt as displeasing in the present and the prospects of future success may bring delight even to an ongoing predicament. In short, future prospects, irrespective of their character, command a considerable proportion of human awareness and emotion.

Of course, the ability to estimate future eventualities is not solely a human trait. While in this introduction I will not discuss in detail the cognitive differences between human beings and other animals, it is still necessary to briefly note the general Deweyan premise according to which human beings are not fundamentally different from other animals, sharing many physiological and – presumably – psychological features with them. Nonetheless, certain cognitive differences do exist, and in the context of this dissertation, the most notable one is the disparity in perceptual capacity. With this statement, I do not refer to the differences in direct sensory perception, such as the ability to perceive colours, but to the different degrees in the capacity to perceive meanings in objects.[16] At this point, it is worth recalling that, in broad terms, the pragmatist definition of the meaning of an object consists of warranted, albeit not infallible, expectations regarding future consequences the said object brings about when having an effect in given circumstances.

The exact extent of the capacity of various animal species to associate objects with future eventualities remains an open scientific question that does not need to be debated in this dissertation. Here it suffices to say that human beings excel at this particular cognitive task of association. For example, the meanings that human beings assign to the substance of water are multiple and diverse; water can be perceived to quench thirst, put out a fire, or clean various dirty surfaces in addition to one's own body.[17] According to empirical observation, the latter two ways of using water are distinct traits of human behaviour not known to be exhibited by other species in their natural habitats. In other words, human perception extends beyond the sensory qualities of objects and even beyond the meaning and value of objects as they relate to current ongoing activities and goals. We can imaginatively perceive the meaning of objects as the consequences of their use in *hypothetical* future situations. That is, human beings can perceive value in

[16] Määttänen, "Facts and Values After David Hume," 19.
[17] Dewey, LW1, 151.

things and acts that may be useless – or even harmful – in the present but which nonetheless may prove useful or beneficial in some other situations that are viewed as potentially coming. Here the last word 'coming' is especially important because it marks a key detail of the future-oriented aesthetic structure discussed later in this introduction. In short, regardless of the degree to which most animals pre-emptively entertain the future consequences that things and acts may produce, in human beings these future-oriented musings play an exceptionally important role.

In the context of this dissertation, it is of utmost importance to understand the reasons why human beings devote such substantial amounts of cognitive resources and emotional involvement to future prospects beyond immediate empirical affirmation. In other words, it is crucial to investigate the human tendency to entertain hypothetical scenarios and the qualities of experience that accompany such predictive practices. Thus, in the following, I discuss the ways in which entertaining imaginative scenarios of overcoming problems bring about the aesthetic quality of experience and, further, comprise an aesthetic experience in a profound sense. Overall, in Dewey's philosophical pragmatism, the human ability to entertain various eventualities comprises a cognitive basis for the emergence of the aesthetic quality of experience.[18] More specifically, the primary focus is on the ways in which things and events are emotionally experienced even if they have yet to take place or even if they cannot take place anywhere outside the human imagination. The latter case comprises such things as knights fighting dragons in fantasy literature and higher dimensional solids of non-Euclidean geometries, both of which are discussed in the third article of this dissertation. But prior to the discussion of aesthetically experiencing events and entities that have not yet been actualised in the concrete, as well as those that never will, it is important to further examine how the imagining and experiencing human being is understood in the Deweyan framework.

Interactions with the physical environment and the sociocultural environment are at the core of Dewey's philosophical enterprise. As already noted, these interactions remain central to the constitution of meanings. Moreover, interactions comprise a foundational basis for human existence and development in the evolution of the species as well as in the growth of an individual. Controlled interactions are necessary for continuously beating faced trials, which, in Dewey's theory, defines the primary mode of all life.[19] In other words, for Dewey, life in general is a matter of overcoming challenges, which, in conscious awareness, becomes a matter of problem-solving.[20] Importantly, human awareness, upon

[18] Dewey, LW1, 27–28; Dewey, LW10, 24.
[19] Dewey, LW1, 326.
[20] Dewey, LW4, 99–100.

which the more proactive approach of problem-solving is based, did not appear out of the a priori blue. The human level of conscious awareness was preceded by less advanced forms of self-awareness in primate ancestry. Out of these it developed in a reciprocal interaction with an increasingly sophisticated social culture.[21]

This broadening of the point of view to worldly affairs effectuated an equally profound expansion and deepening in the assigned meanings. Encountered problems were solved more efficiently than before, but perhaps even more importantly, problems that were not previously even observed became matters of awareness – including problems that posed a threat not only to the existence of the individual organism but to all life in general.[22] Today, human beings have reached a point where it is possible to perceive the potentially unstable state of the Higgs field as a threat to the entire structure of physical reality as we have come to know it.[23]

In addition to conscious awareness, contemplating matters such as the Higgs field requires extensive capabilities in the cognitive and perceptual domain of imagination. Dewey's conception of imagination is, of course, derived from the theoretical basis of philosophical pragmatism. Yet, Dewey's definition of imagination is not totally incomparable to other descriptions put forth outside his philosophical framework. For example, Edmund Husserl views imagination as an active component in the constitution and the adjustment of the entertained features of an object and the way these features connect to one another.[24] This is somewhat similar to Dewey's views in the sense that Dewey sees imagination as relating disparate elements to one another. Accordingly, he defines imagination as "that which holds all other elements in solution".[25] In other words, Dewey posits that through the use of imagination, parts constitute meaningful wholes. Notably, the meaningfulness of imaginative constructs does not entail that they have to be realisable in the concrete reality of the surrounding environment. The human ability to ignore restrictions and elevate consequences in thought – and in contrast to observable reality – can result in various types of ideals and scenarios. These, in turn, may perform a variety of different functions, including guidance for concrete activity and evocation of enjoyed qualities of experience.[26] Imaginative constructs based on a purposeful neglect of factual restrictions brings Dewey's conceptualisation of imagination close to that of Jean-Paul Sartre.

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[21] Dewey, LW1, 135; Donald, *A Mind So Rare: The Evolution of Human Consciousness*, 131–132.
[22] Dewey, LW10, 342.
[23] Espinosa, "Vacuum Stability and the Higgs Boson," 1–13.
[24] Husserl, *Ideas: General Introduction to Pure Phenomenology*, 66.
[25] Dewey, LW10, 278–279.
[26] Dewey, LW1, 223–224; Dewey, LW12, 303.

Admittedly, Sartre's demarcation of imagination and perception is more pronounced than that of Dewey.[27] Nonetheless, in his writings, Sartre similarly focuses on the negation of various aspects of concrete reality in order to bring forth novel imaginative realities.[28]

The description of imagination outlined above renders it possible to perceive actions and consequences – as in meanings – through if–then relations that exhibit considerable flexibility with regard to various practical limitations imposed by physical reality. To describe the pushing of this flexibility to its extreme – as in a decidedly unrealisable fancy – in this introduction I will follow Dewey and hereafter use the term 'imaginary'.[29] However, most often I employ the term 'imaginative', which does not demarcate between what is actually realisable and what is not but applies to both of these alternatives. This is, in part, because sometimes it is not known in advance – or perhaps ever – whether that which is entertained in thought is or is not feasible in actuality. Mostly, though, I use the terms 'imaginative' and 'imaginatively' because they imply an acknowledgement of novel cognitive paths of extraordinary potential. While these imaginative paths may not necessarily be found or traversable in the surrounding environment, they can nonetheless constitute exceptionally interesting, highly captivating, and perhaps even genuinely useful scenarios. Such features often accompany the imaginative processes of abstraction, which mark a key aspect of both fine art and mathematics. In this dissertation, it is on the above-described level of human imaginative perception that the if–then scenarios of fine art and mathematics play out and come to be experienced. And to the degree that such if–then relations concern means of overcoming challenges towards desired goals, they constitute the outline of the aesthetic structure theorised in Dewey's philosophical pragmatism.

2.2 The Aesthetic Quality of Experience According to Dewey

The following is a detailed overview of the interpretation of Dewey's aesthetic theory that I apply in this dissertation. This interpretation is not wholly unique but based on – and in considerable alignment with – the interpretation of Dewey's thinking put forth by Pentti Määttänen.[30] In describing the basic foundations of aesthetic experiencing, Dewey states that "when the participation comes after a phase of disruption and conflict, it bears within itself the germs of a

[27] Sartre, *Being and Nothingness*, 282.
[28] Sartre, *Being and Nothingness*, 45.
[29] Dewey, LW4, 63; Dewey, LW10, 272.
[30] See Määttänen, *Mind in Action: Experience and Embodied Cognition in Pragmatism*.

consummation akin to the esthetic."[31] Here, 'participation' refers to a preferable mode of taking part in worldly affairs, as in being able to engage in matters of life in a desirable manner. This restoration of desirable conditions of living after a disruption may be related to both short- and long-term goals of life. That is, things can be set in order for the benefit of the immediate moment or in such a way that they support further ends-in-view beyond immediate concerns. Most importantly, however, it is the *coming* of such participation, as in the moments leading up to it, that defines the consummatory character of the aesthetic quality of experience. As Dewey notes:

> [T]he parts through their experienced linkage move toward a consummation and close, not merely to cessation in time. This consummation, moreover, does not wait in consciousness for the whole undertaking to be finished. It is anticipated throughout and is recurrently savored with special intensity.[32]

In other words, a consummation is not solely a distinct moment of conclusion. As Dewey further explains, "[f]ulfilling, consummating, are continuous functions […]."[33] Moreover, an integral part of this enticing anticipation that defines the aesthetic is the felt effectiveness of the means applied for the purpose of overcoming the confronted obstacle. This is because if no prospective way to overcome the challenge and reach the goal is perceived, then the present acts are not infused with the consummatory feel of the desired future outcome. Overall, the aesthetic quality of experience is dependent on the aggregate of factors that warrant entertaining prospects of a desirable outcome *before* it – or some other outcome – takes place. Dewey explicitly articulates this by stating "[t]hat which distinguishes an experience as esthetic is conversion of resistance and tensions, of excitations that in themselves are temptations to diversion, into a movement toward an inclusive and fulfilling close."[34] Here it is of utmost importance to emphasise the phrasing 'movement toward', which is clearly distinct from notions such as 'obtainment of', for example.

Määttänen, in turn, further exemplifies the prospective nature of the aesthetic structure by concisely stating that "an aesthetic experience is a promise of consummation, and this promise is enjoyable in itself."[35] In summary, the aesthetic is not about the satisfaction of the secured but that of the promised.

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[31] Dewey, LW10, 20.
[32] Dewey, LW10, 61.
[33] Dewey, LW10, 62.
[34] Dewey, LW10, 62.
[35] Määttänen, "Emotionally Charged Aesthetic Experience," 97.

Most importantly, the promised consummatory state of affairs predicated by the promising things, events, and acts does not – neither in the moment nor perhaps ever – exist outside of imagination. By definition, that which is anticipated has not yet arrived in the concrete but it exists as an imaginative scenario – and sometimes takes place only as such. Notably, Dewey aptly states that "[e]sthetic experience is imaginative."[36] Thus, in this dissertation, I focus mainly on these imaginative aspects of aesthetic experiencing in the specific contexts of fine art and mathematics.

To reiterate, Dewey theorises that the aesthetic quality emerges in experience when promising solutions are found and applied for the purpose of overcoming encountered problems. Importantly, that is before the applied solution has run its course to a conclusive outcome. In other words, things and acts are aesthetically experienced in imagination as promising means for overcoming challenges and in their relation to desirable outcomes. In the following, I provide an example of an instance in which a material object – a wrench – can exhibit this aesthetic procedural structure: first, as the tool itself is interacted with, and second, as the tool is applied in an interaction with other matters of the surrounding environment.

Beginning with the former, consider a situation in which your car has a flat tire. This is a problem that needs to be overcome with proper means. If you are unable to locate the correct wrench, your frustration grows and this frustration adds to the emotional gravity of the confronted obstacle of a flat tire. However, after a few desperate moments of unsuccessfully searching for the correct wrench, you detect something that looks like a wrench handle behind a cabinet. Already the sight of a handle is a promising sign of an increased potential for overcoming the encountered challenge and potentially reaching the ends-in-view: first, being able to change the tire, and second, having a functioning vehicle at your disposal for the purpose you need it for. Moreover, a further validation of the fact that the handle, imaginatively presumed to belong to the particular tool that is needed, does indeed belong to that tool contributes to the forming of an aesthetic experiential structure. For example, as you move the cabinet, every revealed inch of the wrench handle further increases the chances of it being the correct one for the task at hand.

However, a threshold exists after which the discovery process ceases to be merely promising and becomes more or less assured. This threshold marks the incipient decline of the aesthetic impact. The aesthetic quality is consummatory in nature but, as noted previously, it is consummatory primarily in relation to a discovery of a promising path towards a goal and less so in the sense of a

[36] Dewey, LW10, 276.

consummatory deciding closure. Broadly characterised, aesthetic experiencing is more akin to a discovery of a treasure map than a discovery of the treasure itself. Thus, no matter how enjoyably enticing it may initially be, the map is usually tossed aside at first sight of the actual treasure chest. Somewhat similarly, promising imaginative prospects will, in due time, give way to a warranted verificatory satisfaction – or disappointment – in human experience. On that account, the wrench will lose most of its prospectively aesthetic tone when it is securely held in hand – at least as far as locating the correct wrench comprises the problem to be overcome. Of course, in relation to the removal of the lug nuts that attach the tire to the wheel hub, the held wrench may be viewed as having imaginative promise in that regard. Nonetheless, similarly to a treasure map, the wrench too is tossed aside and mostly ignored once the tire comes off, replacing the wrench as the object held in hand and at the centre of attention.

The previous notions further underscore the point that distinct material things are perceived as signs of promising prospects in their relation to the fulfilment of varying needs and the attainment of specific goals. Once these ends-in-view have been reached, then the material thing no longer incorporates the same enticing potential in relation to them. Moreover, if no ends-in-view were entertained in the first place and no need existed for the perceived material object, then the material object would not be interpreted as a promising sign. For example, if one did not have to change a flat tire and was not in need of a wrench, then the observation of a wrench handle behind a cabinet would not come across as invigoratively promising. Most likely, the sight would only arouse slight dissatisfaction due to the fact that the tool is not in its correct place in the toolbox.

Moving on from situations that render concrete things, such as wrenches, as sign vehicles for promising overcoming of challenges to situations in which acts and events perform a similar sign function. Keeping with the ongoing theme, I will now investigate the specific act of changing a flat tire. Consider a situation in which you have, by using a wrench, removed all but one lug nut and you begin to work on the last one, only to find out that it will not loosen. You try and try but to no avail. The lug nut remains stuck. Again, frustration starts to creep in. The task is so close to completion, but if this final issue is not resolved, the entire effort has been for nothing. You start to ponder your options; perhaps you should ask your neighbours for help or call a car mechanic. However, as neither choice feels particularly compelling in that moment, you decide to give it one more go by yourself and this time truly put in every last bit of strength you have. You begin the work, but the lug nut seems as stuck as ever. But then, as you pull the wrench harder than you thought you ever could, you suddenly feel throughout your strained body the lug nut beginning to slowly loosen as the wrench handle turns, even if ever so slightly. This bodily experience of the felt initial release of the last lug nut is charged with emotionalised meaning. The loosening is a sign of

increased prospects for successfully changing the flat tire and having a functioning vehicle at your disposal.

Unlike all the previous lug nuts, which came off as expected, only this last one truly fulfils Dewey's second condition for the foundational basis of the aesthetic quality of experience. As quoted in the beginning of this chapter: "when the participation comes after a phase of disruption and conflict, it bears within itself the germs of a consummation akin to the esthetic."[37] With regard to the noted disruption and conflict, the other lug nuts also posed a challenge to be overcome, but not in any disruptive sense that would put the whole project of removing the flat tire in genuine jeopardy. In addition, these other lug nuts did require effort to remove, but this effort was characterised by mechanical work rather than an actual conflict. Accordingly, none of the other lug nuts gave rise to a search for novel means beyond those currently in possession, the discovery of which would be interpreted as a promise of a return to the desired course of activity. It can be argued that in this example of a tight lug nut the means for overcoming the problem were already within one's possession. However, the extra strength was only required after a disruption and only discovered through a struggle.

Overall, in Dewey's theory, the aesthetic quality is based on the psychophysical systems that make it possible to come up with strategies for overcoming encountered problems. These systems also include the capability to anticipatorily estimate the potential effectiveness of such strategies before they have run their course to an actual outcome. Furthermore, the problems have to be of the type that pose a threat to something valuable, and the modes of overcoming such threats have to be deemed feasible and warranted. Regarding the overcoming, as noted earlier, Dewey states that "participation comes".[38] Again, 'participation' designates an appropriate engagement of an organism with its surroundings, whereas 'comes' relates to the guarantees embedded in the means of overcoming the issues that prevent the said 'participation'.[39] This implies that an appropriate accommodation to environmental conditions is not yet fully achieved, but that a movement towards such a position is justifiably interpreted to be currently taking place. In other words, a coming participation is presumed with such conviction that it is possible to state that it indeed 'comes'. Moreover, if *genuinely* justified according to one's best estimates, a promise of a return to a favourable state of affairs can incorporate the type of consummatory character that marks the aesthetic in experience. That is, consummation is not merely a matter of closure, but also one of a presumed future closure – especially when things are perceived to be moving towards such a fulfilling outcome. In short, the aesthetic quality is

[37] Dewey, LW10, 20.
[38] Dewey, LW10, 20.
[39] Dewey, LW10, 20.

based on imagining, actuating, and interpreting an ongoing overcoming; in the very moment of transition from strain to ease, in between a problem and its resolution.

The previous discussion points to the fact that the emergence of the aesthetic quality in experience necessitates an optimistic attitude toward matters of resistance. This is somewhat akin to a healthcare professional assuring that a cure for the patient's ills is readily available and soon to be administered. Under these circumstances, the patient's mental state can become highly positive even before any actual improvement in their physical condition. In such a case, a return to a desired type of participation in worldly affairs is perceived to be close. Of course, the changing mental state can also be integrally tied to factually changing physical and physiological conditions, as in feeling the administered medicine beginning to take effect in the moments between disease and health. Overall, the level of intimacy between the path of regaining participation and the interpreted sign of being on such path is not wholly decisive. The more important point is that the experienced meaning of the ailment changes from a life-threatening burden to a short-lived inconvenience.

Another key aspect of the processes that produce the aesthetic quality of experience is personal background. A negligible number of people have had such a path of personal cognitive development that they question the suitability of a wrench as a means for loosening bolts. Through natural evolution, the very basic mechanics of levers and pulls have been embedded deep in the human unconscious domain. Moreover, these basic features of physical reality are further consciously verified by interactions with the surrounding environment during an infant's development. This is an area of perceived if–then relations that the overwhelming majority of human beings with functioning sensory and cognitive capabilities can agree upon. Another instance of this extremely high level of agreeability in the relation of means and ends is demonstrated, for example, by food items. Hardly anyone would doubt the if–then scenario of 'if I eat a banana, then my hunger will lessen'. Thus, almost everyone can interpret a banana as a sign for this scenario, which incorporates the visceral meaning of a banana as a material object that supports the continuity of life.

The situation changes with the example of overcoming an illness. From an evolutionary perspective, health care professionals comprise a rather late occurrence. Furthermore, within the history of medical care, the ability to relate means to ends in a way that consistently does more good than harm is an even more recent development. Today, of course, most people view modern health care as generally reliable. Nonetheless, the relations between means and ends in medical care of our time are not as evident and ingrained in the human cognition as the basic mechanical and physical functions of interacting with the surrounding environment. While healing is a highly intimate and corporeal matter, the

molecular level on which the most important processes of human physiological recovery take place is neither directly observable nor readily controllable, at least not in the same tangible and immediate sense as turning a wrench. Thus, the imagined scenarios of recovery entertained during an illness are not founded on the most profoundly tested and verified aspects of the physical environment. Accordingly, the goal of physical health is still commonly shared, but the means deemed to be the most potent in achieving it may begin to diverge between individuals. This basis of personal assessment affects the imaginatively entertained if–then scenarios about recovering from illness and these, in turn, have an effect on the means of treatment the patient deems preferable. For example, instead of accredited healthcare professionals and medicines produced by the pharmaceutical industry, a person may prefer new age gurus and alternative medicines. These latter options may have a considerably worse track record of healing patients, but such empirical facts do not always trump strong personally held – and aesthetically toned – beliefs based on the individual's own life experience.

The degree of consensus about the most efficient means of overcoming problems tends to further decrease as the distance from direct physical environment increases. I would assume that during the dawn of humanity, the primitive tribes did not have debates about whether caves offered superior shelter from various threats compared to sitting under a tree. Whether the herbs offered by the tribe's shaman helped to cure ills was perhaps more debatable, but at least reaching the goal, being healthy as opposed to afflicted by a sickness, was empirically observable for everyone.[40]

However, the ever-increasing complexity of human cognition and social culture led to the contemplation of problems for which it was difficult to assess the success of the means applied for the purpose of overcoming them. For example, which ceremonial colours would most effectively appease the gods? These types of musings emerged from the expansion of the human perspective beyond immediate concerns and towards the highly speculative. Very early on, human beings extended this capacity to cover issues beyond death, a domain outside the scope of empirical confirmation. The lack of direct – or perhaps any – factual interaction with the afterlife domain meant that the most suitable means for dealing with such a spiritual realm were difficult to justify. Consequently, consensuses about religious matters did not arise from direct empirical observation but necessitated authority, customs, and social order; all of which religion, reciprocally, helped to maintain.

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[40] Dewey, LW4, 8–9.

Overall, choosing a correct ceremonial garment is a different matter than choosing a correct wrench. This is because, unlike a wrench, the suitability of a particular ceremonial outfit cannot be empirically affirmed by everyone through direct and, most importantly, universally similar mechanical interactions and outcomes. In the case of a ceremonial piece of clothing, the assurance of correctness does not come directly from the target domain, the spiritual entities themselves that the clothes are believed to affect, but from the social surroundings of human peers and authorities. The suitability of a dress has to be interpreted, for example, from social cues, which, unfortunately, are not based solely on the features of the dress itself but also on a myriad of other things, such as interpersonal relations. In short, oftentimes the social environment provides less straightforward responses as a basis for interpreting if–then relations than the physical environment does. How people react to certain acts is more varied and unpredictable than the responses of inanimate things.[41] For example, people may become angry or delighted with the cutting down of an old tree, but the tree itself only becomes dead wood.

The spectrum of felt verifiability ranges from mechanical acts in physical reality to highly speculative acts performed by spiritual entities of religious belief. In the pragmatist framework applied in this dissertation, the main constituents – namely, fine art and mathematics – are positioned closer to the latter, more speculative, end of the scale. This is not because of their sometimes-presumed connection to transcendent realms of eternal truths but because of their inherently hypothetical nature. In this context, the 'work' of fine art, as well as that of mathematics, takes place in human imaginative experience. Of course, both disciplines employ aspects of physical reality for the purpose of evoking and guiding the imaginative scenarios that comprise the main substance of fine art and mathematics.[42] Accordingly, mathematicians draw symbols on a chalkboard because that allows them, as well as their audiences, to mentally keep track of the investigated abstract relations and structures. However, the drawn symbols only point to the mathematical phenomena in question.[43] These symbols, materially as chalk or shapes as drawn, do not necessarily possess any direct relationship to the mathematical structures they help to describe. Noticeably, the axiomatic base of mathematics is founded upon empirical observations of concrete physical reality.[44] For example, counting began with fingers, markings, and abaci, all of which could be arranged to portray practically useful relations.[45] Yet, further

[41] Määttänen, "Facts and Values After David Hume," 20.
[42] Donald, *A Mind So Rare: The Evolution of Human Consciousness*, 316.
[43] Dewey, LW10, 89.
[44] Dewey, LW12, 394.
[45] Dewey, LW12, 394.

mathematical structures – such as irrational numbers, for example – are not necessarily observable, present, or even realisable on the physical level of the axiomatic base layer. Their existence is constructed upon hypothetical if–then possibilities entertained and experienced in human imaginative thought.

The way that fine art functions in human cognition and experience is in many ways similar to that of mathematics. For example, an artist can draw shapes on a canvas that describe entities such as fire-breathing dragons, which, according to current knowledge, are neither present nor realisable in the concrete surrounding environment. Dragons exist simply as hypothetical if–then constructions in human imagination, even if they, too, are based on a variety of empirically verifiable components, such as wings, claws, and fire. The considerable difference between fine art and mathematics is in the degree to which the structural components of a thought-guiding material object embody the qualities upon which the work is constituted. As Dewey states about this difference, "[t]he material of the fine arts consists of qualities; that of experience having intellectual conclusion are signs or symbols having no intrinsic quality of their own, but standing for things that may in another experience be qualitatively experienced. The difference is enormous."[46] In other words, a specific component – such as fire, for example – is viscerally related to the sensory experience of burning. On the other hand, an abstract symbol – such as a number, for example – does not necessarily relate to any qualitatively concrete physical occurrence. Of course, a number may, for instance, point to the temperature of a burning fire. Nonetheless, reading a string of five consecutive symbols – such as 600°C, for example – is experientially different from being in the vicinity of actual gushing flames. Dewey articulates this experiential difference by comparing a work of fine art to a journey to a city and a set of formal symbols to a signboard pointing to a city.[47]

The overt qualitative difference between organic and symbolic materials only marks the outset for this dissertation. The main objective is to investigate certain ways in which various practices committed to such different material modes can, nonetheless, be seen as converging – and perhaps even aligning – in the human experiential domain.[48] This approach is based on the fact that even though Dewey emphasises their enormous difference, he does not completely separate art and science. Indeed, Dewey views both as functioning through the system of psychophysical cognition of the human body, which comprises the sole convergence point for all aspects of human experiencing.[49] This embodied cognitive structure extends beyond the contact surfaces for interacting with the

[46] Dewey, LW10, 45.
[47] Dewey, LW10, 89–91.
[48] Dewey, LW10, 45.
[49] Dewey, LW1 178–179; LW4, 184; LW10, 80.

variety of sensory stimuli and incorporates, for example, imaginative interpretation, probabilistic prediction, and emotional guidance.

Importantly, application of these further cognitive capacities tends to exhibit somewhat general – albeit distinct – operational forms, irrespective of the involved sensory channels. Consequently, the generality of these emergent psychophysical structures tends to produce a considerable degree of qualitative consolidation in the felt experiential outcomes. Notably, Dewey mentions the aesthetic quality as a specific link between the artistic and the intellectual. Regarding the latter, formal symbolic mode, Dewey notes that "the experience itself has a satisfying emotional quality because it possesses internal integration and fulfillment reached through ordered and organized movement. This artistic structure may be immediately felt. In so far, it is esthetic."[50] However, Dewey offers limited further analysis beyond these kinds of broad remarks. Some comments can be found throughout his writings, but Dewey does not embark upon comprehensive and coherent investigations regarding this aesthetic connection. Especially conspicuous is Dewey's omission of conceptual art, a reformative artistic orientation that sparked fierce academic and public debates prior to and during the time of the publication of Dewey's main work on fine art, namely *Art as Experience*. In this dissertation, I address these barely covered issues concerning conceptual art and the relationship between artistic and mathematical processes. In order to thoroughly explain the pragmatist approach I apply to these subject matters, it is necessary to further examine Dewey's aesthetic theory. In the following chapter, I discuss the specific concept of an aesthetic experience.

2.3 From Aesthetic Quality to an Aesthetic Experience

Thus far, I have provided a brief overview of the basic foundations that give rise to the aesthetic quality of experience. However, I have yet to adequately explain the difference between the aesthetic quality of experience and an aesthetic experience proper. Dewey himself emphasises this difference with the use of an italicised 'an', as in *an* experience.[51] "An object is peculiarly and dominantly esthetic, yielding the enjoyment characteristic of esthetic perception, when the factors that determine anything which can be called *an* experience are lifted high above the threshold of perception and are made manifest for their own sake."[52] In other words, with this italicisation, Dewey highlights the experiential state in which a specific quality –

[50] Dewey, LW10, 45.
[51] Dewey, LW10, 42–49, 61.
[52] Dewey, LW10, 63.

such as the aesthetic, for example – clearly dominates among the multitude of qualities that inhabit and constitute the human experiential sphere.[53]

Admittedly, in Dewey's theory, the aesthetic quality is based upon other qualities of experience – such as frustration and fulfilment, for example.[54] The aesthetic quality is a matter of the relation between these kinds of opposites. However, this composite structure does not amount to a lessening of the distinctiveness of the aesthetic quality. The decidedly aesthetic is in experiencing the ongoing transition from strain to ease, in a moment when tension is felt as being left behind and relief is believed to be approaching or already in sight. The aesthetic quality is a part of striving towards a moment of achieved satisfaction, which, if viewed as a watershed moment, is preceded by the aesthetic and followed by fulfilment; both satisfactory in their own distinct way and both equally waning as other qualities inevitably take their place in human experience according to the ever-changing situations of life.[55]

At this point, it is worth recalling the earlier discussion about the exquisite observational capabilities of humans, and especially the ability to perceive if–then relations that extend far into the future, as well as into the abstract. A crucial aspect of this faculty is the capacity to assign value to these hypothetical if–then scenarios. From an evolutionary point of view, it has been beneficial to reward the strategy of entertaining hypothetical scenarios – as in planning, for example – to the degree that such activity successfully directs an agent towards its goals. More broadly, far-reaching perception and the ability to act according to what is envisioned both possess value in the ever-ongoing struggle for survival.

However, as mechanisms for recognising value already existed in the animal domain prior to the emergence of human-level cognition, it seems to have been uneconomical to develop novel reward systems specifically for the human faculties. In short, despite the capacity for enriched experiencing, human experiential reward – or penalty – from the act of entertaining predictive hypothetical scenarios remains tied to basic organic functions. On that account, considerable emotional overlap exists between imagined and actualised values. For instance, emotional excitement of expectation, whether it be of a positive or a negative type, can be felt throughout the body. Perhaps the most commonly used example is the case of 'having butterflies' in one's stomach. This figure of speech

[53] Dewey, LW10, 61–62; Dewey, LW4, 188.
[54] Dewey, LW10, 329.
[55] Of course, fulfilment is never guaranteed in the absolute. According to Dewey's theory, no matter how well founded and justified, human prediction remains inherently fallible. Thus, an aesthetic experience can also be followed by a disappointment. This is often the case, for example, in the art of tragedy, in which promising prospects do not – wholly or partially – play out as presumed and hoped. Yet, the moments of entertaining the promising prospects are nonetheless enjoyed as in aesthetic experiencing.

describes a bodily sensation related to a predominantly positive and, importantly, meaningful imaginative scenario presumed to take place soon.

At this stage, it is possible to assemble the key points from the above discussions into an explicit explanation of an emphatically aesthetic experience in the Deweyan sense. For Dewey, an aesthetic experience is an experiential state in which the aesthetic quality rises above all other qualities and dominates the whole experience. This means that, when prompted, individuals who have had such an experience would describe it as *an* aesthetic experience. In practice, however, most people do not possess this theoretical framework regarding the aesthetic quality and, thus, they would not be able to label the experience as being dominated by such a quality. In popular discourse, the aesthetic commonly refers to visual beauty. This is not entirely wrong. However, from the viewpoint of philosophical pragmatism – as well as many other orientations of academic aesthetics – the popular discourse uses an extremely narrow definition, because the aesthetic is not solely a visual matter. The aesthetic extends beyond – and can exist irrespective of – the sensory channel of vision. Therefore, it is understandable that common audiences are oftentimes lost for words after having an emphatically aesthetic experience. They might even use the very expression 'I'm lost for words' after witnessing a truly amazing work of art or after grasping an exquisite mathematical idea.

Dewey discusses this general lack of terminological repertoire in an implicit way in his explanation of a proper aesthetic experience. Dewey uses the example of a storm, about which an individual might utter the phrase 'now, that was a storm' to indicate the exceptionally strong character of the event.[56] A storm at sea is a fitting analogy because it illuminates the key aspects of an aesthetic experience discussed above. First, a storm might come as a surprise and throw people off course nautically as well as psychologically. Second, a storm can pose a serious threat to travel plans, as well as to the well-being of the travellers. Third, a storm can be overcome in a way that reinstates calm in the environment of the sea and in the mental environment of the maritime crew. The initial phase of an unexpected storm does not necessarily incorporate the aesthetic quality of experience, as the full extent of the danger is still being assessed. However, as the means to endure the storm and to potentially overcome it begin to emerge in mind, as well as in concrete acts, then the aesthetic quality begins to cumulatively build up in human experience.

This process may culminate in a definite sign-vehicle, which is taken to justify the belief in surviving the storm with the employed means. For example, the first ray of sunshine that cracks through the clouds or even a faint blinking of a

[56] Dewey, LW10, 43

lighthouse can be interpreted as indicating an approaching favourable outcome. This moment may also mark the situational peak of the aesthetic quality in experience. It is a temporal juncture at which all aspects of the situation come together in an exceptional unity and coherence – a defining characteristic of an aesthetic experience in the most emphatic sense, according to Dewey's account.[57] During this aesthetic zenith, the focus is not on any individual component, such as the problem, the employed means, or the end-in-view, but on the relation they hold to one another and the experienced whole of overcoming that they together comprise. Notably, this felt union is only achieved imaginatively, since for Dewey, imagination is "that which holds all other elements in solution".[58]

Overall, an aesthetic experience is imaginatively built upon other qualities of experience – such as fear and hope, for example. However, despite this composite structure, the experience is one of exceptional unity and, accordingly, the aesthetic possesses a distinct quality and character of its own.[59] The aesthetic is the felt quality of a promising transition from an unfavourable state to a favourable state, as all aspects of the situation appear to come together in an encouraging manner – even if sometimes only in imagination. Whether concrete or imagined, such a transition may be viewed as being embodied by a particular tangible occurrence or a more abstract process. However, in order for any occurrence to be recognised as a transition, it has to be cognitively related to both the circumstances it departs the agent from and the state of affairs it directs the agent towards. Depending on the specifics of the situation, such recognition might come effortlessly or, conversely, it might require considerable conscious effort – or a rich background of such efforts.

The latter two, in particular, amount to a fully developed human capability to consciously override an instinctual initial response that indicates impending harm or danger. In contrast, other animals – and even human infants – do not appear to favour such imagined value over tangibly sensed value to the same degree. For example, most animals and human infants tend to fight very hard against all forms of medicine intake because their sensory – and, consequently, emotional – experience instinctually provokes such behaviour. Conversely, human adults are capable of going to the other end of the spectrum to experience medicines in a highly positive manner regardless of their taste or other displeasing attributes. As noted earlier, this positive emotional tone arises in accordance with an imaginatively entertained scenario concerning causally related matters that promise a desired overcoming. The fact that such hypothetical scenarios can be entertained and, importantly, emotionally enjoyed before any direct sensory

[57] Dewey, LW10, 47–48, 61.
[58] Dewey, LW10, 278–279.
[59] Dewey, LW10, 42–48, 61–62.

verification of health actually being regained is a testament to the power as well as the significance of imaginative value assignment.

However, the ability to assign value to means of overcoming does not, in and of itself, elevate the aesthetic quality to the dominant front of the experiential whole. In the specific context of emphatically aesthetic experience, the valued means usually need to be related to an overcoming of a threat to valued goals. That is, something essential has to be at stake for the individual in question; perhaps something cherished is threatened or, alternatively, something necessary remains unobtained. Oftentimes, these amount to one's life prospects, as well as those of close family members. In other words, only when the problem is such that it threatens the desired life path of an individual is it likely that the means of overcoming it will become a matter of extraordinary importance. In these kinds of circumstances, the experienced unity of an overcoming, as well as the overall return to a favourable path, will most likely be saturated with exceptional meaningfulness. This is because the meaning – as an outcome – of the application of means becomes decisive for the future life in a most profound sense. Due to such immense relevance, the mode of overcoming tends to rise to a position of a key focal point in awareness above all others. Moreover, if this mode of overcoming is justifiably deemed as promising of a desirable outcome, it can then be accompanied by a similarly dominant position in the domain of experiential qualities. This, of course, means that the experiential quality of promising overcoming – that is, the aesthetic quality – takes over the experiential sphere, as in an emphatically aesthetic experience.

In the context of Dewey's philosophical pragmatism, it is viewed that minor inconveniences of life can be overcome in a way that evokes some degree of aesthetic quality in experience. However, only exceptional occurrences produce exceptional experiential dynamics and, potentially, exceptional amounts of aesthetic quality in experience. According to Dewey, the effectuation of such emphatically aesthetic experiences in audiences comprises the main goal of an artist and, whenever successfully achieved, denotes the emergence of a work of art.[60] This idea is articulated in the title of his main work on art and aesthetics, namely the book entitled *Art as Experience*.

Mathematics, on the other hand, is a different matter because it is not the main goal of mathematicians to produce aesthetic experiences in their audiences. However, it would be a gross understatement to declare that the aesthetic features of mathematics are nothing more than an irrelevant by-product of the practices of the discipline. It is common among advanced professionals to perceive exquisite

[60] Dewey, LW10, 60–61, 111; Dewey, LW4, 188.

beauty in the abstract relations of mathematical works.[61] Some even tend to follow the perceived beauty of mathematics, instead of its perceived truth value, if the two appear to contradict one another.[62] Dewey is sympathetic towards such a temperament, as he notes that "the esthetic character of logical coherence rather than its tested coherence with fact is that which yields the delight."[63] However, in this dissertation, the aesthetic dimension of mathematics is not discussed through the concept of beauty. Instead, I discuss the topic primarily as a matter of experienced overcoming in the context of abstract scenarios and the specific role such an experience possesses in mathematical disciplines.[64] In order to relate the experience of overcoming in mathematics to that of fine art, it is necessary to examine the aesthetic peculiarities of each discipline in more detail.

2.4 The Aesthetic Experience of Fine Art

The task of an artist is to come up with means and strategies that prove effective in producing emphatically aesthetic experiences in audiences.[65] In order to understand the nature of this procedure, it is best to begin with a straightforward example. Consider the basic structure of a traditional narrative: a relatable person desires something of value but has to overcome obstacles before obtaining that valuable something. The first step is to introduce the main protagonists in a way that establishes their character as relatable. In the second phase, the introduced main characters face a problem that poses a threat to their desired way of living. Thereafter, most of the narrative usually consists of solving consequent issues, each solution cumulatively contributing to the overcoming of the main problem. In the end, this overarching primary issue is resolved and the main characters obtain the thing or a state of affairs they were originally after. In other words, the protagonists return to a desirable life, even if the ensuing mode of living may be somewhat different than initially hoped for. Mainstream movies and novels often exhibit this basic form of overcoming that contributes to the engendering of aesthetic quality in the experiences of audiences.

Notably, even as these types of art products aim to bring about the positive in experience – as in aesthetic – they nonetheless place considerable emphasis on

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[61] Dewey, LW10, 135–136; Rosenthal, "Scientific Time and Temporal Experience: Pragmatism's Contribution to the Search for a Synthesis," 181; Chandrasekhar, *Truth and Beauty – Aesthetic Motivations in Science*, 59–73.
[62] Chandrasekhar, *Truth and Beauty – Aesthetic Motivations in Science*, 65.
[63] Dewey, LW1, 72.
[64] This is not to say that the aesthetic concept of beauty does not incorporate the aesthetic structure of overcoming in Dewey's theory. Nevertheless, I prefer to discuss the issue more broadly and in more intricate detail than the term 'beauty', as such, implies.
[65] Dewey, LW4, 188; Dewey, LW10, 57–58.

negative or obstructing elements.[66] As Dewey notes, "[s]truggle and conflict may be themselves enjoyed, although they are painful, when they are experienced as means of developing an experience; members in that they carry it forward, not just because they are there."[67] On that account, popular narratives tend to focus on dynamic struggles of hardship instead of complacent plateaus of satiety. Again, this is not to say that the latter is unsatisfactory, but rather that the distinctively aesthetic emerges during and through the former. Thus, as far as the goal of a narrative is to bring about an aesthetic experience of art in audiences, then the story benefits from revolving around various struggles to overcome difficulties. In turn, the achieved closing fulfilment is quickly marked off by stating or implying that 'they lived happily ever after'. This is not because such a static goal as achieved cannot be satisfactory but because such a state of being does not support the coming about of the aesthetic quality of experience. In short, the portrayed characters may want to dwell in their 'happily ever after' but audiences – including the authors – do not. Thus, artists continuously write about new instances of struggle and modes of overcoming that audiences do want to engage with and aesthetically enjoy.

The example of the flat tire discussed earlier aligns with this basic narrative structure. For example, it would be entirely possible to incorporate the process of changing a flat tire into an artistic product, such as a movie or a novel. For instance, a highly likable person might be in a hurry to save a loved one but then have a flat tire that puts in jeopardy the efforts to make it in time. Furthermore, the fact that the correct tool seems to be missing and the issue of the last lug nut being stuck both increase the suspense, perhaps to the point of having the audience sitting on the edge of their seats. These types of consequent resistances render the moment of approaching success considerably more satisfactory. The audiences may sigh of exceptional relief when the protagonist finally sits behind the wheel and gets on the road. However, such a relief is only temporary as the main issue of a loved one being in peril still remains. This precarious state of affairs begins, once again, to gain dominance in the awareness of audiences as the satisfaction from the successful tire change fades into the background. The way in which hope is repeatedly contested by circumstances, but continuously revitalised through decisive action, denotes the alteration of tension and release commonly present in engaging narratives. This principle applies to other forms of fine art as well, whether they be musical compositions, paintings, or poems; a befittingly integrated ebb and flow of resistance and discharge contributes to the favourable dynamics of the experience.

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[66] Dewey, LW10, 341–342.
[67] Dewey, LW10, 47.

Another crucial aspect of fine art is the requirement of focusing solely on the aspects that contribute to the constitution of an emphatically aesthetic experience, which, in turn, marks the birth of a work of art. Dewey uses the concept of extraction to describe this process in which all irrelevant and distracting features are removed and the significant ones emphasised or even exaggerated.[68] This applies to both the material art objects and the experiences of the audience members interacting with the said art objects. Naturally, the basic physical materials that artists use commonly require varying degrees of refinement too, as in extracting pigments for the purpose of making paints. The extracted pigment itself may, of course, be experienced as varyingly aesthetic. The pigment can, for example, incorporate an unprecedented depth of colour that possesses promising potential for new types of paintings. This potential is perceived as an imaginative scenario about the specific tone of the experiential impact of paintings using such an extraordinary pigment – even if the scenario does not incorporate any clear and exact vision of specific finished paintings.

However, the type of extraction Dewey refers to is less about means of production and more about experienced meanings, although the two are integrally linked, as described above. That is, in the context of fine art, that which is primarily extracted – as what is expressed – is significant meaning. When such meanings relate to – or fuse with – matters of overcoming resistances, it tends to enrich the aesthetic quality in experience as well. As noted earlier, the aesthetic quality is based on other qualities of experience. Therefore, it is through artistic treatment of these other qualities that the aesthetic can come to dominate the experiential domain and command the attention of audiences. In other words, the aesthetic is emphasised and enriched through an extraction of other cognitively constituted features of the experiencing mind – such as love, for example. Again, this does not amount to artistic expressions of love necessarily being devoid of problematic resistances and only portraying favourable circumstances. For instance, a poet may incorporate a specific problem into a verse in order to express the extent to which a person is willing to go for the sake of love, as in, for example, 'no mountain is high enough to keep me away from you'.

However, this depiction of overcoming a concrete physical challenge is not the main problem-solution dynamic at play in aesthetically experiencing love in the context of a poem. Love expressed in a work of art, such as a poem or a romantic novel, often accentuates specific personal characteristics – especially those that are viewed as highly sought-after in that special someone with whom a person feels deeply reassured to confront the varied challenges of life and, most importantly, thrive. In short, it is not the physical obstacle of a mountain but the

[68] Dewey, LW10, 54, 62, 70, 88, 189, 211.

challenge of finding a great companion that is the crux of imaginative overcoming in such artworks. This emphasis often takes the form of focusing predominantly on situations that mainly draw out the types of personal traits upon which estimates about a potential companionship are based. Thus, in a sense, poems and romantic dramas extract that which is most crucial for a loving relationship. In doing so, these art products guide audiences to imaginatively constitute an exceptionally coherent, even if perhaps idealised, combination of attributes that meets the high standards expected of a life companion.[69] This idealised unity of characteristics provides an idealised solution to the problem of discovering a promising individual for companionship and, potentially, securing a desirable continuity of life. Taken together, the utmost relevance of this problem and the outstanding potency of the idealised solution comprise an especially intense imaginative scenario of an exceptionally promising overcoming.[70] Such intensity in imaginative overcoming commonly saturates the experience with the experiential quality of overcoming – namely, the aesthetic. To the degree that this aesthetic impact is strong enough to dominate the experiential sphere, as in unilaterally commanding attention, an aesthetic experience in the profound sense takes place. Furthermore, to the degree that an artist is successful in an attempt to effectuate such an aesthetic experience in audiences, a work of art is born.

Overall, works of art as emphatically aesthetic experiences, as Dewey defines them, come about through a devoted sensory engagement with constellations of physical materials arranged by an artist for this particular experiential purpose.[71] These arrangements are called art objects and they can consist of, for example, paints spread on a canvas, ordered vibrations of air molecules as in musical harmony, or words printed on the pages of a book. Regardless of the material base, the constellations should be of the type that invites the entertainment of imaginative scenarios that generate exceptional degrees of aesthetic quality in experience.

Notably, many of the constitutive features of fine art are put to comparable forms of use in other aspects of human life as well. For example, I find that the relationship between the aesthetic and fine art is in certain structural ways

[69] Dewey, LW10, 247.

[70] Notably, overcoming in the context of this particular problem-solution dynamic of love holds a rather persistent relevance in the lives of many; even people who have attained a loving relationship in their actual life oftentimes enjoy entertaining fictional – but nonetheless compelling – scenarios of promising realisation of love. In order to cater to such needs of imagination exhibited by a considerable proportion of people, many artists produce romantic dramas.

[71] Dewey, LW10, 54–55, 57, 140, 284–285.

analogous to the relationship between the humorous and comedy.[72] To illuminate this correlation, I posit that most human beings have randomly encountered things and events that they view as unintentionally funny and which make them smile, if not outright laugh. Likewise, most people have come across incidental things and events that are experienced as aesthetic; perhaps these are felt to reinstate tranquillity in a manner similar to when viewing a harmonious landscape.

Based on the capacity to perceive the amusing and funny, a joke is an intentional humorous construct; whereas a work of art is an intentional aesthetic construct based on the experiential quality of overcoming. These two share three key features with one another. First, a joke, like a work of art, is an imaginative exercise that does not take place in actual concrete circumstances. For example, many jokes begin with the phrase 'a man walks into a bar…', but this walking occurs only in the imaginative minds of the audiences, not in any actual bar. The same holds true of artworks. As I note in the second article of this dissertation, for instance, the abstract "Spring" from Vivaldi's *Four Seasons* does not blossom in any actual garden but in the minds of audiences in a concert hall.

These notions highlight the prime entity under experiential evaluation in fine art and comedy; the imaginative mental scenario that ensues from an attentive interaction between an audience and an expressive material object – such as a performance on stage, for example. This argument about the primacy of the imaginative scenario in fine art and comedy can be further justified with the following examples: No matter how eloquently it may be told, an unfunny joke does not make audiences laugh. Similarly, no matter how passionately it may be sung, a bad song does not immerse audiences in an aesthetic experience of art. This is not to say that the technical competence of an artist or a comedian is irrelevant. Indeed, it is often necessary for a singer to hit the correct notes and for a comedian to use clever vocabulary and suggestive intonations. Yet, the audiences are not in attendance for the pleasure of witnessing mere finesse in communication; the audiences want to undergo something exceptional that the honed expressive acts of an artist or a comedian provoke in their experience. In other words, the audiences want more than special sensory input. They want the special input to constitute something exceptional in their experience, which is often emotionally and bodily felt. For example, tears and laughter are common external bodily signs that the activity of an artist or a comedian has constituted a desired type of emotional imaginative scenario in the minds of the audiences. Such observable signs do not merely signify that the audience is in the presence of

[72] This is not to say that fine art and comedy are wholly separate aspects of human experiencing to begin with. Natural overlaps – even of the most extensive type – do exist between the two, as the art of comedy can potentially take forms that are broadly included in the fine arts; see Dewey, LW10, 11–12, 285.

something pleasant to look at or listen to, but also show that they 'got' the joke – or the artwork. In short, the human experiential domain is the main locus of fine art and comedy, even if both require input and guidance from the material objects of the surrounding environment.

Second, the material objects that artists and comedians use in their attempts to direct the formation of imaginative scenarios in the minds of their audiences are not unique to the disciplines of fine art or comedy; bars, walking, and men are not matters of any specific field of interest but that of ordinary life. The same applies to landscapes, colours, and sounds. Of course, in both fine art and comedy, these ordinary materials are usually refined, distorted, and combined. I do not mean this in the sense of an artisan who turns leather and rubber into shoes for the purpose of increased comfort in walking. Instead, I point to transformations that are often done in absurd, excessive, ridiculous, or otherwise surprising and novel ways. Even though often visually striking, artistic and comedic modifications of materials are primarily aimed at the imaginary, rather than sensory, sensibilities of audiences.[73] Clowns do not wear their big shoes for added comfort, nor do heavy metal guitarists attach circular saw blades to their armbands to cut down trees. The purpose of such props, whether they be excessively clumsy or threatening, is to establish specific traits that the attendees assign to the portrayed character; standing on stage but constituted in the imagination – and felt in the experience – of the attending audience.

The importance of the role of imagination in the context of such modified objects is further illuminated by the following examples of failure. For instance, despite genuine efforts to amuse children, a clown's make-up may be deemed scary and threatening by the immature audience. And the other way around, a heavy metal band may be so over-the-top menacing with their make-up and fake blood that the group unintentionally comes across as laughable and ridiculous. Overall, the concrete physical materials that artists and comedians use to construct the objects that audiences interact with are not unique to the disciplines of fine art and comedy. What is exceptional, though, is the ways in which the physical materials are treated and modified. These modifications are made according to the contribution they bring to the constitution of qualitatively specific imaginative scenarios in the awareness of the experiencing audiences.

Third, in fine art as well as in comedy, the imaginative scenarios should not incorporate any irrelevant or distracting features. A joke, like a work of art, should be on point in the most profound sense. The creative insight may very well be, for

[73] Here, 'primarily' does not amount to 'solely'. For instance, the loudness of a musical concert affects both the sensory and the imaginative aspects of the experiences of audiences. More specifically, the sensory impact of loudness has an effect on the formation of imaginative scenarios of art. I discuss the specifics of this process in the second article of this dissertation.

example, absurd or disruptive, but even as such it needs to crystallise a specific issue or a point. Jokes, as well as works of art, possess an uncanny potency to convey the essence and explicate the most relevant aspects of certain issues in a way that no amount of scientific investigative literature can. The best jokes, as well as the most impactful works of art, are self-explanatory. They do not require literary descriptions of how they should be interpreted.[74] Indeed, for the most part, audiences do not want to be told why a joke is funny or why a piece of art is amazing – especially not within a joke or an art object itself. Instead, audiences want to potentially draw that conclusion themselves from an interaction with suggestive materials presented to them by a comedian or an artist.

Importantly, that which is suggested by the work of an artist or a comedian is neither amusement nor greatness itself. The materials presented by a comedian or an artist suggest a cognitive path potentially leading to an imaginative scenario, which can then be experientially evaluated as extraordinarily funny or exceptionally aesthetic. In order for the presented materials to perform this guiding function, they need to be purged from elements that distract the audience from such cognitive path.[75] Again, this applies to both the concrete physical materials, such as uttered words and painted images, and the psychological materials the physical materials evoke in the minds of the audiences – such as love and hope, for example. Such thorough refinement across all aspects of an expressive work is commonly required in comedy and in fine art; both realised through intentional modification of ordinary materials of life for the purpose of generating extraordinary scenarios and, consequently, extraordinary experiences for audiences.

2.5 The Aesthetic of Abstraction and Mathematics

Thus far, I have described the aesthetic as the experiential quality of overcoming and fine art as a mode of intentional accentuation of that aesthetic quality in experience. Yet, even if these definitions are accepted – at least for the sake of the argument – a reader might still raise concerns about certain contemporary manifestations of fine art. For instance, consider a minimalist art installation consisting of, for example, a white room with a white sculpture of an abstract shape in one part of the room. Such a situation does not incorporate an explicit obstacle to be overcome. Notably, imaginative scenarios of climbing over the art object do not constitute a work of art in the Deweyan sense. Envisioning what it would be like to physically climb over a particular sculpture would, of course, be

[74] In the second article, this principle is problematised in the context of conceptual art.
[75] Dewey, LW10, 189.

imaginatively unique but not necessarily aesthetically exceptional – at least for the adult audiences. This latter notion about the role of the experiential background of audiences is crucial for understanding the capacity for aesthetic experiencing in the context of abstract matters.[76] Importantly, in the naturalist tradition of philosophical pragmatism, this background extends beyond individual growth and education all the way to the primordial evolutionary origins.

Dewey's theorisation places substantial emphasis on the unconscious aspects of the human psychophysical setup.[77] A considerable part of this unconscious domain consists of layers built upon one another during the evolutionary origins that predate the human condition. As Määttänen notes:

> The origin of tacit meanings is ultimately from our evolutionary experience. This entails that these meaning structures function largely subconsciously. It is unthinkable that we could remember what kinds of experiences led to the development of our sense organs, for example. However, these experiences have left their trace in the structure and mechanisms of our biological bodies and therefore effect how we experience, understand and interpret our environment.[78]

I would add to the previous quote the notion that the last term 'environment' extends from concrete surroundings to imaginative plains of abstract and counterfactual possibilities. Overall, the main point is that specific obstacles from various bygone eras may no longer be present today, but human beings nonetheless carry the means of overcoming them in their current psychophysical structure – not as specific compartmentalised tools, but as an embodied mix of different overlapping strategies. In addition to the means of overcoming, also the challenge, as well as the goal, can be matters of the unconscious domain. On that account, it is possible that the only conscious sign that various phases of overcoming are currently playing out – even if only as unconscious prognosis – is

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[76] Dewey, LW10, 155, 271.

[77] Dewey, LW1, 227, 235–236; Dewey, LW10, 100, 245; Dewey varyingly uses both terms 'subconscious' and 'unconscious' in his writings. In this introduction, even if not in the articles, I only use the latter, because I deem that it emphasises more profoundly the aspects of cognition I mostly focus on. Thus, I differentiate the term 'unconscious' from the closely related term 'subconscious' according to the following: the term 'subconscious' refers to functions, motives, and responses of the human psychophysical setup that can – at least in theory – become acknowledged matters of conscious awareness. The school of thought represented by Freudian psychoanalysis is focused on precisely these kinds of efforts. The term 'unconscious', on the other hand, refers to the workings of the human psychophysical setup that remain predominantly – and perhaps permanently – outside the scope of even the most profound efforts of introspection. Importantly, as with most terms in philosophical pragmatism, these two concepts are not separated by any distinct or fundamental borderline. Instead, they form a scale from one to the other.

[78] Määttänen, "Emotionally Charged Aesthetic Experience," 94.

the aesthetic quality of experience. In such a case, a person may be confused and wonder why this particular quality of experience rises to the front of their awareness in the first place.[79] In other words, a person can experience an interaction with a material thing or an event as amazing and of exceptional greatness, even as simultaneously being incapable of explaining – even to themselves – the reasons why. This is a rather common occurrence, for example, in attentive engagement with highly abstract art objects.

The shapes that things like abstract sculptures are moulded into are of the type that aim to stir the "subconscious fund of meanings".[80] This can be achieved through emphasising – or exaggerating – the general qualities of objects and the tacit meanings they unconsciously relate to.[81] Importantly, such art objects do not necessarily incorporate in their material structure a distinct problem but function as catalysts for evoking some primal sensibilities of overcoming. This setup does not invalidate the premise of this dissertation regarding the necessity of a problem in the structure of an aesthetic experience. In instances such as experiencing highly abstract art, the problem and the reward of overcoming it can both be located in the primal past instead of the present art object. As previously discussed, these types of ancient obstacles and yields may no longer exist in any recognisable form in our current environment, but they have nonetheless moulded our mode of existence into responding in certain ways. This experiential setup is further complicated by the fact that abstract art objects are not necessarily based on any one specific problem-solution dynamic of ancient times. Instead, abstract art objects can potentially activate a primarily unconscious recall of a variety of different means of overcoming from different eras or general strategic habits that permeate the ages. Such vast composites of approaches do not point to any distinct singular outcome either. The unconscious imaginative prognosis merely suggests that the evoked coming together of a multitude of tested means warrants an expectation of some unidentified – albeit exceptionally favourable – outcome.

Previously, I discussed aesthetic experiencing in the Deweyan framework through instances in which the problem-solution dynamic was predominantly explicit and clearly defined. However, as this discussion of the unconscious aspects of cognition in the processes of aesthetic experiencing indicates, the issue is more complicated than what the most obvious examples make it out to be. Of course, the problem-solution dynamic and the felt overcoming remain as the general core of Dewey's aesthetic theory and apply to all contexts of aesthetic

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[79] Dewey, LW1, 227.
[80] Dewey, LW10, 279–280; see also Dewey, LW10, 35, 66–67, 79–80, 155, Määttänen, *Mind in Action: Experience and Embodied Cognition in Pragmatism*, 43–44.
[81] Dewey, LW10, 99–100.

experiencing.[82] Yet, the problem, the desired end-in-view, and the presumed solution as a mode of overcoming do not need to be aspects of the present situation or the immediate surrounding environment. Instead, they can all be spread out through space and time, as well as levels of consciousness, from the deepest unconscious instinctual urges to the highest flights of conscious recognition. This is not necessarily to the detriment of the felt exceptional coherence that Dewey deems a decisive characteristic of an emphatically aesthetic experience.[83] Indeed, a coming together of components far and wide apart to form a unified experiential whole can potentially lend extraordinary depth and felt significance to the experience.[84] Dewey articulates this dynamic characteristic as "[u]nity in variety."[85] This is often the case with the most impactful works of fine art and mathematics: the sense of exceptional scope of meaning and – in certain instances – the potential for the evocation of further imaginative scenarios. As Dewey notes, "[e]very closure is an awakening, and every awakening settles something."[86]

Notably, even matters with more subtle aesthetic effects are not commonly predicated on a singular present object but rather on a coherent unity of a variety of factors. For example, arranging furniture in one composition instead of another can be affected by the processes of unconscious evaluative systems of extensive spatiotemporal capacity. The individual making the choice may remain wholly unaware of the workings of such deep-rooted systems and attribute the aesthetic quality brought about in experience by a specific arrangement of furniture to fengshui or similar beliefs.

To reiterate, the aesthetic quality does not need to be predicated on a specific linear instance of an explicit solution to a specific and well-defined problem. The key elements – such as the challenge, the means of overcoming, and the desired goal – can all come from different aspects, epochs, and levels of life and environment. Only the combination of these elements needs to be of the type that stimulates a highly favourable experiential response, as in a felt sensation of a coming consummatory fulfilment. The question of what exact need is promised to be fulfilled by such an imaginative combination is usually misplaced and cannot always be unambiguously answered; simply, the novel combination is – often unconsciously – interpreted as to manifest such forms and dynamics that it must be indicative of *something* exceptionally favourable. It is an intuitive feeling of overcoming resistance that irresistibly compels audiences to adhere to it even

[82] Dewey, LW10, 154–155.
[83] Dewey, LW10, 56–57.
[84] Dewey, LW10, 272.
[85] Dewey, LW10, 166.
[86] Dewey, LW10, 174; see also Dewey, LW10, 23.

without a clear understanding of exactly why and to what ends. Overall, the aesthetic quality can come about and even take a dominant position in experience through cognitively miscellaneous elements brought fluently together by unique artistic or mathematical constructs.

A key takeaway from the previous discussion is that abstract art does not fundamentally differ from other art forms that are based on more explicit and distinct problem-solution dynamics – such as, for example, the stories of saving a loved one discussed earlier. Moreover, as Dewey points out, "[e]very work of art "abstracts" in some degree[...]."[87] This allows the incorporation of unconscious and deep-rooted problem-solution dynamics to become a relevant part in the constitution of art objects that focus on familiar things and present issues.[88] For example, a picture of a flower can be painted with such brushstrokes that the strokes invoke some unconscious dynamics in the audiences. Such artistic treatment can lend deeply felt significance to the subject matter of the work, rendering it exceptionally poignant and experientially significant. This is often referred to as the painter having a spectacular 'touch' or, in the case of music, for example, as the drummer playing with an astounding 'feel'. Paul Cezanne and John Bonham, respectively, are often mentioned – although, understandably, only the former by Dewey – as examples of artists who demonstrate these highly desirable features.[89] Importantly, this is not the same as the artist having exceptional mechanical skill.[90] The world is full of musicians who can play very fast without a single mistake but whose music audiences do not want to listen to. Similarly, many painters can get the light and the shadow exactly right, all the while failing to capture anyone's gaze and, further, imagination.

These examples have their counterpart in mathematics, as some individuals excel in fast and correct calculations, but nonetheless fail to come up with interesting novel mathematical ideas of their own. In this dissertation, it is precisely the latter, broader imaginative aspects of mathematics and the aesthetic dynamics thereof that I focus on. In other words, as is the case with any puzzle, mechanically overcoming resistances in the context of a complicated calculation may bring about some degree of aesthetic quality in experience. However, it is the invention of engaging puzzles themselves and the highly imaginative, non-mechanical solutions that hold the full aesthetic potential of mathematics. Similarly to a genuine artist, a genuine mathematician explores the uncharted imaginative plains of worldly – as well as otherworldly – cognitive domains. Moreover, both possess the capability to mediate their unique discoveries and

[87] Dewey, LW10, 100.
[88] Dewey, LW10, 35, 155.
[89] Dewey, LW10, 212.
[90] Dewey, LW10, 99, 271.

creations in a communicable form to the audiences. This communication takes place through various objects and mediums of the material environment.[91] However, this does not necessarily amount to the cognitive path constituting a singular and definite imaginative object that exhaustively describes the full meaning of the discovery. It may be that after a certain point further associations become a matter of the audiences' own free speculation. Overall, an imaginative path can be open-ended or of a more predestined type. The main point, however, is that the meanings constituted by such a path can neither be described nor comprehended to a sufficient degree without a personal involvement in its dynamics, as in a journey. In short, similarly to the most talented artists, the most gifted mathematicians are capable of leading their audiences through exceptional imaginative journeys.

2.6 The Audience

The above notion of 'their audiences' implies the existence of specific groups of people capable of following and grasping the meanings of imaginative paths brought forth by artists or mathematicians. The following quote from Dewey is protracted but it captures the key points of the previous discussion regarding the relationship between an artist and an audience, as well as the mode of existence of a work of art:

> For to perceive, a beholder must create his own experience. And his creation must include relations comparable to those which the original producer underwent. They are not the same in any literal sense. But with the perceiver, as with the artist, there must be an ordering of the elements of the whole that is in form, although not in details, the same as the process of organization the creator of the work consciously experienced. Without an act of recreation the object is not perceived as a work of art. The artist selected, simplified, clarified, abridged and condensed according to his interest. The beholder must go through these operations according to his point of view and interest. In both, an act of abstraction, that is of extraction of what is significant, takes place. In both, there is comprehension in its literal signification--that is, a gathering together of details and particulars physically scattered into an experienced whole. There is work done on the part of the percipient as there is on the part of the artist. The one who is too lazy, idle, or indurated in convention to perform this work will not see or hear. His "appreciation" will be a mixture of scraps of learning with

[91] Dewey, LW10, 111.

> conformity to norms of conventional admiration and with a confused, even if genuine, emotional excitation.[92]

Applied to mathematics, the alignment of creator's and audience's experiences requires a considerable amount of education in the area of formal symbolism and logic. This is a widely understood requirement. Audiences who lack such a comprehensive educational background do not usually condemn new mathematical ideas as 'garbage'. Less educated audiences commonly remain acutely aware of their own limitations with regard to the field of mathematics and, consequently, refrain from passing any judgement. They might utter '*I* do not know what this is about', correctly attributing the reason for their refrainment to themselves.

A somewhat similar requirement of a specific type of personal background is necessitated by a considerable proportion of contemporary artworks today.[93] However, in the context of fine art, this requirement is not an established matter of common knowledge. Many audiences remain wholly oblivious to the fact that something more than living a regular life might be needed in order to aesthetically experience an object of contemporary art. On that account, new artistic ideas can hastily be deemed 'garbage'. Notably, this premature condemnation may be articulated by stating '*that* is garbage', as in attributing the failure to the artist or the art object itself. This is not to say that all contemporary artworks are great, but only to emphasise the fact that aesthetically experiencing certain works of contemporary art may require a particular type of personal history. Given that many artists dwell in the artworld, it is understandable that their works oftentimes reflect aspects of that domain and its many idiosyncrasies. Thus, in a like manner to the most advanced mathematicians, who expect their audiences to have more or less lived a life of mathematics, many artists of our time aim their works – sometimes unwittingly – at audiences highly familiar with the myriad manifestations of the artworld.

On that account, it may not be enough to simply acknowledge the classics and recognise the current trends. Often one has to have thoroughly internalised both aspects in a way that develops new sensitivities and appetites. Many contemporary artists tend to respond to the aesthetic cravings of minds — including their own — shaped by a lifelong absorption in various forms of artistic expression. Such audiences have – figuratively speaking – 'seen and heard it all' and they may ask 'what's next?' or 'where do we go from here?' In both fine art and mathematics, these types of demanding audiences are capable of more than merely following the

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[92] Dewey, LW10, 60–61.
[93] Dewey, LW10, 271.

novel imaginative paths presented to them by the creatives. Highly involved audiences possess the ability to identify the struggles the artist or the mathematician may have gone through in bringing about the novel imaginative scenarios. These audiences perceive and feel, especially acutely, how the new relates to and grows – sometimes painfully – out of the old in the presented work.[94] This felt depth of significance takes place imaginatively, as Dewey notes:

> When old and familiar things are made new in experience, there is imagination. When the new is created, the far and strange become the most natural inevitable things in the world. There is always some measure of adventure in the meeting of mind and universe, and this adventure is, in its measure, imagination.[95]

Highly involved audiences also apprehend – even if sometimes unconsciously – the reasons why a particular new imaginative direction – or an adventure, as Dewey phrases it – makes exceptional sense. Such members of the audience may not necessarily themselves be capable of coming up with similarly profound imaginative scenarios. Yet, they possess the ability to experience such exquisite scenarios in an exceptionally enriched and deeply meaningful way that resembles that of the artist or the mathematician who has developed the scenario itself. Again, in this context, the experiences of a creator of a new work and the experiences of an audience are very close to one another – albeit never identical, as no experience ever repeats exactly, even in a single individual.[96]

In the articles, I do emphasise the artist's viewpoint and the audience's viewpoint separately whenever such demarcation is pertinent in the context of the ongoing discussion. However, as suggested by the lengthy quote above, this separation is somewhat relative. In the Deweyan framework, the artist is deemed a member of the audience as well.[97] The same principle can be applied to mathematicians, who likewise have to impress themselves first in order to become convinced that the work is worth presenting to others as well. As noted earlier, the forefronts in fine art and mathematics are not only about the creation of unprecedented imaginative scenarios but also about the *communication* of such scenarios. And the most effective way to communicate a scenario is to provide the means through which other interested individuals can experience it as well.[98]

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[94] Dewey, LW10, 66–67.
[95] Dewey, LW10, 271–272.
[96] Dewey, LW10, 334.
[97] Dewey, LW10, 111.
[98] Dewey, LW10, 111, 291.

Dewey goes as far as to argue that a work of fine art exists fully only as it is aesthetically experienced by audiences in addition to the artist.[99]

Experiences of following a cognitive path, whether it constitutes an imaginative scenario or guides toward one, are primarily about the features of the path itself; the role of the producer in the creation of the path is less of a factor.[100] This is somewhat akin to a carpenter building a set of stairs. Admittedly, a carpenter may recall various hardships of the construction and feel a sense of accomplishment that others might not when looking at the completed stairway. However, the concrete act of ascending the finished stairs to their destination is experientially more or less similar to all individuals capable of climbing them. Of course, the imaginative pathways constructed by artists and mathematicians are rarely as linear as a set of stairs. The works of fine art and mathematics are usually much more dynamic, incorporating subsequent resistances and reliefs that contribute to their aesthetic characteristics. Overall, it is these dynamics of imaginatively following presented novel cognitive paths that I refer to when I discuss aesthetic experiencing in the contexts of fine art and mathematics. For the most part, these dynamics apply equally to those individuals who have constituted these paths and to those who are capable of following such paths. In short, whenever I discuss various features of aesthetic experiencing in general, they apply to both the creators and the audiences.

The forefronts in fine art and mathematics advance through deeply involved minds, the experiential similarities of which I discuss in this dissertation. To reiterate, it is not, for example, mathematical relations found in compositions of paintings or musical pieces that I focus on in this research. Instead, the research interest of this dissertation consists primarily of the challenges that the most brilliant minds encounter, overcome, and experience in their explorations of the abstract possibilities of the human imagination. When such individuals find or forge an exceptionally interesting path, they invite others to follow and experience it as well; in short, communication through shared experience, which can oftentimes incorporate unconscious bodily functions and tacit meanings. It is particularly on this deeply immersed cognitive level that the aesthetic of fine art and mathematics is seen to converge to a substantial degree – despite the 'enormous' difference between the artistic and the intellectual.[101]

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[99] Dewey, LW10, 60, 111.

[100] Of course, this relation is not absolute. The issue is problematised in the analysis of Felix Gonzalez-Torres' work of conceptual art, found in the second article of this dissertation. In Gonzalez-Torres' work, certain aspects of his own life are incorporated as crucial parts into the path, the aesthetic experiencing of which constitutes the work of art.

[101] Dewey, LW10, 45, 80.

3 Overview of the Articles

3.1 Article Summaries

The interpretation of Dewey's theorisation on aesthetic experience laid out in the above discussion provides the framework for the following three articles included in this dissertation. The first one is entitled 'John Dewey's Theory of Aesthetic Experience: Bridging the Gap Between Arts and Sciences'. Of the three articles, this one includes the broadest approach to Deweyan aesthetics; it covers various premises of pragmatist thought, on which the subsequent articles of this dissertation are based. It is particularly in this first article that the most juxtapositions are introduced. Notably, I discuss the premises of the Deweyan theory in contrast to other naturalist approaches, which appear to incorporate elements of classic philosophy that predate Darwin's theory of natural evolution. Namely, I bring up the writings of Matthew Rampley as an example of an attempt to hold on to pre-Darwinian ideals in a contemporary framework of philosophical naturalism. Rampley explicitly states that "evolutionary theory may provide an additional explanatory layer, but it does not easily replace more established discourses in the humanities."[102] This declaration from Rampley highlights precisely the kind of clinging to outdated premises that Dewey argues against in his philosophical enterprise in general and in the following statement in particular:

> The naturalistic method, when it is consistently followed, destroys many things once cherished; but it destroys them by revealing their inconsistency with the nature of things--a flaw that always attended them and deprived them of efficacy for aught save emotional consolation. But its main purport is not destructive; empirical naturalism is rather a winnowing fan. Only chaff goes, though perhaps the chaff had once been treasured. An empirical method which remains true to nature does not "save"; it is not an insurance device nor a mechanical antiseptic. But it inspires the mind with courage and vitality

[102] Rampley, *The Seductions of Darwin: Art, Evolution, Neuroscience*, 14.

> to create new ideals and values in the face of the perplexities of a new world.[103]

In contrast to Rampley, Dewey views the Darwinian approach as bringing a comprehensive overhaul to our understanding not only of biological development but also of the structure of reality; eternal and immutable transcendent realms of gods – or ideas – have to be discarded no matter how dearly held they may be and regardless of their long-lasting prestige in human cultural heritage. In their place, Dewey suggests an undivided singular world and an empirical approach to the relations and interactions that this one and only world consists of.[104] On that account, the object of knowledge changes from eternal truths to verifiable relations between components of this one reality.[105] In short, knowledge comes to concern the arrangement of matters of this one reality – including social and emotional elements – in a way that predictable outcomes can be consistently obtained. The effectuation of desirable outcomes in one's own experience – and potentially thereafter in the experiences of others – marks the key convergence point of art and science that I posit in the first article. In addition, I suggest that this general-level experiential alignment offers a fruitful basis for further investigations into the particular issues of the relationship between art and science. I undertake these types of further investigations in the second and third articles.

In the second article, entitled 'John Dewey's Philosophical Naturalism and a Pragmatist Approach to Conceptual Art', I address the issue of conceptual art in a Deweyan framework. Dewey himself did not elaborate in detail on the way he understood conceptual art in the context of his art theory. On that account, I put forth a specific suggestion of how conceptual art could be explained in Dewey's pragmatist framework. Despite being specific, I do not claim that the Deweyan approach to conceptual art I propose in the article is exhaustive. Indeed, I emphasise the fact that Dewey's theory allows other interpretations as well. I only strive to provide an account of conceptual art that aligns with Dewey's theorisation in all aspects of its constitution. One of the main hurdles in such an attempt is the abovementioned enormous difference between the intellectual and the artistic.[106] I do not suggest that the difference can be entirely eliminated in an absolute theoretical sense. Nonetheless, I do posit that, in practice, the disparity

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[103] Dewey, LW1, 4.
[104] Dewey, LW1, 61–63, 205; Määttänen, *Mind in Action: Experience and Embodied Cognition in Pragmatism*, 10–11.
[105] Määttänen, "Emotionally Charged Aesthetic Experience", 86–87.
[106] Dewey, LW10, 45.

can be alleviated to such a high degree that a genuine aesthetic experience of art can be constituted upon conceptual matters.

A key aspect of this conceptual artistic practice is the preparation of audience's background resources in a way that helps them to align their experiential responses to the art object with those of the artist. Without such experiential alignment, it is probable that the material object will fail to mediate the meaning of the work and, consequently, the communicatory aspect of fine art will remain unrealised. Of course, as a lead-up to these conclusions, Dewey's theory of the constitution of concepts, as they emerge in life in general and in specific circumstances, is discussed as well. Overall, however, the main part of the discussion revolves around a case example, namely, the work of Felix Gonzalez-Torres entitled "Untitled" (Perfect Lovers), 1991. It is through an analysis of this particular piece of art that I examine the advantages and the disadvantages of the conceptual approach to bringing about aesthetic experiences of fine art in audiences. This analysis highlights a particular instance of the more general convergence of art and science proposed in the first article of this dissertation.

In the third article, entitled 'Managing the Vague: John Dewey's Aesthetics and the Relation of Fine Art and Mathematics', I examine the specifics of the experiential alignment between fine art and mathematics. Dewey himself did not suggest a favourable connection between vagueness and the aesthetic. In fact, he mentions an instance in which vagueness inhibits the emergence of the aesthetic quality in experience. I do not oppose Dewey's view in this particular case of character development in literature. However, a thorough analysis of the concepts of vagueness and aesthetic – as they are defined in the Deweyan framework – also reveals possibilities for relating the two in a conducive way.[107] The manner in which cognitively managing the phenomenon of vagueness can potentially tie into the Deweyan aesthetic structure is twofold: it is possible to view the aesthetic quality as a part of an experience of managing the vague and also to view the management of vagueness as a part of an aesthetic experience proper. This relationship is complicated because the two experiential modes are not necessarily mutually exclusive but sometimes intertwined. The main difference is marked by a threshold after which the management itself, as a mode of overcoming, overtakes vagueness as the main aspect and focus point of the experiential whole. If a situation compels such a shift in experienced priorities, then the transition is accompanied by a reappraisal of experiential qualities; as the overcoming rises to the fore, so does the experiential quality of overcoming in the manner of an emphatically aesthetic experience. Similarities in occurrences of this type, within

[107] For example, Dewey, LW10, 79–80.

the contexts of fine art and mathematics, denote the main experiential connection between the two disciplines that I investigate in the third article.

In academia, and oftentimes in certain practical contexts as well, the role of experiential qualities in each discipline is indeed traditionally viewed as dissimilar. Fine art is seen to be primarily engaged in for the sake of experiencing itself, whereas mathematical efforts are deemed to be undertaken for a variety of other, often more formal, purposes. These descriptions are not invalid and I do not dispute them as such. However, from a more ingrained and organic perspective, the two are not categorically separate. As Dewey notes, "[i]t is not possible to divide in a vital experience the practical, emotional, and intellectual from one another[…]."[108] Moreover, the ways in which an obstacle, such as vagueness, is overcome in mathematical and artistic practices exhibit an instance of further experiential similarity between the two disciplines. Dewey discusses the general basis of this particular type of further convergence as follows:

> The spontaneity of art is not one of opposition to anything, but marks complete absorption in an orderly development. This absorption is characteristic of esthetic experience; but it is an ideal for all experience, and the ideal is realized in the activity of the scientific inquirer and the professional man when the desires and urgencies of the self are completely engaged in what is objectively done.[109]

Dewey's emphasis on 'the professional man' underscores the aspect that the experiential similarities are particularly pronounced at the forefronts of artistic and mathematical developments; before new ideas and discoveries are fully grasped and established, they are oftentimes imaginatively presumed. In this enticing inquisitive phase, often characterised by a deep immersion, the meaning of the novel object is initially more or less vague, but it is also clarified and solidified through further cognitive acts of overcoming the vagueness.[110] These procedures describe the development of the imaginative trails that artists and mathematicians blaze and, consequently, epitomise in their material products, such as art objects and equations. These material products are then presented to audiences for the purpose of giving them cognitive guidelines for following the carved imaginative path and experiencing the dynamics of the scenario that the path embodies.[111]

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[108] Dewey, LW10, 61.
[109] Dewey, LW10, 284–285.
[110] Dewey, LW10, 195–196.
[111] Dewey, LW10, 57-58.

In summary, the three articles that follow this introduction comprise an effort to apply Dewey's theory of aesthetic experience to the relationship between art and science. In the first article, I elaborate on the reasons why I find the Deweyan approach more compelling than other alternatives, including certain contemporary naturalist theories. In addition, I provide an interpretation of Dewey's key notions about art and science, on the basis of which further inquiries can be conducted. In the subsequent articles, I employ this Deweyan foundation for the purpose of investigating the specifics of the relationship between art and science. In these two studies, I examine the topic through combinations of elements that Dewey himself did not discuss, but to which his theory nonetheless remains open. In other words, the articles expand upon Dewey's work and take it to areas that benefit from such undertakings, namely, the theorisation of conceptual art and the relationship between fine art and mathematics. Overall, these investigations illuminate aspects relevant to an improved understanding of human ingenuity, including the driving motives and the directing influences that shape its advancements. Such insights, in turn, contribute to the broadening of perspectives on the aggregate human cultural and intellectual development.

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I

Experience in a New Key

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John Dewey's Theory of Aesthetic Experience: Bridging the Gap Between Arts and Sciences

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Abstract: John Dewey's philosophical pragmatism offers a reformatory approach to the arduous relationship between natural sciences and humanities. The crucial issue, which Dewey sets himself to resolve, is the pre-Darwinian influence of classical philosophy upon various scholarly practices. Ancient background assumptions still today permeate a considerable proportion of academic research and argumentation on both sides of the debate. Even evolutionary accounts appear to be affected. In order to avoid the often implicit, but nonetheless problematic, consequences that ensue from such archaic premises, I examine Dewey's reappraisal of the concepts of art, science and knowledge. An analysis of these key concepts renders it possible to understand the proper function of aesthetic experience. In this paper, natural constitution of an aesthetic experience, which carries one of the intrinsic relations between art and science, comprises the core of the proposed solution. Furthermore, establishment of an integral aesthetic connection forms a fruitful basis for further bridging of the gap between hard sciences and humanities.

Keywords: philosophical naturalism, pragmatism, John Dewey, aesthetics, natural evolution, cultural evolution, philosophy of science, epistemology, philosophy of art

1 Introduction

The dialogue between natural sciences and humanities has traditionally been a tumultuous one. Also, it is plagued with both unintentional and intentional misapprehensions. In this paper, I discuss John Dewey's philosophical pragmatism for the purpose of dissolving some of the most persistent issues that bedevil the exchange of ideas between the two research traditions. Recent works on the topic provide detailed examples of the challenges as they appear in the present academic debates. For example, Matthew Rampley analyses with meticulous care the difficulties that accompany particular attempts to apply the methodology of natural sciences in the field of humanities.[1] However, it is possible and, I believe, more productive to examine the relationship between humanities and natural sciences from a broader point of view. Instead of an analysis of the consequences of applying certain models, it is possible to focus on the foundations of the disciplines themselves. If properly conducted, this type of alternative approach can be used to reassess key terms like art and science. The contents of these particular terms are predominantly considered as self-evident in most discussions, Rampley's study included. Of course, the scope of ontological reassessment I propose necessitates a total reconstruction of the entire tradition of philosophy of science. Nonetheless, such an overhaul is, I suggest, precisely what is needed for a profound improvement in the dialogue between hard sciences and humanities. Otherwise, the influence of archaic philosophical thought remains an ever present obstruction for developing equitable modes of communication between practitioners of natural science and arts scholars.

1 Rampley, *The Seductions of Darwin: Art, Evolution, Neuroscience*, vii, ix.

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On the topic of bridging the gap between natural sciences and humanities the possibilities offered by Dewey's philosophical framework have previously been examined by Tibor Solymoski.[2] He focuses on the role Dewey's conception of truth plays in the process of establishing connections between the two research traditions. Hence, in his work Solymoski utilises a different aspect of Dewey's work than the theory of the aesthetic which I employ in this essay. Nevertheless, Solymoski raises an important point about Dewey's position that is essential for the present debate as well; a genuine reconciliation of natural sciences and humanities necessitates a thorough reconstruction in philosophy.[3]

Dewey's philosophical reform has influenced many contemporary neopragmatist scholars. For example, Richard Shusterman includes various aspects of Dewey's philosophy in his somaesthetic theory. However, in Shusterman's work the Deweyan elements are overshadowed by linguistic ones. He aligns with Richard Rorty and positions language in the center of solving philosophical issues.[4] The version of philosophical pragmatism I discuss in this paper diverges from the 'post-Rortyan' pragmatism advocated by Shusterman. The importance of language to human thought is acknowledged, but human cognition is not deemed to be as linguistic as the above mentioned neopragmatists claim it to be. Moreover, in this paper Dewey's operational concept of knowledge is conjoined with that of his theory of aesthetic experience. Especially the latter comprises the core of the proposed solution. Dewey holds that natural evolution profoundly affects, but does not dictate or exhaustively define, the formation of every mode of human activity. This includes arts and sciences. Furthermore, an aesthetic experience, in itself, does not necessarily demarcate artistic operations from scientific ones. Combined, all of these conclusions strongly suggest a natural connection between art and science, which, in turn, can support a constructive convergence of humanities and natural sciences.

2 Naturalistic reconstruction in philosophy

The monumental task of challenging classical philosophy in its entirety has been taken up by John Dewey, although his results are not generally accepted and often remain overlooked. Dewey's endeavour to revolutionise philosophy originates from a very basic question. In short, he asks what should be changed in philosophy if Darwin is correct in his hypothesis about the evolution of life.[5] Dewey's answer to this question is equally straightforward: everything. Darwin's revelations about the substratum of human existence necessitates a complete reappraisal of human ontology. Consequently, Dewey spends the majority of his career reconstructing several areas of philosophical thought. He addresses issues that range from ethics to logic and from social organisation to education. However, for this paper, I will focus predominantly on Dewey's conception of fine art and aesthetics as well as on his description of the structure of knowledge.

Naturally, Dewey is not the only philosopher to engage in such thoroughly regenerative efforts, as others have had similar aspirations. For example, Hans-Georg Gadamer has studied the issue of revision in philosophy and the role of humanities in such a process.[6] Also, Georg Henrik von Wright discusses the relation of humanist philosophy and science.[7] However, for the purposes of this paper Dewey's framework is especially pertinent. This argument for the appropriateness of Dewey's theory finds support in the title and the content of Jerome Popp's book Evolution's First Philosopher: John Dewey and the Continuity of Nature.[8] In his study Popp provides an overview of the Darwinian basis of Dewey's thinking. And even though aesthetic considerations receive only minute attention in Popp's analysis, his work describes the foundations upon which Dewey builds his theory of fine art. This is important because in Dewey's inquiry into the philosophy of art the theory of natural evolution is rarely mentioned. Some of Dewey's contemporaries, such as Yrjö Hirn for example, were more willing to discuss the connection between

2 See Solymoski, "Can the Two Cultures Reconcile? Reconstruction and Neuropragmatism", 83-97.
3 Ibid., 84.
4 Määttänen, "Shusterman on Somatic Experience", 56.
5 Popp, *Evolution's First Philosopher*, 115.
6 See Gadamer, *Truth and Method*.
7 See von Wright, *Explanation and Understanding*.
8 See Popp, *Evolution's First Philosopher.*

natural evolution and fine art in an explicit fashion.[9] Popp hypothesises that Dewey's reluctance to use evolutionary references is traceable to the miseducation of his audience.[10] In Dewey's time Darwinian ideas were not as widely accepted as they are today.[11] Yet, for the ideas that I will put forward in this study, it is essential to understand Darwin's impact on the origins of Dewey's philosophical stand.

Dewey's pragmatist definition of knowledge is founded upon the acceptance of Darwinian premises. Also, the aesthetic quality of experience plays a role in his theory about the constitution of knowledge. This is due to the fact that the aesthetic relates to the satisfaction of various natural conditions. When results are found to be satisfactory, they are experienced as such by human beings. No extraneous insurance for making the correct inferential judgements exists. However, the experienced emotion of satisfaction, which functions as a sign of value in an organism-environment interaction, is not purely internal in its origin. Satiety has developed amidst an evolutionary survival pressure; a selective process where random emotional variation gradually makes way for a more consistent relation between desirable concrete effects and positive emotional responses. Emotion as a sign evolved for the need of effortless ascertainment of the concrete benefit or harm of the ongoing activity. The fact that human beings have survived and prospered in a hostile environment using experience as a guide guarantees – to a degree – that human experience more or less accurately corresponds with other natural events. And for Dewey, 'natural events' include the experiential states of other living beings as well.

Solymoski discusses this issue in relation to overcoming problems in an organism-environment interaction. He states that, according to Dewey, if a proposed outcome is experienced as, or 'feels', unsatisfactory, truth remains unattained for the time being.[12] In other words, if the activity does not produce a sufficient outcome the original plan of the operation is inadequate. On the other hand, expected consequences experienced as satisfactory indicate establishment of truth and direct further modes of activity.[13] In short, a successful operation indicates that the original plan is 'true enough', as Dewey's operational concept of knowledge excludes absolute truths in the classical sense. Originating from Darwinian ideas this reappraisal of the role of satisfactory emotions in expectation and action plays an important role in the constitution of an aesthetic experience as well. In Dewey's aesthetic theory this nucleus of natural evolution is embedded in cultural evolution and social surroundings; these merely provide new challenges, as well as possibilities, for the application of primal mechanisms of anticipation and verification. Human beings cannot completely ignore the influence of these collective natural guidelines, nor should they. Following the aesthetic intuition wherever it may lead has often preceded major discoveries in arts and sciences alike.

3 John Dewey's naturalisation of experience

Dewey bases his philosophical reconstruction on concrete events of nature, such as the birth of an individual organism; human beings find themselves 'thrown into the world', as Heidegger would say, with varying physiological and psychological properties.[14] This is an inescapable fact. The development thereafter depends on numerous things, constitution of knowledge being one of the most important ones. In the following Dewey explains the origin of knowledge and its ontological position:

> But suppose a busy infant puts his finger in the fire; the doing is random, aimless, without intention or reflection. But something happens in consequence. The child undergoes heat, he suffers pain. The doing and undergoing, the reaching and the burn, are connected. One comes to suggest and mean the other. Then there is experience in a vital and significant sense. Certain important implications for philosophy follow. In the first place, the interaction of organism and environ-

9 See Hirn, *The Origins of Art: A Psychological & Sociological Inquiry*.
10 Popp, *Evolution's First Philosopher*, 92.
11 Ibid.
12 Solymoski, "Two Cultures", 91.
13 Ibid.
14 Dewey, *The Later Works of John Dewey, 1925-1953. Volume 1: 1925, Experience and Nature* (*LW1*), 277, also Määttänen, *Mind in Action: Experience and Embodied Cognition in Pragmatism*, 71.

> ment, resulting in some adaptation which secures utilization of the latter, is the primary fact, the basic category. Knowledge is relegated to a derived position, secondary in origin, even if its importance, when once it is established, is overshadowing.[15]

The above summary contains several key concepts that are essential for understanding Dewey's philosophy. Perhaps the most important one is that of experience. An occurrence of an experience always depends on objective physical events of nature. This applies to social experiences as well. Human communication is a form of natural continuity. Moreover, in its primary form an experience is a whole that does not separate object from subject.[16] These are derivative products of reflective thought, which itself arises from the natural process of continuously experiencing the world with structural properties that enable contemplative tendencies.[17] In this instance 'natural process' denotes the fact that the human body is the primary instrument of experience. The consciously reflective phase is an evolved extension of the total experience of a living organism. It is emphatic in humans and blends with elementary animal properties. This combination enhances the capacity of experiential material to function as a guide in various operations. In addition, the evolutionary constitution and the structural features of the human body, which affect the way the world is experienced, can be extended and enriched with scientific instruments.[18] However, this demarcation of instrumentalities is only relative. The human body and all physical tools are no more than different arrangements of the same basic materials of nature. Therefore, no fundamental difference exists between the two. Both serve a similar operative function in the actualisation of various forms of interaction between organisms and their respective environments.[19]

The common foundation of organic bodies and material tools is not limited to them alone. Also the environment, in which bodies and tools are used, shares the same physical basis. Dewey is adamant about the fact that only one world exists.[20] Thus, it is no longer reasonable to use the term 'external world' in any classical or Cartesian sense. Instead, the world in its entirety is to be understood as a network of interactions. In this web of relations human beings possess no separate position. The overall development of the one and only natural system has resulted in an uneven distribution of complexity across the parts of the system. As a consequence, human beings have gained the ability to experience and operate in a certain way, which the other structural formations of the network lack. However, this factual state of affairs does not elevate humans above nature. Neither the structural complexity nor the operational capability should be taken as signs of transcendence of any kind. All components of the network are equally real in their concrete existence, even if their connections vary from loose to intricate.[21]

In order to better understand the human position within nature, it is imperative to examine how the experiencing human mind comes to achieve the trait of self-reflection. Dewey states that no one has ever encountered a mind that was not connected to a material body.[22] Indisputably, the material structure upholding life and mind in an organism-environment interaction has limits that cannot be exceeded without losing them both. Thus, mind can be viewed as an emergent feature of organisms that fulfil certain organisational conditions in the arrangement of their physical structure and surroundings.

Despite the prerequisite of a material basis, the human mind is never fully realised on mere physiological constitution. Dewey notes that a mind needs other minds to obtain its full operative potential. He explains that only through interaction with others it is possible to become self-aware.[23] A cognitively demanding environment fosters the human tendency to observe the effects of the surroundings upon the individual self. And no environment is more complex and challenging than the one consisting of a multiplicity of

15 Dewey, *The Middle Works of John Dewey, 1899-1924. Volume 12: 1920, Essays, Reconstruction in Philosophy* (*MW12*), 129.
16 Dewey, *LW1*, 18-19.
17 Ibid.
18 Määttänen, *Mind in Action*, 26, 83.
19 Määttänen, *Action and Experience; A Naturalistic Approach to Cognition*, 122.
20 Dewey, *LW1*, 205.
21 Määttänen, *Mind in Action*, 10-11, also Dewey, *LW1*, 207-208.
22 Dewey, *LW1*, 212.
23 Ibid., 135.

other human beings with individual minds of their own. Thus, a participation in communication with other human beings is a necessary condition for an individual person to gain the cognitive ability to communicate with herself.[24] In short, the origin of the human mind and the use of reflective thought in the degree exhibited by contemporary human beings is inherently social. This viewpoint is reaffirmed and developed further by twenty-first century scholars. For example, Merlin Donald states that "Enculturation dominates human cognitive development."[25] In addition, David Franks expounds a continuity between the work of George Herbert Mead and current studies in neurosociology. Both focus on the cognitive perspectives of the self and others.[26] These examples indicate that in thoroughly evolutionary theories the question of the very first mind is a moot point. Through social interaction human beings can build upon the thinking of their predecessors in a way that exceeds any previous modes of thought. A contemporary mind is a continuation of more primitive minds, and this continuation extends all the way to the animal ancestry.[27]

Multilevel evolutionary developments have, nonetheless, led to a notable cognitive divergence between human beings and other animal species. Of course, the sensory interaction of organism and environment is the basis of all experience, as the example of burning one's hand demonstrates.[28] In addition, a considerable number of animal species show at least redirection of ongoing activity by sensory stimulation, if not outright learning from various sensations.[29] For example, identification of the types of objects that have in prior interactions caused unpleasant experiences guide some animals towards more favourable courses of activity. Generally, an experience can be defined as "orientating to possible future experiences on the ground of past practical experience."[30] In human beings, however, this orientation can go beyond the preparedness for the immediate future situation. Perception of relations in one's own actions and consequences, as well as in those of others, leads to a heightened awareness of what is possible in future. Thus, in humans, encountered objects are not only experienced in their relation to the current situation and ongoing activity, but to the ones expected to take place in the distant future. The reason primitive human beings started to carry physical objects with them relates to the fact that these objects were associated with perceived future possibilities beyond immediate use. The primary mode of experiencing the world is through affordances for action either here and now or some other time in some other situation, the latter being the ones in which human beings excel above other animals.

4 Dewey's definition of object of knowledge

Dewey demarcates the 'had' and the 'known' in experience.[31] When objects and events are experienced randomly in the course of life they are 'had'. In order for these encountered things to become 'known' they need to be intentionally produced. If the 'had' is deemed as enjoyable and beneficial for life, it evokes an inquiry into possible ways of re-establishing the concrete conditions under which the experience initially emerged. Thus, the means for attaining factual ends that are experienced as valuable, as in satisfactory, become the object of knowledge. In other words, knowledge relates to the capability to rearrange the relations in the network of interactions in a way that desirable outcomes are secured.[32] The challenge of discovering practices that continuously redirect the experiencing organism toward life's goals is an ever-ongoing process.[33] Of course, certain aims human beings entertain in thought and pursue in the natural

24 Ibid.
25 Donald, *A Mind So Rare: The Evolution of Human Consciousness*, 254.
26 Franks, "Why We Need Neurosociology as Well as Social Neuroscience: Or—Why Role-Taking and Theory of Mind Are Different Concepts", 27-32.
27 Popp, *Evolution's First Philosopher*, 39.
28 Dewey, *MW12*, 129.
29 Ibid., 128.
30 Määttänen, *Mind in Action*, 23.
31 Dewey, *LW1*, 28, 232, also Dewey, *The Later Works of John Dewey, 1925-1953. Volume 4: 1929, The Quest for Certainty* (*LW4*), 194, 206.
32 Dewey, *LW4*, 236.
33 Ibid.

environment differ considerably from the goals that animals from other species strive for. Furthermore, the scope of human perception, generally, enhances the capability to respond to unforeseen problems and, also, supports effective utilisation of attained results. Yet, no amount of cognitive capacity liberates human beings from the basic fact that throughout the lifetime of an organism one problematic situation is followed by another.[34] In short, no absolute or all-encompassing solutions exist for the problem of knowledge; only improvement in the methods of obtaining further enriched experiences.[35]

The previous notion points to the fact that all forms of knowledge, including the scientific, are operational in the most profound sense. The historical processes of natural evolution do render possible and affect, but do not define or dictate, the formation of these operations. Moreover, natural sciences employed relational operations even during the times when concepts such as mass and motion were viewed as intrinsic and immutable properties of objects.[36] However, Einstein's challenge to the Newtonian absolutes of space and time prompted a comprehensive re-evaluation. These new ideas transformed the understanding of the role of relations as well as that of operations in the formation of scientific concepts.[37]

> With the surrender of unchangeable substances having properties fixed in isolation and unaffected by interactions, must go the notion that certainty is attained by attachment to fixed objects with fixed characters. For not only are no such objects found to exist, but the very nature of experimental method, namely, definition by operations that are interactions, implies that such things are not capable of being known. Henceforth the quest for certainty becomes the search for methods of control; that is, regulation of conditions of change with respect to their consequences.[38]

Acceptance of the concrete restrictions imposed upon human beings by the structure of nature compels the renouncement of all epistemological premises that transgress these limits. Eternal transcendent truths or immutable realms of other 'more real' realities are clearly in direct violation to anything encountered or created by humanity. Therefore, such fantasies should occupy no fundamental position in the structure of knowledge – neither in premises nor in goals. For Dewey, the fact that classical philosophy and certain accounts of natural science often rely on various antecedent existences positions them in the same category as religion.[39] Thus, instead of being regarded as solutions, they become an obstruction to knowledge. This applies equally to the actual attainment of knowledge as well as to the comprehension of its proper office. I conclude this chapter with Dewey's uncompromising description of the effects and benefits that accompany the acceptance of the Darwinian hypothesis.

> The naturalistic method, when it is consistently followed, destroys many things once cherished; but it destroys them by revealing their inconsistency with the nature of things – a flaw that always attended them and deprived them of efficacy for aught save emotional consolation. But its main purport is not destructive; empirical naturalism is rather a winnowing fan. Only chaff goes, though perhaps the chaff had once been treasured. An empirical method which remains true to nature does not "save"; it is not an insurance device nor a mechanical antiseptic. But it inspires the mind with courage and vitality to create new ideals and values in the face of the perplexities of a new world.[40]

5 Dewey's conception of art and science

Dewey's reform of philosophical foundations brings about considerable revisions in the concepts of art and science. However, it is first necessary to analyse how the conception of 'concept' itself is understood after the naturalisation of philosophy. For example, it is no longer tenable to assign any metaphysical significance to concepts. Instead, all concepts are to be defined through operations which form a coherent set.[41] A concept

34 Ibid.
35 Ibid., 235-236.
36 Ibid., 102.
37 Ibid., 102-103.
38 Ibid., 103.
39 Dewey, *LW1*, 34.
40 Ibid., 4.
41 Dewey, *LW4*, 89.

is always recognised, cultivated, and utilised in human activity. This applies equally to overt actions and thought processes. Generally, Dewey defines conceptions as platforms for responding to situations.[42] These facilities are based on prior experiences and originate, as well as develop, in accordance with cognitive faculties such as the capacity for language use. In other words, the continuous progression of concepts is conjoined with, but not solely determined by, forms of human communication. Concepts, as inherently hypothetical, comprise possible eventualities if a certain action is taken. They are verified through concrete outcomes of activity and can, accordingly, be modified or discarded if they fail to meet expectations.[43] Once established a concept may factually effect future eventualities and experiences which ensue from its own emergence. Nevertheless, even the most elaborate conceptual thought constructions remain subordinate to the physical foundations of nature itself. Thus, no compelling reasons exist for favouring the former over the latter as the outset or the endpoint of any epistemology.

Furthermore, Dewey deems any fundamental separation between art and science as misguided. For him art, in the broadest sense, is a successful integration of means and ends in human activity.[44] However, in anything genuinely artistic the success is not of the type measured in mere monetary compensation. Art necessitates that the intentional integration has to be thoroughly connected to the experience of attaining meaningful goals of life. Science, in turn, is an exceptionally well refined intentional mode of operational activity, which aids in the expansion, as well as the actualisation, of the potential of various arts.[45] The scientific is defined by the comprehensive efforts that are undertaken in order to verify and communicate relevant aspects of prevailing issues. In short, science is problem solving without any prearranged commitments to a specific methodological framework, such as the natural scientific.[46] Arts can be approached scientifically, as is often the case when a thorough study about the relations between available means and desired ends is conducted. A struggle to establish secured relations between materials and procedures describes an essential part of the working practices of both artists in their studios as well as scientists in their laboratories. Even with the latter the valuable discoveries are not necessarily predetermined by prior natural scientific conceptions or ideals. Promoting a methodological pluralism in science distinguishes Dewey's naturalism as 'soft' from the 'hard' naturalism of natural sciences.[47] For him, empirical observations of natural relations neither have to be limited nor reduced to those that are studied in physical sciences. For example, relations between operations and consequences in social affairs can be subjected to scientific empirical inquiries, which can be formal and useful without being mathematical.

I conclude this discussion about means and ends with a brief overview of the concept of intelligence. When the relationship between action and consequence becomes the object of reflective thought, associations of further connections begin to emerge in the human mind. These prospective relations suggest forms of concrete activity which, in the end, confirm or falsify the validity of contemplated hypothetical relations. The capability to produce hypothetical scenarios that practical testing affirms in experience is the essence of intelligence.[48] Dewey states that "The action and its consequence must be joined in perception. This relationship is what gives meaning; to grasp it is the objective of all intelligence."[49] In addition, Dewey recommends using the adverb 'intelligently', as it better captures the active nature of the term.[50] All intelligently performed operations share the cognitive phase of integration regardless of their contextual setting. Fine art, natural science and other sophisticated modes of activity are all alike in this most profound respect.

42 Dewey, *MW12*, 162-163.
43 Ibid., also Dewey, *The Later Works of John Dewey, 1925-1953. Volume 12: 1938, Logic: The Theory of Inquiry* (*LW12*), 343.
44 Dewey, *LW1*, 277.
45 Ibid., 269.
46 Dewey, *LW4*, 99-100.
47 Määttänen, *Mind in Action*, 2.
48 Dewey, *LW1*, 126.
49 Dewey, *The Later Works of John Dewey, 1925-1953. Volume 10: 1934, Art as Experience* (*LW10*), 51.
50 Dewey, *LW1*, 126.

6 The role of evolutionary theory in scholarly practices

Today a considerable part of the academic discussion remains fixated upon saving the treasured ethos of classical philosophy in one way or another. It is not difficult to find examples of the type of thinking in which the theory of evolution is accepted in principle but, nevertheless, denied of its full reformatory potential. Consider, for example, the following argument that "...evolutionary theory may provide an additional explanatory layer, but it does not easily replace more established discourses in the humanities."[51] This statement explicitly contravenes Dewey's philosophical enterprise. Dewey does, in fact, completely replace the outdated discourses in all forms of traditional inquiry. Moreover, he does so with an epistemology that starts out from, but does not limit itself to, natural evolution. However, the main problem with the above quote is found in the context in which it is put forth. In this framework the theory of evolution is often viewed as a purely natural scientific product: a derivate of antecedent scientific ideals, which themselves remain unaffected by the emergence of the theory of natural evolution. In other words, evolutionary theory is not accepted as a fundamental premise replacing those formed prior to Darwin's efforts.

Today many evolutionary scholars favour a reduction of all humanities to a natural scientific paradigm.[52] Yet, Darwin's ideas, when consistently followed, do not lead to a single universal solution for all conceivable problems. Neither do they imply that, in the end, all problems have a mathematical formulation. The important takeaway from these notions is that certain natural scientific accounts incorporate, even if implicitly, epistemological aspects from classical philosophy that contradict Darwinian ideas. An inclination towards a pre-Darwinian way of thinking has considerable consequences for research modes. For example, it is common to observe that the Darwinian theory of evolution is assigned to an intermediate role between premises and ends that predate the evolutionary theory itself. Such attempts underline the desire to preserve the high esteem of the reductionistic ideals of classical philosophy.

In contrast to the tradition of natural sciences, which often suffers from implicit pre-Darwinian influences, several accounts of traditional humanities remain openly pre-Darwinian.[53] For example, mind-body dualism still remains as an acceptable viewpoint in many philosophical discussions. Furthermore, cultural studies often rely on archaic concepts.[54] Dewey would agree on the problematic nature of both issues. As previously noted, Dewey unambiguously rejects mind-body dualism. On the other hand, the use of ancient, or generally imprecise, conceptual tools is a more complex matter, and it comprises the topic of the following section.

7 Argument for humanities

Dewey rejects natural scientific reductionism as an all encompassing principle. Therefore, it is important to examine the ways in which his philosophical position supports the scientific standing of the humanities – terminology included. Dewey's view regarding concepts and vocabulary is generally permissive; those should be applied that solve the encountered problematic situation in a desirable manner. Nevertheless, the referents of any terminology should be confined to a causally closed nature. In Dewey's philosophy teleological concepts, such as 'purposes' for example, do not refer to fundamental existences but to emergent modes of directing and controlling practical activity.[55] 'Aspirations' take place within the natural sphere of concrete experience, which comprises the sole point of reference for the diverse language used to describe them. The use of 'human aspiration' in the sense of a transcendent category is pre-Darwinian and should, therefore, be avoided.

Even though terms and concepts refer only to natural objects, events and features, methodological pluralism is, nonetheless, needed. This is due to the fact that, for example, mathematical exactness does not

51 Rampley, *The Seductions*, 14.
52 Ibid., 4-6, 132.
53 Ibid., 6, 132.
54 Ibid., 132.
55 Dewey, *LW10*, 65.

necessarily produce the best results in every imaginable situation. Of course, the world does contain aspects and relations that are most comprehensively revealed and developed with mathematical concepts. Yet, nature's complexity also holds emergent forms of interaction which, clearly, do not submit to mathematical formalism. In most challenges of life the experienced problematic situation is so indeterminate that it escapes all exact definitions. Thus, even the most educated mathematicians do not apply their professional competence in all life's situations. Such attempts comprise the material of fictional comedy – rarely of actual life. In the end, it is difficult to deny that human beings, as well as other animals, have successfully developed means for overcoming problems that defy mathematical or natural scientific formulations.

If concepts such as 'holy', for example, are used to describe organic experiential states of an individual person, they can be of practical use in various problematic situations. Furthermore, the alignment of associative materials does not need to be total in order to improve co-operation between conscious agents. For example, organisers of a festival can ask the musicians to play something 'uplifting' to enhance the mood of the ongoing event. In such a situation a somewhat common experiential understanding of the term 'uplifting' is adequate in directing the choice of a song and the mode of its performance with regard to the end-in-view. A successful execution of the request does not necessitate a complete and exact theoretical category of uplifting music that every party involved in the situation can agree upon. When discussions about possible consequences result in an agreement, which in itself does not have to be absolute or exact, it is a strong indication of a sufficient overlap in the experienced premises as well. Overall, a perfect cohesion of concepts is not mandatory in any phase of productive and successful social activity – or in the formation of knowledge about it. Inarticulate indefiniteness is a considerable part of human life. Yet, it is possible to obtain desirable, even if not ideal, results from vague starting points. And science, as a refined continuation of other practices of life, is no different. Problems vary in their exactness and the concepts used to solve them have to adjust accordingly. In most circumstances prototypical examples with fuzzy boundaries suffice.

What makes an attitude scientific, in distinction from common sense, is the intentional engagement in discovery and confirmation of relevant relations in a given problem.[56] This principle does not necessitate exact definitions or all-encompassing final solutions. Accuracy does not amount to total correspondence or ideal exactness. Dewey implies that a mindset which deems anything less than perfect or absolute as unscientific can be seen as originating from pre-Darwinian ideals.

> The fact seems to be that uncritical adherence to Aristotelian conceptions has combined with the prestige of physics, especially of mathematical physics, to generate the conception that physics is not only the most advanced form of scientific inquiry (which it undeniably is), but that it alone is scientific in nature.[57]

Dewey's own conception of science, on the other hand, is based on a view according to which all concepts are more or less vague. They range from elaborate mathematical accuracy to less precise models of human behaviour. Moreover, if human activity is most securely predicted and directed with the use of indeterminate concepts such as 'uplifting' or 'passion', they should be employed instead of, say, mathematical ones. This concerns the practice of science, as it is, after all, a problem-solving enterprise. The previous example of directing human behaviour indicates that the methods of natural science are not synonymous with scientific rigour. This esteemed thoroughness arises from continuously taking the appropriate measures to identify and overcome the integral aspects of a prevailing problem. Dogmatic demands to uphold only a small section of the entire methodological spectrum do not improve the human ability to control occurrences in science or otherwise.

56 Dewey, *LW12*, 245.
57 Ibid., 434.

8 Dewey's definition of fine art

Dewey's reform of scientific conceptions has an equally comprehensive counterpart in his revision of the concept of fine art. Moreover, Dewey's criticism of classical art theory echoes in tone and principle that of his work on traditional philosophy and science. Both target the pre-Darwinian premises and goals of traditional accounts.

> But, to my mind, the trouble with existing theories is that they start from a ready-made compartmentalization, or from a conception of art that "spiritualizes" it out of connection with the objects of concrete experience. The alternative, however, to such spiritualization is not a degrading and Philistinish materialization of works of fine art, but a conception that discloses the way in which these works idealize qualities found in common experience.[58]

This leads to a number of important points about the concept of fine art. Perhaps the most crucial one is the separation of a work of art from an art object. The former is an experience, whereas the latter is a material construction.[59] The dynamics between the two form the core of Dewey's conception of fine art. In his theory physical objects are constructed for the purpose of producing certain types of experiences in the individuals who interact with them. The producer assumes that if her personal interaction with an art-object produces the desired type of experience in herself, it might possibly do so in others as well.[60] This procedure underlies the social aspects as well as the communicatory dimension of art.[61] In practice, an artist uses her own experience as a guide for transforming existing materials of nature.[62] It makes no difference whether the material consists of human bodies on a stage, pigments on a canvas, or movements of air as in music.[63] The principle holds nonetheless. A work is complete when the materials evoke the correct type of experience, which denotes the emergence of a work of art.[64] In short, the artist creates an art-object based on qualities of personal experience.[65] However, a work of art is not complete until an audience interacts with the art-object and in doing so experiences the object aesthetically.[66] If an object fails to bring about an aesthetic experience in any individual it cannot be conceived as art-object. However, no physical object or event can be aesthetically experienced as art by everyone. The plurality of cultural backgrounds and individual histories among audiences is too diverse. Yet, in the absence of totally universal art-objects, a considerable overlap in the experienced qualities among human beings does exist. The human ability to produce works of art as experience is nearly universal.

9 Fine art, science and the constitution of aesthetic experience

The above description of fine art holds mutatis mutandis also of scientific practices. The intentional production of distinct types of experienced outcomes through methodological or explorative activity is essential to scientific operations as well. In addition, fine arts and formal sciences both require specific cultural education from the engaging audience. The common factor for all parties involved in science and fine art is that everyone experiences the consequences of taking action when faced with a problematic situation. In both fields the modes of actively taking up a challenge, whether it be construction or interpretation of objects, affect the experienced outcome.

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58 Dewey, *LW10*, 17.
59 Ibid., 167, 218, 313, also Määttänen, "Emotionally Charged Aesthetic Experience", 93, also Määttänen, "Emotions, Values, and Aesthetic Perception", 94.
60 Dewey, *LW10*, 55, 111, also Määttänen, "Emotionally", 94, 98.
61 Määttänen, "Emotionally", 94.
62 Ibid., also Dewey, *LW10*, 55.
63 Dewey, *LW10*, 53.
64 Määttänen, "Emotionally", 94.
65 Ibid.
66 Ibid., 93-94, also Määttänen, "Emotions", 94, also Dewey, *LW10*, 110.

'Consummatory overcoming of meaningful challenges' summarises in a crude form the gist of Dewey's aesthetic theory.[67] One starting point for understanding this key process can be found in the animal grace.[68] For example, every aspect of the structure, as well as the activity, of a hunting cheetah fits the purpose. In the act of foray the feline does not reflectively contemplate the relations between actions and consequences. Instead, it lives them in a state of an instinctually heightened awareness.[69] Similar functions take place in a performing musician, who consciously thinks over individual aspects of the performative task predominantly in the training of personal skills – less so in an actual performance. The development of a musician requires that the conscious and clumsy contemplation of individual sounds and their relations transforms into an automatic and instinctual use. Only then it is possible to intuitively play an instrument in a way that can be experienced as aesthetic and expressive by most audiences. In other words, reflective thought is beneficial in the process of understanding the relevant aspects of a given problem. However, conscious awareness can become an obstruction for intuitive execution of the solution.

The challenges a performing musician faces are different from those of a mathematician. Yet, the latter, also, benefits from intuitive and instinctive modes of thought. Of course, reflective thinking is required in the process of learning the historical structures and accepted operations of mathematics. Nevertheless, the competence for challenging or extending these existing structures requires more than mere comprehension and rote memory. By the time a mathematician reaches a level of reformative skill, she should have internalised a considerable number of mathematical operations to the point of their becoming instinctive. Otherwise, the task of producing new and elaborate mathematical constructions becomes overwhelming. The level on which a mathematician operates does not, in itself, determine the aesthetic quality of engaging in such activity. Solving mathematical problems of any kind contains a consummatory aspect, which is a necessary component in the constitution of an aesthetic experience. However, with professional mathematicians an immersion into a state of primary experience affects not only personal enjoyment but also the overall development of the academic discipline.

Neither the mathematical environment of abstract relations nor the cultural sphere of artistic practices are that of the savannah. Yet, all forms of intuitive execution overlap to an extent. This applies to an organism's engagement with the types of challenges it is most comprehensively trained to overcome. With intuitive expertise the meanings of objects in the environment, including the capabilities of the organism itself, are no longer consciously verified but subconsciously relied on. In the case of human beings, derivative conceptions often precede and follow this type of intuitive activity. Therefore, an expert's immersion into an aesthetic struggle can include internalised products of reflective thought. On the level of primary experience these conscious objects of thought lose their defining, and in some cases restrictive, distinctions. However, their intuitive meanings and possibilities are not lost but subconsciously enriched and expanded. A free and imaginative interplay of affordances ensues in a way that only human beings are capable of. And when this intuitive juggling of qualities and relations produces an aesthetic experience, it is time to revive conscious modes of reflection.

In human activity it is conscious reflection that determines the proper context for the fruits of intuitive thinking.[70] Sometimes it is the litterbin. Other times their most suitable context is found in a totally different discipline than the one they originate from. For example, intuitively promising medical experiments can fail to cure patients, yet they can flourish in a gallery of contemporary art. Similarly, the activity of an artist can produce outcomes that predominantly excites the minds of the scientific community. An aesthetic experience is only an indication of the fact that parts are assembled, even if only in imagination, to a new consummatory whole that relates to prior forms of the successful overcoming of challenges. Moreover, during evolutionary development a considerable amount of successful activity has been subconscious and primal. In other words, the basis for the emergence of primary aesthetic experience is one that human beings share with animal ancestors. Although, in addition to animal operations the blended experience of a modern human being always includes reflected aspects from the cultural plane as well. In a deep aesthetic immersion these socially constructed conceptions take a subconscious form and affect accordingly.

67 Dewey, *LW10*, 22, 25.
68 Ibid., 24.
69 Ibid.
70 Ibid., 198.

10 Deweyan alternative specified

The Deweyan alternative to the bridging of the gap between natural sciences and humanities diverges from the more prevalent types of efforts. In order to make the contrast more explicit, it is essential to clarify how Dewey's philosophical argumentation relates to the specifics of the more common forms of the debate; parallelisms exist, but the differences are, nevertheless, substantial. In the following discourse I highlight Matthew Rampley's recent study about the relation between the two research traditions.[71] In his approach Rampley is highly critical of the all-inclusive reductionism of natural sciences. In addition, he acknowledges the most blatant excesses of the humanities. Yet, Rampley's work, also, incorporates undertones from classical philosophy, which, predominantly, lead him towards intractable differences between natural sciences and humanities instead of correspondences.

In his discussion about knowledge Rampley contends that "Exponents of evolutionary aesthetics assume that since *in general* the theory of evolution is not contested, and that since, as materialists, few hold to a dualistic theory of mind, it must follow that the theory of evolution must provide the bedrock for the understanding of human cultural practices. Yet even for ontological monists it does not follow that there must be a single unified field of knowledge, unless one ignores the diverse interests that motivate inquiry."[72] For the main part this particular argument can be viewed as consistent with Dewey's thinking. However, the Deweyan approach I present in this paper takes the issue further; even if various fields of knowledge exist with numerous methodological practices, all of them come together in the one general mode of human experience. Experiential understanding of the relation between initial states of affairs and consequent outcomes through action underlies all modes of inquiry. This relation is often stated, even if implicitly, in the propositional form of 'if–then' and it alone comprises the object of knowledge. In other words, even if no 'single unified field of knowledge' exists, as Rampley points out, Dewey's operational concept of knowledge is a generalisation that applies to all forms of inquiry. Hence, the operational principle of knowing can be found in all various fields of knowledge regardless of their other differentiating factors.[73]

Rampley's views can be seen as aligning with Dewey's in the matter of defining fine art as being conditioned by the social sphere that exists between individuals in a society.[74] Moreover, Rampley argues that purely biological definitions of art must make way for more comprehensive explanations.[75] Dewey, likewise, renounces purely biological explanations.[76] However, for Dewey, the necessary broadening of explanatory methods does not mean fundamental distancing from Darwinism. This is due to the fact that Dewey does not identify the theory of evolution exclusively with biology or natural sciences. In his soft naturalism the acceptance of the concrete implications of evolutionary theory precedes the understanding of the proper office of all intellectual efforts.[77] For Dewey, natural evolution describes one of the many conditions for the constitution of knowledge in its entirety. Dewey's philosophy accepts Darwinian ontology, and at the same time it is free from the premises of hard scientific reductionism.[78] In other words, Darwinian ideas yield a naturalistic general epistemology as an outset for all sciences, including biology. Therefore, biological concepts should be based on Darwinian ones and not the other way around. However, reciprocal development is, of course, allowed in the network of nature. Within said framework biology aids in understanding the interrelation of nature and culture.[79] In the end, the way in which the expansion beyond biological explanations of art takes place makes all the difference. The expansion should not be channelled towards, or by, a classical separation of nature and culture. Otherwise unyielding problems for the project of bridging the gap between natural sciences and humanities will inevitably arise.

71 See Rampley, *The Seductions*.
72 Ibid., 43.
73 Dewey, *LW4*, 157-159, also Dewey, *LW10*, 50.
74 Rampley, *The Seductions*, 101.
75 Ibid., 134.
76 Dewey, *LW10*, 319, also Dewey, *LW12*, 49.
77 Dewey, *LW4*, 183-184.
78 Ibid., 164, also Dewey, *LW12*, 62-63, 205-206.
79 Dewey, *LW4*, 156-157.

In principle, Dewey would agree with Rampley's statement that "It may be that the sense of beauty is descendent from earlier responses to visual display in mating rituals and is thus rooted in sexual selection, but such distant origins have long since been overwritten by layers of cultural meanings, which are precisely what concern art and cultural historians."[80] However, even if the constitution of cultural meanings is not dictated by natural evolution alone, in this paper I posit the view that the philosophical tradition has, generally, misunderstood the process of overwriting. Cultural development is based on multiple forms of interactions in the network of nature described by Dewey. It is important to keep in mind that natural evolution is only one of the processes taking place within this dynamic network of relations. An exhaustive analysis of all natural components that may possibly effect cultural development is not mandatory for understanding the fallacy of traditional pre-Darwinian philosophy. It suffices to say that culture does not originate out of the a priori blue. Furthermore, cultural development is not directed by any transcendent entities, whether they be envisioned as immutable categories, laws of reason or, simply, gods. More probable explanations for cultural evolution and the origins of social practices have been conceived. For example, Merlin Donald's elucidation of mimetic culture as a precursor for a linguistic culture is a description which does not suffer from the unnecessary burden of archaic thought.[81] Overall, Dewey maintains that culture is a product of nature, and the former bears the characteristics of the latter in one form of continuity or another.[82] In other words, culture may overwrite distant natural origins but it does not render all of them completely irrelevant.

In an explicit appeal to classical pre-Darwinian authorities, Rampley states that "Clearly, the aesthetic response to art does draw on certain general capacities, but the tradition of thinking since Kant has been concerned to articulate the very particular ways in which it does so, so as to distinguish between aesthetic and other kinds of experience."[83] It appears that Rampley deems Kantian theory and its equally pre-Darwinian derivatives as suitable conceptual tools for assessing the role of evolutionary theory. In aesthetics, both Dewey and Kant analyse the same phenomenon. Nevertheless, their theories about the aesthetic are completely different. The latter builds his theory primarily upon modes of existence which Darwinism renders questionable – if not totally erroneous. The anti-Kantian aesthetics of Dewey, on the other hand, is based on observable natural phenomena, including cultural and social ones, that align with twenty-first century sciences. In this framework the aesthetic, as a quality of the overall experience of living, is always integrally entangled with various other modes of experiencing. Hence, the aesthetic is not isolated as an autonomous category in any Kantian sense.[84]

For Dewey, the arrangement of natural and everyday materials in the ongoing experience of life can, and often does, contain tints of aesthetic quality. However, in order for an experience to become aesthetic in the emphatic sense, the aesthetic quality must grow into its defining feature. Dewey uses the example of a storm, which stands out from other more tranquil phases of a journey across sea, as in 'that storm'.[85] In such an event the sensory qualities of the ongoing situation align with future expectations and the background of past experiences in an especially unified experiential whole; life suddenly becomes real in the concrete – not just in contemplation. An exceptional meal served at a dinner can alter the life path of an individual who abruptly decides to become a chef, after which she can reminisce about 'that dish' that stood out from the rest as changing everything. Of course not all genuinely aesthetic experiences need to be life changing in the most profound sense, but they, nevertheless, have to strike the very being of the experiencing individual to the point of affecting a positive personal commotion.

The aesthetic takes over as the dominant quality of experience only in situations that are, consciously or subconsciously, deemed as especially relevant for personal being, communal life or both. Such are the situations that artists intend to produce for audiences with their own bodies or some other natural materials.

80 Rampley, *The Seductions*, 14.
81 Donald, *A Mind*, 261, 263.
82 Dewey, *LW10*, 34.
83 Rampley, *The Seductions*, 103.
84 Dewey, *LW10*, 84-85, 257.
85 Ibid., 43.

Scientists, also, deal with relevant aspects of the world to the point of actual matters of life and death: an opportune environment for the emergence of aesthetic experience in the full. Accordingly, uncertainty in a relevant situation is always needed. If a situation does not contain a challenge which can be overcome in a consummatory fashion, or a challenge exists but it relates to an irrelevant situation, the aesthetic quality of experience is fleeting at most. Natural evolution provides the basic mechanisms for carrying out experiential assessments of the relevance of a situation, at least as far as the immediate continuity of life is concerned. However, Dewey's theory explains how these natural mechanisms of evaluation remain active in cultural environments such as the art world and the scientific tradition of accumulating knowledge. For him the aesthetic is not a self-sustaining category that exists independently of other experiential factors and modes. It is a quality of the experience of life that varies in intensity with the particularities of the situation.

In his treatise Rampley briefly notes the full extent of the Darwinian revolution in general epistemology.[86] Yet, Rampley mainly discusses the theory of evolution as if it were, first and foremost, a natural scientific concept and in stark opposition to the tradition of the humanities. Dewey, in contrast, views the Darwinian subversion as primarily a philosophical matter, which brings a comprehensive revision to all modes of classical thought, including that of natural science. Appropriately, the object of knowledge is deprived of any self-sustaining position. It is relocated within the natural processes of practical activity and concrete experience done and undergone respectively by living organisms. This move establishes an inherent connection between all modes of inquiry and, therefore, various fields of research. Thus, Dewey avoids the problems that ensue from superimposing the theory of natural evolution to a multiplicity of predetermined ideals. From a Deweyan viewpoint it seems that Rampley's work exemplifies the common tendency to underestimate the obstruction that certain background assumptions of classical philosophy pose to the goal of bridging the gap between arts and sciences. Or, at the very least, it is difficult to believe that major breakthroughs will follow from the further development of accounts that contain emphatic echoes of a pre-Darwinian epoch. Rejection of isolated and autonomous categories is necessary for comprehending the inherent relationship between different forms of human activity; especially when subordination and superficial pleasantries are to be replaced with a profound connection between research disciplines.

11 Concluding remarks

Dewey's philosophical naturalism is an approach that describes science, and to certain extent also human life, as problem solving. A common ground for all forms of knowledge is thus established through a perception of verifiable relations between initial states of affairs (problems) and consequent outcomes (solutions) by active agents in nature. In this process an aesthetic quality of experience arises when the challenge of a problematic initial situation is perceived to be overcome in a consummatory fashion. In other words, well-founded, even if subconsciously so, anticipation of future success can evoke an aesthetic experience, which, then, can direct further operations in a diversity of areas such as fine art and science. An emotional aesthetic experience is a sign that activity proceeds on a new path that, nevertheless, possesses some resemblance to those that have led to satisfaction in the past. Furthermore, this past extends all the way to the evolutionary origins of human beings.

In fine art the novel path has to be exceptionally intense as well as enduring to the degree that the mere being on such a path brings about a consummatory satisfaction to persons following it; suggestions are enjoyed as suggestions from which ensues an enriched experience as the conclusive consummation. The very same aesthetic quality that is found to be enjoyed by artists and audiences alike benefit the scientific effort; not always but frequently enough to warrant the assertion of the importance of such emotional experiences in scientific discoveries.[87] However, scientific operations necessitate experiential verification beyond even the most well founded emotional anticipation of success. The promise of desired consequences

86 Rampley, *The Seductions*, 131.
87 Dewey, *LW10*, 202-203.

observed in material objects has to be actualised in a new material object of importance other than, and in addition to, the object of factual experience. That is to say, in scientific operations a consummation follows from the experienced confirmation of concrete results that occur after the encouraging initial material has run its course not only in imaginative perception but in physical surroundings as well.

For Dewey, the theory of natural evolution describes one of the initial premises that necessarily affects all further modes of human endeavour, including the formation of knowledge. Therefore, all attempts to retrofit Darwin's ideas to traditional philosophic and scientific frameworks remain futile. The most prominent pre-Darwinian premises and ideals found in classical philosophy do not lead to natural Darwinian continuities. And, conversely, Darwinian ideas used as premises do not indicate the concrete existence of anything eternally immutable or exactly definable on any level of reality. Furthermore, a considerable amount of empirical evidence supports the theory of natural evolution. The traditional ideals and premises of classical philosophy, on the other hand, rely predominantly on customary institutional hegemony and the human desire for clear solutions. Therefore, the former can be viewed as a more productive and grounded foundation for any type of epistemology. Natural evolution as a premise, also, aids in understanding the integrative aspects of aesthetic experience and their role in contemporary human progression.

From Dewey's viewpoint, the gap between arts and sciences never existed in the form defined by classical philosophy and science. Instead, the demarcation of modes of human activity follows from observed results and the consequential use of these results in further challenges that exhibit distinct experiential characteristics. Natural sciences and humanities diverge only after such differentiation is useful and needed in the overall development of human culture and living standards. Names of disciplines are derivative descriptions that reflect the natural emergence of diversity of human goals as well as the intentional means of attaining them. Moreover, natural sciences and humanities function alike through the experience of a human being engaged in activity – whether it be concrete, ideational or a combination of both. Dewey's aesthetic theory indicates that no physiological differences exist between the aesthetic of fine art and the aesthetic of science. His description of the shared experiential foundation constitutes an alternative basis for the development of the dialogue between natural sciences and humanities. It begins with a natural connection instead of trying to search for one after different areas of intellectual effort are a priori separated as autonomous categories. Thus, Dewey's theory avoids the pitfalls of subordination and superficiality. Furthermore, it designates the proper office as well as the 'resolution' of aesthetics. I conclude with Dewey's own words:

> The nature of experience is determined by the essential conditions of life. While man is other than bird and beast, he shares basic vital functions with them and has to make the same basal adjustments if he is to continue the process of living. Having the same vital needs, man derives the means by which he breathes, moves, looks and listens, the very brain with which he coordinates his sense and his movements, from his animal forbears. The organs with which he maintains himself in being are not of himself alone, but by the grace of struggles and achievements of a long line of animal ancestry.
>
> Fortunately a theory of the place of the esthetic in experience does not have to lose itself in minute details when it starts with experience in its elemental form. Broad outlines suffice. The first great consideration is that life goes on in an environment; not merely in it but because of it, through interaction with it. No creature lives merely under its skin; its subcutaneous organs are means of connection with what lies beyond its bodily frame, and to which, in order to live, it must adjust itself, by accommodation and defense but also by conquest.[88]

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II

John Dewey's Philosophical Naturalism and a Pragmatist Approach to Conceptual Art

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Abstract

The emergence of conceptual art is one of the most profound changes that has ever taken place within the cultural sphere of artistic practices. Naturally, the deviation of conceptual art from traditional art forms has been intensely debated. However, pragmatist art theory and aesthetics has placed relatively scarce emphasis upon this significant divergence. Hence, the aim of this paper is to introduce a coherent pragmatist approach to conceptual art; one that explains the emotionalized expression of meaning through conceptual art objects which, on the face of it, appear to lack the potential for conducting such experiential functions. The main discussion concerns the relation between the constitutive parts and the whole of a work of art. In particular, I highlight the peculiar role of contextual information in the process of interpreting and experiencing conceptual art objects. The ideas put forward are based on John Dewey's philosophical naturalism, which also comprises the broad theoretical framework for this study.

Keywords

philosophical naturalism, philosophical pragmatism, conceptual art, aesthetic experience, John Dewey, Felix Gonzalez-Torres

Introduction

The emergence of conceptual art was one of the most important developments in the cultural sphere of the twentieth century. According to Marcel Duchamp, "[e]verything was becoming conceptual, that is, it depended on things other than the retina" (Cabanne 1971, 39). Through sensory channels, a color, for example, can lend its unconscious associative meanings to new perceptual wholes. Indeed, the colors of a rose, a bridal dress, a state flag, or a painting are not arbitrary, but carefully chosen to

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evoke the desired type of emotional tone in the experiences of audiences. It is precisely this potential of colors—as well as a wide range of other perceptual materials—to automatically lace human experience with specific accents that was being renounced in the shift towards the conceptual described by Duchamp. The most profound aspect of this transformative period is not the introduction of ready-made objects but the abandonment of ready-made meanings; conceptual art exhibits an ambition to expand the role of the artist from a creative modifier of meanings to a creative inventor of meanings. Consequently, automatic and general sensory cues have increasingly given way to personally acquired specific knowledge in the constitution of experiences of art. This turn from the appearance to the idea has carried over into the twenty-first century. Today, a considerable proportion of contemporary art is focused on conceptual content.

Naturally, such a dramatic, as well as enduring, deviation from traditional artistic practices has been intensely debated in academic journals and elsewhere. A common attitude in these debates is articulated in, for example, Goldie and Schellekens's *Philosophy and Conceptual Art* (2007), an edited collection of analytic philosophy, in which it is stated that "there is one artistic movement which has claimed that art should invariably aim to engage its audience intellectually, and, moreover, that it need not do so aesthetically or emotionally" (ix).

In this paper, however, I take an alternative approach with regard to both the philosophical orientation as well as the description of conceptual art as highlighted above. The main difference concerns the separation of the intellectual, the aesthetic, and the emotional from one another—a common distinction in philosophy, as evinced by the quotation from Goldie and Schellekens above. Admittedly, language does render it possible to analyze these aspects of experience individually. Yet, such a rigid partition is not how the experiencing human mind—as a dynamic unitary structure of nature—functions in practice. For instance, the ever-present emotional incentives are constantly needed to dispel total apathy—a state of being which is hostile to the emergence of both intelligence and the aesthetic quality of experience.

Hence, instead of segregation, an integral interconnectedness of experiential features comprises a key premise for this paper. The unitary structure of human experience described above fits into the broad field of philosophical naturalism and, especially, the more specific framework of philosophical pragmatism. It is crucial to note that the latter, in particular, makes a fundamental departure from all classic accounts of philosophy. The historical line, as well as the modern-day derivatives, of classic philosophy are predominantly focused on introducing ways of combining men-

tal features after an initial, and often a priori, separation of these features into various enclosed categories. In contrast, the founders of philosophical pragmatism, including John Dewey, argued that following the discoveries of Charles Darwin such detours were neither necessary nor tenable; human ontology and cognition could thereafter be understood on the model of interactions occurring in nature. Consequently, many traditional philosophical doctrines, such as mind–body dualism, were deemed insupportable.

Today, the validity of these pragmatist premises is reinforced by a multitude of modern natural scientific ventures into the psychophysical constitution of human beings (see Franks 2010, 10, 86–88, 204; see also Popp, 2007)—although we should be cautious of oversimplifying the matter by treating it as purely biological or physical: as Dewey insists, the natural sciences alone are insufficient in explaining the entirety of human activity: "We cannot direct a course of interactions without counting and measuring, but the interactions are more than numbers, spaces and velocities" (Dewey [1925] 1981, 216). For example, culturally motivated and teleologically driven behavior tends to escape exact mathematical definitions and predictions. On that account, the humanities do belong among the sciences, as long as transcendent or any other supernatural premises and explanations are avoided. As such, philosophical pragmatism, whose main premises are that the experience of art is a natural phenomenon and that the one and only reality of nature consists of a continuum of interactions (from the subatomic to the social and cultural), offers a productive basis for discussing conceptual art.

On the whole, as a study within the framework of philosophical pragmatism, neither the contents nor the goals of this paper pertain to eternal truths or immutable transcendent realities. Rather, the approach of this paper reflects Dewey's call ([1920] 1982, 151) for a change in the philosophical agenda from the "vain metaphysics and idle epistemology" to a more active guidance for modern civilization. In other words, Dewey maintains that philosophical undertakings should focus—even if indirectly—on concrete improvements of human life as it unfolds in physical, cultural, and social environments. Furthermore, Dewey holds that art, too, possesses a considerable role in rendering life more meaningful, worthwhile, and also communal. He views works of art as potentially "marvelous aids in the creation of such a life" (Dewey [1934] 1987, 87). Hence, in this paper, I discuss the particular ways in which conceptual art, and its profound shift in emphasis from the appearance to the idea, furthers the attainment of modes of desirable living—an issue possessing considerable relevance in the field of philosophical pragmatism.

Accordingly, I put forward a pragmatist approach to the psychophysical constitution of an aesthetic experience in the context of conceptual art. The suggested approach is based upon Dewey's view of the experiencing human mind as a complex—but nonetheless unitary—natural whole. Within this frame of reference, I examine specific cognitive modes of preparing this wholeness for experiencing conceptually oriented art objects in a consummatory fashion. In particular, I disclose mechanisms through which primarily intellectual works of art can potentially fulfil the aesthetic condition set by Dewey, according to which "no intellectual activity is an integral event (is *an* experience), unless it is rounded out with this quality" (Dewey [1934] 1987, 45; emphasis in original). For this purpose, I use a specific case example; namely, a conceptual artwork by Felix Gonzalez-Torres entitled *"Untitled" (Perfect Lovers)*. This particular work of art—discussed in the latter half of this paper—highlights the difficulties as well as the benefits of the conceptual approach to artistic endeavors. However, prior to this case study, it is imperative to state the reasons for discussing conceptual art within a specifically Deweyan framework and, also, to provide an overview of the relevant key points of Dewey's philosophical program. The latter includes, in the following order, the unique characteristics of human experience, the constitution of concepts, and the relation between the aesthetic quality of experience and artistic practices.

John Dewey and Philosophical Pragmatism

Of the founders of American pragmatism, John Dewey provides the most comprehensive and coherent theory on art and aesthetics. In his *Art as Experience* ([1934] 1987)—one of his principal works—Dewey puts forth a generally applicable pragmatist theory of art and aesthetics. As the title suggests, Dewey holds that art should be understood, first and foremost, as concerning experiences. Of course, the concrete material objects that audiences interact with in order to evoke the experiences of art matter too, but the artistic value of material objects of any kind stems from their influence on human experience: without the capacity to bring about aesthetic quality in the experiences of audiences, a material object cannot be deemed an art object. In short, Dewey defines a work of art as an experience evoked in, and through, an interaction with a material object. Accordingly, the unifying link that connects all domains of fine art to one another is to be found in the similarity of experienced qualities rather than of material features of physical objects.

Dewey's theory takes into account an unusually wide range of aspects that play a part in the constitution of an aesthetic experience of art—including, but not limited to, material objects, laws of physics, human cognition, the social sphere, natural and cultural evolutions, and situational particularities. All of the above, as inherently connected to each other, affect the phenomenon of art in the broadest sense of the term; taken individually, they are insufficient in determining fine art or explaining experiences of it.

Moreover, Dewey's voluminous writings extend beyond the comprehensive theorization on art and aesthetics. For example, in his treatise *Logic: The Theory of Inquiry* ([1938] 1986), he scrutinizes intellectual operations, including the formation of concepts, in an equally systematic fashion. However, Dewey does not develop a consistent theory on the possibilities of combining these two areas of his philosophical undertaking—that is, not beyond their common foundation in the general human constitution, which, as stated above, he examines meticulously.

In his discussion of aesthetic modes of thinking, Dewey does, indeed, briefly refer to intellectual art. He opines that "the strictly intellectual art will never be popular as music is popular" (Dewey [1934] 1987, 45). In addition, Dewey incidentally ponders the possible future convergence of the subject matters of fine art and mathematical sciences. He states that

> it is possible that there may come a day in which subject-matter that now exists only for laborious reflection, that appeals only to those who are trained to interpret that which to sense are only hieroglyphics, will become the substance of poetry, and thereby be the matter of enjoyed perception.
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> Dewey ([1934] 1987), 154

Yet, neither of the two themes are developed to a conclusion in Dewey's writings. This paper is a continuation of these discussions in the context of contemporary artistic procedures, thus augmenting Dewey's pragmatist theory of art and aesthetics.

Of course, a significant body of literature about art and aesthetics already exists in the pragmatist tradition. For example, Richard Shusterman, Joseph Margolis, and Arnold Berleant each provide substantial input (see Shusterman 1992, Margolis 2009, Berleant 1991). Yet, pragmatist scholars have not engaged in a systematic and continuous Deweyan discourse on conceptual art, although the relationship between Dewey and conceptual art is occasionally brought up (see Stroud 2007 and Sullivan 2002). Admittedly, no fundamental contradiction between conceptual art and more traditional artistic forms arises directly from Dewey's theorization. Hence, an argument can be made that from a Deweyan standpoint, the

specifics of this divergence are not relevant enough to warrant extensive investigations. However, with this paper, I support the view that even if the differences between the artistic modes are not foundational, they are not trivial either, especially with regard to Dewey's view of the role of art in the efforts to render human life more enjoyable and meaningful through aesthetic experiences. Overall, this paper contributes to the somewhat neglected area of pragmatist aesthetics and art theory that concerns conceptual art.

Dewey on Human Experience and the Constitution of Emotionalized Meanings

The human experience defined as a natural phenomenon within the continuum of animal experience is the leitmotif of Dewey's entire philosophical project. (His book titles *Art as Experience* and *Experience and Nature* attest to this.) For Dewey, the continuous human experience is always based upon various forms of interaction. Moreover, this dynamic process incorporates physical as well as sociocultural dimensions; the latter emerges from and functions through the former.

In addition, Dewey uses a distinctly italicized "an" to demarcate an occurrence of *an* experience from other broader notions, such as accumulated life experience. This emphasized "*an*" denotes a marked break from life's predictable routines, whether they be sensory, social, artistic, athletic, mathematical, or the like. For example, as Dewey mentions, in any area of life a person may utter "that was an experience" after undergoing circumstances which defy habitual expectations and occupy one's attention for a definable timeframe (Dewey [1934] 1987, 43). Importantly, this interruption of the ordinary course of living has to be dominated by a single unifying quality, which pervades, and in doing so defines, the experienced total situation (*ibid.*, 44). For example, an extraordinary taste may establish "that dessert" as *an* experience.

In this example, the experience is, to a considerable degree, based upon a concrete fulfilment of a vital need; this particular satisfying response to sensory stimulation evolved in environmental conditions where sugars and fats were hard to come by. The experience conjoins the intake of specific nutrients and the continuity of life into a coherent meaning, the value of which is unconsciously estimated but nonetheless emotionally felt in conscious awareness. In general, an emotion reports an instinctual initial estimate about the encountered situation and its presumed consequences. That is, an emotion performs the function of an automatic guide for

grasping the meaning of perceived objects, events, and affordances based on the value or harm they supposedly bring to the process of overcoming various challenges of life. This applies to most organisms and most problems—from the primitive and sensory to the enculturated and conceptual. Of course, cultural beliefs and personal peculiarities sometimes affect the specific relations between meanings and emotions instituted through natural evolution. For example, the emotions arising from a conscious recognition of the long-term risks posed by obesity to the continuity of life may directly contradict the emotions induced by a high calorie intake. Appreciation of slowly cumulating health hazards does not as such sour the taste of delicacies, but conscious awareness of far-reaching consequences may at times impair the overall experience of having a dessert due to the conflicting value assessments that feature in that overall experience.

In addition to an explicit discord, human enculturation may also bring about intentional transmutations to embodied meanings. In an artistic context, the experienced effects of physical materials are often intentionally transformed and repurposed (Dewey [1934] 1987, 69–70, 205). Especially in the fine arts, audiences have been conditioned to respond to stimuli in ways that partly diverge from the inborn reactions brought about by the embodied background of human evolutionary history. For example, in the wilderness, sudden loud sounds nearby generally indicate that an immediate threat is unfolding. However, in some contemporary situations the visceral response of escape has been nullified through cultural upbringing; the bodily excitement remains but no longer leads to fear and anxiety, which have been replaced with aesthetic enjoyment. For instance, people attending a rock concert do not instinctively try to escape from the venue when the first chords are struck. Encultured audiences have learned to enhance the enjoyment of perceptual objects of their liking—such as melodies and harmonies—with the experienced intensity of exceptionally loud sounds that would otherwise indicate impending harm. A musical performance is not a matter of actual life and death, but it bears experiential resemblance to such matters—especially in the intensity of the experience, even if not always in other ways.

Traditionally, mastering the ability to control organic value assignments in the context of material objects defines the technical competence of an artist, and this applies to conceptually oriented art practices as well. However, for the most part, the conceptual approach to art does not arouse what meaningfulness of an experience of art it arouses through modes of extraordinary sensory stimulation. Conceptual art is predominantly devoid of explicitly personified skillful ordering of sensory mate-

rials, whether they be paints applied to canvas, notes of music as motion of air molecules, or the movements and gestures of actors or dancers on stage. In conceptual art, meanings can—and often do—function more in the manner of an awareness of obesity than they do in the manner of a strong sensory impact such as a distinct taste. This type of approach to artistic practices is something of a double-edged sword. Arguably, the renouncement of overt use of tacit meanings—even in their artistically transfigured incarnations—helps artists to increasingly step outside the confinements of a meaning-formation mechanism that derives from evolutionary pressures. As a consequence, wholly new possibilities for directing the experiences of audiences open up. On the other hand, though, if culturally—or sometimes even situationally—instituted conventional meanings are not conjoined with deep-rooted tacit ones, the characteristic intensity of a genuine experience of art tends to remain elusive. Manipulation of exclusively conventional, rather than mostly tacit, meanings handicaps efforts to bring about exceptionally meaningful aesthetic experience in audiences.

In order to attain the passionate vigor of art, conceptually oriented artists tend to emphasize highly meaningful—as in emotional—ideas, instead of emphasizing vivid sensory stimulation and material objects explicitly marked by personal touch. Sometimes the latter two might even be considered as obstructing the clarity of the idea; thus, many conceptual artists gravitate towards some form of sensory minimalism. In an experience of conceptual art the full emotional intensity hits primarily after—and only through—conscious interpretation of the substance of the work. This contrasts with the more traditional methods of art, in which the unconscious—even if culturally transformed—emotionalization renders the process of interpretation *itself* intense, and commonly from the very outset. Carried to an extreme, a traditional artist may, within limits, ignore the significance of *what* is expressed and focus solely on *how* the subject matter is expressed. In principle, this is totally acceptable for all artists, even if not necessarily practically feasible for the conceptually oriented, for whom the incubation phase of interpretation does not hold particular aesthetic relevance without the consummate idea.

In the latter half of this paper, I scrutinize certain key peculiarities of this switch to emphasizing the fruits of long-term thought in the context of fine art. But first, it is necessary to briefly examine the foundations of human cognition that enable the extension of, and shift in, the focus of human awareness from the immediate sensory surroundings towards the generalized and the conceptual. Also, the topic warrants an overview of

the general ways in which these cognitive structures relate to aesthetic experiencing and artistic endeavors.

Extension of the Human Perceptual Horizon

As discussed above, human beings and the majority of other advanced animals possess an experiential capacity for an almost immediate assessment of the direct benefit or harm effected by present tactile circumstances. In addition, both have developed an ability to imaginatively (or proto-imaginatively in the case of animals with less developed cognitive capacities) experience potential outcomes of activity in a somewhat similar, as in emotionally meaningful, fashion. For example, the delight from expected future benefit motivates and the fear of future harm deters. In short, the survival of an organism is rendered more probable when emotional guidance is applied not only reactively but also proactively. It should be noted that the majority of advanced species share a common base of sensory capabilities. Yet, the mutually reinforcing combination of cognitive evolution and progressive enculturation has rendered human beings by far the most capable of forming spatiotemporally distant, generally complex, and increasingly abstract expectations.

In Dewey's philosophical program, the scope of perceptions, and consequently that of experiences, extends from verified relations to propositional "if–then" relations. The emotional intensity of the latter is a sensory derivative of the assumed consequences that the imagined "then" would bear upon life, if ever actualized in the concrete. For example, imagining an upcoming wedding can match, or even surpass, the actual ceremony in emotional excitement.

Nevertheless, whether a taste of a wedding cake or a ceremonial dance, an imagined occurrence is always vaguer than a concrete occurrence. The former is always more or less of a hypothetical generalization based on previous contacts with similar materials and combinations. This detachment from direct interaction is a first step towards conceptualization. However, the loss of visceral details does not—necessarily—amount to a confusion or a decrease in emotionalized meanings.

A generalization is constituted upon a discovery of a specific unifying thread among particulars—a type of "meaning-concentrate" prepared in thought. With such a distinct and verified coherence in meaning comes an emotional clarity in bodily experience, as the two are integrally linked (Määttänen 2015b, 72). Furthermore, the relationship between meanings and emotions carries through to the practice of devising operations on

the basis of generalizations; that is to say, the linkage persists through the constitution of concepts.

Importantly, as planning relates to hypothetical outcomes, it, too, is a form of emotionally guided activity. Hence, the establishment of a specific relation between a generalization and a planned goal—as in the constitution of a concept—provides an opportunity for an artistic intervention. Conjoining two different catalysts of emotional response is open to a diversity of creative combinations. And so no fundamental principle prevents the implementation of concepts—long since established or more recent in origin—as definite parts in the constitution of experiences of art.

Concepts as Ideational

Dewey describes a concept as an idea tested and, consequently, defined by a set of practical or abstract operations (Dewey [1929] 1984, 89). For example, the concept of sweetness is derived from numerous instances of experiencing particular sweet tastes. The former is a well-founded estimate about a specific type of experiential quality as an outcome of an interaction between certain environmental materials and bodily organs. This particular hypothesis about the tone of future experiences guides the choice of procedures, for example, in the act of baking. In short, Dewey's definition of a concept is somewhat akin to a template; its main function is to aid in responding to specific types of challenges. Moreover, as the problems of human life range from the physical to the social, and sometimes even to the wholly abstract, so too do conceptualizations.

Furthermore, in Dewey's philosophical pragmatism, action is an integral constitutive part in the formation of both perceptions and conceptions, which develop in a "functional correlativity with each other" (Dewey [1938] 1986, 115). The former discovers problems and the latter suggests solutions (*ibid.*). However, certain restrictions apply. For example, in a neuroscientific discussion about the priority of action, David Franks emphasizes that "[o]ur senses and the nature of our brains impose strict limits as to how and what we can conceptualize and categorize" (Franks 2010, 206). Even highly abstract as well as emphatically social concepts arise from bodily activity and embodied reasoning, and all of these invariably manifest in continuous human intercourse with the surrounding environment and other living beings.

In the end, it is repeatability in attaining specific goals of human life that determines the tenability of any concept. However, as discussed above, not only achievements and failures after the concrete fact, but also

achievements and failures as predictively entertained and expected in imagination, emotionalize experienced value. On this account, any tool—even a conceptual one—that is perceived as embodying means for overcoming problems possesses aesthetic potential.

Constitution of an Aesthetic Experience

Discussing Dewey's theory of aesthetic experience requires forgoing definitions of the aesthetic put forth in traditional philosophy. Of course, Dewey theorizes terms such as beauty or the sublime, staples of conversation in classical aesthetics. However, his description of an aesthetic experience is neither based upon nor defined by such terms.

For Dewey, an aesthetic experience relates to the encountered resistances of life and, more specifically, perceptions of overcoming them in a consummatory fashion. That is, the aesthetic quality emerges in accordance with experiencing an anticipated solution to a problem. On that account, "[e]sthetic experience is imaginative" (Dewey [1934] 1987, 276). Furthermore, sometimes even the consciously held expectations are based on unconscious detection of possibilities, as in intuition. In any case, the emphasis is on the prospective, because the aesthetic quality relates to the hypothetical outcomes, as does the conceptual by its suggestive nature. An actualization of an outcome in the concrete may very well be emotionally satisfying. However, experiencing a satisfactory concrete outcome introduces aesthetic quality primarily in its perceived relation to overcoming unresolved challenges, the probability of which the factual outcome renders more likely in imaginary estimates. For example, tasting raw cookie dough may very well be a satisfying experience in the present moment. Yet, in order for this experience to incorporate aesthetic quality, the concrete present taste has to be perceived as indicative of, for example, a hypothetical future taste of a desired kind; the latter, of course, a potential outcome of eating finished cookies baked from the dough. In short, the taste of dough is experienced as a promise of delicious cookies. As Pentti Määttänen aptly summarizes the Deweyan disposition, "an aesthetic experience is a promise of consummation, and this promise is enjoyable in itself" (Määttänen 2015a, 97).

However, any final consummation in absolute sense is neither achievable nor desirable. Life consists of a rhythmic alteration of tension and release, as various balances needed for upholding psychophysical existence and well-being are continuously lost and restored. This dynamic takes place on, as well as joins together, multiple levels of cognition. The phys-

iological, the social, and the mathematical are examples of human capabilities that may be entrusted a leading, a supporting, or an equal role in overcoming an encountered resistance—depending on the requirements of the situation.

Moreover, as problems vary in their relevance for a human being, so does the intensity of the aesthetic quality of experience. The aesthetic arises as the defining quality over other qualities only when the challenging situation and, especially, the mode of overcoming it are perceived as highly significant for the experiencing individual. Otherwise, the aesthetic as a part of total experience is shallow, transient, and quickly forgotten. In the latter case, the aesthetic quality does not substantially affect personal growth or communal life.

Dewey on Art and Expression

Dewey bases his theory of art on the aesthetic quality of experience. In fine art, an aesthetic experience is idealized. However, Dewey does not mean "ideal" in the sense of absolute perfection or anything transcendent. The term "extraction" captures the gist of his theory regarding the expression of the ideal in art. Dewey states that "[e]tymologically, an act of expression is a squeezing out, a pressing forth" (Dewey [1934] 1987, 70). He mentions the mechanics of a wine press as an example. He does not discuss thirst specifically, but the purpose of a wine press is to convert raw materials of nature, in this case grapes, to a more ideal form. It is not that grapes cannot be enjoyed raw, but in certain situations extracted juice, as such or as further developed into wine, provides a heightened emotional response of satisfaction. In other words, bodily experience verifies that thirst is more effectively quenched with juice than with grapes. For a person experiencing thirst—an emotional indication of a life-threatening imbalance—the seeds and the pulp are obstructions to the satisfaction of a need. Therefore, extracted juice, as material *expressed* through a filter, is a more ideal way to overcome the problem of restoring a balanced hydration, and, consequently, removing thirst from the present experiential whole.

In most situations in life, the desirable is often entangled with the irrelevant and the obstructing. This applies not only to grapes but to social and cultural objects as well. For example, in real life even the most loving relationship is saturated with constant distractions and tediums of daily living. And from time to time, even individuals who are in a loving relationship want to experience the satisfaction of "ideal" love through some-

thing like fictional romantic films. This is not to say that fantasy love is more satisfactory than actual love. The issue is that the great majority of encultured individuals have emergent needs that no amount of nutrition or concrete love can satisfy. Such are the needs of imaginative perception, which comprises the domain of fine art.

Unlike physiological needs, the fulfilment of which requires specific molecules, the criteria for satisfying the needs of imagination are more psychological and, consequently, more flexible. Nonetheless, competent artists recognize—sometimes unconsciously—certain general conditions for producing especially satisfying outcomes in imagination, first in their own imagination and, subsequently, also in the imaginations of audiences with experiential backgrounds that overlap with the artists'.

For example, storytellers are well aware of the fact that audiences do not want to hear about every single step undertaken by the main characters, as the narrative would be saturated with trivialities and dull monotonies. Storytellers have to focus on those parts that crystallize the essence of the described journey; that is, an alluring narrative should strongly emphasize the most relevant aspects of overcoming the primary problem encountered by the protagonists. Only through such intentional discrimination, even if it means gross exaggeration, is it possible to effectively satisfy the needs of the audience's imagination.

In a similar fashion, all artists strive to extract from conscious and unconscious personal materials that which aesthetically inspires imaginative perception. This takes place in conceptually oriented art too, because, as Dewey notes, "*an* experience of thinking has its own esthetic quality" (Dewey [1934] 1987, 45)—from which it is, of course, possible to extract further artistic outcomes. Henceforth, I will use the term "scenario" to describe these distilled objects and events that play out in imagination. In addition to scenes upheld in visual imagination, the term "scenario" also captures a diversity of conceivable eventualities, including, but not limited to, intangible relations and social schemata.

In an artistic context, the constitution of these imagined aesthetic scenarios is initiated and directed through a proper interaction with physical objects of art. Importantly, in distinctively artistic instances the emerging imaginary objects, situations, and events unfold only in the experiences of artists and audiences, not in the surrounding environment. For example, *Spring* from Vivaldi's *Four Seasons* does not bloom in anyone's garden, but in the minds of audiences, which is the sole locus for experiencing such an abstract scenario of fine art. Accordingly, artistic scenarios can be extremely inarticulate, as is the case with this particular example of instrumental music. Yet, they are, whenever successful, especially poignant;

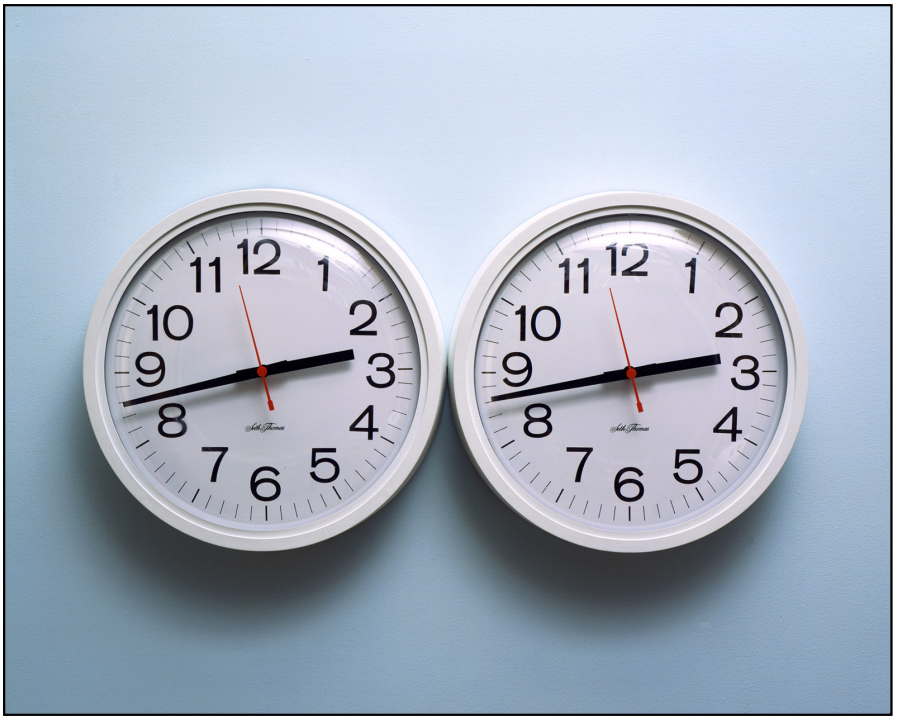

FIGURE 1. Felix Gonzalez-Torres, *"Untitled" (Perfect Lovers)*, 1991. Wall clocks and paint on wall. Overall dimensions vary with installation; original clock size: 14 inches diameter each. Photographer: Peter Muscato. © Estate of Felix Gonzalez-Torres. Image courtesy of The Felix Gonzalez-Torres Foundation.

more so than the suggestive associations evoked by sounds or sights of common everyday situations. Artworks pinpoint meaning and arouse emotion in an unadulterated fashion, as they are designed solely for this particular purpose. For example, a joyful tune is a constitution devoid of any unnecessary elements or potential distractions; instead of dispersive rivalry for attention, every part and detail contributes to the same distinct, unified, and consummatory experiential goal. Even when artists want to confuse their audiences, they usually aim for a specific type of confusion that fits particularly well within a particular rhythmic alteration of resistance and relief. And the full aesthetic depth of art has to do with the question of whether undergoing such an experience, as a whole, aligns with the broader rhythms of the overall life of an individual member of an audience—that is, whether a work of art fits one's life in a way that renders the experience especially worthwhile and memorable, whether it is intimate and touching rather than exogenous and distant.

The Problem of Expressiveness in Conceptual Art

In Dewey's philosophical framework expressiveness is the crux of fine art (Dewey [1934] 1987, 277). It is defined as the use of some material medium in such a way that it constitutes "the meaning not of what it physically is, but of what it expresses" (Dewey [1934] 1987, 205). That is to say, the experienced effects of physical materials are repurposed, traditionally more or less in the manner described by the example of a loud rock concert, or in the way that a red rose may be an expression of love even if the flower as a physical object is not isomorphic with the particular experiential state of an individual human being. This type of embodiment of emotionalized meaning is the hallmark of traditional art objects. The overall composition may be novel and culturally motivated, but the constitutive parts rely heavily upon widely shared meanings established during natural evolution.

The great difficulty of conceptual art resides precisely in the fact that it does not always rely on commonly used operational rules or shared meanings. In conceptual art, the tools of interpretation, as in meanings, may be established for each individual art object separately—not as general guidelines for the entire field. Thus, conceptual art takes to the extreme the Deweyan idea according to which "every authentic new work of art is in some degree itself the birth of a new art" (Dewey [1934] 1987, 233).

The lack of instantly felt expressiveness in the physical objects of conceptual art remains a problem for some, and perhaps most, audiences. Arguably, the majority of people have become used to using their evolutionary background as well as their cultural upbringing—both embedded in the structure of a human being—to effortlessly initiate, carry, and direct the interaction with an art object towards an imaginative aesthetic experience of art. Hence the irresistible, but nonetheless enjoyable, ease with which an instantly expressive traditional masterpiece seizes an audience and evokes emotionally intense aesthetic scenarios in imagination seems unrivalled. In contrast, conceptual art relies on the more conscious and, thus, more laborious cognitive functions in the process of constituting a work of art as an experience. Consequently, conceptual art can appear unnecessarily cumbersome and arid in comparison.

Constitution of an Expressive Conceptual Work of Art

The main difference between the conceptual and the more traditional approach to the constitution of art objects can be summarized as follows:

Within traditional artistic practices the material art objects take unprecedented forms marked by personal touch, but the mediated meanings—even as artistically transfigured—tend to be more or less familiar and widely shared; whereas in the conceptual orientation it is somewhat the opposite: the physical features of art objects are predominantly familiar to the point of being mundane, but their meanings are highly unusual and extremely contextual.

In general, conceptual art objects commonly provide ordinary cultural symbols or objects in various arrangements that the audience is expected to interpret primarily in conscious thought. For example, the conceptual artwork *"Untitled" (Perfect Lovers)* (1991), by Felix Gonzalez-Torres (fig. 1), consists of two identical circular clocks, placed on a wall next to each other. Of course, in the context of an art gallery or museum the commonplace meaning of a clock does not apply anyway. Nevertheless, no unconscious sensory response, cultural convention, or combination thereof renders ordinary clocks expressive in the traditional sense.

Initially, the clocks show the same time. However, as batteries are exhausted the clocks inevitably fall out of synchronization—a key feature of the art object. Thus, a proper interaction with the art object of *"Untitled" (Perfect Lovers)* is exceptionally difficult, as it may require several encounters with the clocks at different times. Yet, even if audiences managed to "fully" interact with Felix Gonzalez-Torres's art object over long periods of time, this alone would not assure a marked consistency in the ensuing experiences.

Unlike traditionally expressive art objects, an interpretation of conceptual art objects usually necessitates a considerable amount of contextual background knowledge. Not even an extensive general education ensures that an interaction with a conceptual art object is experienced in a way that resembles the experience of the artist. For instance, in the case of *"Untitled" (Perfect Lovers)* it is probable that without any audience knowledge about Gonzalez-Torres's life, the experiences of the artist and the audience remain disparate. The experiences may align on the level of sense perception but not on the level of imaginative perception, where works of art are constituted as aesthetic scenarios. Without the latter, the communicative aspect of genuine art remains unrealized.

The bare cues embedded in the art object *"Untitled" (Perfect Lovers)* do not make it instinctual or effortless to arrive at an experience that resembles in meaning and emotional tone the experience undergone by Gonzalez-Torres himself. In order for a member of an audience to direct her personal experience towards that of Gonzalez-Torres's, it is necessary to resort to resources outside the physical art object and general psy-

chophysical preparedness. Learning that Gonzalez-Torres lost his partner Ross Laycock to AIDS, a condition that would later consume the artist as well, gives the dual composition of clocks a whole new meaning. With this additional information, which may require conscious effort to acquire, it is possible to interact with *"Untitled" (Perfect Lovers)* in a more comprehensive manner. The extra information renders it possible for the minimal material cues to express the general idea of gradually diverging life paths as an emotionally intense imaginative scenario. Due to the fact that the main emphasis is on concepts of asynchrony and death *in general*, it is apparent that the artist is not looking for the sympathy of his audience—neither for himself nor for his social group. The intensity as well as the consequent emotional appreciation of Gonzalez-Torres's work arise mainly from the significant implications of the presented scenario; these will, with time and in one way or another, come to touch the lives of the members of the audiences themselves.

Commonly, an increase in the uniformity of experiential backgrounds within a group results in improved possibilities for communication and mediation of ideas. Shared enjoyments, sufferings, consummations, and knowledge all increase the depth of meanings. This applies to culture in general and to a work of art in particular. Sometimes acquiring an adequate knowledge-base may require considerable personal effort. However, once a person obtains the necessary cognitive tools—even if only on a case by case basis—a whole new world opens up to experience. Hence, in addition to possibly satisfying existing needs of imaginative perception, conceptual art may also offer the possibility of discovering novel modes of perceiving imaginatively.

Within the realm of conceptual art, the conditions for inclusion into a social group capable of experiencing a conceptual art object as expressive are most peculiar. They are increasingly set by the artist and less by a combination of collective cultural structures and organic bodily functions. Of course, the latter two will always play a part, since no meaning—no matter how conventional, abstract, or idiosyncratic—is totally cut off from the composite substratum of nature and culture. Nonetheless, it is important to emphasize the fact that conceptual works of art, as experiences, often incorporate situationally specific meanings constituted—and sometimes even embodied—by the artist.

In the context of conceptual art, the embodiment of meaning by the artist is sometimes quite literal but not necessarily overt, as in situated in the concrete art object. With regard to the latter, Dewey emphasizes the "local habitation" of common emotions and meanings in expressive artistic treatment (Dewey [1934] 1987, 96). In other words, according to Dewey,

in *traditional* aesthetic portrayal the manifested emotion is individualized (*ibid.*). An expression of grief, for example, is the grief of a distinct individual in a particular situation—not a direct general statement, as in the phrase "a person is sad" (*ibid.*).

On this account of local habitation, a traditional rendition of *"Untitled" (Perfect Lovers)* could have depicted actual people instead of generic clocks; perhaps Gonzalez-Torres himself and his companion in specific situations exhibiting explicit gestures and facial expressions. In an individualized form, the idea of slowly losing a companion would be effortlessly grasped with the resources most audiences already possess. However, in such a case, the work would not be as much about the concept of death, but more about "a death" or "the death of."

Becoming consciously aware of mortality as a general aspect of human reality differs cognitively, experientially, and emotionally from perceiving a particular death of a particular being. Depending on the situation, the former can be more intimate: its implications pose a more direct—even if not necessarily more urgent—challenge to the continuity of one's own life, the primal goal embedded in all organisms during natural evolution. On this account, it is possible to position the concept of death in thought as the main obstacle to be imaginatively overcome, as in a genuinely aesthetic experience of fine art.

Of course, death can be imaginatively overcome in a multitude of ways and in various contexts. One direct approach would be to entertain the decidedly hypothetical concept of immortality: a total solution to a most persistent of problems. The mere idea of personal existence beyond natural limits commonly generates high degrees of aesthetic quality in experience. Consequently, imaginative scenarios regarding afterlife carry the allure of most religions and certain technological sciences alike.

However, *"Untitled" (Perfect Lovers)* does not rely upon the concept of immortality in restoring the mental balance disrupted by the notion of one's own mortality. Rather, the work, as an experience, compels cherishing and valuing the finite moments—precisely because human lifetime is limited. In other words, death is not overcome in a literal sense; its daunting inevitability is counterbalanced by the emotionalized consummatory experience of finding value in temporally restricted existences, such as shared moments with loved ones. This key aspect of *"Untitled" (Perfect Lovers)* makes it especially suitable for the general role that Dewey sees fine art as possessing in human life. That is, the work renders everyday being more meaningful and enjoyable.

Furthermore, Gonzalez-Torres's work performs this function of fine art in a way that aligns with the specific characteristics of a modern encul-

tured mind; it pushes the focus of awareness beyond the immediately present and tangibly distinct towards the temporally distant and spatially dispersed. Of course, the sciences, too, generalize and conceptualize from the cognitive scatter. But in science, the value of a concept is measured according to its degree of benefit for further inquiries and predictions. As aesthetic as the scientific problem–solution dynamic may be, in such instances the felt significance arises primarily from objectivity instead of intimacy. In contrast, it is precisely the latter that comprises the emotionalized value and meaningfulness of fine art—even if conceptual art, in particular, introduces this connection to innate human affairs through peculiar channels and, often, at a comparatively late phase in the process of constituting an experience of art. Nevertheless, as is the case with most artworks, even the conceptually oriented tend to provide value for individual and communal life rather than for any specific inquiry; conceptual artworks do not commonly intend to articulate unambiguous conclusive answers for the purpose of advancing a predetermined research. On this account, the conceptual approach to art appears to align with the sciences more in the means and less so in the ends. Hence, for the time being, the convergence between the subject-matters of art and science anticipated by Dewey remains only partial.

Summary

Gonzalez-Torres's conceptual artwork *"Untitled" (Perfect Lovers)* reshuffles the time-honored constitutive principles exhibited by traditional artworks. Firstly, the local habitation of emotionalized meanings is relocated from the art object to external contextual information—perhaps even to the personal life and character of the artist. Of course, universal human capacities are still needed, but their "coming together" in an experienced artistic whole is no longer primarily directed by the unique features of a concrete art object. Rather, the uniqueness of constitutive elements is now primarily a matter of an audience's preparation.

Secondly, the imaginative scenario, towards which the particularized supplementary information directs the audience's experience, is usually of the generalized type. In Gonzalez-Torres's work, the clocks dampen the particularity arising from the special contextual material used to interpret the art object. Knowledge about the artist's life does provide meaning to the relation of the clocks, but the clocks are not experienced as the life of the artist. The impersonality of the clocks compels audiences to empha-

size the concept of gradually growing asynchrony between individuals as a common feature of life in general, not just in the life of Gonzalez-Torres.

Overall, in the context of *"Untitled" (Perfect Lovers)* the general concepts of asynchrony and death are unified into a coherent experiential whole. Even without highly individualized and unconsciously impactful features in the concrete structure of the art object, the emergent *total* scenario is imaginatively compelling and, once attentively constituted, perhaps even expressive. The relation of life paths, time, and the inevitable end are organized into a unified imaginative vision that vividly expresses certain significant aspects of the reality to which all living beings are subject to. That is to say, relations in Gonzalez-Torres's work are not established only in the midst of conceptual matters, but also between the conceptual elements and the concrete life of a member of an audience. In short, despite the impersonal outer appearance of the art object, in its experiential entirety *"Untitled" (Perfect Lovers)* can become a personally affecting consummatory whole—just as can any genuine work of art.

Concluding Remarks

The purpose of this paper is to demonstrate one possible way that conceptual artworks can be explained within the framework of John Dewey's pragmatist theory of art. This study is not an all-encompassing or exhaustive analysis of conceptual art as a whole. Works, artists, and audiences that defy the approach I outline in this paper do exist. Overall, the above examination of conceptual art relates primarily to a key condition of fine art defined by Dewey. According to him, "[t]he abiding struggle of art is thus to convert materials that are stammering or dumb in ordinary experience into eloquent media" (Dewey [1934] 1987, 233).

Furthermore, Dewey maintains that it is possible to approach this transformation of materials with a distinctly conscious mindset. That is to say, artistic processes may exhibit a "deliberate awareness," which contrasts with the more intuitive method of "sympathetic vibration" (Dewey [1925] 1981, 293). In this paper I have highlighted both modes, but prioritized the former, as conceptual art often tends to be "analytic," that is, to rely on "deliberate awareness." Considering emphatically analytic art products, Dewey notes that "[a]t their worst, these products are 'scientific' rather than artistic; technical exercises, sterile and of a new kind of pedantry" (*ibid.*). With this statement in mind, I present means for overcoming such pitfalls in the context of conceptual art. In the end, the pragmatist approach to conceptual art that I put forward establishes a path

towards the realization of the aesthetic potential of these analytically constituted art productions. As Dewey also proclaims: "At their best, they assist in ushering in new modes of art and by education of the organs of perception in new modes of consummatory objects; they enlarge and enrich the world of human vision" (*ibid.*).

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III

Research Article

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Managing the Vague: John Dewey's Aesthetics and the Relation of Fine Art and Mathematics

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Abstract: In philosophical discourse, vagueness is commonly regarded as an undesirable and problematic aspect of human experience. Such standpoints are not unfounded. However, in this article, I argue that vagueness may in certain instances also possess an instrumental role that supports specific modes of human aspiration, including the artistic and the mathematical. In particular, I investigate the ways in which vagueness not only hinders, but also fosters the emergence of an aesthetic quality of experience during the imaginative endeavours of fine art and mathematics. The manner in which the benefit from felt vagueness ties into the formation of artistic and mathematical scenarios helps to illuminate deep and often unnoticed relations between these two domains of human ingenuity. In this article, the overall concept of experience and the particular features of human experience, such as the aesthetic and the vague, are examined in the context of John Dewey's philosophical pragmatism. In Dewey's philosophical framework, the human mind and culture are understood as natural phenomena. As such, the Deweyan approach fits the paradigm of a twenty-first century scientific understanding of the inherent ontological unity of all modes of human existence and activity.

Keywords: philosophical naturalism, philosophical pragmatism, vagueness, imagination, human experience, natural evolution

1 Introduction

In this article, I discourse the aesthetic relationship between fine art and mathematics. Furthermore, John Dewey's philosophical pragmatism provides both the outset and the broad philosophical framework for this inquiry.[1] I begin the discussion with Dewey's remarks on the aesthetic relationship between intellectual thought and artistic engagement. He states that:

> [*A*]*n* experience of thinking has its own esthetic quality. It differs from those experiences that are acknowledged to be esthetic, but only in its materials. The material of the fine arts consists of qualities; that of experience having intellectual conclusion are signs or symbols having no intrinsic quality of their own, but standing for things that may in another experience be qualitatively experienced. The difference is enormous.[2]

1 Since Dewey's time, philosophical pragmatism has developed into many different directions, some of which have become more or less incompatible with Dewey's theorisation. On that account, it is necessary to emphasise that none of these later versions, such as the linguistically oriented neopragmatism for example, are discussed in this article; the framework for this inquiry is strictly Deweyan.

2 Dewey, *The Later Works of John Dewey, 1925–1953. Volume 10: 1934, Art as Experience* (*LW10*), 45 (Italics in the original).

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Thus, on the one hand, the two domains have a common experiential ground as the same psychophysical mechanisms operate in both, bringing about the aesthetic quality in human experience. And on the other, despite the similarities in bodily systems and experiential outcomes, the cognitive strategies – or routes – for arriving at this particular experiential state are markedly different. Dewey calls these differences "enormous." I do not challenge the view that artistic expressions and scientific statements commonly differ in their respective modes of coming about. However, in this article, I investigate the question of whether the enormousness of the difference can be reduced to the point of becoming "miniscule." This approach is not in contradiction to Dewey's argumentation, because Dewey himself contemplates the possibility of overcoming the enormous difference between the artistic and the intellectual. As such, I argue for specific cognitive processes that warrant Dewey's premonitions about a future where the aesthetic and the intellectual increasingly converge.[3]

I posit that the convergence is especially notable in instances in which imagination is the primary domain of activity, as is the case with artistic and mathematical scenarios that oftentimes cannot take place in the surrounding environment. The meaning (as in "experienced consequences") of entities such as dragons of the fantasy genre or higher dimensional solids of extra-dimensional geometry can only be experienced in human imagination.[4] Of course, these imaginative scenarios do not appear out of the a priori blue, but necessitate engagement with concrete materials and objects, such as paints arranged into paintings and abstract symbols arranged into equations. These constructions, in conjunction with various personal traits and sociocultural settings, direct the development of meaningful scenarios in human imagination.

Overall, the purpose of this inquiry is not to reinterpret Dewey, but to expand upon his theorisation, especially in the less explored and developed areas of his work, such as the relationship between fine art and mathematics. To that end, I will first give a general overview of the theoretical basis that ties various aspects of human activity and experience – such as the artistic and the mathematical – together. I will then discuss how this basis gives rise to both the aesthetic and the vague and, consequently, examine certain ways in which the two manifest in the context of fine art. After these points, I move on to discuss the roles of the vague and the aesthetic in the context of mathematics. And in the end, I bring the two approaches together and highlight the similarities between fine art and mathematics as they relate to vagueness within the contexts of instrumentality and imagination.

All of these topics are discussed in the specific framework of Dewey's theorisation on the concept of human experience – a key aspect of his philosophical enterprise, as indicated by book titles such as *Art as Experience* and *Experience and Nature*.[5] In Dewey's philosophical pragmatism – a subsection of the broader framework of philosophical naturalism – life is predominantly deemed as a matter of problem solving; organisms encounter various types of resistances to the desirable courses of living and to the continuity of life itself. This is the struggle of existence that the human psychophysical setup, including the experiential capacity, has evolved to respond to. Our experiential sphere is geared towards managing the process of detecting challenges, discovering the means for taking on these challenges, and evaluating whether the challenge has been overcome with the selected means in a desirable manner. Even in the absence of urgently pressing problems and in times of leisure, the emotionally rich qualities, nonetheless, define the human experiential whole. The embodied structures forged through evolutionary, sociocultural, and

3 Ibid., 154.

4 Notably, in Dewey's art theory, the definition of fine art does not follow any demarcation line of socially introduced labels, such as high culture, popular culture, or folk culture. For him, the defining factor that separates the "fine" from other arts is the intentionally set goal of effectuating exceptionally aesthetic experiences in audiences, which includes the artist herself. In fine art, material objects are constituted for this principal purpose, and it, above all, guides the production of and the engagement with these objects, and their determination as art objects. Accordingly, in this article, too, fine art is viewed as the exceptionally intense aesthetic experiencing that emerges in an interaction with material objects that range from dance to paintings, from movies to sculptures, and from musical performances to fantasy novels.

5 Dewey, *LW10*; Dewey, *The Later Works of John Dewey, 1925–1953. Volume 1: 1925, Experience and Nature* (*LW1*).

personal struggles cannot be "switched off." Consequently, assertive qualities, such as sorrow or satisfaction for example, may occupy the experiential domain in all circumstances and beyond active strife.

It is the qualities of human experience, namely the vague and the aesthetic, that denote the main focus point for this inquiry. More specifically, I examine the aesthetic relationship between fine art and mathematics in the context of vagueness – a quality of the human experiential sphere that predominantly receives negative attention whenever it is discussed. I do not deny the fact that vagueness can be problematic in philosophy, fine art, science, and everyday life. Yet, I posit the view that the human psychophysical setup has evolved not only to manage felt vagueness, but also, in certain instances, to enjoy overcoming such a cognitive challenge. And the aesthetic quality of experience emerges in accordance with the benefit that the management of problematically vague situational specifics brings to the struggle for achieving entertained goals as secured rhythms of activity and life.

Dewey himself does not employ vagueness as an approach to aesthetics. However, he does view the emergence of the aesthetic quality as a matter of consummatory overcoming of challenges.[6] In addition, Dewey deems vagueness as a challenge in the cognitive process of meaning formation.[7] Thus, I think that combining these two points into a stand in which the vague posits a challenge to be aesthetically overcome is not as controversial as it is under investigated.[8] On that account, through this examination of the phenomenon of vagueness and of its role in human experience it is possible to highlight certain neglected aspects of the human cognitive whole. Hence, this study contributes to a better understanding of the deep underlying unity of all human affairs, which comprises a key part of the foundations of Dewey's philosophical project.

In this article, I view vagueness as a problem in the very act of problem solving, a kind of a meta problem that can potentially permeate several phases of the process. Vagueness may disturb the cognitive phase of grasping the nature of a problem and the discovery of the means for overcoming it. Also, it may become an issue in the evaluation of the degree of success produced by an application of specific means to a perceived problem. Vagueness is highly ingrained into the cognitive mechanisms and poses a strong prohibitive factor whenever it emerges in experience. As such, overcoming it – as in achieving clarity of perception and gaining the confidence of asserting accurate meaning to problems, means, and outcomes – can be felt as deeply aesthetic. Connecting this depth and intensity with the similarity of the way in which both artistic and mathematical scenarios incorporate vagueness renders it possible to establish a profound aesthetic link between the two disciplines.

Of course, experiential and aesthetic similarities between the fine arts and mathematical disciplines have been examined in the past. For example, Subrahmanyan Chandrasekhar offers testimonies from various experts as material for relating the aesthetic dimension of mathematical work to that of fine art.[9] However, Chandrasekhar concentrates on the concepts of beauty and elegance, which Deweyan aesthetics covers, but does not position in the core of aesthetic experiencing.[10] Moreover, Chandrasekhar's background assumptions are reminiscent of those of classic philosophy – a broad pre-Darwinian theoretical orientation, the validity of which the founders of philosophical pragmatism in general, and Dewey in particular, challenged.[11] More recently, Angela Breitenbach has examined the relationship between the

6 Dewey, *LW10*, 20–1.

7 Ibid., 198.

8 A closely related discussion on the vague and the aesthetic within philosophical pragmatism can be found in Avcı, "Experience of Absence as the Aesthetic Ground of Sense-Making in James," 177–96. Based on William James, Avcı discusses the aesthetic experience in the context of a felt "absence in relation to which the unity is gained." This correlates with Dewey's views about thinking as oftentimes directed towards things that are not currently present and closures that are yet to be achieved. Moreover, for Dewey, the aesthetic is a matter of a promise of a fulfilment; a compelling prospect marked by a felt consummatory unity even as yet to be obtained and as only imaginatively entertained.

9 Chandrasekhar, *Truth and Beauty*, 59–73.

10 Määttänen, "Emotionally Charged Aesthetic Experience," 97.

11 Dewey questioned the classic notion of "aesthetic" as an independent mental domain separated from other functions of the human mind. For him, aesthetic is a quality of experience that not only coexists with other qualities, but is also partially founded upon them; when concrete activity or an imaginative exercise turns qualities of experience such as frustration and

aesthetic value of science and the cognitive value of art.[12] While not a pragmatist in her philosophical approach either, Breitenbach does acknowledge the importance of imagination and its unified – and unifying – character in various forms of human endeavour, a position that I emphasise as well.

Both fine art and mathematics consist of ventures that take place in the human imagination, but necessitate a catalyst, support, guidance, and distinctiveness from the objects of the external environment.[13] Dewey describes the reciprocal interplay between the imaginative and the concrete as follows:

> There is a stage in which the inner vision seems much richer and finer than any outer manifestation. It has a vast and enticing aura of implications that are lacking in the object of external vision. It seems to grasp much more than the latter conveys. Then there comes a reaction; the matter of the inner vision seems wraith-like compared with the solidity and energy of the presented scene. The object is felt to say something succinctly and forcibly that the inner vision reports vaguely, in diffuse feeling rather than organically.[14]

This quote depicts the cognitive processes taking place in an artistic production. However, it might equally well describe the development of a mathematical idea and its formulation into an equation; replace images painted on a canvas – as the external object – with symbols drawn on a chalkboard and the depiction applies as well. Psychologist Merlin Donald explains in detail this general capacity of material objects to function as constituents of an external memory field – a cognitive strategy without which it would be impossible to bring about, uphold, and develop many of the more complex and abstract mental scenarios. He argues that concrete materials provide stable support and direction for the emergence of imaginative scenarios that embody artistically treated or mathematically formulated ideas: "[t]hrough the external memory field, external symbolic devices create stable, vivid displays of many things that were previously undisplayable. Ideas, theories, strategic plans, even imaginary events are left suspended in the mind, to be processed as we please."[15]

It is precisely this further mental processing and the consequent constitution of a chain of varyingly abstract imaginative scenarios that I examine in this article. An equation or a poem may be printed on paper with ink, but no matter how well executed, the typing does not constitute one or the other. Exquisite typography provides little solace for a mathematician or a poet whose imaginative scenarios are not well received by their reading audiences. In short, I focus primarily on what a particular work "says" and, further, implies. Angela Breitenbach provides an illuminating description of this type of further processing in her personal account of witnessing a dance performance:

> The achievement of the performance, and my experience of it, required an imaginative involvement on my part. It relied on my drawing out ideas that were suggested, but *only* suggested and never made *fully* explicit, by the artwork itself. The show challenged me to think further. It prompted me to engage with ideas I found expressed in the performance, and to offer a variety of representations and interpretations to make sense of what I saw and heard. The beauty of the performance lay in pointing me to ideas of great significance whose content went beyond any particular representation of what was shown by the dance itself.[16]

Arguably, one of the hallmarks of excellence in fine art and science is the ability of a work – regardless of type or topic – to prompt further ideas in the imagination and to keep doing so over long periods of time. That is, in certain instances the imaginative scenarios constituted and experienced in an artistic or a scientific engagement preferably lead to the entertainment of further imaginative scenarios that extend

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desperation into satisfaction and enjoyment, undergoing the process of transformation is felt as aesthetic in experience. In other words, the distinctively aesthetic quality is not in experiencing problems and solutions separately, but in consciously experiencing a desirable way to – sometimes unconsciously – relate the two into a unified consummatory whole of overcoming.

12 Breitenbach, "One Imagination in Experiences of Beauty and Achievements of Understanding," 71–88.

13 Dewey's philosophical pragmatism is founded upon the principles of philosophical naturalism. Hence, instead of a fundamental difference of substances, in Dewey's philosophical framework, the external and the internal denote different points of view from and to the network of relations that constitute the one and only reality of nature.

14 Dewey, *LW10*, 273.

15 Donald, *A Mind So Rare*, 316.

16 Breitenbach, "One Imagination in Experiences of Beauty and Achievements of Understanding," 73 (Italics in the original).

beyond the original context. Importantly, neither the original scenarios nor the further associative scenarios have to be realisable in the concrete environment. And, for Dewey's philosophical pragmatism, these types of counterfactual imaginary constructions – and even fantasy – possess considerable relevance. This claim goes somewhat against views, such as Edward Casey's, according to which Dewey's conception of imagination is "use-bound."[17] Admittedly, Dewey holds that imagination can contribute to "a modification of the objective order" and "the institution of a new object."[18] It is, after all, "an organ of nature."[19] But even as such, Dewey also views imagination as being "often fantastic" and, importantly, not always to the detriment of human aspiration.[20] Indeed, he maintains that:

> I do not think it can be denied that an element of reverie, of approach to a state of dream, enters into the creation of a work of art, nor that the experience of the work when it is intense often throws one into a similar state. Indeed, it is safe to say that "creative" conceptions in philosophy and science come only to persons who are relaxed to the point of reverie. The subconscious fund of meanings stored in our attitudes have no chance of release when we are practically or intellectually strained.[21]

Accordingly, Dewey goes on to argue that "reverie and desire are pertinent for a philosophic theory of the true nature of things; the possibilities present in imagination that are not found in observation, are something to be taken into account."[22] In this article, the imaginatively entertained possibilities – including those known to be untenable in concrete reality – are not only taken into account, but also comprise the main subject matter of the inquiry.

In addition, Dewey describes imagination broadly as "a way of seeing and feeling things as they compose an integral whole."[23] More specifically, he notes that:

> When old and familiar things are made new in experience, there is imagination. When the new is created, the far and strange become the most natural inevitable things in the world. There is always some measure of adventure in the meeting of mind and universe, and this adventure is, in its measure, imagination.[24]

This process is oftentimes highly dependent on subconscious mechanisms and applies to human thought and efforts generally. Of course, a similar point of view – perhaps without the emphasis on the subconscious – can be derived from other philosophical premises, including some that contradict Dewey's philosophical naturalism. For example, Mary Warnock arrives at a description of imagination reminiscent of Dewey's, but bases her account on Kantian theorisation. She emphasises the ability to see, for instance, a "chest as a ship," as children often do.[25] Overall, instead of a "special faculty" Dewey views imagination as "that which holds all other elements in solution."[26]

It is also important to note that Dewey acknowledges the inherent inexactitude of imaginatively contemplated matters – an imprecision that may effectuate felt vagueness under the specific conditions explored in this study. He asserts the following:

> It is important for philosophic theory to be aware that the distinct and evident are prized and why they are. But it is equally important to note that the dark and twilight abound. For in any object of primary experience there are always potentialities which are not explicit; [...].[27]

17 Casey, *Imagining*, 195–6.
18 Dewey, *LW1*, 171.
19 Ibid., 57.
20 Ibid.
21 Dewey, *LW10*, 279.
22 Dewey, *LW1*, 27.
23 Dewey, *LW10*, 271.
24 Ibid., 271–2.
25 Warnock, "1980 Imagination," 266.
26 Dewey, *LW10*, 278–9.
27 Dewey, *LW1*, 27–8.

In this particular excerpt, Dewey speaks about objects of primary experience, which means the objects of the surrounding environment as they are sensorily interacted with. The non-existential objects of secondary – as in reflective – experience emerged for the purpose of rendering the sensorily channelled objects of primary experience more intelligible in presupposition and consequence; language, theorisation, and conceptualisation all clarify, complete, and solidify the meaning of objects.[28] In other words, reflective analysis of material relations commonly dispels – in varying degrees – the vagueness obfuscating the usefulness of concrete objects necessary for the goal-oriented activity of human life. For example, general theories of aerodynamics, and particular ideas such as lift and flow, assist the pursuit for more effective wings in aviation.

However, in addition to material objects of primary experience, the objects constituted in reflective thought also possess hidden consequences. This is already suggested above, in Dewey's note regarding imaginative scenarios that possess "a vast and enticing aura of implications."[29] Moreover, the extent of the applicability of an imaginative idea is not always immediately evident or necessarily exhausted in the same context that provoked its emergence. In short, ideas themselves do not – for the most part – come as finished complete wholes. This argument aligns with Dewey's view on ideas, according to which "[a]t first, save in highly familiar matters, they are vague."[30] Through cognitive effort, the vagueness of an unprecedented initial idea can be dispelled and the resultant clarity usually indicates a further path of usefulness in material affairs, imaginative endeavours, or both. For example, studies of the concept of turbulence in aerodynamics gave rise to improved airplanes, but played a part in the development of mathematical chaos theory as well.[31] These types of connections between the concrete and the abstract emphasise the genuinely Deweyan disposition of this study; divergences are acknowledged and explored, but the theoretical basis rests upon similarities and couplings. The latter two comprise a central aspect of Dewey's philosophical enterprise, namely the overarching unity of all human affairs. He maintains that:

> The arts of science, of politics, of history, and of painting and poetry all have finally the same material; that which is constituted by the interaction of the live creature with his surroundings. They differ in the media by which they convey and express this material, not in the material itself. Each one transforms some phase of the raw material of experience into new objects according to the purpose, each purpose demands a particular medium for its execution.[32]

2 The Aesthetic, the Vague, and the Artistic

The above quote emphasises the fact that the inherent connection of all modes of human aspiration is operational and experiential. This incorporates the aesthetic, which is a quality of experience that potentially arises in any type of goal-oriented activity – especially during an interpretation of situational specifics as being supportive of obtaining the entertained goals. In Dewey's theory, the aesthetic relates inseparably to the overcoming of challenges, as in experiencing solutions to problems. Importantly, encountered problems, alone, do not stimulate the emergence of the aesthetic quality in experience; a prospective

28 Ibid., 15–6.

29 Dewey, *LW10*, 273.

30 Dewey, *The Later Works of John Dewey, 1925–1953. Volume 12: 1938, Logic: The Theory of Inquiry* (*LW12*), 113.

31 Li, "Major Open Problems in Chaos Theory, Turbulence and Nonlinear Dynamics," 379.

32 Dewey, *LW10*, 323; In this quote "the arts" are understood in the broadest sense of the term and incorporate a diversity of areas with specific refined skills. The key takeaway is that the mediums of expression commonly applied in the context of fine art are not necessarily well suited for furthering the achievement of the goals upheld in the various other arts mentioned. For instance, a politician is better-off resorting to the art of human relations – including persuasion – in the legislative environment she operates in and wishes to make changes to. Of course, it is totally acceptable for an object of fine art, such as a movie for example, to highlight political matters such as social injustice. However, as a direct means for legislative reform a movie, alone, is inadequate and, most of all, inappropriate; if a director holds specific political goals above aesthetic ones (not necessarily in her life, but in the context of a particular film), her mode of operation shifts from that of fine art to the art of propaganda.

solution is, also, needed. Dewey explicates the cognitive origins of the aesthetic structure by stating that "resistance that calls out thought generates curiosity and solicitous care, and, when it is overcome and utilised, eventuates in elation."[33]

More specifically, the aesthetic quality emerges in the process of restoration of balances disrupted by events that obstruct the ongoing activity. Accordingly, Dewey notes that "[f]or only when an organism shares in the ordered relations of its environment does it secure the stability essential to living. And when the participation comes after a phase of disruption and conflict, it bears within itself the germs of a consummation akin to the esthetic."[34] For example, opening a door with keys is a mode of rhythmic accommodation to environmental conditions that support the stability of living; the problem of entering a house is solved with the use of the appropriate keys. However, this type of problem-solution dynamic is not disruptive itself, but comprises a stabile rhythm that is subject to disruptions. For instance, upon entering a house, a person might notice that the keys necessary for opening the door appear to have been lost. This is an emotionally felt disruption to the presumed and desirable course of ongoing activity.

Finding the lost keys restores the emotional balance, and the reinstated tranquil sentiment indicates that, again, life proceeds in a desirable manner. However, the restoration is a process with rhythms of its own and phases varying in aesthetic quality. The aesthetic quality of experience is most emphatic in two particular phases: first, during the recall of a probable location of the keys, perhaps preceded by a phase of having no idea of their whereabouts. Second, the aesthetic is especially pronounced in experience during the steps that further the verification of the fact that the keys are in the location they are imaginatively presumed to be. Notably, the aesthetic quality is less prominent in the phases of actually finding the keys – as in coming into physical contact with them – and finally opening the door. Of course, the contact and the unlocking may both be highly satisfactory because of the prior disruption. However, at these later stages of the process, the disruptive problem is already solved.

In short, the aesthetic is most prominent as the balance *is being restored*, not as the balance *is already restored*, as in the balance being affirmatively obtained. This description fits Dewey's view according to which "[e]sthetic experience is imaginative."[35] In particular, because the aesthetic quality tends to become most pronounced in experience when situational specifics warrant increasingly favourable imaginative prospects for overcoming the encountered challenge. As Pentti Määttänen summarises the Deweyan definition, "an aesthetic experience is a promise of consummation, and this promise is enjoyable in itself."[36] On that account, the adages according to which "the journey is more important than the destination" and "the chase is better than the catch" are apt in the context of aesthetic experiencing. However, none of the examples above are meant to say that a closure is totally irrelevant. They merely denote a phase during which the aesthetic quality clearly dominates, as in defining, the experience. For instance, in a movie, the aesthetic quality peaks in the experiences of audiences during the heightened tension of the climax of the story, not as the main characters are affirmed to "live happily ever after." Moreover, the climax builds in accordance with perceived factors that give rise to imaginative – but initially vague – estimates of a desirable way to overcome the main challenge encountered by the protagonists. Also, each step that incrementally dispels the vagueness of an imaginative scenario concerning a desirable outcome, and ushers in a more distinct version of that scenario, may be felt as consummatory as in aesthetic. As Dewey maintains, "perception will be serial in order to grasp the whole and each sequential act builds up and reenforces what went before."[37] Furthermore, the sequential acts may extend into the hypothetical realm and comprise wholes that do not – and oftentimes cannot – exist in the concrete surrounding environment. Accordingly, in this article, imaginative perception is viewed as the primary domain where artistic and mathematical activities align and, also, become subject to similar disruptions introduced by vagueness.

33 Dewey, *LW10*, 66.
34 Ibid., 20.
35 Ibid., 276.
36 Määttänen, "Emotionally Charged Aesthetic Experience," 97.
37 Dewey, *LW10*, 141.

The various schools of thought in classic philosophy disagree on many things, but usually share a common desire for the utmost univocality and almost never embrace vagueness. As Dewey points out, "whenever the habit of identifying reality with the object of knowledge as such prevails, the obscure and vague are explained away."[38] This orientation has persisted in numerous incarnations throughout the millennia. Over the last century, philosophical discussions about the problematic nature of vagueness have been especially prominent in the context of linguistic propositions. For example, in his article entitled "Vagueness," the pioneer of analytical philosophy Bertrand Russell asserts that all language is vague, because all possible use cases for a particular word are not known in advance.[39] The framework of philosophical pragmatism, within which this article is positioned, remains in stark contrast to accounts derived from classic philosophy, including the analytical represented by Russell. Yet, a somewhat similar – as in linguistic – approach to vagueness as a philosophical issue appears in the pragmatist framework as well. Namely, the founder of philosophical pragmatism Charles Peirce defines vagueness as follows:

> A proposition is vague when there are possible states of things concerning which it is intrinsically uncertain whether, had they been contemplated by the speaker, he would have regarded them as excluded or allowed by the proposition. By intrinsically uncertain we mean not uncertain in consequence of any ignorance of the interpreter, but because the speaker's habits of language were indeterminate; [...].[40]

In this article, however, the linguistic aspects of vagueness commonly discussed by the likes of Russell – and even by pragmatists such as Peirce – do not comprise the main focus point. That is, I do not discuss the removal of vagueness in the sense of developing new and increasingly exclusive definitions for a particular term or a concept. Rather, I discourse vagueness as *felt* – as a part of the human experiential whole. Overall, felt vagueness may emerge in the human experiential sphere in any problematic situation in which the available means and materials point to a range of consequences that is too wide for being comfortably relied upon in the efforts to secure desirable outcomes. And as such, the experienced vagueness is phased out through activity that reorganises available resources – including the embodied human capabilities – into constellations that are perceived to narrow the range and, thus, increase the probability of reaching the ends-in-view.

The above definition of the phenomenon of vagueness is not exactly concise and explicit in Dewey's philosophical pragmatism, but spread out through his writings. For example, in one instance, Dewey discusses vagueness by stating that "[a]t twilight, dusk is a delightful quality of the whole world. It is its appropriate manifestation. It becomes a specialised and obnoxious trait only when it prevents distinct perception of some particular thing we desire to discern."[41] Evidently, Dewey steps outside the compartmentalisation of formal and natural languages, in the context of which Peirce discusses vagueness. For Dewey, vagueness is an obstacle in the general process of meaning formation; a cognitive procedure of interaction with the environment which establishes meanings as the experienced effects that objects and acts produce in the structures of the world, including our embodied selves. Importantly, according to this view not only linguistic meanings, but, also, the entertained meaning of any object, including the imagined, incorporates varying degrees of indefiniteness.[42]

However, as the above quote regarding "dusk" implies, it is crucial to note that an inability to capture or project all the details of an object or a scenario does not always amount to experiential vagueness. The resolution of sensory stimulation may not be arbitrarily high, but, nonetheless, it may suffice for the task at hand. For example, most of the time, taste is successfully applied in determining the suitability of food items, even if taste oftentimes cannot distinguish all the exact ingredients that went into a dish. Vagueness, on the other hand, is usually felt when the obtained data are not deemed sufficient for a successful

38 Dewey, *LW1*, 27.
39 Russell, "Vagueness," 84–92.
40 Peirce, "Vague," 748; A further examination of both Peirce and Russell in the context of vagueness can be found in the book *Vagueness* (1996) by Williamson.
41 Dewey, *LW10*, 198.
42 Dewey, *LW1*, 27–8.

overcoming of the challenges presented by the given circumstances. For example, for a person with a food allergy, an inability to discern potentially dangerous ingredients through smell or taste may constitute vagueness in the assessment of whether a presented dish supports or hinders life. In other words, vagueness obscures the experienced meaning of objects and puts in doubt the rationality of relying upon them in further thought and outward activity. Overall, human beings commonly experience vagueness when indistinctness interferes with the held belief that the ongoing path of activity is appropriate for achieving desirable outcomes.

As a felt disturbance, vagueness usually calls for measures that remove either it or the disturbing quality from the experiential whole. That is, vagueness needs to be managed in one way or the another, so that the perception of causal relations can be comfortably relied upon in planning and executing activity. The most obvious way to achieve mental stability and operational security is through empirical confirmation. However, such a reassuring verification is not always possible to obtain. And when conditions do not allow the use of empirical evidence as a basis for decision making, imagination is usually applied in bridging the irritating gaps that vagueness introduces into the chains of causal reasoning.

Depending on the situation, a varying proportion of the sensorily channelled affirmative events can be replaced with imaginatively conceived hypothetical scenarios. Oftentimes the substitution can be accomplished without excessive mental discomfort – at least in everyday life and apart from the requirements of strictly empirical sciences. Of course, this type of psychological flexibility does not do away with vagueness in a strict epistemic sense. Yet, it dispels the accompanying emotional disturbance that may induce paralysing confusion, which is – and during natural evolution has been – a potentially life-threatening state of being. Assigning some imaginatively determinate meaning – rather than nothing at all – to that which is felt as vague is more beneficial for survival; that something may prove adequate – even if not wholly accurate – for resolving the problematic situation. Notably, this type of a resolution of the problem of felt vagueness and, especially, the accompanying removal of emotional disturbance effectuates a restoration of mental balance. And as previously discussed, the restoration of mental equilibrium denotes the main part of the process that culminates in the consummatory aesthetic experience. Taken together, it is possible to establish a connection between the vague and the aesthetic quality of experience; the latter emerges through the dissipation of the former. In short, the vague can become a problem, the overcoming of which can, in turn, result in aesthetic experiencing.

Notably, arranging materials in formations that increase the probability of producing anticipated outcomes can take place both in concrete surrounding environment and in abstract imaginative thought. This relates to a general human tendency to include a degree of imaginative conjecture in inductive reasoning; a continuous self-correcting series of acts, of which Peirce notes that, "in the long run they approximate to the truth."[43] From an evolutionary standpoint, either the fruits of imaginative guesswork were frequently harvested or they were so exceptionally advantageous – even if rare – that the imaginative procedure itself became enjoyed and, consequently, sought after. As Dewey summarises, "[t]he striving of man for objects of imagination is a continuation of natural processes; it is something man has learned from the world in which he occurs, not something which he arbitrarily injects into that world."[44] This cognitive setup plays an important part in the following examination of the aesthetic enjoyment that emerges during the dispelling of vagueness in the context of fine art and later on in the discussion of the role of vagueness in mathematics.

Dewey states that "[t]he real work of an artist is to build up an experience that is coherent in perception while moving with constant change in its development."[45] Both the building up and the constant change may involve the type of problem–solution dynamics that generate exceptionally high degrees of aesthetic quality in experience. As Dewey further explicates, "[s]ince the artist cares in a peculiar way for the phase of experience in which union is achieved, he does not shun moments of resistance and tension. He rather cultivates them, not for their own sake but because of their potentialities, […]."[46] As described earlier, in

43 Peirce and Hartshorne, *The Collected Papers of Charles Sanders Peirce, Volume 5: Pragmatism and Pragmaticism*, 350.
44 Dewey, *LW1*, 315.
45 Dewey, *LW10*, 57.
46 Ibid., 21.

order for the aesthetic potential to actualise in experience, relevant aspects of the problem must hang in the balance for the time being. And felt vagueness, in particular, is an indication of the fact that things have not yet been resolved into sufficiently distinct outcomes that are necessary for planning and executing further activity in a mentally comfortable manner. As such, vagueness can tie into the building up of basal coherence and to the dynamic of further developments in imaginative perception; vague issues call for imaginative estimates about the way things actually are (the nature of the present problem) and, also, about the way things could potentially turn out to be (a reasonable future solution).

An example of an artwork that relies on a combination of the two is the feature film *Alien* (1979), in which the structure, the capabilities, and the intentions of the antagonist are only slowly revealed. These aspects remain rather vague for a considerable part of the film, which allows the audience to engage in the emotionally rewarding activity of constituting imaginative assessments about the extent of the danger. That is, even if the worst fears seem to be coming true, correctly inferring this to be the case plays enjoyably into the formation of the aesthetic dynamism of tension and release. The sequels to the original film do display the threat more explicitly and in higher sensory detail. Yet, in comparison to personal imaginative visions, the improved special effects comprise a less rewarding way to dispel the vagueness regarding the nature of the obstacle – if any remains after the first instalment. In brief, only the first *Alien* film upholds two simultaneous – albeit intertwined – layers of imaginative prognosis: the survival of the protagonists *and* the essence of the antagonist. The sequels tend to focus merely on the survival of the main characters, which reduces their imaginative scope and limits their aesthetic potential.

The emotionalised dissipation of vagueness through the formation of feasible scenarios in imagination is grounded in multilevel evolutionary developments. First, the fate of another person matters to a member of an audience because human self-preservation has been highly dependent on the social group for a considerable part of human evolution. As Dewey maintains, "destructive enemies must be kept away; the help of others must be availed of. Meanings and ideas connected with these organic-environmental adjustments are substantially sound as far as adjustments are successfully made – and within limits they are ordinarily so made, or life ceases."[47] In addition, Jerome Popp further elaborates on Dewey's thinking about this social function by stating that "[i]f an interest is consciously shared by a sizable number of people, then as they put their minds to various problems, they are aware that their solutions and reconstructions have meaning that goes well beyond their personal well-being or even that of their extended family."[48] On the whole, sympathising with another person – even a fictional one – compels audiences to imaginatively entertain possible ways in which the presented difficult situation might be resolved in a satisfactory manner for that person.

Second, from a broader evolutionary point of view, it is highly beneficial for survival to form initial threat estimates *in general* and continuously improve upon them through further iterations. Moreover, the way that natural evolution has encouraged organisms to engage in such an advantageous predictive activity is through emotional incentives. Although fallible and subject to being consciously ignored and overridden, in their original primal function "[e]motions help us make decisions about what to do."[49] And, importantly, emotional consummatory satisfaction is felt not only in a life-enabling closure, but also during – and because of – the imaginative formation of increasingly probable and decreasingly vague estimates about past, present, and future states of affairs. In the context of fine art, the emotional guidance for the further activity of constituting imaginative scenarios in thought is oftentimes based – in significant part – upon tacit meanings. Pentti Määttänen explains the background of this process. "Most of the workings of tacit meanings (habits) are subconscious but the outcome of this subconscious cognition become conscious as emotions as signs of the value of anticipated experiences."[50] I add that the valued aesthetic quality of experience is exceptionally emphatic in situations in which the increased probability of a prediction reveals

47 Dewey, *LW1*, 260.
48 Popp, *Evolution's First Philosopher*, 102.
49 Määttänen, *Mind in Action*, 72.
50 Ibid.

increased odds for overcoming potentially life-altering challenges and a clear(er) path towards desirable goals. This viewpoint defines the specific way that the cognitive act of dispelling vagueness examined in this article fits Dewey's notion according to which "[a]rt is a mode of prediction not found in charts and statistics, and it insinuates possibilities of human relations not to be found in rule and precept, admonition and administration."[51]

Of course, in fine art vagueness may, also, sometimes be unintentional, ill-advised, and counterproductive. For example, in the discussion of expression of character in literature, Dewey points out that "whenever situations are left inchoate and wavering, characters are found to be vague and indefinite – something to be guessed at, not embodied, in short are uncharactered."[52] However, as previously described, felt vagueness *can* function as an intentional and enjoyable part of an artwork; carefully applied vagueness may, for example, entice audiences to connect the dots imaginatively and to the effect of aesthetic enjoyment instead of distracting incoherence. Moreover, as the gist of Dewey's main work on art theory – namely *Art as Experience* – suggests, all forms of fine art function temporally in the sphere of human experience.[53] On that account, in any mode of fine art – from painting to instrumental music – phases of experienced vagueness can be implemented according to the requirements of the aesthetic ebb and flow of tension and release.

3 The Vague and the Aesthetic in Mathematics

In colloquial language, mathematics is often described as the most exact of sciences, and vagueness, in particular, is not commonly associated with the discipline in such discourse. Admittedly, the rules of mathematical formalism are very strict and unforgiving. However, as Dewey notes, mathematics comprises "a canon of liberation rather than of restriction," because "all developments are welcome as long as they do not conflict with one another."[54] In addition, "[o]nce the idea of possible operations, indicated by symbols and performed only by means of symbols, is discovered, the road is opened to operations of ever increasing definiteness and comprehensiveness."[55] Naturally, human engagement with such an open – but nonetheless precise – field of imaginative endeavours is neither predetermined in path nor easily exhausted in scope. And that which is indeterminate, but actively presumed, tends to be more or less vague until actually confirmed in the concrete or in logical proof.

In order to constitute the unfettered mental domain of mathematics, certain cognitive peculiarities need to take place. Most importantly, the axiomatic base and the consequent exactness are both achieved by intentionally loosening various aspects of the correspondence between mathematical symbolisation and the elements of tangible reality. Dewey describes this cognitive approach as "a temporary neglect – an abstracted gaze."[56] It enables perception of relations that play a role in the coming about of individual phenomena, but which the uniqueness of a particular phenomenon tends to obscure prior to symbolic generalisation. For example, the differences between individual fingers of a hand need to be ignored in order to count them as units of measurement and use them in operations such as summing and dividing. In addition, the general concept of "finger" needs to be abstracted further into a general symbolic unit or a number for the purpose of performing these operations among even more heterogeneous objects, such as fingers and rocks for example. As Dewey further posits, symbols "afford the only way of escape from submergence in existence."[57]

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51 Dewey, *LW10*, 352.
52 Ibid., 248.
53 See Dewey, *LW10*.
54 Dewey, *The Later Works of John Dewey, 1925–1953. Volume 4: 1929, The Quest for Certainty* (*LW4*), 128.
55 Ibid., 126.
56 Dewey, *LW1*, 118.
57 Dewey, *LW4*, 129.

However, the vagueness potentially arising from the diversity of existences in the process of forming basic mathematical axioms is no longer a major concern; the foundations of mathematics are predominantly fully established and only rarely questioned.[58] In the modern epoch, vagueness in the relationship between mathematical symbolisation and features of concrete reality tends to emerge in increasingly further abstractions and more complex phenomena of nature. For example, Einstein struggled for well over a decade to combine his unique ideas about gravity with mathematical ones. Supposedly, he did not arrive at the mathematical formulation for the general theory of relativity by chance, but was led by some – perhaps a vague – imaginative foresight.[59] This hypothesis finds support in Merlin Donald's notion, according to which "[w]e can recognise the value of ideas whose mere possibility we suspect, and whose reality still eludes us completely, to the point of pursuing them passionately for a lifetime."[60] I posit that maintaining such passionate drive owes in part to the aesthetic quality of experience, which arises through specific acts that gradually remove vagueness from the focus point of imaginative perception and give the entertained idea a distinct communicable form. That is to say, the emotional incentive takes the form of an aesthetic enjoyment, which keeps the agent engaged in activity deemed as highly worthwhile; every increment suggesting an increased probability of reaching a goal – partial or conclusive – can be experienced as consummatory as in aesthetic. This aligns with Dewey's view on aesthetic quality as comprising "a significant motive in undertaking intellectual inquiry and in keeping it honest."[61] Dewey also notes that the "esthetic cannot be sharply marked off from intellectual experience since the latter must bear an esthetic stamp to be itself complete."[62]

According to Dewey's definition, mathematics "is intrinsically free from the *necessity* of existential reference while at the same time it provides the *possibility* of indefinitely extensive existential reference."[63] As described above, developing a particular, explicit, and functioning realisation of such a *possibility* caused Einstein to flounder. However, Einstein was a physicist – not a mathematician. The latter do not – for the most part – concern themselves with this particular aspect of their discipline; as long as the axiomatic base holds, it is implicitly presumed that further abstractions – if not contradictory to one another – are sound as well. On that account, mathematicians tend to emphasise their freedom from "the *necessity* of existential reference."[64]

Acts performed in symbols bear results that are composed of symbols, not of concrete existential matters. Of course, this symbolic mode "to act without acting" was initially motivated by the fact that it rendered possible planning and predicting overt outcomes without being subjected to potentially hazardous material consequences.[65] However, such a useful cognitive tool warranted its own development independent of any particular application. Notably, this progression led to the discovery of various abstract phenomena that bear no direct resemblance to tangible aspects of physical nature. For example, the diagonalisation argument presented by Georg Cantor demonstrates the counterintuitive fact that some infinite sets of numbers contain more numbers than other infinite sets.[66] In other words, Cantor showed that not all infinities are equal in size. It is possible to arrive at such a conclusion because, instead of individual transformations between the material and the symbolic, mathematics proper focuses on *transformability* in general.[67] The abstract transformability of mathematics concerns only the relations between symbolic operations and it is, also, itself described in symbols.

58 For an example of this kind of questioning, see Hintikka, *The Principles of Mathematics Revisited*.
59 Hadamard, *An Essay on The Psychology of Invention in the Mathematical Field*, 142–3.
60 Donald, *A Mind So Rare*, 278.
61 Dewey, *LW10*, 45.
62 Ibid.
63 Dewey, *LW12*, 391. (Italics in the original).
64 Ibid.
65 Määttänen, *Mind in Action*, 8.
66 Cantor, "Ueber Eine Elementare Frage der Mannigfaltigketislehre," 75–8; Ewald, *From Kant to Hilbert Volume II*, 920–2.
67 Dewey, *LW12*, 394.

Nonetheless, cognitive operations in mathematical fields of interest are not fundamentally different from those performed in other areas of human activity. Dewey maintains that "[j]ust as we overtly manipulate things, making new separations and combinations, thereby introducing things into new contexts and environments, so we bring together logical universals in discourse, where they copulate and breed new meanings."[68] And, "[i]n trying new combinations of meanings, satisfactory consequences of new meanings are hit upon; then they may be arranged in a system."[69] In other words, new mathematical phenomena may be consciously developed or encountered more or less accidentally. However, prior to any kind of establishment of new meanings and systems of meanings, the reformative phenomena – even if wholly symbolic – can initially be felt to be shrouded in vagueness. This disturbance is gradually abated during the activity that gives rise to a prospective mathematical formulation and, in the end, disposed of with the assertion of the exact final articulation as an equation.

Commonly, the former stage of *increasing* mathematical clarity holds the most potential for engendering the aesthetic quality of experience, because the majority of vagueness yields to the emerging distinctness during this particular phase. Most of the time, the latter – more static – phase of clarity *as obtained* merely confirms that which the promising materials have already suggested in imagination. And confirmation is a less imaginative cognitive process leaning more towards plain satisfaction than aesthetic enjoyment, especially if the confirmation is neither related to the means for achieving further goals nor of a surprising type enticing further exciting associations. As Dewey aptly points out, "[a] consummatory object that is not also instrumental turns in time to the dust and ashes of boredom."[70] This type of instrumentality applies to both concrete objects and objects constituted in imagination, such as the mathematical and the artistic.

4 Vagueness, Instrumentality, and Imagination in Fine Art and Mathematics

Paints applied on a canvas or symbols drawn on a chalkboard may be instrumental in pushing the mind towards the entertainment of a specific type of hypothetical scenario. Dewey explicitly states that "a painter converts pigment into means of expressing an imaginative experience."[71] Yet, in fine art and mathematics, the full experiential potential of the discipline is only undergone insofar as the constituted mental scenario, too, is instrumental in pushing the mind further towards new imaginative grounds. This extension beyond the original context impregnates the experience with felt depth, especially if the further inspired associations suggest an existence of unprecedented connections to other interests not explicitly present in the ongoing situation, but, nonetheless, held by the audiences.

However, prior to an establishment, these unprecedented connections remain presumed and, thus, more or less vague. In such an instance the vague does irritate, but it also intrigues – as long as the annoyance functions as a sign of a novel ground for inquiry and as an invite to embark upon it. For a curious mind, it is a delight to come across even vague hints of unprecedented phenomena or faint cues for novel approaches into known matters. They imply potentially advantageous and, consequently, enjoyable forms of activity in expanding present understanding through recontextualisation of obtained ends into means for attaining increasingly further ends. For instance, anomalies in particle accelerator experiments are lauded because they mark the unknown beyond current knowledge and stir the imagination of theorists and experimentalists alike.

68 Dewey, *LW1*, 152.
69 Ibid.
70 Ibid., 274.
71 Dewey, *LW10*, 69.

From a technical point of view, a felt vagueness can potentially reposition human awareness within the rhythmic alteration of tension and release to a phase where the aesthetic quality of experience is on the rise rather than yields to other qualities. That is, vagueness can denote the beginning of a new cycle in the ever-ongoing problem–solution dynamic of life. And, for an optimistic mind, the satisfaction from concrete achievement is built upon, and augmented with, the satisfaction of imaginatively perceived future potential. If this potential was not initially vague, but wholly resolved, then instrumentality – as experienced – would be stuck in conclusive satisfactions devoid of the aesthetic potential of promising, imaginative scenarios.

In this respect, as a part of instrumentality, vagueness does not need to be dissipated always and entirely. The presumed meanings – as imagined consequences – of a scenario may be clarified in one area and simultaneously remain vague in others as a sign of potentially uncovered affordances. Hence, persistent – but always partially receding – vagueness can play a part in rendering scenarios into catalysts for long-lasting aesthetic enjoyment. This does not mean that ideas can be inexhaustible in the absolute sense. Yet, certain scenarios of fine art, and those of mathematics, may be deemed to imaginatively conjoin multiple areas of a particular human being's interests. In such a case – and for the individuals in question – these types of scenarios can potentially last for a lifetime as sources for continuous excitement and aesthetic enjoyment as they encourage experimentation and even play.

An example of an abstract mathematical idea that has had such a profound impact on peoples' lives is the Pythagorean theorem, which played a role in the formation of something of a religious cult at the time of its discovery in antiquity. Undoubtedly, other factors, too, contributed to the establishment of the Pythagorean sect, but the allure of mathematical elegance cannot be understated. The Pythagorean theorem posits a scenario regarding relations between the sides of a triangle, but it has – time and again – proven to possess considerable relevance outside its relatively simple geometrical origins. For example, the theorem has been generalised to non-Euclidean spaces and higher dimensional solids.[72] In addition, and within the realm of applied mathematics, the Pythagorean theorem is integral to, for example, the Born rule, which is used to calculate quantum probabilities.[73] Overall, the discovery of the extent of the instrumentality of the Pythagorean theorem – partly through removal of vagueness regarding its applicability – has been a long and, perhaps for some also, an aesthetic intellectual journey.

In the context of fine art, the criteria for an enduring capacity for aesthetic quality usually incorporate more personal factors and preferences from the audiences. This is because, unlike in mathematics, in fine art the furtherance of thought and experience does not commonly gravitate towards any specific inquiry, but to life more broadly. Dewey reflects on this difference, "[t]he work of esthetic art satisfies many ends, none of which is laid down in advance. It serves life rather than prescribing a defined and limited mode of living."[74] On that account, the works of art that maintain the potential to bring about aesthetic experiences of art in audiences over long periods of time are more diverse – as are the life paths of human beings in comparison to mathematical advancements. Of course, popular artworks that appeal to the masses do exist, but these are not necessarily those that the individual members of audiences find the most potent in constantly evoking the aesthetic quality in experience. Accordingly, Dewey notes that:

> Some esthetic products have an immediate vogue; they are the "best sellers" of their day. They are "easy" and thus make a quick appeal; their popularity calls out imitators, and they set the fashion in plays or novels or songs for a time. But their very ready assimilation into experience exhausts them quickly; no new stimulus is derived from them. They have their day – and only a day.[75]

Moreover, the longevity of an artwork is not always based on the type of instrumentality discussed above. It is, for example, also possible to turn to familiar art objects for solace or nostalgia. Furthermore, many of the

72 Pambuccian, "Maria Teresa Calapso's Hyperbolic Pythagorean Theorem," 2; Conant and Beyer, "Generalised Pythagorean Theorem," 262–5.
73 Mandolesi, "Quantum Fractionalism," 126725.
74 Dewey, *LW10*, 140.
75 Ibid., 172.

most famous pieces of art, especially from the distant past, are continuously admired for their cultural prestige or exquisite craftmanship, instead of the imaginative impact of their subject matter on a modern mind. The Mona Lisa is a prime example of an art object that is often revered because of the position it holds in the western cultural heritage. However, the actual content of the painting is unlikely to be experienced as imaginatively extraordinary by the majority of audiences that have grown up in the constant hyperstimulating audiovisual bombardment of the twenty-first century media outlets.

Nonetheless, contemporary art objects that continuously bring about recontextualised or recontextualising imaginative scenarios do, also, exist. Especially with such works, the type of – often conscious – effort highlighted by Dewey is required. "The perceiver, as much as the creator, needs a rich and developed background which, whether it be painting, in the field of poetry, or music, cannot be achieved except by consistent nurture of interest."[76] But even so, the full depth of the work is not necessarily immediately apparent. Indeed, Dewey notes that:

> Indifference to response of the immediate audience is a necessary trait of all artists that have something new to say. But they are animated by a deep conviction that since they can only say what they have to say, the trouble is not with their work but those who, having eyes, see not, and having ears, hear not. Communicability has nothing to do with popularity.[77]

Of course, even the most novel works of art may incorporate materials from – and references to – past objects and events. In such instances, the combination of various elements usually reflects a contemporary viewpoint or highlights issues relevant in the present society. I do not suggest that what is relevant for human life today is entirely different from the relevancies of the past. Yet, nuances matter in fine art, especially in what audiences of our time deem as forward looking and experience as intriguingly vague. Accordingly, museums of contemporary art commonly – even if not always – exhibit art objects that emphasise this type of future-oriented aesthetic.

Overall, neither in fine art nor in mathematics does the experiencing of scenarios incorporate a closing affirmation from the surrounding sensory environment. The same does not hold true of physicists or artisans, whose ideas can usually be experienced and, consequently, evaluated through direct sensory engagement with concrete material outcomes. For example, lasers may be reflected from mirrors and chairs may be sat in. In both instances, the direct sensory experience of physical properties is usually highly effective in dispelling the vagueness of imaginative estimates that anticipatorily precede and guide the active testing of a planned scenario. As Dewey explicitly states, "the natural sciences not only draw their material from primary experience, but they refer it back again for test."[78] Such a concrete removal of vagueness regarding an idea is available neither to advanced mathematicians nor practitioners of fine art, both of whom produce scenarios that are carried out in the imaginative thought of audiences instead of the surrounding physical environment.[79] In his definition of a work of art Dewey states that it "is not only the outcome of imagination, but operates imaginatively rather than in the realm of physical existences," and the same can be said of mathematics proper.[80] This procedural similarity aligns mathematics and fine art more with one another than with disciplines they are commonly associated with – such as experimental physics and craft arts, respectively.

Of course, it is entirely possible for a contemporary artist to put together an art installation that consists of, for example, an actual chair and the overt act of an audience sitting on it. In fact, Estonian sculptor Villu Jaanisoo has done just that; the aptly entitled sculpture "Chair" (2001) is built from rubber tires and allows audiences to try it in practice. However, in such a special contextual setting – which necessitates other

76 Ibid., 271.
77 Ibid., 110.
78 Dewey, *LW1*, 15.
79 Alongside this argument, it is worth reiterating the Deweyan definition of a work of art as an experience. Art objects can be put on display for others to evaluate, but works of art – as experiences – cannot. In other words, it is possible to hang a painting on a wall, but as Pentti Määttänen notes, "[e]xperiences cannot hang anywhere." Määttänen, "Emotions, Values, and Aesthetic Perception," 94.
80 Dewey, *LW10*, 277.

situational factors as well – the psychophysical experience of sitting on a chair arouses new imaginative scenarios rather than terminates existing ones. It is precisely the former that constitutes a work of art, as the emergent imaginary scenario – more than the sensory feel of the chair – is experientially undergone and emotionally evaluated by the audience. In other words, the rubber tires used in Jaanisoo's work do affect the audience sensorily, but they are not judged merely according to their material function for supporting a human body. Rather, the rubber – as felt – is primarily and often unconsciously evaluated in its role as supporting the associative emergence of imaginative scenarios that may escape any concrete realisation.

On the whole, in fine art and in mathematics, the evaluation of success is only loosely tied to the exigencies of the physical environment. This is in contrast to the more concretely oriented frameworks, which of necessity incorporate solidifying aspects from the physical domain into the held criteria. For example, even as prospective, a medicinal treatment is consummatory only insofar as it is assumed to cure patients in actuality instead of merely in imaginative visions. Whereas in fine art and mathematics neither dragons nor complex numbers, for example, are expected to embody a concrete material form and affect physical reality through direct interactions. Naturally, both include familiar components, such as wings and fire or, in the case of complex numbers, symbolised forms of established abstract operations. Nonetheless, the general structure of dragons and that of complex numbers requires a degree of modification to factual limitations, a type of adjustment which is possible only in imagination.[81] And this adjustment also concerns the basis for interpretation, evaluation, and experiencing of such objects.

Overall, in fine art and in mathematics, it is possible to develop premises, objects, and standards that are imaginatively derived from – instead of outright dictated by – the direct surroundings. In other words, various practical demands imposed by the surrounding physical and cultural settings can be imaginatively modified or ignored, if not always at will, but potentially through effort. The important point is that, in addition to existent particularities, abstractive derivation can discriminate general conditions of physical and sociocultural reality. That is, not only the individualising features that render objects such as fingers or rocks unique, but also the laws of nature and the human condition that produce the known modes of existence can be imaginatively omitted to varying degrees. On that account, the broad frameworks themselves, including aspects of the standards of evaluation, may continue to develop reciprocally with the scenarios, both imaginatively liberated from various existential preconditions. It is important to note, however, that this type of liberation does not amount to a total detachment from reality – neither into transcendent existences nor into unintelligible chaos. Rather, the result is cognitive plasticity and an ever-branching development of abstract thought.

Moreover, this mental flexibility does not lead to a continuous overthrowing of established logical or artistic procedures, but to a holistic bifurcation of frameworks. For example, non-Euclidean geometry does not overturn the preceding Euclidean framework. The former introduces new affordances, structures, and objects that become conceivable and meaningful only in a new context in which certain premises – as in conditions for possibilities – of the prior framework have been imaginatively modified. Furthermore, in this particular instance, the path of derivation from the concrete to the abstract is clearly distinguishable. Evidently, Euclidean geometry is derived from the specific ways in which human beings experience spatial dimensions. And further developments into non-Euclidean geometries retain certain elements of the preceding frameworks in their vocabulary and in the constituent parts. Units and terms, such as "lines" and "directions," are still employed in the formation of novel scenarios of non-Euclidean geometry, unfit for – and perhaps unrealisable in – the prior sensory and theoretical contexts.

Somewhat similar forms of development commonly occur in various areas of fine art as well. For example, the evolution of bebop jazz into fusion jazz did not discard typical jazz instrumentation nor abandon general musical notation. Yet, appreciation of jazz fusion requires changes in the cognitive systems of interpretation and evaluation. The exact type of the necessary changes may be difficult to identify, verbalise, and communicate, because in fine art a considerable proportion of the alterations need to take place below conscious awareness. Hence, it is a challenging task to teach oneself – or others

81 Notably, the structure of complex numbers includes a component that is explicitly called "the imaginary part."

– to enjoy and engage with novel artistic frameworks that introduce cognitively unusual approaches to subject matters and unfamiliar types of imaginative scenarios. However, the potential benefits of such a difficult, but not impossible, undertaking are noted by Dewey: "escape from the familiar environment to a foreign one is often a means of enlarging subsequent experience, because the excursions of art create new sensitivities that in time absorb what was alien and naturalise it within direct experience."[82] Or, as Gregory Minissale phrases the issue, "[s]uch artworks eventually condition us to have appetites for even more bizarre, subtle and improbable combinations of partial objects, a new vocabulary that stutters on the edge of giving form to a new outline of practice."[83] In short, it is oftentimes precisely the more exotic kinds of scenarios and the accompanying associative implications that advance artistic, and mathematical, developments and the personal growth of an individual.

Naturally, an adjustment in – or a removal of – familiar contexts of reference affects the emergence of vagueness in experience. In such instances, the meanings assigned to objects may be indistinct because the most suitable composition of a framework for interpretation and evaluation may be unsettled for the time being. That is, the felt vagueness may concern the foundational structures – as laws or norms – that, first, permit the entertained scenarios and objects to exist, even if only in imagination. For example, factual limitations of animal physiology have to be ignored in the case of fire-breathing dragons of fantasy literature and concrete physical proportions have to be exceeded in the case of higher dimensional mathematical objects. Second, vagueness may be felt in the less-constraining preconditions that render it possible for the scenarios to incorporate interesting processes and outcomes. That is, contemplation of novel fantastical beasts or new abstract mathematical entities usually necessitates accompanying accounts of the imaginative environment that suits them, not only as allowing their existence, but, also, as contributing to their further development. For example, dragons are more at home in the world of magic rather than in the world of modern weapons. And n-dimensional objects call for higher dimensional geometrical spaces in which their properties can be studied and developed. In short, in addition to details of a particular imaginative existence, vagueness may also concern the suitability of an environmental framework – or a "space" – for novel existences in general.

Admittedly, this added layer of indefiniteness renders the alteration of tension and release more complicated and cognitively burdensome – perhaps daunting for the unaccustomed, but possibly enriching for the attuned. For the latter, the enhancement incorporates more than a possibility for a restoration of lost balances. It denotes the potential for a discovery of wholly new ways to achieve states of equilibrium – novel not only as new links in a chain of particular occurrences, but possibly also as new links in the chain of contextual frameworks. As mentioned above, the two are integrally related; the removal of vagueness regarding a particular object may lead to a questioning of the suitability of the current contextual environment. In both fine art and mathematics, surprising features of new objects can evoke vague premonitions regarding more suitable conceptual environments of meaning and evaluation for them. And, also, the other way around: removal of vagueness with regard to an emerging conceptual framework can come to imply a potential for unprecedented objects and scenarios that presumably exceed in properties, and in meaning, the ones that originally prompted the development of the framework in question.

5 Conclusion

Overall, in fine art and in mathematics the imaginatively constructed extensions of possibilities – and the abstract frameworks, scenarios, and objects constituted upon them – comprise ever-evolving multilevel cognitive wholes. The continuous steps of advancement contribute to the longevity and the layers of signification to the depth of the experienced aesthetic dynamic. Vagueness can be viewed as an impetus

82 Dewey, *LW10*, 287.
83 Minissale, *The Psychology of Contemporary Art*, 62.

for both and as an enhancement in the emergence of aesthetic quality of experience. That is, not only does vagueness motivate the type of investigation and engagement that the advancement from known steps and layers towards the unknown commonly benefit from, but it, also, potentially increases the aesthetic quality generated during such efforts. On that account, vagueness is – to a degree – instrumental itself for the type of instrumentality that Dewey deems necessary for rendering experiences of objects and scenarios aesthetic in the full. In Dewey's words, "[t]his occurs when activity is productive of an object that affords continuously renewed delight. This condition requires that the object be, with its successive consequences, indefinitely instrumental to new satisfying events. For otherwise the object is quickly exhausted and satiety sets in."[84] This statement underlines the main argument of this article, which holds that even though vagueness is often deemed somewhat of an opposite to consummation, it is through detection and dispelling of it that consummations are rendered more profound and persistent. This means that the aesthetic quality becomes exceptionally emphatic in experience, as it often does during an attuned and inspired engagement with the imaginative pursuits of fine art and mathematics.

The significance of the above investigation ensues from the clarification of Dewey's thinking and argumentation. His call for the "enormity" of the difference does, indeed, apply to most common types of engagements with fine art and mathematics. For example, calculating your taxes and listening to the latest pop song are markedly different experiences. However, Dewey also notes the cognitive basis for an unity between artistic and intellectual engagements in the following point that he makes about rational thought: "[T]he experience itself has a satisfying emotional quality because it possesses internal integration and fulfillment reached through ordered and organised movement. This artistic structure may be immediately felt. In so far, it is esthetic."[85] A thorough understanding of this procedural similarity, for which Dewey argues for, requires further exploration of more idiosyncratic cases. Hence, in this article, I explore the types of intensive and imaginatively oriented engagements with artistic and mathematical matters that highlight the cognitive flexibility necessary for a procedural overlap in the degree of considerable experiential alignment. Such instances may be less common, but they, nonetheless, can potentially reduce the experiential difference between the artistic and the intellectual from the "enormous" to the rather "minor."

The broad goal of this article is to enhance the understanding of the role that human experience possesses in the processes of perceiving the world and comprehending the possibilities the world offers. In the modern epoch, human perception of environments and affordances commonly extends from the immediate sensory surroundings to the hypothetical and abstract entertained in imagination. And in the present framework of Dewey's philosophical pragmatism, this extension occurs as a natural continuity, which comprises a general axis of advancement for all human activity and pursuance, that is in the evolution of the perceivers and perceptions alike.

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84 Dewey, *LW1*, 273–4.

85 Dewey, *LW10*, 45.

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