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Movement for Movement’s Sake? On the Relationship Between Kinaesthesia and Aesthetics

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Abstract

Movement and, more particularly, kinesthesia as a modality and as a metaphor has become of interest at the intersection of phenomenology and cognitive science. In this paper I wish to combine three historically related strands, aisthêsis, kinesthesis and aesthetics, to advance an argument concerning the aesthetic value of certain somatic sensations. Firstly, by capitalizing on a recent regard for somatic or inner bodily senses, including kinesthesia, proprioception and the vestibular system by drawing lines of historical continuity from earlier philosophical investigations on bodily background experience, initially from aisthêsis, Aristotle’s concept of the sensory faculty. Secondly, concepts of the sensate body are advanced through discoveries in the nervous system and related discussions of the ‘inner’ senses such as Charles Bell’s ‘muscle sense’ (1826), and what Charles Sherrington later termed ‘proprioception’ (1906). Thirdly, we consider the possibility of aesthetic status for those inner senses, where recently aesthetic arguments by Montero (2006) and Cole and Montero (2007) seek to determine aesthetic criteria for proprioception, and similarly in dance theory the aesthetic status of kinesthesia has been questioned (e.g. Foster 2011). Finally we consider whether previous exposure to a ‘grammar’ of movement is a factor in determining the relative aesthetic value.

Introduction

Increased attention has been given to movement and, more significantly, the subjectively-felt qualitative dynamic of movement, kinesthesia, within phenomenologically-influenced studies in cognitive science and embodied cognition. Recently work on the philosophy of embodied gesture and movement in the performing arts has begun to shift the focus away from movement per se, and to consider the effects of gesture and movement in terms of performance (e.g. Shusterman 2009; 2011) and the relationship between gesture and agency (e.g. Noland 2009). Considering the aesthetics of movement most commonly entails a need for interpretation by a somewhat static audience. In this case there remain few treatments of
the felt qualities of movement, utilizing the so-called ‘muscle sense,’ the ‘interoceptive’ or somatic senses that include kinaesthesia, proprioception and the vestibular or balance system. Research on dance in particular, or the performing arts in general, deals only sporadically with the particularity of these somatic sensations, compounded by non-standardized or confused terminology dealing with those modalities that pertain to movement. The first part of this paper clarifies the terminology by returning to a historically significant treatment of bodily sensations, aisthēsis, a generalized sense faculty within Aristotle. From this generalized aisthēsis are derived ‘coanesthesia’ in the eighteenth century, the more particular ‘muscle sense’ (Muskelsinn) in the nineteenth century, and ‘proprio-ception’ and ‘kinesthesia’ in the early twentieth. Throughout this unfolding story the emphasis is placed on how aisthēsis binds sensation into aesthetic evaluations. In proceeding from aisthēsis, via kinesthesis, to aesthetics in following sections, I consider how we might sequester the aesthetic value of movement, and by extension, isolate and examine the particularity of movement for movement’s sake.

Aesthetic accounts usually center upon visual experience, rarely considering “other modes of experience and forms of attention” such as tactility, as Johnson (2002:61) observes. Yet the etymological and historical derivation of ‘aesthetics’ reveals a different story, able to be defined as dealing with physical, material things perceptible by the senses. ‘Aesthetics’ derives etymologically from stem aesthe, ‘feel, apprehend by the senses’ (OED, 1989), the basis for aisthēsis as the putative sensory faculty for example in Aristotle’s De Anima (c350 BCE) and De Sensu et Sensibilibus (c350 BCE), although we note some antecedents. Accordingly, the first section explores the utility of re-examining aisthēsis within these proliferating and specialized neurophysiological terms such as kinaesthesia (from Greek, kinein to move, and aethēsis as sensation), somaesthesia (from Greek somatos, body, and aisthēsis, sensation), proprioception (Latin, proprius to own, and percipere, to perceive) and coenesthesia (the feeling of inhabiting the body). This paper combines the related strands, aisthēsis, kinesthesia and aesthetics, through the following structure. In the first section ‘From aisthēsis to kinesthesis’ I investigate how movement and, more particularly, kinesthesia as a modality and as a metaphor has become of interest at the intersection of phenomenology and cognitive science. Situating the relationship between aisthēsis that collectively constitutes the bodily or somatic senses, and kinesthesia as the sense of movement, I follow David Morris (2010) in demonstrating how this phenomenological interest has met with empirical validation through a renewed interest in the dynamics of movement within cognitive science (e.g. Maxine Sheets-Johnstone 1999, 2010; Berthoz 2000). The second section tracks how aisthēsis develops into the more medicalized language of a distinct ‘muscle sense’ from Charles Bell, and the emergence of the concepts of ‘kinaesthesia’ from Henry Charlton Bastian, and ‘proprio-ception’ from Charles Sherrington. The third section concentrates on neurophysiological discoveries of movement.
and the sensory-motor around this period. The fourth section ‘kinesthesia to aesthetics’ threads through these historical treatments of movement into recent arguments made by Montero (2006a) and Cole and Montero (2007) about the aesthetic value of proprioception, in order to consider whether kinaesthesia is equally deserving of aesthetic value, both for the embodied subject and for outward observers. However, my argument will be achieved through different means.

1. From *Aisthèsis* to Kinesthetic

After admitting that a work of art is produced for apprehension by the senses, and that fundamentally the purpose of such art is to “arouse feelings” in us, in his 1835 lectures on aesthetics Hegel rather dismissively pronounced: “art is related only to the two theoretical senses of sight and hearing, while smell, taste and touch remain excluded from the enjoyment of art” (1998:36). Conversely, Herder had discoursed on the virtues of touch in relation to vision in his 1776 appreciation of sculpture Das Plastik. Touch amongst the senses, as also sculpture amongst the fine arts, traditionally enjoyed a lowly position in their respective hierarchies. Reading against the consensus voiced later by Hegel on sensory hierarchies, Herder wished to reclaim the significance of touch. If sight [*Gesicht*] reveals shapes, he argued, touch [*Gefühl*] revealed bodies, so cementing touch as necessary in revealing the form of things rather than mere appearance (1776/2002:35). In a rather artful analogy to illustrate this distinction, Herder considers that if the student of art were to encounter something doubtful or contradictory in their interpretation of a piece then they should make use of “the fingers of [their] inner sense [*den Finger seines inner Sinnes*] in order to discover that which [they] could not otherwise identify: the shape of the spirit within the form [*Gestalt des Geistes in deiser Form*]” (1776/2002:90). Of course, Herder’s project of a sustained reexamination of tactility within aesthetics is not trivial. But his invitation to discern the immaterial spirit [*Geist*] of a material work by using the metaphorical ‘fingers’ of a putative ‘inner sense’ invokes a striking tactile metaphor, a virtual probing, an imaginative grasping or palpating of an aesthetic work the better to discern its ‘true’ or intended form. In this, Herder clearly shares with Hegel an imperative to discover the overriding definitive meaning or spirit of an artwork.

Moreover, while the larger project of the revaluation of tactility within aesthetic encounters is ongoing, not only in sculptural terms but also in practices of looking at pictures (see e.g. Merleau-Ponty 1969, Lopes 2002), film (e.g. Barker 2009), or dance (Foster 2011, Noland 2008), I focus upon the long history of the more abstracted tactility indicated by Herder’s ‘inner sense.’ This is premised not on the facticity of ownership of an individual body wherein distinct sensations of sight, touch, taste and so on supposedly arise, but instead on
the particularities of potentially indistinct yet commonly recognizable bodily or somatic sensing as such, akin to Herder’s inner Sinnes. An inwardly-directed form of touching thereby reveals the body’s reflexive awareness of its own capacities of sensing and feeling, understood within subsequent contexts in terms of ‘interoception,’ ‘somesthesia,’ ‘coanasthesia,’ and so on. This inner sense is subdivided into ‘proprioception’ and ‘kinaesthesia’ in the twentieth century. But something akin to Herder’s inner senses have been a genuine neuroanatomical area of inquiry in some form since Plato’s Theaetetus and Aristotle’s De Anima. Let us now examine how the common root aisthēsis relates to inner touch.

Herder’s conceptualization of the inner senses as a kind of metaphorical or imaginative touching involves a somatic reflexivity, a knowing ‘grip’ on the body and its movement that forms a long-running strand in philosophy and medicine, the place of “a kind of inner touch, by which we are able to grasp ourselves,” as Heller-Roazen (2007:241) summarizes. To reconsider the historical and etymological aisthēsis is to elaborate also upon ‘common sense’ (aesthesis koine) and later the medicalized term coenesthesia, so within the concept of aisthēsis and its derivatives we find a productive wellspring for reconsidering the type and nature of experiences that arise from perception through the body. This long trajectory starts from a broad concept originating through classical scholarship, something the Abbé de Lignac will term “the sense of the coexistence of the body” in his Elements of Metaphysics Drawn from Inner Experience of 1752, and a series of sensations which Turgot in his Encyclopédie entry of 1755-6, acknowledging Lignac, wished to place under a special class, “inner touch” (in Heller-Roazen 2007:242). Variously understood by their contemporaries in terms of an expanded notion of touch as bodily self-perception, this includes Lamarck’s “feeling sense” which includes touch both inside and outside the individual, “self feeling,” “the tonality of the sensory nerves” (Henle), or “the consciousness of our sensory condition” (Weber), amongst other formulations, all revealing the preponderance of conceiving the experience of manifold inner senses specifically in terms of some kind of touch. Recently, the philosopher Richard Shusterman has written extensively on what he terms ‘somaesthetics’ or “body consciousness” in the performing arts. He explains this as “the embodied consciousness that a living sentient body directs at the world” (2009:133).

This section therefore charts those aspects of aisthēsis pertinent to considering the significance and distinguishability of movement and bodily position in space. We return to Plato and Aristotle to establish the necessity for touch, and a generalized inner touch faculty. In classical Greek scholarship the word aisthēsis [αἴσθησις] is translated by most, including the standard Greek-English Lexicon by Liddell and Scott (1843) and Chappell (2004), simply as ‘sensation’ or ‘sense-perception.’ At another point, Liddell and Scott
elaborate upon it as “perception by the senses, especially by feeling, but also by seeing, hearing, etc. […] also of the mind, perception, knowledge of a thing” (in Chappell p. 53). However, Michael Frede (1987) rightfully takes issue with the vagueness of this translation, arguing there are three senses of *aisthēsis* that need to be distinguished. Firstly, an ordinary or more general sense like ‘awareness’ not necessarily connected with sensory perception. In both Aristotle’s *Politics* (1267a29) and Plato’s *Symposium* (220c7), for example, *aisthanomai* is translated as ‘I notice.’ Secondly, a narrower sense as used in *Phaedo* and *Republic* in which *aisthēsis* necessarily involves the body, does not equate to knowledge as such and is therefore allied with *doxa* (belief), and consequently not strictly sense perception. Thirdly, the narrower sense as used in *Theaetetus* (184-187) in which *aisthēsis* comes to mean an entirely “passive affection of the mind” and so, more ordinarily, “sense-perception.” If there is an affection and therefore an alteration, what would be the cause? In *Theaetetus* (157-160) it is not simply the perception of objects in the outside world, but also dreams and illusions. This suggests that “the primary objects of *aisthēsis* are *internal to the mind*” (Chappell 2004:54, his emphasis), to be categorized as immediate experiences, impressions – in modern parlance, ‘sense-data.’ But in another passage (151-187) Plato considers and subsequently rejects the straightforward proposal that knowledge is perception; at times in this passage ‘perception’ means something like ‘immediate sensory awareness,’ and at others it means *judgments* about that awareness. This raises the question as to how such judgments or beliefs may emerge from immediate sensory awareness, and this forms the basis for the discussion in *Theaetetus* 187-201, summarized thus: “Knowledge is not to be found in our bodily experiences, but in our reasonings about those experiences” (186d2). If immediate sensory awareness is in flux, its epistemological value is limited. “Strictly speaking, sensation in itself has *no* cognitive content” summarizes Chappell (p.152). This is unsurprising if the word *aisthēsis* goes against the modern distinction of ‘sensation’ and ‘perception.’

However, touch has a rarefied status elsewhere for Aristotle, and for further clarification of ‘inner’ touch it is instructive to see why. Capable of fine discrimination in the aesthetic evaluation of objects like a piece of sculpture, nonetheless touch remains at the bottom of the sensory hierarchy as we share it with beasts (e.g. *Ethics* 1176a1-2). Because there is no obvious single organ to which it corresponds, unlike sight (the eye) or hearing (the ear), touch is distinct since flesh is the medium, rather than the organ, of touch. Aristotle correctly moves away from the locus of skin in order to argue “the sense-faculty of touch is within,” like internal organs, rather than “without” (*De Anima* 423b), like skin, eyeballs or ears. Wearing a glove, we may still stroke an animal or imprecisely sense an object’s texture; similarly, when walking with a stick we apprehend the roughness of the ground. The fleshy medium is corporeal then, and extendable through prosthetic means: “so it is necessary that the body be the ongrown medium of the touch-faculty and that the sensations
(which are indeed many) take place through it,” says Aristotle (423a, original emphasis). At times straightforwardly cutaneous, at other times Aristotelian touch is more diffuse or a generalized contact. From aisthēsis and a more diffuse model of touch in Aristotle, we now focus on one particular strand within somatic perception.

Given the role of the body in producing a sense faculty (aisthēsis) oriented to experiences of sensuousness as such, and contrary to his own influential formulation of a five sense sensorium in De Anima and De Sensu et Sensibilibus, touch for Aristotle is more bodily and categorically diffuse. What of the somatosensory system that helps constitute a sensate background, necessary for the feeling of having (proprioception) and moving (kinaesthesia) a body, which depends in turn upon interaction between subsystems including the vestibular or balance sense? Next we consider how this generalized inner touch becomes a distinct muscle sense.

2. The History of a Distinct Muscle Sense

Between Aristotle and nineteenth century physiologists like Bastian and Bell, Condillac and his followers describe a so-called ‘active touch’ (Jones 1972:299) which predates Gibson’s twentieth century use of the phrase (e.g. Gibson 1962). But attention to the particularity of what is sensed through the muscular body becomes of scientific interest in Germany as the Muskelsinn, literally muscle sense. This terminology was apparently first introduced into Britain as early as 1820 by Thomas Brown in his Lectures on the Philosophy of the Human Mind, where these sensations were characterized as “an awareness of muscular contraction” (Jones 1972:299). The new body of research was then reported to the British scientific community by Sir William Hamilton writing in 1846, and subsequently William Hammond in 1871 reports in The Journal of Psychological Medicine a paper in a German journal of science and medicine of the previous year by a Professor George, a section entitled ‘The Muscular Sense (Muskelsinn)’ (Hamilton 1871: 396-398). Parallel to George’s German articulation of Muskelsinn as something distinct from cutaneous touch (Tastsinn), generalized bodily feeling (Gefühlssinn) as Kirchner had termed it, or common sense (Gemeinempfindungen) for Wundt as Titchener reminds us (1908:158), in Brown’s lectures XX-XXII on touch the sensations particular to a muscle sense are recognizably distinct and worthy of attention:

The feeling of resistance is … to be ascribed not to our organ of touch, but to our muscular frame, […] as forming a distinct organ of sense … The sensations of this class, are … commonly, so obscure, as to be scarcely heeded … but there is no contraction, even of a single muscle, which is not attended with some faint degree of
sensation, that distinguishes it from the contraction of *other muscles* or from *other degrees of contraction* of the same muscle. (Brown 1820, I, 496, original emphasis)

This focus on the distinctness is retained so that shortly afterwards he states: “each motion of the … limb, whether produced by *one* or *more* of the … muscles, is accompanied with a *certain feeling* … which we distinguish from every *other feeling* accompanying every other *quantity of contraction*” (Brown 1820 I:497, original emphasis). In other words, a more general awareness of bodily position is maintained through more localized and distinct muscular tensions and contractions. In line with his forebears, this is interpreted as a form of bodily touch which extends beyond the cutaneous and proposes the whole body as an organ of sense, where “our muscular frame is not merely a part of the living *machinery of motion*, but is also *truly an organ of sense*” (Brown 1820 I:501). In this way, Brown, George, Wundt and their contemporaries could be considered as re-articulating the ongoing inner touch of *aisthêsis*, while focusing on its manifestations through muscle fibers and the muscular frame.

Murray’s 1909 essay ‘Organic Sensation’ provides an historical overview of what she collectively describes as the “sensory contributions from the internal tissues” (1909:400). Reviewing neurophysiological work from the nineteenth century onwards, she remarks upon “the least developed and systematized sphere of our consciousness” in order to “throw new light on processes of localization and attention” (1909:402). Digestive, muscle, and respiratory systems for example each produce their own sensations, what Ebbinghaus in 1902 terms *eigenartige Empfindungen* (‘strange sensations’). Again, Meumann in a 1907 article ‘On the sensibility of the internal organs’ celebrates a multiplicity of ‘organic sensations’ (*innere Tastempfindungen*) derived from distributed organs and tissues, but actually a direct translation of Meumann’s phrase would offer the now familiar ‘inner touch sensations.’ The unusual combination of qualitative diversity yet indistinctness of these sensations together obscures “the indefiniteness of localization of the sensations, and their deficiency in correlated visual images by which qualitative isolation might be facilitated,” Murray argues (1909:400-1). In other words, these sensations remain frustratingly vague and therefore unsystematic, and cannot be compared to the clarity that vision enjoys. At the end of one section Murray summarizes:

The fusability, absence of memory images, unanalyzability, lack of cohesiveness with other sensations, unlocalizability, capacity for eluding the attention, and other features ascribed guardedly or confidently in various quarters to our organic experience, demand critical verification. (1909:402)
The terminological difficulties noted above extend to the laboratory, of course, as that legacy of Wundt’s ‘common sensation’ (*Gemeinempfingdung*) amongst experimental psychologists interested in internal or, as Murray puts it, ‘organic’ sensations, is problematic. Murray’s frustration is expressed at one point in a footnote referencing this vagueness: “The problem is somewhat obscured by the custom deriving from Weber, Wundt, and Goldscheider of lumping organic or visceral sensation with the *Gemeinempfindungen* (‘common sensation’), a class which by definition consists in whatever residue of sense material proves resistant to elaboration, analysis, and localization” (1909:390, footnote 1). The ‘common’ element across these sensations seems to be the “pain-pressure-temperature equipment common in his belief to the exterior and interior of the body alike” (ibid.).

Against this diffuseness of inner touch, a more refined answer that distinguishes a ‘muscular sense’ occurs in Charles Bell’s *The Hand* (1833), where he considers the interaction between touch and movement. His earlier lectures on anatomy proffered a distinct muscle sense, in his words a “consciousness of muscular exertion,” akin to a sixth sense (1833:195). Bell’s earlier anatomical discoveries reported to the Royal Society of distinct specialized sensory and motor nerves had led him to investigate the mechanisms of the nervous system that governed and regulated muscular activity. Given that we customarily have a sense of muscular coordination, an awareness that heightens with exertions and spasms or even the estimation of weights through the use of our hands, Bell states his goal thus: “I shall first enquire, if it be necessary to the governance of the muscular frame, that there be a consciousness of the state or degree of action of the muscles?” This can be asked since “[w]e are sensible of the most minute changes of muscular exertion, by which we know the position of the body and limbs, when there is no other means of knowledge open to us” (1826:167, original emphasis). In passing he offers the example of a rope-dancer or a blind man balancing his body, and finds its explanation in neuroanatomical terms. Referring to prior discussion of the interactions of sensory and motor nerves, in deceptively simple terms he summarizes: “Between the brain and the muscles there is a circle of nerves; one nerve conveys the influence from the brain to the muscle, another gives the sense of the condition of the muscle to the brain” (1826:170). Likewise, this bidirectional nervous mechanism is referred to in his later book: “there is a nerve of sensibility to convey a sensation of the condition of the muscles to the sensorium, as well as a nerve of motion for conveying the mandate of the will to the muscles” (1833:196).

This sixth, muscular sense is later termed ‘proprio-ception’ by Sherrington (1906), based on his laboratory research conducted on muscular reflexes between 1892-4. Sherrington integrated these experimental observations into a prestigious lecture series at Yale and the influential monograph *The Integrative Action of the Nervous System* (1906). In his
centenary appreciation of Sherrington’s book and an overview of the lectures, Burke notes how Sherrington identified “afferent feedback,” nerve impulses returning to the brain from diffuse muscle tissue, and in Lecture III Sherrington considered how these afferents were ‘proprioceptive’ because they are caused by the organism’s own movements, in contrast with ‘exteroceptive’ afferents that convey more distal information from the environment. In Lecture IX, Sherrington steps back from the details in order to offer a more panoramic view of the evolutionary development of nervous systems through the phylogenetic sequence, and notes that “by its branching the motor neurone [sic] obtains hold of many muscle-fibres” (1906:309), and this diffusion of nerve endings through muscle fibers feeds back to a ganglion within the cerebellum, what Lidell and Sherrington will later term the ‘motor unit’ (in Burke 2007:892). In other words, the sensory is invariably coupled with the motor, so ‘sensory-motor.’ This allows Dewey in his famous essay ‘The Reflex Arc Concept in Psychology’ of 1896 to speak of “sensory-motor coordination” in a proto-phenomenological way which unites an initial sensory act or stimulus, say visually noticing an object or person, with an associated movement to achieve an overall action, for example steering a car around a raccoon or waving to a friend:

we begin not with a sensory stimulus but with a sensori-motor coordination . . . In a certain sense it is the movement which is primary, and the sensation which is secondary, the movement of body, head and eye muscles determining the quality of what is experienced. (358; see also Pfeiffer et al. 2007)

Dewey continues in terms that reinforce the unity of perception and action: “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” (359). Our attention having been focused on the muscle senses, Dewey here raises a potential difficulty for aesthetically evaluating such movements in the arc of perception and action, given the unity of the sensory-motor circuit. Given this indistinct and potentially confused muscular feedback, and inner touch remaining diffuse, what factors affect how muscular sensations puncture a threshold of conscious awareness within our sensory-motor body, thereby producing sensory qualia which might then inform actions or gestures that can be judged by oneself or others in aesthetic terms? In dance for example such feedback might be required to better effectuate and coordinate particular bodily movements, evaluated by the dancer and their audience. What is the nature of the sensory qualia that arise usefully in addition to the circuit of the sensory-motor? The answer might involve pain, fatigue and pleasure as proprioceptive markers within a series of coordinated actions.

Expressed in more contemporary neurophysiological terms from original research by Mense and Stahnke in 1983, the afferent pathway for the sensory-motor body involves “small
afferents arising in the muscle and joints,” consisting of “small unmyelinated nerve fibres which arise within muscle. Most may be involved in signaling pain, contraction and temperature, but some appear to relay information related to fatigue,” explain Cole and Montero (2007:302). Like us, Mehnse and Stahnke pondered whether these afferents reach consciousness, and what perception they might produce since the system could signal not just fatigue or pain but also pleasure. Such low threshold touch, as research by Olaussen et al. (2002), involves unmyelinated CT fibres which, unlike conventional touch through large myelinated fibres, is not localized or clearly perceived, yet occurs in the same brain area (insula cortex) as the monitoring functions of internal bodily functions like hunger, pain and discomfort. In other words, this low threshold touch is continually present as part of the sensations of embodiment (Sherrington’s ‘proprioception’), but also capable of producing pleasure from gentle caressing or stroking in a way that registers differently from a higher-threshold cutaneous touch per se. It supports the mixed sensations Bell (1833) describes in another section of The Hand entitled ‘The pleasures arising from the muscular sense:’

The exercise of the muscular frame is the source of some of our chief enjoyments. The beautiful condition of both body and mind shall result from muscular exertion and the alternations of activity and bodily repose … This activity is followed by weariness and a desire for rest, and although unattended by any describable pleasure or local sensation, there is diffused throughout every part of the frame after fatigue a feeling almost voluptuous. (Bell 1833:205-6)

Cole aptly refers to this passage to remark on “the rise of kinaesthetic-related pleasure” such as jogging or dancing (1995:144), and a notable characteristic of such pleasure is that it deepens with practice. The “simple ineffable pleasure of, and of being in, action” as Cole and Montero (2007:303), exemplified through dance, is enriched by moving in a way that ‘feels right,’ that is judged or feels beautiful, so Cole and Montero consequently argue that dancers enjoy a more “cognitively enriched” pleasure as a result (303).

On the one hand, the utility of providing musculo-skeletal positional feedback from the muscles to the sensorium forms part of a somatosensory background that Husserl and others had already assumed (see Husserl’s Ideas II for an explanation of the ‘kinestheses,’ for example). This feedback, perceived as proprioception, might be seen as a more neurologically specialized explanation for those functions of aisthèsis discussed above, but which includes a reflexive ‘grip’ on our body and its motor capacities. This musculo-skeletal form of perception becomes foregrounded in nonvisual experiences for instance, where a congenitally blind subject is aware of their bodily position in space due to proprioceptive feedback or ‘muscle sense.’ Without touching anything, a blind person may continually sustain and adjust their upright posture. As Bell explains: “It is obvious that he
has a sense by which he knows the inclination of his body, and that he has a ready aptitude to adjust it, and to correct any deviation from the perpendicular,” and given their lack of vision the only source of knowledge is literally through the body, “a sense of the degree of exertion in his [sic] muscular frame” (1833:198). So far, Bell’s discussion of a hypothetical blind man perceiving their own musculo-skeletal position in space is an adequate definition of what Sherrington in 1906 later terms the ‘proprioceptive’ sense. Just like with dancing, this attunement to the muscular frame becomes more precise, more deft and flowing, with practice.

In proprioceiving a difference between a static body state at one point in time and anticipating the possibility of future movement in that body, Bell touches upon a kinesthetic element in describing this muscle sense: “We could not command our muscles in standing, far less in walking, leaping or running, had we not a perception of the condition of the muscles previous to the exercise of the will” (1833:200). The activity of touching, especially through the prehensile organ of the hand, also betrays a kinesthetic element, since it is the “combined perception” (1833:205) of touch with movement of the hands, arms, and fingers that are necessary to embrace objects in the active register necessary for an engaged sense of touch. Here Bell anticipates, or perhaps acknowledges, Weber’s 1834 psychophysical experiments on so-called “active touch” (1978):

So it is affirmed by physiologists … that the sense of touch differs from the other senses by this circumstance – that an effort is propagated towards it, as well as a sensation received from it. This confusion obviously arises from considering the muscular agency, which is directed by the will during the exercise of touch, as belonging to the nerve of touch properly. We proceed to show how the sense of motion and that of touch are necessarily combined. (1833:197)

This observation, tying in a somatic, active tactility to the principle of movement, again expands tactility from mere cutaneous contact, and by invoking the idea of ‘muscular agency’ it echoes Herder’s formulation of the inner senses as more active, prehensile feelers, an enlivened form of tactility. One may consider for example a choreographer tentatively sketching movements for a dance piece, or how a painter approaches a blank canvas with a series of broad brush strokes in mind, successively accreting further movements and gestures with paint and so sympathetically ‘feeling’ the textures inscribed. There are accordingly positive affects that accompany the mastery and refinement of movement, not only for a dancer or an accomplished musician but also a cook or a runner, say (Cole 1995). The pleasure which arises from muscular activity derives in part from a gratification that accompanies any refinement or active shaping of activity, “as that which mere dexterity, successful pursuit in the field, or the accomplishment of some work of art
may give,” Bell explains (1833:206). Part of the pleasure of the generalized muscle sense, and more specifically kinesthesia in this instance, Bell explicitly identifies in aesthetic terms. Via Bell we return therefore to a relationship between aisthēsis, kinesthesia and the aesthetic values of movement for movement’s sake. The aesthetic and even joyful qualities of touch and movement are praised in a rather romanticized way by Bell but which nevertheless exhibits a familiarity:

We owe other enjoyments to the muscular sense. It would appear that in modern times we know comparatively little of the pleasures arising from motion. The Greeks, and even the Romans, studied elegance of attitude and of movement. Their apparel admitted of it, and their exercises and games must have led to it. Their dances were not the result of mere exuberance of spirits and activity; they combined harmony in the motion of the body and limbs, with majesty of gait. They consisted more of the unfolding of the arms than of the play of the feet - “Their arms sublime that floated on the air.” (1833:206)

3. Kinesthesia, proprioception and the bodily senses of movement and position

At this juncture I briefly summarize definitions of kinesthesia initially from psychology and its relation to proprioception before developing any distinctly aesthetic line of enquiry concerning the differentiation of kinaesthesia and proprioception for the purposes of aesthetic evaluation.

Firstly, kinesthesia or the sense of movement. From Greek kinein (to move) and aesthesis, kinaesthesia is “a sense mediated by end organs located in muscles, tendons, and joints and stimulated by bodily movement and tensions,” and relatedly the “sensory experience derived from this sense” says Sklar (1994:15). As part of the haptic system, Gibson (1968:111ff) writes of kinesthesia as the perception of the body’s movement not as a distinct, individuated sense but as cutting across several perceptual systems, a sense that utilizes a range of nerve information including that of muscular tension and balance from the vestibular system, collectively returning sensations of movement. Identified in Western medicine by Charles Bell in 1826 originally as a ‘muscle sense,’ kinesthesia was initially confused with proprioception within this generalized muscle sense, according to Boring (1942:525ff). In 1880, Henry Charlton Bastian suggested ‘kinaesthesia’ instead of ‘muscle sense’ on the basis that some of the afferent feedback was coming from structures other than the muscles including tendons, joints, and skin. With her choreographic eye, Susan Leigh Foster notes a shift in research focus at the beginning of the twentieth century from kinaesthesia to proprioception, “naming a more focused system of spinal-level neural arcs
that continually adjust for the body’s changing relationship to gravity” (2011:7). While distinct, both kinesthesia and proprioception involve conscious sensations of bodily position in space accomplished through sense-returns from receptors distributed throughout the body, in physiology termed “re-afferent feedback” (see e.g. Gibson 1968:111), thereby integrating sensory information from other systems.

Secondly, proprioception as the sense of bodily position. Identified in a landmark work of 1906 by Charles Sherrington, ‘proprioception’ is a perceptual system based on the sensory returns from nerve endings in muscles and tendons, helping to constitute a sense of the position of the body and limbs. In this work Sherrington differentiated between ‘interoception’ (inwardly directed sensing providing information about internal organs) and ‘exteroception’ (outwardly directed sensing, the Aristotelian five senses), and proprioception was a function of interoception. Koffka’s (1935) gestalt psychology led to empirically investigating a sense of the ‘vertical,’ for example, and while what he called the ‘framework’ of space is a perception, as Gibson (1968) details, the “accompanying awareness of the axis of the body is a proprioception” (his emphasis). Compared with a grounded spatial framework, then, the axis of the body is literally ‘felt’ as upright or tilted, and limbs and their movement are distinguished in reference to this fixed framework. Later this becomes significant for Merleau-Ponty, especially when he discusses “the spatiality of one’s own body and motility” (1992:112ff), as he acknowledges the influence of empirical findings from Gestalt psychologists. The medical writer Leder clarifies the phenomenon:

proprioception traces out a completed sense of my surface body, allowing me to adjust every limb, every muscle, in appropriate motoric response to tasks. Though visually this sense is subliminal, I can close my eyes and proprioceptively hone in on the position, the level of tension and relaxation, in any region of the muscular body. (1990:42)

Like other forms of interoception, proprioception as a perceptual subsystem relies not simply on the returns of particular receptors (in this case proprioceptors) in the muscles and skin, but functions as a nexus of sensations from a variety of sensors throughout the body that provide a sense of the body’s and limbs’ felt position in space as a series of subjectively-felt muscular tensions, and therefore feedback as to bodily posture and equilibrium (Gibson 1966:34). In a completely darkened room, for example, one’s body is felt as upright, or one’s arms sensed as outstretched, as a result of proprioception.

Thirdly, the vestibular system which helps constitute a sense of balance. Deriving from the ‘vestibule’ area of the inner ear, the vestibular system connects up information picked up from weighted hair cells in the cochlea, triggered by movements of fluid within three
Semicircular canals oriented roughly along the three spatial axes. These are the horizontal, anterior, and posterior canals which pick up turning movements and bodily orientation, and lateral movement is picked up through the otoliths, which sense linear accelerations (Lackner and DiZio 2005:117). Rather than a distinct ‘sense’ itself, bodily inertia or change of bodily orientation or direction is picked up through this system, and feeds directly into the other somatic senses. To characterize it simply as balance neglects the complexity of its functions, dealing with inertia and momentum and actively correlating with other distributed sense-returns. That is, information from the vestibular system of semicircular canals, cochlea, and otoliths collectively help constitute a sense of “bodily postural equilibrium,” as Gibson (1966:67) puts it, sensitive to changes in orientation and self-produced movement, and is therefore indissociable from the other somatic senses. Furthermore, feedback from the vestibular system directly influences the eye muscles, and this is known as the vestibular-ocular reflex (Lackner and DiZio 2005:119ff). Were this not the case then sudden head movements, movements of the eyeballs or acts such as running or turning would make the visual perception of the world unclear, distorted or chaotic. In other words, without this reflex a fixed point in space could not be tracked. Ballet dancers in particular must track a fixed point in space when they go ‘en pointe,’ pirouetting on tiptoe without falling down. The technique is to visually locate a fixed object such as a clock, and continually maintain eye contact with it while spinning (as the ballerina Deborah Bull explains in the BBC documentary The Dancer’s Body, 2002).

After a brief survey of those five senses familiar to us from the days of Aristotle, and leading directly on from a discussion of touch, Richard Shusterman usefully summarizes the relationship between proprioception, kinesthesia, and “other distinctively bodily senses related to the somaesthetic nervous system” (2011:154), advancing his larger project of ‘somaesthetics.’ He elaborates:

Proprioception concerns the inner sensations and resulting cognition of the position, posture, weight, orientation, balance, and internal pressures of one’s body and bodily members, while kinaesthetic perception more specifically relates to such internally perceived feelings and resulting cognitions that relate to postural, orientational, pressure, and equilibrium changes through movement. Other specifically somaesthetic sensations are feelings of body temperature and feelings of one’s internal organs (often associated with pain). (2011:154)

Is proprioception present in the tactual exploration of an object, for example? Within haptic exploration, the active nature of touching in the apprehension of the spatial properties of the object surely involves a proprioceptive component, which is linked to the somatic body. According to Gallagher, “if proprioception has an object, its object would be, by definition,
the body” (in Montero 2006b:150), furthering the idea that *aisthèsis* is a philosophical antecedent of proprioception. Allied to this is Shusterman’s development of somaesthesis as “somatic style” (2011), denoting the physicality of embodied acts and the bodily gestures of inscription (*stylus* from Latin is associated with acts of writing and inscription) which forms the basis for any aesthetic appreciation. These somaesthetic ideas lie outside of the usual recognizable Aristotelian model of five senses and, as we have discovered elsewhere, this potentially poses a problem in terms of the indistinctness. It becomes difficult to pin down what a particularly somatic style is, and accordingly Shusterman asks: “What features or uses of the body are especially formative or expressive of somatic style? Which senses and modalities of perception are engaged in our appreciation of somatic style?” (2011:147).

Answering this question will be useful for rethinking the relationship between *aisthèsis* and kinaesthesis, some issues raised earlier about the imprecise nature of somatic sensations, and the role of pleasure that arises from the accomplishment of style, that is, the proprioceptive or kinaesthetic recognition that a movement or gesture is performed skillfully and beautifully. In the early stages of learning a new sensorimotor skill, such as learning a dance step or riding a bicycle, we are often required to pay critical attention to the body parts engaged in a series of actions. Furthermore, Shusterman “would add that we should also pay attention to our breathing and the proprioceptive feel of what we are doing” (2009:138). Without getting into specificities of oriental performative styles and historical traditions, it happens that in Noh theater “the actor is performing with an explicit, reflective image of himself, not only his internal image of his somatic bearing (his proprioceptive sense of balance, position, muscle tension, expressiveness, grace, and so forth) but also the image of how he senses he appears to the audience” (2009:140):

A further way that proprioception or kinesthesis may help us perceive another person’s somatic style is through our empathetic appreciation of that person’s movement or posture. Part of our appreciation of watching dance and sports seems to be based on our empathetically imagining the feel of the movements that the dancers and athletes make. As these feelings essentially involve proprioceptive and kinesthetic sensations, so our empathetic watching of their movements will include those kinds of feelings (though they will not be strictly identical to those experienced by the actual performers themselves). (Shusterman 2011:155)

The question that Shusterman touches upon here, of how movements are perceived and evaluated by others, lies at the heart of some recent arguments concerning the aesthetics of proprioception and kinaesthesia, to which we now turn.
4. From Kinesthesia to Aesthetics: Movement and Muscular Sense

My previous sections presented a preponderance of historical material within which particular concepts were etymologically and conceptually tracked. Now we are in a position to see how the relation between aesthe, aisthēsis, self-perception (proprioception) and the self-perception of movement qua movement threads together and advances a particular argument about kinaesthesia. Having started the paper with a reference to Herder’s idiosyncratic aesthetics of the tactility of sculpture to introduce the importance of an ‘inner sense’ in evaluating aesthetic value, in this section we consider the illustrations of kinaesthetic aesthetics within the performing arts and, most pertinently, dance. Based on previous definitions of kinaesthesia and proprioception, we can address the question of what constitutes a ‘style’ of movement and gesture that may be aesthetically evaluated and judged, and cross-cultural variance in the aesthetic criteria of certain styles of movements and gestures becomes an issue, especially with regard to non-Western theatrical traditions such as Noh, or non-scripted styles of movement in modern dance such as contact improvisation. Here – I wish to develop a more focused approach to the body’s own awareness of its kinaesthetic capacities in order to answer the question whether, irrespective of Montero’s argument that proprioception is an aesthetic sense, and therefore that in her words “one can make proprioceptive judgments based on proprioceptive experience” (2006:231), then the same could be said for kinaesthesia. The reason that I wish to make this argument in parallel to Montero’s argument on proprioception (2006; also Cole and Montero 2007) is that, while much of our historical tracing of concepts of the inner senses is affirmed in her approach, in order to make her case she makes certain philosophical leaps based on inferences from accessible or popularized accounts of empirical research in neuroscience that are questionable. Therefore, whilst noting the innovative aspects of Montero’s argument concerning proprioception, my argument about kinaesthesia here is distinct, and folds into the predominantly historical-conceptual approach adopted in this paper so far.

The first step is to provide a brief synthesis of Montero’s arguments about proprioception before critically examining steps in her argument more detail. Simply put, Montero (2006a) argues that proprioception, the body’s awareness of its own position in space, is worthy of aesthetic consideration in itself, irrespective of its visibility by others or any aesthetic judgment by outward observer or audience. Elsewhere, Montero argues that if there is such aesthetic value, it rests in part upon an ability to proprioceive another’s movement (2006b), a claim supported by Susan Leigh Foster’s work on how the body experiences itself kinesthetically and apprehends other bodies (e.g. 2005). To make these claims Montero needs to make questionable inferences from empirical work in neuroscience. Based on our elaboration of aisthēsis, and in line with parallel philosophically inclined work in dance and
performance (Foster and Davies), we return to the connections between the muscle sense, *aisthēsis* and kinaesthesia. Furthermore, an unresolved problem from Montero’s analysis of proprioception is deemed significant in the case of kinesthesia, where previous exposure to a ‘grammar’ of movement is a factor in determining relative aesthetic value.

In ‘Proprioception as an aesthetic sense,’ Montero’s starting position is that proprioception “enables one to perceive aesthetic qualities of one’s own bodily movements” (2006a:240). This as a *prima facie* argument which she then seeks to justify by briefly referring to some historical work in philosophy and neurophysiology, before engaging in more contemporary cognitive neuroscience and empirical findings in neurophysiology. Both this paper and also her paper ‘Affective Proprioception’ co-written with neurologist Jonathan Cole (Cole and Montero 2007) assume that one is able to perceive the aesthetic qualities of one’s own movements in the first place, sharing the *prima facie* claim, and affording proprioception a central role. In her standalone paper a clearer line of argument about proprioception and aesthetics occurs, and can be summarized thus:

1a. One may proprioceive one’s own movements
1b. One is able to sense aesthetic qualities of those movements

By virtue of having a body, and given the lack of neurological cases of the loss of proprioception (see e.g. Sacks’s ‘The Disembodied Lady,’ 1985; Cole 1995) for celebrated exceptions), 1a understandably forms the basis of Montero’s *prima facie* case. Whether or not proprioceptive information in itself is a reliable source of sensory input, or whether we habitually conjoin this with other sensory information, bodily predispositions or intentionalities, the recognition of proprioceptive sensation as distinctly belonging to, or arising within, our own bodies should be uncontroversial. A logical extension of this *prima facie* case is that one can recognize the aesthetic qualities of one’s own movements through these proprioceptive means (1b). However, Montero fails to mention any intentions attributable to the body-subject. Sensations of bodily displacement that accompany a dance move, for example, are recognized as integral to that movement but, significantly, we would usually identify an intentional component. In other words, it is simply assumed that a particular movement, along with any co-arising bodily sensations, is intended by the dancer. This stipulation need not preclude improvisation or more spontaneous bodily movement, but brings the argument into line with other areas of aesthetic judgment concerning, say, authorial intention. Bringing in arguments concerning intentionality (see McMahon, this issue) could only help in considering the example Montero herself provides, where a performer creates skillful representations of a bird in flight with their hands: “It seems that observers could see that such representations are beautiful or lively, for example, and, moreover, that the artist would not be barred from such perceptions merely because it is his
or her own body that is on view” (2006a:233). Which is to say, the aesthetic evaluation of the performance, perhaps incidentally involving culturally-based assumptions concerning gracefulness or verisimilitude when evoking birdflight onstage, is neither limited to an audience of external observers, nor to predominantly visual-auditory channels. This is plausible and lends credence to points 1a and 1b in Montero’s argument, and opens the way to the next stages:

2a. An audience “may base certain aesthetic judgments about dancers in part on the internal experience of movement one has while watching dance” (2006a:240)
2b. Empirical work on seeing movement in others “lends support to the view [that] while watching dancers we represent their movement in our bodies” (2006a:240)

The leap to 2a now considers proprioception intersubjectively. As we have established that proprioception is recognized within an individual body-subject, Montero makes the further distinction that while the object of visual experience, a painting, may be experienced by many observers, “the object of proprioceptive experience, one’s own body, can be proprioceived only by oneself” (2006a:234). We might consider an analogy with pain here, being somewhat comparable to Wittgenstein’s position in *Philosophical Investigations* about the impossibility of experiencing another’s pain. More pertinently, since one does not know of one’s own pain, one simply has a pain, given the indistinct, intermittent and sometimes misleading nature of one’s own proprioceptive experience, the same criteria for proprioception might be advanced here. Increasing awareness of, and attunement to, proprioception arises as a result of coordinated and practiced movement in the dancing body, but for most of us our awareness of proprioception is only ever partial and sporadic. But in watching, learning from and talking to other dancers, argues Montero, a dancer can judge whether they are moving in a similar way (2006a:234). There need not be aesthetic relativism when it comes to judgments of proprioception, we can infer, since “dancers with similar training and abilities often agree on the proprioceptive qualities of certain movements, with some steps feeling awkward, others graceful, some dynamic, some dull…” (2006a:235). However, one corollary for the step to 2a and 2b is the dependence on the visual modality for watching a dancer and subsequently judging its aesthetic value. For both 1a and 1b, the ability to proprioceive and then aesthetically judge one’s own movement visual experience is not a prerequisite, whereas both 2a and 2b are premised on an audience watching a dance performance, even if a proprioceptive element is involved. A dancer may know, however a particular move appears to an audience, whether it flows correctly or feels ‘right,’ and some imagination of how it will appear to others may occur. A blind or vision impaired dancer is accordingly as good a judge of the aesthetic criteria of their own movement as a fully-sighted dancer. Indeed, work with choreographing blind dancers undertaken by one of my graduate students, and instances of mixed blind, vision impaired
and sighted dance troupes show this to be the case. In such groups, the dynamics of improvising choreographies through a mixture of touch, proprioception and visual feedback from others demonstrates the interdependence between proprioception and vision in judging aesthetic criteria of the movements of another dancer as well as your own. Montero acknowledges something like this when discussing how “a dancer’s proprioceptive aesthetic sensibility is informed by his or her visual aesthetic sensibility” (2006a: 236) and vice versa. Judging that a movement is beautiful need not rest on the imaginative assumption that, if seen, it must appear or look beautiful or expressive of some intended emotion, say. Montero suggests that “in other cases, one might visually judge that a movement is beautiful because one knows that if proprioceived, this movement would feel beautiful” (2006a:236, emphasis mine).

The claim that while watching the movements of dancers we somehow internalize that movement as a series of representations in our bodies (2b), is made irrespective of any concrete empirical evidence. Montero speculatively identifies possible neurophysiological mechanisms that might fill this criteria, so-called mirror neurons, but this is a big leap. Whether empirical explanations might be offered in future, this fails to detract from her suggestion that, based on 2b, “via this internal representation of movement we are, in a sense, proprioceiving the movements of others” (240).

Now, in order to make inferences to advance her thesis about the next stage of the argument, that one is able to proprioceive another’s movement and that this is also a component of the assessment of aesthetic value, concerning the putative existence and role of so-called ‘mirror neurons’ in proprioception and the ability to proprioceive another’s movement.

The next and final steps in her argument:

3. “Since movement is the essence of dance, the aesthetic value of a dance partially depends on proprioceptive experience” (240).

This would be proprioceptive experience by dancer and audience alike, although the audience is assumed to be normatively ‘abled’ and not restricted in motile ability, say quadraplegic. The next and final step:

3a. Via these internalized responses and “internal representation of movement” of others in our own bodies, that is, ‘proprioceiving,’ the possibility exists that “we are, in a sense, proprioceiving the movements of others.” (2006a:240)
However, based on what has been covered in this paper so far, it will be argued that this understanding of proprioception (1a) is imprecise or incorrect, certainly in order for the later stages of the argument to follow. Overall, the implication from our earlier sections on the philosophical and psychological genealogy of *aisthèsis* is that it makes more sense to speak of kinaesthesia than proprioception in this way. If we have followed Montero’s reasoning up to this point, it is this crucial final step which returns us neatly to our earlier historical survey in terms of *aisthèsis* and the etymological and neologistic confusions surrounding these forms of somatic sensations. And because in this case there need not be any particular ‘object’ that kinaesthesia or proprioception refer to, this implies a nonrepresentational element where such sensations refer not to ‘objects’ as such, but refer back onto the sensory body itself.

Aesthetic considerations for somatosensory phenomena are more usually directed towards the experiences of the performer in a quasi-phenomenological way, of course. It is less problematic to introspect in order to attach aesthetic judgments, instances such as “[w]hen one’s movements are full of vibrant energy, power, and grace or conversely awkward, imbalanced, hesitant, and heavy, one can feel it proprioceptively and kinesthetically, in one’s muscles, joints, and bones” in the words of Shusterman (2011:154). This approach is familiar from the language of Husserl’s analysis of the *kinestheses* and from Merleau-Ponty’s development of this, especially in his chapter on “The spatiality of one’s own body and motility” and its mention of “motor intentionality” in *Phenomenology of Perception* (1962:127ff). The significance of the philosophical implications of movement, and especially its import to phenomenology, lies outside the scope of this article (see e.g. Sheets-Johnstone 1981, 1999 for particularly detailed treatments of this aspect). Quite apart from such a phenomenologically inspired or introspective account of a body’s own somatic sensations, Montero’s final step and therefore a principal question for determining the possibility of an aesthetic evaluation of somatic sensations is the apprehension of movement in other bodies. From the perspective of an audience member watching another body performing, to what extent is the apprehension of that other body informed by similarly proprioceptive sensations, so that proprioception is involved in “perceiving the somatic styles of others,” as Shusterman puts it (2011:155)? In such a performance the question therefore becomes whether, as Montero formulates it, one may firstly “proprioceive the beauty of another’s movement” (2006a:231), and secondly, even if this were possible, how might one evaluate this *aisthèsis* as an aesthetic category? Furthermore, given that Sklar originates the term “kinaesthetic empathy” (1994:15), and subsequently Montero (2006a), Shusterman (2011) and Foster (2005) at some stage each invoke the empathetic perception of another’s movement, we demur. The last three point to the theory of mirror neurons (see e.g. Rizolatti and Sinigaglia 2008) as a possible explanation. Montero’s final step, or variants on it, is repeated in other theoretical approaches to dance, including Foster’s latest
book *Choreographing Empathy: Kinesthesia in Performance* (2011). What lies in common is the understandable need to consider the intersubjective nature of proprioceptive and kinaesthetic performances, but the leap to import empirical neuroscientific findings distilled into popular form, an intriguing yet nonetheless decontextualized theory of mirror neurons speculatively re-applied to contexts such as dance, should give us pause. While the implications for kinaesthesia might further our understanding of *aisthēsis* as both embodied and intersubjective, I now turn finally to specifically aesthetic considerations of *aisthēsis* and kinaesthesia.

5. Kinaesthesia as Aesthetic Sense

Previously we had noted the kinaesthetic orientation of a choreographer tentatively sketching out a new dance piece, or a painter approaching a blank canvas with a selection of kinaesthetic intentions and gestures. A kinaesthetic predisposition, a background capability that might then be played out through skillful movement. Likewise, Carrie Noland begins her book *Agency and Embodiment* (2009) by observing a graffiti artist spraying paint on the wall, and notices how movement and gesture were an integral part of the appreciation of that art form. Between the original script or ideogram, through a mixture of movements, repetition and improvisation, and the final product, a painted script on a wall, “a body was afforded a chance to feel itself moving through space” (2009:1) and so a performance emerges. Like any performance which requires deliberate movement, this is simultaneously a “repetitive routine and improvisational dance,” observes Noland. What she terms the “sensate motor body,” and we have referred to as the ‘sensory-motor’ body after Dewey, forms the medium upon which the “gestural regime” builds, she argues (2009:2). Overall, while Noland is more interested in questions of the ‘subject’ and ‘agency’ that result, she acknowledges how gestures belong to the domain of movement. Such iterative and performative gestures “provide kinesthetic sensations that remain in excess of what the gestures themselves might signify or accomplish in that culture” (2009:2). Much as in the discussion of *aisthēsis* above, the body’s awareness of its own position and movement, its own interoceptive ability or kinesthetic awareness, helps structure the range and indeed styles of movement that result.

Whereas Montero shares a common and noble interest with Noland, Sklar, Foster and others in investigating other bodies in movement, Noland’s formulation stops short of seeking to validate these ideas through empirical data. We therefore take a step back, to consider like Noland how a body is afforded the chance to feel itself moving, as a kinaesthetically reflexive body as opposed to a merely proprioceptive one. For the iterations, the gestural regimes, the mimicking of the grace of a bird in flight, involves a quality of movement that
remains resolutely transitory yet absolutely recognizable, for performer and audience alike, without the need for theories of mirror neurons. Indeed, given the sporadic nature of neurophysiological treatments of the inner senses and kinaesthesia in particular, it might be surprising that dance criticism and dance pedagogy have long stressed the importance of kinaesthetic awareness in viewers as well as performers, throughout the twentieth century. One of the most influential dance critics of the time, John Martin wrote for the *New York Times*, and his approach to dance as a form of communication is premised on the audience’s active kinaesthetic engagement with the dancers onstage. As articulated here in *America Dancing* (1936), kinaesthesia is central to his thesis:

> When we see a human body moving, we see movement which is potentially producible by a human body and therefore by our own; through kinesthetic sympathy we actually reproduce it vicariously in our present muscular experience and awaken such associational connotations as might have been ours if the original movement had been of our own making. The irreducible minimum of equipment demanded of a spectator, therefore, is a kinesthetic sense in working condition. (John Martin 1936:117)

To paraphrase Martin, for the aesthetic evaluation of a performance involving movement, therefore, the bare minimum of equipment is a working kinaesthetic sense not just for the dancer, but for the audience too. From a critic writing about dance to a dancer writing about dance, central to Deirdre Sklar’s comparable kinaesthetic analysis is the ability of dance researchers to perceive their own kinaesthetic experience, along with that of others (Sklar 1994). Such reflexivity is premised on that proprioceptive ability to ‘feel’ and therefore recognize one’s own body and its movements as a crucial first methodological step, as Sherrington had suggested in his formulation of ‘proprioception,’ whether or not this subsequently becomes extended in the form of ‘kinaesthetic empathy,’ or to further social values, as a “social kinaesthetic” (see Foster 2011:8). That is, it is unnecessary to identify the exact neurophysiological mechanism involved in kinaesthetic empathy. Irrespective of whether this is the result of putative mirror neurons that fire sympathetically when seeing another body moving, there remains a privileging of certain modalities (vision and a form of inner touch) in our experience, or a form of ‘empathic vision’ based on proprioceiving the movements of others, as Montero would have it. Regardless of the actual mechanism, therefore, it is striking how effectively we are moved by other peoples’ movements, how an audience’s aesthetic response accompanies our sensory-motor (visual and proprioceptive) perception. At one stage Montero suggests that previous exposure to skillful dance is likely to affect our judgment of aesthetic value, effectively making kinaesthetic displays “resonate” with us (2006a:237). Certainly we might generalize this to other artforms, as Noland did with graffiti. Clearly, those of us with prior exposure to a kinaesthetic
performance, whether it is dance, graffiti or sculpting objects in three dimensions, will certainly appreciate the level of skill involved in such controlled movements in space, as well as simply the way they appear visually, seem fluidly connected or skillfully composed.

We now come full circle. My earlier revisitation to *aisthēsis* as a generalized sense faculty was in order to re-establish the capacity for aesthetic evaluation within the sensory body, validating forms of aesthetic judgment that lay outside the predominantly visual sway of the arts. Herder’s guidance in evaluating the three-dimensional form of sculpture as a form of ‘inner sense’ whereby the audience could imaginatively palpate an object has been instructive, as this furthers the nonvisual aspects of ‘resonance’ or aesthetic evaluation. Furthermore, experiences of architecture and the built environment are increasingly discussed in nonvisual or ‘more-than visual’ terms (see e.g. Pallasmaa 2005; Paterson 2011), where muscular movements of the eye and the kinaesthetic sensations of the walking body suggest a more haptic engagement with space, premised on an expanded notion of tactility. Indeed, the kinds of multimodal experiential encounter discussed so far are entirely consistent with that early twentieth area of art history that counters the ‘optic’ mode with the ‘haptic’ mode in painting (e.g. Aloïs Reigl, Heinrich Wölfflin). This suggests that the often hidden, underlying kinaesthetic orientation to aesthetic objects discussed in this paper through aisthēsis and kinaesthesia has multiple historical points of entry, each entreatng us to expand our criteria for aesthetic evaluation into richer, less predictable sensory-motor areas.

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