

Gioia Laura Iannilli

Dewey on the threshold of aesthetics: the critique of the reflex arc concept

Abstract

This essay aims at providing a brief analysis of John Dewey's 1896 essay The reflex arc concept in psychology by identifying in it "proto-aesthetic" elements that will be thematized in an explicitly aesthetic sense only, almost forty years later, in Art as experience. This latter can be indeed considered both as a hapax and an apex of a path in which Dewey progressively focuses on matters that can be deemed properly aesthetic and of which The reflex arc concept in psychology can be seen as one of the first steps. Our analysis will attempt at showing this connection by spanning the reflex arc idea, amended by Dewey in this essay, and that of "an" experience as a proper aesthetic experience through the fundamental concept of coordination.

Keywords

Reflex arc; organic circuit; coordination; fully rounded out experience; "an" experience

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gioialaura.iannilli@gmail.com

This paper is part of a wider research carried out in Iannilli (2020a), where I proposed a reconstruction of Dewey's theory of perception from a specifically aesthetic standpoint by analyzing a series of contributions he wrote before *Art as experience* and then by relating their crucial points to this latter. In the course of that research the importance of *The reflex arc concept in psychology* has emerged in many respects. Due to the exemplarity and the relevance of this text in the framework of the path that I have traced, the outcome of that analysis is now published here separately from the wider research I carried out. My aim is to open a discussion on some of the topics that have been considered more organically through a more fine-grained and gradual reconstruction in that context (including and relating affectivity, qualitiveness, the overcoming of the means-ends dichotomy, the relationship between appearing and appearance etc.). My hope is that the sense of the analysis that I propose can clearly emerge despite the fact that, in this context, some connections have been omitted for the sake of the present argument.

1. *Between a critique of psychology and aesthetics*

What distinguishes Dewey's stance in the field of aesthetic reflection are his continuism or anti-dualism and his anti-essentialism. The famous 1896 essay *The reflex arc concept in psychology* confirms this fundamental approach. It does so, however, in a not yet properly aesthetic sense, since it specifically belongs to the debate that strongly emerged in the 19th century around the theory of the reflex arc. As Fausto Caruana and Marco Viola nicely put it:

The reflex arc is a concept that originated in physiology, and describes the structure that governs much of the reflexes: an afferent component, which carries the sensory impulse from the periphery to the central nervous system, and an efferent component, which sends the motor impulse to the muscles. As far as the reflexes are concerned, this arc does not involve the higher centers [*scil.* the subject's will] making the sensorimotor sequence a linear path made up of distinct sensory and motor elements. (Caruana and Viola 2012: 41-2) [my translation]

Dewey is critical of this concept, in particular as far as its application in the field of psychology is concerned. Dewey's association of the reflex arc with the state of contemporary psychology derives from the observation of an almost trivial fact. He finds both a remarkable advance in the research carried out in that field and the need for the identification of a

unifying and regulating principle within it. According to Dewey, it is precisely the concept of the reflex arc, more so than others, that has come close to satisfying this need. However, this concept – as Dewey immediately clarifies – does nothing but reiterate on the one hand the traditional dualism between sensation and idea in the dualism between peripheral and central structures and functions, and on the other hand the dualism between body and soul in the dualism between stimulus and response. This reiteration is due to the fact that this concept mechanically accepts as ontologically distinguished and separated elements, and not as functionally distinct but organically coordinated parts, the sensory stimulus, the central activity (or idea) and the motor discharge (or the actual act). Dewey hence suggests that the reflex arc concept needs amendment, or that it should at least be reconsidered in light of the more complex reality that it actually designates.

[...] the reflex arc is not a comprehensive, or organic unity, but a patchwork of disjointed parts, a mechanical conjunction of unallied processes. What is needed is that the principle underlying the idea of the reflex arc as the fundamental psychical unity shall react into and determine the values of its constitutive factors. More specifically, what is wanted is that sensory stimulus, central connections and motor responses shall be viewed, not as separate and complete entities in themselves, but as divisions of labor, functioning factors, within the single concrete whole, now designated the reflex arc. (Dewey 1896: 385)

Despite the fact that it is the physiological-biological and psychological aspects that are taken into consideration by Dewey more directly in this essay, my brief analysis is aimed at showing how, particularly in the last few pages of *The reflex arc concept in psychology* – but also more generally throughout the text, less explicitly – those same aspects that are specific to Dewey's aesthetics appear in an inchoate form. Also, the elements that in the following analysis will be emphasized correspond to those same nuclei that elsewhere (Iannilli 2020b) have been identified in the sixth chapter of *Art as experience*, "Substance and form", as consistent with and corroborating the aesthetic implications of a contemporary phenomenon such as Experience Design. The set of these elements will be presented again schematically in the conclusion.

2. *The essay on the reflex arc concept*

Dewey's essay falls within a critical framework traced by William James a few years earlier (see James 1881; 1890). By retrieving the well-known example already given by James of the interaction between a child and a candle, Dewey introduces a key concept, that of coordination. The entire contribution will essentially revolve around this concept. The child-candle instance is useful to Dewey because it represents well the fragmentation that the reflex arc idea as such implies. A first phase (a first arc) in which the child is attracted by the light of the candle flame and therefore reaches out her/his arm to touch it, would be followed by another phase (a second arc) in which the child withdraws her/his arm because the flame burns her/him.

Dewey's essay calls into question several aspects, even technical and detailed ones. It is not the aim of this analysis to engage in an accurate and articulated comparison with important studies that have already taken them into account from a specifically aesthetic point of view (see Alexander 1987: 41, 73, 123, 128 ff., 202, 208; Dreon 2007: 167 ff.; Matteucci 2019: 97, 165, 173). The purpose of the present analysis is only to make clearer and hopefully more effective the focus on the aesthetic aspects that appear there in a germinal form, that is, the focus on the aspects that can be defined as "proto-aesthetic" ones. Consequently, I will circumscribe the discussion by retrieving and following the articulation into three phases of the experience described in Dewey's text: a) that which coincides with the first arc describing the relationship between stimulus and response in which seeing and reaching are involved; b) that which consists in the second arc describing the relationship between stimulus and response in which burning and retraction are involved; c) finally, the phase in which both stimulus and response are uncertain. I shall suggest that this latter is the phase that seems to indicate the centrality of the properly aesthetic component of experience.

Dewey, for his part, starts by describing the first two phases. The first one is illustrated in the following terms:

Upon analysis, we find that we begin not with a sensory stimulus, but with a sensori-motor coördination, the optical-ocular, and that in a certain sense it is the movement which is primary, and the sensation which is secondary, the movement of the body, head and eye muscles determining the quality of what is experienced. In other words, the real beginning is with the act of seeing; it is looking, and not a sensation of light. The sensory quale gives the value of the act, just as the movement furnishes its mechanism and control, but both sensation and movement lie inside, not outside the act. [...] More specifically, the ability of the hand to do its

work will depend, either directly or indirectly, upon its control, as well as its stimulation, by the act of vision. If the sight did not inhibit as well as excite the reaching, the latter would be purely indeterminate, it would be for anything or nothing, not for the particular object seen. The reaching, in turn, must both stimulate and control the seeing, the eye must be kept upon the candle if the arm is to do its work; let it wander and the arm takes up another task. In other words, we have now enlarged and transformed coordination; the act is seeing no less than before, but it is now seeing-for-reaching purposes. (Dewey 1896: 358-9)

The second one, that is, the one in which the child gets burned and s/he retracts her/his arm, as follows:

It is hardly necessary to point out again that this is also a sensori-motor coordination and not a mere sensation. It is worth while, however, to note especially the fact that it is simply the completion, or fulfillment, of the previous eye-arm-hand coordination and not an entirely new occurrence. Only because the heat-pain quale enters into the same circuit of experience with the optical-ocular and muscular quales, does the child learn from the experience and get the ability to avoid the experience in the future. More technically stated, the so-called response is not merely *to* the stimulus; it is *into* it. The burn is the original seeing, the original optical-ocular experience enlarged and transformed in its value. It is no longer mere seeing; it is seeing-of-a-light-that-means-pain-when-contact-occurs. The ordinary reflex arc theory proceeds upon the more or less tacit assumption that the outcome of the response is a totally new experience [...]. The fact is that the sole meaning of the intervening movement is to maintain, reinforce or transform (as the case may be) the original quale; that we do not have the replacing of one sort of experience by another, but the development (or as it seems convenient to term it) the mediation of an experience. (Dewey 1896: 359-60)

What can be inferred from these two passages?

First, that, when experiencing, there is a whole body that is involved, immersed in a situation, and at most one can speak of a difference in emphasis between the parts involved in an act, but not of a hierarchy among them. Furthermore, the experience can be indeterminate, or focused. In the latter case, coordination is amplified and transformed, it is enriched. Action is understood in the sense of a sensori-motor circuit. Within this latter, coordination indicates that there is no ontological difference but a kind of teleological discernibility – drawn descriptively as a function – between the parts involved, which, however, is reabsorbed within the sensori-motor circuit itself. It is therefore not difficult to recognize here, or in what can be typically defined as a stimulus-response nexus, the same perception-expression nexus highlighted in the chapter on substance and form of *Art as*

experience through the problem of the (seeming) hiatus between the aesthetic and the artistic, developed through a critique of both the theory of sense data and associationism.

Were it true that only qualities coming to us through sense-organs in isolation are directly experienced, then, of course, all relational material would be super added by an association that is extraneous — or according to some theorists, by a “synthetic” action of thought. [...] On this basis there is always a gap between the esthetic and the artistic. They are of two different kinds. (Dewey 1934: 125).

This remark is not of little importance exactly on the basis of the observation, made by Dewey at the beginning of *Art as experience*, concerning the general identification in the English language of the term “artistic” with that which is creative (i.e., expressive), and of the term “aesthetic” with that which is passive (i.e., perceptual).

We have no word in the English language that unambiguously includes what is signified by the two words “artistic” and “esthetic”. Since “artistic” refers primarily to the act of production and “esthetic” to that of perception and enjoyment, the absence of a term designating the two processes taken together is unfortunate. Sometimes, the effect is to separate the two from each other, to regard art as something superimposed upon esthetic material, or, upon the other side, to an assumption that, since art is a process of creation, perception and enjoyment of it have nothing in common with the creative act. In any case, there is a certain verbal awkwardness in that we are compelled sometimes to use the term “esthetic” to cover the entire field and sometimes to limit it to the receiving perceptual aspect of the whole operation. (Dewey 1934: 53)

Let's now return more specifically to the question of coordination within the sensori-motor circuit. It is no coincidence that Dewey will place greater emphasis on the gap between description or thematization and operativity of the experience implied by it, for example, when later in the text he will speak of the so-called “psychologist's fallacy” (Dewey 1896: 367). According to this fallacy, from a descriptive, or analytic-thematic perspective, an expression would be a sign of something else whereas, for Dewey, in the first-hand experience, in the operative immersion (i.e., in experience *qua* experience), the nexus between perception (as something that is not merely passive and instantaneous) and expression (as something that is not merely subjective and denotative) cannot be undone.

What this argument also tells us is that the parts involved within the coordination mutually and dynamically take on significance and value depending on the role they play in maintaining, reconstituting or transforming coordination itself, should it have been altered in any way. In the sensori-motor circuit, moreover, what follows the response is not an entirely new experience, as the ordinary reflex arc theory assumes. Instead, it is a development, or mediation, of an experience. This is because the reflex arc theory conceives of the response only as a response *to* a stimulus, whereas the integrated view of the process suggested by Dewey conceives of the response as *internal to, in*, the stimulus, and vice versa. To use a terminology that recurs elsewhere, in other fields (i.e., design and economic theory), one could say that it is not a matter of invention (i.e., *ex novo*) but of innovation (i.e., *in re*) that is, of the ability to manage something already existing that may prove problematic. This remark is directly linked with the idea that experience implies variable levels of problem-setting and problem-solving (and in this regard see again Iannilli 2020b: 22, 56) that are not merely, and, so to speak, externally instrumental but are intrinsically gratifying, i.e., internal to experience in its own course.

Dewey then refers briefly to a somewhat similar example, i.e., the motor reaction following the perception of a loud and sudden sound. The scheme suggested by the reflex arc theory (specifically in the version advocated by James Mark Baldwin) would imply the sequence perceived sound-registered sound-escape. Instead, Dewey argues that this interpretation is partial because, first of all, it does not take into account the state that precedes the perception of the sound.

Here Dewey seems to shed an even brighter light on a major issue:

Now, in the first place, such an analysis is incomplete; it ignores the status prior to hearing the sound. Of course, if this status is irrelevant to what happens afterwards, such ignoring is quite legitimate. But is it irrelevant either to *the quantity or the quality* of the stimulus? (Dewey 1896: 361)

What follows from this excerpt is that the traditional analysis does not take into account the type of situation in which the action takes place, i.e., the context in which the experientor is operatively situated, or immersed. Taking this into account would instead imply recognizing the value of the specificity, or the irreducible qualitiveness of each experience, to which, therefore – to answer Dewey’s rhetorical question – qual-

ity is clearly not irrelevant. Not taking this into account would imply a conception of experience as mainly measurable, that is, a mainly quantitative conception, since it would reduce the experiential process to a series of mechanical reactions¹. Indeed, according to Dewey, what precedes the “stimulus” is already, in itself, an integral act, a sensori-motor coordination. Thus, the stimulus emerges from this coordination, which is its matrix, and therefore it can never be something that happens absolutely *ex abrupto* and externally – i.e., a nervous shock, a physical event that supervenes. It rather consists in a *shift of focus* (i.e., a transfer, a transaction of value) in the tensions involved in the preceding act and that are then redistributed (in a coordinated, if not even co-dependent, way) (Dewey 1896: 361-3).

Just as the “response” is necessary to constitute the stimulus, to determine it as sound and as this kind of sound [...] so the sound experience must persist as a value in the running, to keep it up, to control it. (Dewey 1896: 363)

What is at stake, then, are processes of mutual shaping that occur in the interactions between organism and environment. It is a matter of energies that are “absorbed” (see for instance Dewey 1934: 128, 163) or mediated, and re-issued into the world with a renewed, “transferred” (see, for instance, Dewey 1934: 123), but above all, conscious value.

What we have is a *circuit*, not an arc or a broken segment of a circle. This circle is more truly termed *organic* than reflex, because the motor response determines the stimulus, just as truly as sensory stimulus determines movement. [emphasis added] (Dewey 1896: 363)

Here a further proto-aesthetically relevant point emerges. What Dewey is talking about are experiences that are self-enclosed, when coordinated. These are – to use Dewey’s words – “fully rounded out” (see Dewey 1934: 114), that is, “consummatory” experiences that take shape through dynamic processes – and that are indeed *organic*. In *Art as experience* they

¹ In this framework, the overcoming of the means-end dichotomy in Dewey’s theory is indeed a crucial question as far as a comparison between coordination and a consummatory qualitative experience is concerned. As anticipated, a more detailed analysis has been carried out in Iannilli (2020a), by taking into consideration a wider selection of texts from Dewey’s literature. Retrieving that, more extensive, reconstruction would mean exceeding the aims of this paper. For a more direct study of the overcoming of the means-ends dichotomy we refer the reader to Joas (2000: 103-23) and Santarelli (2019 see in particular chap. 4), although their focus is not specifically aesthetic.

are famously described in terms of “an” experience. In other words, what is being described is an aesthetic experience. Dewey, as previously noted, does not carry out a proper analysis of aesthetic experience in this essay, but his insistence on the idea of a “roundness” of experience in which there is some kind of coordination between *flexible* functions and not *fixed* entities (Dewey 1896: 364) seems to point exactly in that direction.

In order to support this claim, we can refer to an element to which Dewey then devotes in more detail – and not by chance, as if it were one of the next things to be developed in his own theory, so to speak – the concluding pages of the essay: experience meant as a conscious experience. And consciousness, in *Art as experience* (see in particular chap. 3, “Having an experience”), is described as one of the fundamental characters of an experience that can be properly called aesthetic. Dewey then returns to the example of the child and the candle, while making it more complex.

[Now] take a child who, upon reaching for bright light (that is, exercising the seeing-reaching coordination) has sometimes had a delightful exercise, sometimes found something good to eat and sometimes burned himself. *Now the response is not only uncertain, but the stimulus is equally uncertain; one is uncertain only in so far as the other is.* The real problem may be equally well stated as either to discover the right stimulus, to constitute the stimulus [the establishing of the problem], or to discover, to constitute the response [the solution of this problem]. The question of whether to reach or to abstain from reaching is the question what sort of a bright light have we here? Is it the one which means playing with one’s hands, eating milk, or burning one’s fingers? The stimulus must be constituted for the response to occur. Now it is at precisely this juncture and because of it that the distinction of sensation as stimulus and motion as response arises. [...] Generalized, sensation as stimulus, is always that phase of activity requiring to be defined in order that a coordination may be completed. What the sensation will be in particular at a given time, therefore, will depend entirely upon the way in which an activity is being used. It has no fixed quality of its own. The search for the stimulus is the search for the exact conditions of action; that is for the state of things which decides how a beginning coordination should be completed. [...] There is nothing in itself which may be labelled response. That one certain set of sensory quales should be marked off by themselves as “motion” and put in antithesis to such sensory quales as those color, sound and contact, as legitimate claimants to the title of sensation, is wholly inexplicable unless we keep the difference of function in view. (Dewey 1896: 368-9)

This third passage, in its exemplarity, not only recapitulates previously outlined elements, but adds interesting elements to those already identified earlier by Dewey when the analysis concerned the seeing-reaching phase and the burning-retracting phase.

Dewey speaks of an uncertain and indeterminate situation on both the perceptual and expressive levels. This situation, he says, must be coordinated, or stabilized/normalized, according to the conditions in which one is operating, with respect to and respecting the trend lines connoting the situation in which individual and environment are equally co-involved in processes that Dewey would define as “transactional”. This attentive attitude, so to speak, seems to recall an idea of competence as the ability of “keeping things together”, that is, to skillfully coordinate a previous situation with a current one in a prospective way, that is, oriented towards the future. It is an ability to inhabit, to dwell in a particular space that is co-constituted in the interaction between organism and environment. This phase could be read in terms of the passage from a phase of openness and potentiality of experience in a generic sense, to a moment of particular closure (though not in the detrimental sense of the term) of this genericness in “an” experience in which all the nexuses are reconstituted.

[...] and just the moment we need to know about our movements to get an adequate report, just that moment, motion miraculously (from the ordinary standpoint) ceases to be motion and becomes “muscular sensation”. On the other hand, take the change in values of experience, the transformation of sensory qualities. *Whether this change will or will not be interpreted as movement, whether or not any consciousness of movement will arise, will depend upon whether this change is satisfactory, whether or not it is regarded as a harmonious development of a coördination, or whether the change is regarded as simply a means in solving a problem, an instrument in reaching a more satisfactory coördination* [emphases added]. (Dewey 1896: 369)

What Dewey is describing is an enriched kind of experience, which is positively transformed to the extent that it is satisfying, gratifying, and engenders a harmonious sense of development and progression that is internal to the experience. Its fulfillment is not felt² as a mere mechanical

² As far as the affective features of experience are concerned, it is useful to refer the reader to a series of texts that have stressed the link between Dewey’s 1894-95 essays on emotion and the 1896 essay on the reflex arc concept while sometimes pointing at his later formulation of a proper aesthetic theory. Among the most relevant ones see: Garrison (2003), Szpunar (2010), Dreon (2012), Baggio (2017).

resolution to a problem one has been faced with and that has been overcome. It is a salient moment that Dewey describes as special precisely because it is not generic, but results (albeit contingently, because it is not fixed, but flexible) from a particular processuality (or genesis; see Dewey 1896: 370) and a system of particular ends or functions.

As mentioned, however, Dewey's interests are not yet systematically directed toward aesthetic experience in the essay on the reflex arc, and this is evidenced by the use of the term "special". When Dewey will get to the direct thematization of the aesthetic, that is, in *Art as experience*, he will note how, in aesthetic experience, when a properly aesthetic competence is exercised, there is no subordination to a special (or fixed) end, because instead the implicated end is inclusive (flexible or coordinating, we might say) and aimed at the enrichment and individualization of the experience in progress, in situation, here and now.

In esthetic experience [...] *the material of the past neither fills attention, as in recollection, nor is subordinated to a special purpose.* There is indeed a restriction imposed upon what comes. But it is that of contribution to the immediate matter of an experience now had. The material is not employed as a bridge to some further experience, but as an increase and individualization of present experience. The scope of a work of art is measured by the number and variety of elements coming from past experiences that are *organically absorbed* into the perception had here and now [emphases added]. (Dewey 1934: 128)

Probably, on the other hand, in 1896 Dewey was still moving cautiously on a ground that was not yet properly "his own", or perhaps he was only intuitively exploring it, without having yet fully established a proper aesthetic vocabulary in this regard.

The conscious stimulus or sensation, and the conscious response or motion, have a special genesis or motivation, and a special end or function. The reflex arc theory, by neglecting, by abstracting from this genesis and this function gives us one disjointed part of a process as if it were the whole. It gives us literally an arc, instead of the circuit; and not giving us the circuit of which it is an arc does not enable us to place, to center, the arc. This arc, again, falls apart into two separate existences having to be either mechanically or externally adjusted to each other. (Dewey 1896: 370)

Dewey's aesthetic "good intentions", so to speak, appear in the lines that were just quoted. There, the reflex arc theory is further criticized insofar as it generalizes a process that is intrinsically particular, as comprehensive and complex as that which characterizes a "rounded out" experience,

with its own “centered” and “localizable” identity. It furthermore reduces its integral roundness to a couple of segments that at most are mechanically juxtaposed from the outside.

It seems almost as if Dewey was then somehow aware of the fact that in order to account for the complexity of certain experiences a not yet existing organic theory had to be developed. This aspect emerges in the conclusions of the essay, which in their prospectiveness leave to another occasion the further elaboration of certain questions, some of which (in particular the latter two) seem to point in the direction of a specifically aesthetic theory. They also refer to the application of the concept at issue, suggesting – it seems – that the test bed of any theory can only be found in practice.

The point of this story is in its application; but the application of it to the question of the nature of the psychical evolution, to the distinction between sensational and rational consciousness, and the nature of judgment must be deferred to a more favorable opportunity. (Dewey 1896: 370)

3. *Conclusion*

We can therefore summarize the “proto-aesthetic” elements of Dewey’s perspective as they appeared in the 1896 essay as follows:

- experience is always situated, of an immersive type, and involves the interaction and the mutual shaping between organism and environment;
- experience can be generic or focused; in the latter case, some kind of attentivity and salience come into play and therefore the experience is configured as “an” experience; however, the shift between genericness and focus, or “centeredness”, of experience is a processual, non-binary matter;
- the perception-expression nexus can be understood as the stimulus-response nexus and vice versa;
- in experience, a distinction must be made between a descriptive, thematic and analytic level, and an operative level;
- also for the analysis of the reflex arc, the difference between invention and innovation becomes important;
- experiential dynamics subsist as dynamics of problem setting and problem solving, but in a particular sense, that is, they subsist as felt as useful and gratifying and not as mechanical and merely instrumental;

- the character of openness (or potentiality) and particularity of experience is also significant in the sense of an irreducibility of the quality of experience to measurable and therefore generalizable quantities;

- the fundamental principle of coordination should be understood as the principle of “keeping things together”, or of the competence in inhabiting, or dwelling in a space in the best possible way; this competence also has to do with the temporal dimension of experience;

- the opposition, outlined by Dewey, between the idea of a “reflex arc” and that of an “organic circuit” is consistent with the idea of aesthetic experience understood as “an” experience, or a “fully rounded out” experience, as the form of an experience that “works”.

According to this line of interpretation, then, *Art as Experience* is not only undoubtedly a *hapax* in the prolific production that characterized John Dewey’s career – that is, a single occurrence of a work specifically committed to the elaboration of an aesthetic theory. It is also an *apex* of a path in which pivotal elements already observable in the psychological studies carried out by Dewey at the beginning of his career have gradually taken on a connotation, or rather have found an excellent exemplification, in a properly aesthetic sense.

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