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The aesthetic senses are the senses by which we experience beauty, grace, and other aesthetic properties. Vision and hearing are commonly recognized as aesthetic senses, while smell, taste, and touch are not. Proprioception is the sense by which we acquire information about the positions and movements of our own bodies, via receptors in the joints, tendons, ligaments, muscles, and skin. My claim is that proprioception is an aesthetic sense and that one can make aesthetic judgments based on proprioceptive experience. I will argue that, just as one can deem a painting beautiful based on one's visual experience of the painting, one can deem a certain movement beautiful based on one's proprioceptive experience of the movement. In addition, I posit that in a certain sense an observer can proprioceive the beauty of another's movement. Although this may sound surprising, I argue that recent discoveries about the function of mirror neurons—neurons that are activated both when one performs a task and when one sees that task performed—as well as other empirical studies illustrating that when seeing others move we kinesthetically represent their motion, support the case and potentially pave the way toward a third-person proprioceptive aesthetics.

I. THE PRIMA FACIE CASE FOR PROPRIOCEPTION AS AN AESTHETIC SENSE

A central reason to think that proprioception is an aesthetic sense is that one way professional dancers claim to evaluate the aesthetic qualities of their movements is by *feeling* (that is, proprioceiving) what is right. Other types of artists, as well as athletes, models, and perhaps even those with natural grace, may sense the beauty of their movements proprioceptively, but the proprioceptive aesthetic sensibility of the dancer is perhaps most pronounced.[1] Ask a dancer why he or she changed a certain movement to make it cover less space, or decided to move his or her wrist just so, and the answer will sometimes be that the dancer can feel that this particular way of movement is better than the other way: it is more exciting, or graceful, or brilliant, or any other number of aesthetic qualities that bodily movements can manifest. The feeling, or as the anatomist Charles Bell called it, "muscular sense," upon which such judgments are based is proprioception.[2]

To be sure, when it comes to evaluating a dance as a whole, even a solo dance, proprioception is only one of the senses by means of which aesthetic self-evaluation can occur. My focus here, however, is not on the aesthetic qualities of dance in general; rather, it is on the aesthetic qualities of bodily movements or positions themselves that sometimes, but not always, occur in the context of a dance.[3] For example, a dancer attempting to perfect an arabesque, I claim, makes certain aesthetic judgments based on how the position is proprioceived. Of course, in such a situation vision is also of great importance, but vision is not a dancer's only guide: While dancers use mirrors as tools and often make self-corrections based on how a movement looks, looking at oneself in the mirror is often not the best guide to self-correction (to say nothing of the futility of looking at one's body directly). Not only can turning one's head to look in the mirror destroy the desired effect of the movement, but a trained dancer often trusts proprioception *more* than vision when it comes to evaluating aesthetic

qualities of his or her movements and positions. So while vision is an important means of aesthetic self-evaluation, it is not the only means. Professional dancers, at least, seem to experience aesthetic qualities proprioceptively and make aesthetic judgments based, at least in part, on proprioceptive experience. Indeed, much of a dancer's work involves constant aesthetic refinement of movement qualities based on proprioceptive input.

II. THE EXCLUSION OF THE BODILY SENSES FROM THE AESTHETIC REALM

The experience of the dancer, then, indicates that proprioception is an aesthetic sense. However, a long tradition of theorizing about aesthetics takes the aesthetic senses to include only those that are capable of focusing our attention beyond our own bodies. Aesthetic experience, it is thought, while sensuous (depending on sense experience), is not sensual pleasure, not pleasure in our own bodily sensations. Rather, as D. W. Prall puts it, "experience is genuinely and characteristically aesthetic only as it occurs in transactions with external objects of sense."[4] Or, in the words of George Santayana, in aesthetic experience "the soul … is glad to forget its connection with the body."[5] Given this tradition and given that the very function of proprioception is to provide information about, and awareness of, our own bodies, one might wonder how proprioception could be an aesthetic sense.

Traditionally, the only two senses that are thought of as aesthetic are vision and hearing. As Francis Hutchenson points out, "the ancients observe a peculiar dignity of the senses of seeing and hearing that in their objects we discern the kalon [beautiful], which we do not ascribe to the objects of the other senses."[6] According to Hegel, "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."[7]

However, in questioning the privileged status of the visual and the aural, I am not alone. As others have argued, many of the features that supposedly give vision and hearing their privileged status are features of other senses as well.[8] The ability vision and hearing afford us to distance ourselves, both physically and psychologically, from the object of awareness is a good example. The light waves that bounce off a painting must come in contact with one's eyes no less than the molecules wafting away from the perfume bottle must come in contact with one's nose. Moreover, while one must eat to survive, once the edge of appetite is taken off, one can distance oneself from one's needs and dine without the practical purpose of fending off hunger.

Indeed, in some respects, a proprioceptive aesthetics may be less controversial than an aesthetics based on the so-called lower senses, namely, taste, touch, and smell. For, in the words of Thomas Aquinas, "we do not speak of beautiful tastes and beautiful odors"—or, at least, if we do it is with a bit of awkwardness.[9] However, it is natural, at least for dancers, to talk of experiencing beauty proprioceptively. A dancer, during a rehearsal onstage—a situation in which there are no mirrors—may claim that a certain movement or position is beautiful or, since dancers tend to be a self-critical lot, complain that the beauty, or whatever other aesthetic quality he or she is aiming at producing, is lacking: "The movement is too abrupt"; "The line is ugly"; "I'm not feeling the connections" are all phrases that roll naturally off a dancer's tongue.

Furthermore, it is sometimes thought that the aesthetic senses do not admit satiety—in Bernard Bosanquet's words, "the aesthetic want is not a perishable want, which ceases in proportion as it is gratified"—and that this precludes some of the exteroceptive senses (senses that typically inform us about the external world) from being aesthetic senses.[10] For example, it might be thought that at a certain point the pleasures of eating chocolate and other delicacies turns to disgust. Of course, while one becomes sated by food, it may be that the pleasure of eating, if it could be prolonged without actually ingesting anything, is insatiable. In any event, whatever we think of this as a criticism of gustatory taste, it seems even less applicable to proprioception. Although one gets physically exhausted in moving, as one might get physically exhausted in looking at paintings in a museum, one seems to never tire of the experience of moving in aesthetically valuable ways.

The idea that proprioception is an aesthetic sense, however, seems to present us with a

unique problem: aesthetic senses seem to require a distinction between the object one senses and the bodily sensation itself, a distinction that can be made with sight, smell, taste, touch, and hearing. However, proprioception, it might be claimed, cannot focus our attention beyond ourselves, for it is by definition a type of self-perception; it is, as Oliver Sacks puts it, "the inner sense by which the body is aware of itself."[11] Thus, it might be claimed, the distinction between the object one senses and the bodily sensation dissolves. I will address this claim as well as the correlative claim that the object of proprioceptive experience seems to be necessarily private, making it difficult to see how a proprioceptive experience could, as Immanuel Kant claimed aesthetic judgments must, command universal assent, and making it difficult to see how a proprioceptive experience could ground true disagreement and not just differing opinions.

III. PROPRIOCEPTION AS BODILY YET CORRIGIBLE

Though there is a line of thought going back at least to Plato that disparages the body, it seems clear that in some circumstances one can sense the beauty of one's own body. Imagine, for example, a highly skilled individual creating representations of a bird in flight with his or her 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. Rather, the apparent problem of taking proprioception as an aesthetic sense arises because of the particular nature of proprioception and the way it allows one to perceive one's own body. For proprioception may seem to direct our attention primarily and perhaps exclusively not simply to one's own body, but to the sensory itself. Thus, the difficulty, one might argue, is that as opposed to even the "lower" sense of touch, which is thought to represent objects, proprioception does not represent objects but, rather, merely the sensory.

The aesthetic senses, however, do not provide us with merely sensory information but, in some sense, reach out to objects in the world, or at least they must do so if correct aesthetic judgments based on such sensations are to lay claim to at least intersubjective validity. Is proprioception a mere sensation, more similar to pain, for example, than vision, or does proprioception represent objects?[12] Representation, as opposed to mere sensation, allows for misrepresentation, and I think that it is not too difficult to see that proprioception does, too. One way vision can misrepresent the world is that it can represent p as q when p is not q. When I look at a field and see it as covered with snow when it is actually covered with clover in bloom, my visual experience is misrepresenting the field. Proprioception can similarly misrepresent the world. Choreographers often see dancers make mistakes based on such misrepresentations: a dancer might proprioceptively experience his or her knee as perfectly straight, when it is in fact bent, or a hand as directly above his or her head, when it is behind. More dramatic proprioceptive mistakes occur with amputees who have phantom limbs; in this case they represent p as q, where p does not even exist. Even pain judgments can be mistaken in this more dramatic sense: with phantom limb pain, one can feel foot pain without having a foot. Yet, arguably, judgments of pain are not mistaken in the former sense: if a pain appears sharp, then it is sharp. However, one's limb may proprioceptively appear straight when it is bent.

This illustrates that proprioception is not merely sensory, but represents objects in the world. The object in the case of proprioception is, to be sure, very close to the perceiver: it is one's own body. Although there is a sense in which one's own body is not part of the world, this is not the relevant sense here; rather, the relevant contrast here is between one's body and one's bodily sensations, between the positions and movements of one's limbs and the sensations one has of these positions and movements, a contrast that can be made with respect to proprioception.[13] Proprioception may be a type of self-perception, but the self in question is not merely sensory. Thus, proprioceptive experience, it seems, need not be doomed to exist solely in the realm of the mere agreeable.

IV. OVERCOMING THE DEEPER OBJECTION: THE PRIVACY OF THE OBJECT OF PERCEPTION

The objection that proprioception cannot be an aesthetic sense, however, runs deeper than the

claim that proprioception provides us with information only about our bodily sensations and not about the world. For, despite the aforementioned similarities between vision and proprioception, there still seems to be a significant difference between the two cases: the example of the choreographer and the dancer shows that vision can be used to correct proprioceptive judgments, yet when we disagree about the snow on the field, we are disagreeing about properties in the world that are visually presented to us both. The deeper objection is, then, how is it possible for there to be disagreement, not just differing opinions, about properties that are presented to two individuals proprioceptively?

The problem is that while an individual painting, for example, can be seen by many different people, only I can proprioceive my own movement. You may be able to experience the same type of *developé* as the one I am performing—one, say, that begins with the foot wrapping around the ankle of the supporting leg, slowly proceeding up the calf to the knee, moving more quickly first into a short and then a longer *attitude*, and finally slowing down for the final extension of the knee—but you cannot experience the same *token developé*, that is, the *developé* done by my right leg at time *t*. It seems that a movement-token, that is, a particular bodily movement at a certain time, can be proprioceived only by one individual, the person performing the movement. Or, in other words, the proprioceived movement-token seems to be private. It is not merely that the proprioceptive experience seems private since, arguably, there is a sense in which all experience is private. Rather, it is that the object of experience appears to be private: the object of visual experience, a painting, can be experienced visually by many observers, while the object of proprioceptive experience, one's own body, can be proprioceived only by oneself.

It may be that the object of proprioception, the movement-token, is only typically private; presumably, conjoined twins who share an arm, for example, each proprioceive the same movement-token, that is, the movement of the shared arm.[14] However, even if the movement-token is not necessarily private, being typically private seems problematic enough—for an aesthetics applicable only to conjoined twins is not a satisfactory outcome. So let us ignore this case and focus on the typical situation.

The question, then, is whether the privacy involved in proprioception bars it from being an aesthetic sense. I think that the following thought experiment illustrates that it does not. Imagine a world that had a convention by which musicians were allowed to play music only while alone in soundproof rooms. There would be no recorded music, no chamber music, no orchestras (definitely a sad situation), but I could enjoy the Goldberg Variations by playing them on the piano in a soundproof room, and you could do the same.[15] In this situation, are we barred from sensing any of the aesthetic properties of the music we play? It seems to me that we are not. An indication of this is that after our isolated sessions, you and I could discuss the aesthetic value of the piece. Of course, in order to discuss the auditory qualities of the piece *as performed*, we would need to determine whether our techniques are similar enough to produce similar sounds. Without being able to hear each other this would be difficult, since the mere fact that we both followed the same score would not suffice to determine that we produced significantly similar sounds, but it would not be impossible: I could watch a (silent) film of you playing, we could discuss our interpretations, and so forth. Barring, of course, the problem of other minds, once we have determined that our interpretations of the piece are close enough, we can assume that we are talking about different tokens of the same type of musical performance, which in the imagined situation seems sufficient to ground discussion of, and not just differing opinions about, the aesthetic qualities of the performance. In other words, audition would still be the means by which we experience the aesthetic properties of music, even if token musical performances are always private.

The situation with proprioception, though private by nature and not merely by convention, is similar to the private music room example—the "Beatles in a box" example, as it were—in the relevant respects: a dancer might proprioceive only his or her own movements, but by talking to others and watching others, dancers can judge whether they are moving, more or less, in the same way.[16] If a dancer says, "The movement is beautiful," I should not respond

after performing the same type of movement, "To each his own, you find it beautiful, I do not, there is no standard." Rather, barring vagueness and assuming that we are not relativists about aesthetic properties in general, if the movement does not feel beautiful to me, it would be most reasonable to assume that either there are subtle but significant differences in the way we are executing the movement or that one of us is mistaken in our aesthetic judgment. This is what would occur in the odd music community as well: after exiting our soundproof rooms, if I claim that the first variation is tranquil and you deny this, we will not say, "To each his own," but instead we will assume either that one of us was playing the piece in a different way or that one of us is mistaken. If this is correct, the type of privacy involved in proprioception does not preclude proprioception from being the means by which we experience certain aesthetic properties.

In fact, dancers with similar training and abilities often do agree on the proprioceptive qualities of certain movements, with some steps feeling awkward, others graceful, some dynamic, some dull, indicating that such aesthetic judgments not only command the sort of "subjective universality" that Kant thought was required of aesthetic judgments, but seem to possess it as well.

V. THE INTERDEPENDENCE OF THE PROPRIOCEPTIVE AND THE VISUAL

One might object that proprioception only gets its purchase on the aesthetic by informing us about what is beautiful visually. Although a dancer may make judgments based on proprioceptive information, one might argue that this does not show that proprioception is an aesthetic sense, since proprioception in these situations merely serves as a guide to the visual. In other words, the objection is that the only way proprioception is involved in aesthetic judgments about movement is that it can allow us to picture what the movement looks like, and we may then judge that the movement would be beautiful, if *seen*.

It is difficult to counter this objection definitively. However, except for the theoretical considerations against proprioception being an aesthetic sense, which I have addressed, there is little reason to think that a translation of proprioceptive information into visual imagination *always* occurs in making such judgments. Proprioception can, and sometimes does, provide us with a platform upon which visual imagination can work. However, since my claim is that we can make aesthetic judgments based on proprioceptive input, it is consistent with proprioception sometimes being merely grounds for visual imagination.

Moreover, a consideration that seems to tell in favor of proprioception being directly aesthetic, as it were, is that some blind dancers, such as the great Cuban dancer Alicia Alonso (though not blind at birth), seem to be artistically creative and, as such, seem to be aware of aesthetic properties. Though visual memory can fade with time, perhaps blind dancers' apparent creativity is the result of remembering what certain movements look like; or perhaps it is merely the result of being well trained by sighted instructors. But this need not be so. Imagine an isolated community of the blind.[17] Could some form of dance develop in such a community? One can imagine dance evolving out of the movements that two people in bodily contact might make in response to music. Since such dancers could observe each other through touch, it seems that they could intelligibly converse about the various experiences they have while engaged in dance. This, it seems, would indicate that for such dancers, proprioceptive experiences are not derived from visual experiences.

Of course, in such a situation, the aesthetic judgment of the dancers might be partially based on tactile experience. But, apart from the desire to exclude proprioception from the realm of the aesthetic at all costs, there is little reason to think that such dancers' movements are only aesthetically valuable in as much as they are physically felt a certain way. Rather, what seems reasonable is that in the imagined community of blind dancers, the proprioceptive and the tactile often (though perhaps not always) work hand in hand, one informing the other as to the aesthetic content of the movements.

The type of interdependence of aesthetic senses that would occur in the community of blind dancers is, at least at times, characteristic of the relation between the proprioceptive and

the visual: while a dancer's proprioceptive aesthetic sensibility is informed by his or her visual aesthetic sensibility, visual aesthetic sensibility can also be informed by his or her proprioceptive aesthetic sensibility.[18] To be sure, in some cases, one might proprioceptively judge that a movement is beautiful because one knows that the movement, if seen, would look beautiful. But in other cases, one might visually judge that a movement is beautiful because one knows that if proprioceived, this movement would feel beautiful.

The partial dependence of the visual on the proprioceptive may not even be confined to the realm of bodily movements and positions. We speak as if we are visually aware of aesthetic properties, such as the grace of a curve in a statue or painting, but perhaps here our judgment of grace may be based on our sense that if we were to move our arm in such a way, the movement would feel graceful. The suggestion here is not just that some visual judgments may depend on proprioceptive input but, moreover, that they depend on proprioceptive, aesthetic input.

Why is the Mona Lisa's smile so captivating? Certainly, it is visually captivating, but, I suggest, it is also proprioceptively captivating: when we observe the smile we feel what it is like to smile in that way. If this is correct, there seems to be no reason to claim that visual experience is necessarily more fundamental than proprioceptive experience. Rather, the visual and the proprioceptive work hand in hand: I take my own bodily movements to be proprioceptively graceful in part because I judge that if seen, these movements would look graceful, and I take certain bodily movements of others to be *visually* graceful in part because I judge that if I were to move in this way, these movements would feel graceful.

VI. THE ROLE OF PROPRIOCEPTION IN THE OBSERVERS' AESTHETIC JUDGMENT

So far, I have argued that proprioception can allow one to perceive aesthetic qualities of one's own movements and positions—this is an aesthetics, as Friedrich Nietzsche might have put it, from the point of view of the artist, in this case the dancer.[19] I also suggested that proprioception may play an aesthetically relevant role in the experience of the receiver of art, that we perceive the aesthetic properties of the movements of others not only visually but also proprioceptively. I now want to further explain, as well as argue for, this latter claim, the claim that proprioception plays an aesthetically relevant role in the experience of the audience member sitting motionless in the darkened theater.[20]

My suggestion is that when we watch someone dance there is a sense in which we proprioceive aesthetically relevant aspects of the dancer's movement. This is meant to be as surprising as it sounds: when watching a dancer move, not only can we represent in our bodies movements we see on stage, which may sound surprising enough, but also in becoming aware of these representations we, in some sense, proprioceive the dancer's movements. My suggestion is speculative, but if it is correct, it should assuage any lingering worries about the privacy of proprioception barring it from the realm of the aesthetic—if one can proprioceive the movements of others, proprioception is not private—and, more significantly, provide us with a new perspective on the aesthetically valuable qualities of dance.

Of course, just as proprioception is not the only aesthetic sense for dancers onstage, proprioception is not the only aesthetic sense for audience members. Such things as the geometrical patterns of the *corps de ballet* or the relationship between the movement and the music are not perceived entirely proprioceptively, if perceived proprioceptively at all.[21] Nevertheless, it seems to me that aesthetic judgments of an individual movement need not be based entirely on visual input or on imagining how that movement would feel if one were to perform it. Rather, there are some aesthetic judgments that are based, at least in part, on the proprioceptive sensation of the movement being observed, a sensation one can have while motionlessly watching others move.

There are a number of different strands of empirical support for the idea that when seeing motion (or even static images that capture motion) we can represent movement in our bodies. One such strand comes from the recent discoveries of a class of neurons, dubbed "mirror neurons," which are activated when one sees certain types of movements, much as they

would be activated if one were to perform the movement oneself. If, as a team of researchers puts it, "by means of [the mirror neuron] system, the observer during action observation is placed in the same 'internal' situation as when actively executing the same action," observing dance may give one the internal experience of dancing.[22]

The most significant discoveries about mirror neurons are the result of research on monkeys.[23] Macaque monkeys were presented with objects such as raisins, slices of apple, and paperclips, and when the monkeys observed the experimenter grasping and manipulating these objects, electrical activity was recorded in an area of the premotor cortex that is also activated when the monkeys perform these tasks themselves.[24] Although electrodes have never been inserted into human brains for the purposes of observing mirror neuron activity, transcranial magnetic stimulation experiments show that when subjects observe an experimenter performing grasping and placing actions, their motor-evoked potentials are enhanced in the same muscular groups that are used by the experimenter to execute those actions and, significantly, the pattern of activation changes in accord with changes in the observed movement.[25]

Mirror neurons have been identified only for a limited range of observed actions—primarily actions such as grasping, manipulating, and placing—but there are indications that the representation of motion is an important component in a wider range of situations. For example, it has been shown that subjects perceiving static photographs of an individual in motion are more likely to mistake the position of the individual as being further along in the action than as being in a position that is prior to that in the photograph, indicating that even in perceiving static images, we can represent dynamic information.[26] Moreover, subjects tend to perceive geometrical figures in a way that is consistent with how that figure is naturally drawn: if they see a circle being traced by a point of light that speeds up along the top and bottom of the circle and slows down along the sides, subjects tend to perceive an ellipse rather than a circle, which is consistent with the fact that we slow down while drawing sharp curves.[27] It seems to me that one explanation of what is going on here is that our understanding of the circle is not entirely visual, but that we also understand its shape by feeling what it is like to draw it; when we watch a shape being drawn, the motion of drawing resonates in our own bodies.[28]

Do dancers' movements "resonate" in observers' bodies? Is there any evidence that while watching dance (and other aesthetically valuable bodily movements) we represent the movement not just visually, but kinesthetically as well? If there is a system, "a mirror system" let us call it, whose function is to produce such a resonance, it would help explain a number of things. For example, it would help explain why watching good dancers is such an important element of dance training: if by watching someone move gracefully one feels the movement, one will be more easily able to reproduce the movement quality. Of course, one learns visually as well: one sees a dancer cross his or her arms during a *port de bras* and imitates this movement. However, it seems that a dancer, while observing others dance, also has an immediate or automatic sensation of movement, a sensation that can capture and allow one to imitate the overall quality of the movement, which would at least be difficult to specify in terms of how each particular arm, leg, torso, and head movement looks. Such a system would also explain why films of dance that have been sped up—perhaps by an editor in order to save time—are often not at all aesthetically pleasing and can be painful to watch; moving one's body in that way does not provide one with aesthetic pleasure but just hurts![29] Finally, it might also help explain why people who have never had dance training often do not appreciate certain aspects of dance as readily as those who have had dance training: having done similar movements oneself might heighten one's proprioceptive awareness, which, in turn, might facilitate the proprioceptive experience of the movement done by others.[30] What is it that we enjoy so much in watching Suzanne Farrell dance? Part of the enjoyment, no doubt, comes from the visual experience as well as seeing how her movements relate to the music, for one of Farrell's great strengths is her musicality. But, if my hypothesis is right, part of the aesthetic pleasure depends on proprioceiving her movements.

This type of resonance behavior may not be the only way to explain the above phenomena;

nonetheless, its potential explanatory power and the empirical research that suggests that we sometimes represent visual motion kinesthetically support my view that at least some audience members sitting motionlessly in the dark have something going on in their bodies that is similar to what would be going on if they were to actually move in a way similar to what is observed.

I claim that in such a situation, we are proprioceiving *the dancer's movements*. Although this is extending our use of the term "proprioception," I suggest that it is legitimate. In arguing for this it would be useful to know whether the proprioceptive centers of the brain are activated in this situation, which is unknown. (In fact, it is not entirely clear exactly which areas of the brain are responsible for proprioception, though we know that lesions in the left-parietal lobe can cause loss of proprioception.) Although we lack this information, I think that the analogy between the situation with which I am concerned and other cases of indirect perception (perception where we perceive one thing in virtue of perceiving something else) is close enough so that it is reasonable to call the situation "proprioception of another's movement." Arguably, you can hear grandmother's voice when she is talking to you on the telephone, even though what you hear more directly is the vibrations of the speaker in the telephone. The situation with proprioception is relevantly analogous: just as one *hears* what is at the end of the telephone's causal path, it would seem that one proprioceives what is at the end of the mirroring system's causal path.

Although the situations are analogous in some respects, one might argue that there is a significant dis-analogy between them. Specifically, when you hear grandmother's voice on the telephone, there is no intervening sense modality, the sensory process is entirely aural: you *hear* her voice in virtue of *hearing* the vibrations of the speaker in the telephone. Yet when you purportedly "proprioceive" someone else's movement, vision is involved as well as the kinesthetic sensations in your body. This, one might argue, disqualifies the process from counting as indirect proprioception of someone else's movement. It may be that in watching dance we kinesthetically represent the dancers' movements in our bodies and, even, that this is aesthetically relevant, since it allows us to simulate the proprioceptive feelings of the dancers in our imagination, but this does not count as proprioceiving another's movement.

I think that at times we very well may simulate the proprioceptive feelings of dancers in our imagination; however, I also think that, just as with one's own experience of dancing, part of the experience of watching dance involves a more immediate or automatic proprioceptive experience. The dis-analogy, as I see it, while real, is not relevant. In both cases there is an intervening mechanism in virtue of which one perceives a direct target. When speaking with grandmother, there is a causal chain that starts with her and culminates in your auditory experience representing her voice. Similarly, when proprioceiving (as I would like to put it) a dancer move, there is a causal chain that starts with the dancer on stage and culminates in your kinesthetic experience representing the dancer's movement. To be sure, part of the causal path in the latter case involves vision (rather than wires, vibrations of speakers, and so forth), but it is not clear why this should be relevant. One *hears* grandmother's voice in virtue of *hearing* the vibrations of the speaker in the telephone and, if I am right, one *proprioceives* the dancer's movements and positions in virtue of seeing the dancer move.

Here is a thought experiment that I think further illustrates the irrelevance of an intervening sense modality. There are prosthetic "vision" devices that, when encountering objects in what would be the visual field of a blind individual, represent the shape and contours of the objects via pressure on the skin. A video camera is hooked up to a plate worn on the stomach or back and represents the image with a vibrating pattern. Now, while such devices can help blind individuals navigate their environment, it is at least somewhat contentious to call such navigation "visual," since it does not involve what we would typically call visual experience.[31] To make the situation analogous to the audience member's kinesthetic experience, let us imagine that for individuals who are blind due to eye damage (as opposed to being cortically bind), such tactile experiences do cause visual images of the objects by stimulating certain visual regions of the brain. These visual images may be degraded in certain ways: perhaps they lack

color and are less distinct than objects one sees with one's eyes. However, if these images appear without further conscious effort on the subject's part (as does the kinesthetic representation of motion in the audience member's body), I think that we would not say that these individuals have only tactile sensations that allow them to imagine what the object looks like. Rather, I think it would be natural to say that this is a way of *seeing* these objects. Since the intervening tactile sensation would not prevent us from taking this as a case of seeing an object, an intervening visual sensation should not prevent us from taking the audience member's kinesthetic experience of movement to be a case of proprioceiving a dancer's movement.

I think that the above analogy indicates that extending the meaning of the term proprioception in this way is reasonable. I also think that this extension, if adopted, could facilitate aesthetic discourse on an element of experience that otherwise would be quite cumbersome to describe. Dance criticism often sounds flat to dancers' ears. Could this be because we lack an adequate way of describing what I take to be the proprioceptive element of watching dance? (Perhaps some are still uncomfortable with expanding the meaning of the term "proprioception" in this way. If so, simply take this subthesis of my article to be that proprioception* allows us to appreciate the aesthetic qualities of the movements of others, where proprioception* should be interpreted as our motor-informed visual sense of other people's movements.)

VII. THE AESTHETICS OF PROPRIOCEPTIVE AND VISUAL ILLUSIONS

A possible objection to my claim that proprioception is an aesthetic sense for the dancers or for the audience members is that the aesthetically relevant qualities of movement depend on the visual illusion—the appearance of floating on the stage during a *bourrée*, of suspending oneself in the air in *grand jeté*, and so forth—produced by the movement. In other words, what is aesthetically relevant is how a movement looks, not how it actually feels.[32]

Certainly, some aspects of how a movement actually feels are aesthetically irrelevant. Performing certain steps, such as *pas de couru* or a difficult lift, can be painful, yet the experience of pain is typically not aesthetically relevant for either the dancer or the observer. Moreover, the aesthetic value of bodily movements at least sometimes depends on how they illusorily appear. Ballet, in particular, is based on the creation of visual illusions: leaps that appear to defy gravity, limbs that appear elongated, and so forth. Yet if all aesthetic judgments of bodily movements depend on the illusory image produced by the movement, and if proprioception only tells us how the actual movement feels, there is little, if any, room left for a proprioceptive aesthetics.

I think, however, that neither condition is satisfied. Not all aesthetically valuable movements are intended to create visual illusions; sometimes, especially outside the realm of ballet, a movement is supposed to be seen for what it is. A ballet dancer's beveled foot at the end of an arabesque is intended to create a longer line by drawing the eye out and up, while a modern dancer might leave the foot relaxed in order to show the body in a more natural state. But, more importantly, it seems to me that one can proprioceive an illusory movement. When one performs a "gravity defying" leap by further extending one's limbs at the top of the leap, one has a proprioceptive sensation of flying and, at least for certain individuals, I would claim that the same goes for watching such a leap; in watching the leap we feel the flight, which is, in part, what makes watching such movements aesthetically satisfying. Indeed, I would claim that one of the wonders of dancing—one of the reasons why dancers will put up with the pain it often involves—is that dance allows one, as it were, to experience the impossible.

If one can proprioceptively experience a leap that defies gravity, this means that there are proprioceptive illusions. That there are such illusions is widely accepted: pilots in flight and in-orbit astronauts can experience proprioceptive illusions related to their position in space, and artificial muscle vibration can create a proprioceptive illusion that one's limb is bent at a certain angle when it is not. Of course, these sorts of illusions are more robust than the proprioceptive illusion one experiences when performing a leap, but at the same time, much studied visual illusions, such as the Mueller-Lyer illusion, are more robust than the visual

illusion one has of seeing a dancer defy gravity. So, while the illusory element of the aesthetics of bodily movements cannot be overlooked, we can proprioceive, as well as see, illusory movement.

VIII. SHIFTING OUR FOCUS TO THE PROPRIOCEPTIVE

Proprioception, then, if I am correct, enables one to perceive aesthetic qualities of one's own bodily movements. There is a prima facie case to be made in favor of the claim, and the theoretical considerations that might tell against the possibility of proprioception enabling us to perceive aesthetic qualities of our own movements do not stand.

Beyond sensing certain aesthetic qualities of our own movements, audience members may base certain aesthetic judgments about dancers in part on the internal experience of movement one has while watching dance. As I argued, empirical work on how we represent dynamic information when we see movement lends support to the view that while watching dancers we represent their movement in our bodies. I further suggested that via this internal representation of movement we are, in a sense, proprioceiving the movements of others. Thus, putting the pieces together, it would seem that, since movement is the essence of dance, the aesthetic value of a dance partially depends on proprioceptive experience.

It is likely that much of the proprioceptive information we receive about the movements of others, and even of ourselves, is below the level of conscious awareness, but by shifting our awareness to the proprioceptive experience of watching others move and of moving ourselves, this could change. It is sometimes thought that a deliberate focus on how one is moving may hinder one's performance of the movement. In the words of the great ballet master: "Don't think; do!" If this is so, in the first-person case we may have to settle for enjoying whatever aesthetic proprioceptive experiences that happen to bubble up to consciousness naturally. However, when it comes to the experience of the audience member observing the activity behind the proscenium arch, the situation is different. If I am right, certain aspects of the observer's experience of dance can be enhanced by an awareness of the bodily feeling of dance. With this awareness, the life of the dance critic will encompass another dimension, and when the curtain rises the audience will discover an abundance of beauty that has been patiently waiting by the sidelines to be proprioceived.[33]

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1. See J. R. E. Ramsay and M. J. Riddoch, "Position-Matching in the Upper Limb: Professional Ballet Dancers Perform with Outstanding Accuracy," *Clinical Rehabilitation* 15 (2001): 324–330.

2. Bell is usually credited with the first clear formulation of the notion of "muscular sense." See Charles Bell, *The Anatomy and Physiology of the Human Body* (London: Logman, 1826). The term "proprioception" was coined by Charles Sherrington in his Silliman Lectures, published as *The Integrative Action of the Nervous System* (New York: C. Scribner's Sons, 1906).

3. My claim here implies that we can distinguish between dances and aesthetically valuable bodily movements and positions, but I actually take it to be an open question whether, say, a graceful arm movement itself should count as a dance.

4. D. W. Prall, *Aesthetic Judgment* (New York: Thomas Y. Crowell, 1929), pp. 28, 56.

5. George Santayana, *The Sense of Beauty* (New York: Dover Publications, 1955), p. 24.

6. Francis Hutchenson, *An Inquiry Concerning Beauty, Order, Harmony, Design*, ed. Peter Kivy (The Hague: Martinus Nijhoff, 1973), p. 47.

7. G. W. F. Hegel, *Aesthetics: Lectures on Fine Art*, 2 vols., trans. T. M. Knox (Oxford: Clarendon Press, 1975).

8. See, for example, Carolyn Korsmeyer's delightful book, *Making Sense of Taste: Food and Philosophy* (Cornell University Press, 1999) and Dominic McIver Lopes's interesting work on the aesthetics of touch, "Vision, Touch and the Value of Pictures," *The British Journal of Aesthetics* 42 (2002): 87–97.

9. See Thomas Aquinas, *Summa Theologiae* (New York: McGraw-Hill, 1960), vol. I, q. 27.

10. Bernard Bosanquet, *Lectures on Aesthetic Experience* (London: McMillan & Co., 1968), p. 4. For a discussion of this line of thought and a compelling argument against it, see Korsmeyer, *Making Sense of Taste*.

11. Sacks defines proprioception as such in the forward to Jonathan Cole, *Pride and the Daily Marathon* (MIT Press, 1995), p. x, which chronicles the amazing life of an individual with complete loss of proprioception and touch.

12. Of course, there are representational accounts of "pain" as well.

13. This is consonant with the view put forth in José Bermúdez, *The Paradox of Self-Consciousness* (MIT Press, 1998). See also Wittgenstein's distinction between the body as "object" and the body as "subject." Ludwig Wittgenstein, *The Blue and Brown Books* (Oxford: Basil Blackwell, 1958).

14. Thanks to Steven Jacobson for this point. Virtual reality might be another way an individual can proprioceive another's movements since virtual reality seems to create situations where we speak of proprioceiving a movement that is not a movement of our own body. That is, when watching an image of your arm reach out across the Hudson over to New Jersey, it seems that you are proprioceiving a virtual arm.

15. The line between a score and a recording is a vague one: if individuals had player-piano scores for the Goldberg Variations and then played them in private on duplicate player pianos, the distinction between private and shared musical experience may seem to dissolve. To make the music room experience analogous to proprioceptive experience, I must exclude such borderline cases.

16. Credit for the phrase, "Beatles in a box," which alludes to Wittgenstein's "beetle in the box" thought experiment goes to Josh Weisberg.

17. Thanks to David Blumenfeld for suggesting this line of thought.

18. A dancer's auditory sense may also inform his or her proprioceptive judgments: a movement that feels, say, humorous might do so in part because it represents a rhythm that sounds humorous. Interesting thoughts on how the dependency also goes the other way can be found in Charles Rosen, *Piano Notes: The World of the Pianist* (New York: C. Scribner's Sons, 2002).

19. In Nietzsche's words, "our Aesthetics have hitherto…only formulated the experiences of what is beautiful, from the point of view of the receivers in art. In the whole of philosophy hitherto the artist has been lacking." See Friedrich Nietzsche, *Will to Power*, vol. II, trans. Levy (London: Foulis, 1910), p. 265.

20. I focus here on providing an account of how proprioception is relevant to the audience member's experience watching dance, but I hope that what I say will also indicate how someone may proprioceive the aesthetic qualities of various forms of art.

21. A further question is whether the expressive qualities (which are sometimes distinguished from aesthetic qualities) of a dance, such as its sadness, can be proprioceived. It seems to me likely that they can: when watching someone's bent-over, dejected posture, one feels the dejection partially by means of feeling the posture.

22. See M. A. Umilta, E. Kohler, V. Gallese, L. Fogassi, L. Fadiga, C. Keysers, and G. Rizzolatti, "I Know What You Are Doing: A Neurophysiological Study," *Neuron* 31 (2001): 155–165.

23. See V. Gallese, L. Fadiga, L. Fogassi, and G. Rizzolatti, "Action Recognition in the Premotor Cortex," *Brain* 118 (1996): 593–609.

24. It has been shown that a subset of mirror neurons are activated when the final part of the action (the actual grasping of the object) is hidden from view. See Umilta et al., "I Know What You Are Doing."

25. L. Fadiga, L. Fogassi, G. Pavesi, and G. Rizzolatti, "Motor Facilitation During Action Observation," *Journal of Neurophysiology* 73 (1995): 2608–2611.

26. J. Frede, "The Mental Representation of Movement When Static Stimuli Are Viewed," *Perception and Psychophysics* 33 (1983): 575–581.

27. P. Viviani and N. Stucchi, "The Effect of Movement Velocity on Form Perception: Geometric Illusions in Dynamic Displays," *Perception and Psychophysics* 46 (1989): 266–274.

28. There is also a large body of rich philosophical and psychological work on how visual information is (or at least sometimes is) information about what action to perform. See, for example, Maurice Merleau-Ponty, *Phenomenology of Perception* (London: Routledge, 1962); James Gibson, *The Ecological Approach to Visual Perception* (Hillsdale, NJ: Lawrence Erlbaum Associates, 1986); Alva Noë, *Action in Perception* (MIT Press, 2004); Andy Clark, *Being There: Putting Brain, Body, and World Together Again* (MIT Press, 1997). Another related paper is John R. Skoyles, "Motor Perception and Anatomical Realism in Classical Greek Art," *Medical Hypotheses* 51 (1998): 69–70, in which it is argued that the mirror neuron system may be relevant to understanding the aesthetic value of classical Greek art.

29. Some of the sequences in the film *Jesus Christ Superstar* (Norman Jewison, 1973)—where one can feel as if one has experienced whiplash—illustrate this effect quite well. Might it be that the editors in question lack developed proprioceptive sensibilities and find such sequences aesthetically acceptable or perhaps even aesthetically enhanced? There is also an absurd element in such dance sequences, which might be explained if, as it seems, we kinesthetically represent biological motion but not mechanical motion. When a movement is sped up so much so that it is no longer possible to perform, the typical harmony between the visual and the kinesthetic is missing and we have the absurd experience of seeing a human move as an inanimate machine.

30. It would be interesting to investigate whether people who have been diagnosed with a degraded sense of proprioception appreciate dance. Anecdotally, I know one individual who has been so diagnosed and he does claim to have absolutely no appreciation of dance. Oliver Sacks, in his essay "The Disembodied Lady," concerning a woman who has suffered complete loss of proprioception, mentions that before her illness, she had a great appreciation of dance, which seems to imply that afterward she no longer did. See Oliver Sacks, *The Man Who Mistook His Wife for a Hat, and Other Clinical Tales* (New York: Harper and Row, 1985). To be sure, this implication may not have been intended, and even if it was, there could be various reasons for why she no longer appreciated dance. Any evidence for a correlation between degraded proprioception and a lack of appreciation of dance would need to be interpreted carefully.

31. See Paul Bach-y-Rita, *Brain Mechanisms in Sensory Substitution* (New York: Academy Press, 1972).

32. Thanks to Dominic McIver Lopes for pressing this point, in his commentary on an earlier version of this paper presented at the 2002 Pacific American Philosophical Association meeting.

33. For other thoughts on this relatively unexplored area of aesthetics, see Richard Shusterman's "Somaesthetics: A

Disciplinary Proposal," *The Journal of Aesthetics and Art Criticism* 57 (1999): 299–313. My work here can be seen as part of this discipline. For comments on various earlier drafts of this work I am grateful to, in addition to those already mentioned in the endnotes, Rachel Zuckert, Susan Feagin, Graham Parsons, Joel Hamkins, and a *JAAC* anonymous referee, as well as numerous other people, including audience members at the Georgia State University Philosophy Colloquium, the CUNY Cognitive Science Colloquium, and The College of Staten Island PEP Talk Series. Writing this article was greatly facilitated by an NEH Research Fellowship (2004–2005), summer research support from Georgia State University, and a PSC-CUNY grant.