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

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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.

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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.

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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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88 Ibid., 19.

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