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"First Hand," Not "First Eye" Knowledge

Bodily Experience in Museums

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FROM FORBIDDEN TO INADEQUATE: LONGING FOR THE RIGHT TOUCH IN MUSEUMS

In museums all around the world it is assumed, even when there is no written rule to that effect, that touching the exhibits is forbidden. Institutions invest significant amounts of money to enforce this rule in visible and invisible ways: through a simple rope, with sensors that beep when one comes too close to the art, through a change of level in the floors or by placing the exhibit behind a glass. The reason is simple: the most recurrent damages to artworks, aside from those caused during transport, are the result of the public's disregard of the rule to refrain from touching the art—and repairing this type of damage is very expensive. To summarize the most common interventions required, it suffices to read this instruction given by the Getty Museum to its visitors: "DON'T touch pictures: fingers and fingernails scratch varnish and paint. DON'T touch picture frames: fingers dislodge fragile gliding and very old wood. DON'T touch furniture and sculpture: oils from your fingers stain wood and stone and etch your fingerprints into metals. DON'T enter the museum with crayons or pencils. DON'T open furniture drawers, lift tops, or sit on chairs and tables. If you're in a wheelchair, be careful that your foot-rest doesn't bump into furniture or walls" (Classen, 2005).

All these measures speak loud and clear of a deep-rooted need that is instinctual in mankind: that of touching objects to acquire information about them. Early museums, which originated in the seventeenth and eighteenth centuries from private collections, catered to this need by encouraging visitors to touch the exhibits. As sociologist Constance Classen writes, "the museum tour led by a curator matched the house tour that might be offered by a host. The curator, as gracious host, was expected to provide information about the collection and offer it up to be touched. The museum visitors, as polite guests, were expected to show their interest and goodwill by asking questions and by touching the proffered objects" (Classen, 2005). The switch toward our current touch-less museum experience was brought on for several reasons: the impossibility of controlling uncultured masses of visitors; improvement of display techniques and electric lighting, which reduced the need to handle the object in order to see it better; and the new prominent role of sight in nineteenth-century cultural discourse (see the works of Charles Darwin, Max Nordau, and Sigmund Freud, for example).

So, has touch disappeared from the museum experience? If touch means only the contact between one specific body part (the hand) and the object, then the answer is affirmative. But there may be more to touch than meets the hand.

First, although surface touch has been banned from museums, other bodily sensations are not. We are taught in school that the senses are five, but a quick introspection can easily reveal that our body is a much richer source of sensations than just surface touch. While reading this book your body has a specific posture. Whether you are sitting on an armchair with your legs crossed one over the other, or you are laying down on a sofa, you know exactly the posture of your trunk, your head, your upper and lower limbs, your fingers and your feet. You know all this despite the fact that your eyes are busy reading the words on this page, and you likely see very little of your body parts. The body sensation conveying this information to your brain is termed proprioception, and results from specialized sensory receptors in our muscles and tendons. Through proprioception we derive information about the angles of our joints, the static or moving state of our own body parts and—to some extent—the extension of our body segments in space (Longo et al., 2009). Proprioception, however, cannot inform the brain as to the overall orientation of the body with respect to gravity (upright, horizontal, or tilted). For this we rely on a different bodily sensation, termed vestibular sense, which depends on specialized receptors that rest within our inner ear, next to the sensory organ for hearing. Finally, a number of visceral sensations contribute to our body experience: from the rhythmic changes of chest volumes caused by breathing to the beats of our heart, from the feeling of the digestion processes in our stomach to some diffuse pain inside our body. These inputs associated with the physiological conditions of our own body and with the autonomic nervous system are known as interoceptive sensations, and are distinguished from touch, from proprioception, and from vestibular sensations (Craig, 2009). All of these body senses continuously provide information during our museum visits, albeit not through our hands.

The second reason why touch has not disappeared from the museum experience is more subtle and has to do with the multisensory nature of our perceptual experience. Prohibiting touch does not halt the constant and unavoidable tendency of the visitors to represent a multisensory environment. Even when we are forced to keep distant from a painting or a sculpture, and thus seemingly allowed only a visual experience, our brain builds a representation of the observed object that goes beyond each single sensory modality. This occurs because our perceptual experience is fundamentally integrative, binding together in a seamless way inputs from multiple sensory inputs with motor plans and action executions. At any given moment our brain processes multisensory and motor inputs, and forges a representation of the environment in which each contribution is weighted as a function of its reliability (the so-called optimal integration theory of multisensory perception; Ernst and Banks, 2002; Alais and Burr, 2004). Thus, we can evoke touch through sight or audition and our bodies anticipate the sensation of touch when we are particularly close to the object that we are about to stroke. We can activate our vestibular sensations through sight, or feel a sensory-motor impulse when confronted with moving artworks (or even just artworks which refer to or imply motion). Finally, as detailed above, we constantly experience other bodily senses while in the museum environment.

Extending the concept of touch to bodily sensations and to multisensory perception has at least two implications: first, museum restrictions to one's ability to touch do not necessarily imply a complete absence of some alternative bodily experience of art; second, permission to touch does not necessarily imply a more accurate perception of the work of art. In this chapter we will address each of these implications, exploring also the consequences of this perspective for the experience of blind people in museums.

THE EXPERIENCE OF ART THROUGH PROPRIOCEPTION AND INTEROCEPTION

One of the qualities of art that makes it worthwhile to experience is its power to elicit empathetic emotions. In figurative art, we often find ourselves identifying with the protagonist of a painting or sculpture, wondering how it would feel to be in the same place, time, or situation of the sitter portrayed. It is an intense way to vicariously feel what our fellow humans feel, of exploring—as Rothko once said—"tragedy, ecstasy and doom" safely and painlessly. This empathic process, which most frequently occurs as the visitor takes in the artwork through sight, is felt in one's body. The response is as physical and physiological as it is intellectual. When visual routes are not available, we propose that one meaningful way to convey this sensation is posing the visitor as the figures in the painting or the sculpture, along with a verbal description of what the artist represented. To know and to feel that one's body is in exactly the same position as that of the person portrayed eliminates the gap between public and artwork, thus throwing one's body (as the phenomenologist Merleau-Ponty would say) in the space and time of art itself.

Proprioception (that is, the body position sense) is at the core of a series of works by Erwin Wurm—the "one-minute sculptures," an ongoing project started in the late 1980s. In these works the artist asked passers-by to pose with one or more everyday objects for approximately one minute. The living sculpture is photographed and, in its stillness and volumetric solidity, it becomes the equivalent to more traditional sculpture forms. Aside from all the considerations on Wurm's project as a critical commentary to notions of permanence and materiality in sculpture, this work gives visitors a chance to feel the sculpture's position in their own muscles and skeleton, making their identification with the work something that you can feel, rather than think about. Similarly, in 2009 sculptor Anthony Gormley presented "One and Other," which consisted of having ordinary people occupy, for one hour each, the empty fourth plinth in the northwest corner of Trafalgar Square in London. A total of 2,400 people took the stage, becoming a living sculpture and a collective portrait of contemporary Great Britain. Once again, embodying what is on display can provide a new self-awareness, which in turn has the power to deeply affect our experience of art. We are not made to be only viewers, but rather fully sentient entities with a personal understanding of the art—not only at a high cognitive level, but also at a more basic, yet rich sensory level.

Another example of art that relies on body sensations other than touch, is art based on biofeedback. In the last decade, sensors capable of recording physiological signals became non-invasive, cheap, and reusable. In sports equipment, a simple metal handle can serve to capture the heartbeat, a band around the chest can measure breathing, and a few reusable surface electrodes can measure skin conductance response (that is, the electrical conductance of the skin, which varies with its moisture level). These indicators capture private interoceptive experiences, and initially attracted attention because they are indices of psychological and physiological arousal. One example of such artworks is "Emergence," a mixed-media sculpture by Sean Montgomery. In the words of the artist,

> when a viewer touches the installation, the electrical impulses generated by each beat of the viewer's heart propagate throughout the viewer's body and are detected and digitized by the installation. During this interaction, Emergence synchronizes its own electrical pulses with the viewer's heart to create a synco-

pated light and sound-scape that reflects its intimate experience with the viewer. (Montgomery, 2012)

This type of art is designed from the body and for the body, and certainly has the potential to be interesting to members of the public with different sensory abilities.

One recent theory in cognitive neuroscience suggests that the implications of biofeedback art can go much beyond manifesting some otherwise private arousal states. Anil Seth and colleagues at the University of Sussex (Seth et al., 2012) have suggested that interoception could contribute to one's sense of the reality of the world and of the Self within the world (that is, the sense of "presence," nowadays used also to describe the degree of realism of virtual environments or avatars). Specifically, they propose a framework termed "interoceptive predictive coding," which postulates that a successful sense of presence results from the brain's capability of predicting the interoceptive signals from the body. Vice versa, pathologically imprecise prediction of interoceptive signals could be at the basis of psychiatric disorders of presence, such as depersonalization (the loss of the subjective sense of reality of the Self) or derealization (the loss of the subjective sense of reality of the world). Within this framework, amplification of interoceptive sensations in art may elicit particularly strong sensations by modulating the sense of presence of the visitor. Notably, this type of art does not need to be visual, as the amplified heartbeat or the modulation of skin conductance can be (and in medical biofeedback devices typically is) conveyed through sounds.

TAKING ADVANTAGE OF MULTISENSORY PERCEPTION IN ART

One powerful case of touch sensations elicited by sight is offered by body art. Let us consider a famous performance by Gina Pane, titled "Sentimental Action" (1973), in which the artist bled as she pricked her arm skin by pressing rose thorns into it, and concluded by etching a rosebud in the palm of her hand with a blade. The sense of pain and danger experienced by viewers was palpable, so much so that visual displays similar to those originally adopted by Pane have now become the standard way of studying evoked empathic responses in cognitive neuroscience research. For instance, Avenanti and colleagues (2005) measured the excitability of the sensorimotor system of people while they observed video of a needle penetrating deeply into the hand of a stranger. This scene evoked a reduction of sensorimotor excitability, similar to that observed when people experience pain directly (Urban et al., 2004), which was not observed when participants observed a needle penetrating into a tomato, or the scene of a harmless cotton bud touching a stranger's hand.

Using a brain imaging technique (functional magnetic resonance imaging, fMRI), Singer and colleagues (2004) measured brain activity in female partners of couples while they experienced pain directly or when they saw their male partner being hurt. The results showed that the circuit of brain areas typically involved in the affective processing of pain (that is, bilateral anterior insula, dorsal anterior cingulate cortex, brain stem, and cerebellum) was active both during the personal experience of pain and also during the empathic experience of pain. In sum, the mere viewing of someone else being hurt can evoke in us an empathic sensory and affective experience of pain, which is likely mediated by the activation of the same brain circuits we activate when we experience pain directly (Singer and Lamm, 2009).

In the case of Pane's art, all that remains from her actions are photographs; thus, visually impaired visitors could not find touching the art useful. However, hearing a verbal description with appropriate noise from this action while being touched on the arm and possibly smelling the odor of blood would surely cause a strong reaction. Recent findings from neuroimaging research again suggest that such a strategy can prove very effective. Lang and colleagues (2011) tested whether empathy for pain can also be evoked by pain-related exclamations. Compared to control conditions in which participants heard human utterances with positive (for example, laughing) or negative (such as snoring) valence but not associated with suffering, pain-related exclamations modulated brain activation in auditory areas as well as in the regions associated with affective pain (for example, secondary somatosensory cortices, anterior cingulate cortex, cerebellum). This suggests that similar brain circuits are involved in hearing and seeing others' pain, suggesting a truly multisensory processing of this sensory and affective empathic experience.

Clearly, multisensory experience of pain in body art is only one of the many examples of how multisensory processing of art can evoke bodily sensations. In Anthony McCall's exhibition "Five Minutes of Pure Sculpture" (2003–2012), on view at the Museum für Gegenwart - Hamburger Bahnhof in Berlin in August of 2012, a dark room full of a fine water mist hosts numerous light installations. Simple white drawings are projected from the ceiling onto the floor, and the beams of light form what appears to be a solid shape in the air. Visitors invariably try and strike the boundary between darkness and light, as if the edges of the shapes were concrete. The awareness that these sculptures are immaterial is reinforced by the fact that people walk through them in the exhibition space, yet the sensation that one must be able to feel the forms is too strong to resist extending a hand to touch. It would be interesting to create a similar sensory play for visually impaired visitors, using immaterial perceivable elements such as directional hot air streams in place of the light beams, which can be felt but do not offer a material resistance to the hand. Research suggests that such implied experience of touch can be wired in the brain, and even encoded at the level of single neurons. In the 1970s Finnish neurophysiologists working with macaque monkeys discovered neurons in the brain that responded in a multisensory fashion (Hyvärinen and Poranen, 1974): they were activated by tactile stimuli on specific regions of the skin, but were also activated by visual stimuli that occurred in the immediate vicinity of the same region of the skin that triggered the tactile response. Thus, for instance, if the neuron responded to a touch to the dorsum of the right hand, it also responded when the experimenter approached the right hand dorsum, without touching it, provided the stimulation was near enough to the hand (approximately 30 cm). This initial evidence has been extensively confirmed, with bimodal visuo-tactile neurons documented in many regions of the brain (Graziano e Gross, 1994; Rizzolatti et al., 1981), and with behavioral and neuroimaging studies in humans pointing in the same direction (Makin, Holmes and Zohary, 2007). Most interesting for blind people, these anticipatory touch experiences have also been documented between hearing and touch. In monkeys (Graziano et al., 1999) and humans (Làdavas et al., 2001) nearby sounds (compared to sounds farther away from the body) interact strongly with processing of tactile stimuli, as if they are already treated by the brain as bodily events. In brief, our brain represents space near the body in a special manner, anticipating visual and auditory events as if they were already in contact with the skin. It is touch before touch, and likely serves as an interface that permits us to anticipate the contact of an approaching object in order to program avoidance or defense movements. In addition, it can allow better planning of our voluntary actions toward the surrounding objects. Neuroscientists call this space "peripersonal" (Rizzolatti et al., 1981).

The implications of multisensory coding of peripersonal space for behavior and for art likely extend beyond anticipation of touch. Behavioral scientists are now exploring the possibility that peripersonal space may play a role in how much a space can be perceived as suffocating or restrictive. Stella Lourenco from Emory University and colleagues examined the relationship between peripersonal space and claustrophobic fears, and found that people with larger peripersonal space showed stronger phobic reactions to enclosed spaces (Lourenco et al., 2011). To explore these sensations, Austrian artist Erwin Wurm recently presented his installation of a "Narrow House" (2010) at the CAC in Malaga, Spain, as part of his wider project titled "Am I a House?" In this work Wurm reconstructed his childhood house in full scale, but altered the width of the construction so that the walls progressively close in on the visitors. When walking across its length, one feels the progressive narrowing of the space around one's body, starting to feel uncomfortable when the peripersonal space is invaded by the objects and furniture, and experiencing a true claustrophobic sensation when, once arrived in the bathroom, one needs to turn his/her body sideways to avoid being touched (or rather, sandwiched) by the house walls. It is precisely in the unpleasant anticipation of the moment in which the space will be too narrow and we will be touched by the house that the work releases all of its expressive potential and meaning.

Walls and objects around us are not just external stimuli that can enter our peripersonal space, they are also powerful visual cues about the orientation of our body. Sculptor Richard Serra is famous for his monumental-scale steel installations, a good example of which is the Guggenheim Bilbao series titled "The Matter of Time," comprising eight large sculptures measuring 12 to 14 feet in height and dating from between 1998 and 2005. In positioning huge slabs of cor-ten steel loosely parallel to each other (but not quite so), often tilted as to be nonperpendicular to the ground and according to an irregularly curved trajectory, Serra places us in an architecture that defeats our perceptual assumptions and habits on the shape of human-built spaces. Walking through these canyons or narrow corridors, one feels the need to hold onto the artwork in order to maintain one's erect posture and equilibrium, as a slight sense of vertigo and confusion take hold. Clearly Serra is interested in the "physicality of the space [. . .] shifting in unexpected ways as viewers walk in and around them, these sculptures create surprising experiences of space and balance, and provoke a dizzying sensation of steel and space in motion" (FMGB Guggenheim Bilbao Museoa, 2013). It would be crucial to the inclusion of all audiences if sculptors such as Serra and Wurm would provide specific information regarding permission to touch their work, since it seems that such art would well withstand gentle stroking; the aesthetic consequences of touching may even be of interest to the artists who created these pieces. The artworks' correct interpretation would benefit enormously from such a practice, since it is in the dynamic relationship between the visitors' bodies and the sculpture that the meaning is conveyed.

One final aspect that must be emphasized when discussing the bodily sensation evoked by multisensory art experiences is the close link between our sensory perceptions and the motor system. During the last two decades the notion that vision and the other senses evoke responses in our motor system, as well as the related notion that we recruit our motor circuits while experiencing the environment, has become primarily linked with the well-known notion of mirror neurons and mirror systems (Rizzolatti and Craighero, 2004). However, the theoretical notion of a constant interplay between perception and action predates the important neuroscientific discovery of mirror neurons and mirror systems by several decades. The psychologist James J. Gibson, for instance, was among the first scientists to note that the afferent input from the receptors serves motor exploration of the environment and is constantly changed by this process (Gibson, 1966). Even before Gibson, the French psycho-physiologist Henri Piéron argued that the reason why we believe we have five senses is because our approach to active exploration of the environment is centered around five actions: seeing, touching, hearing, sniffing, and tasting. Other authors have stressed the role of the motor system in art perception (for example, Gallese, 2011a and 2011b). Along these lines, here we suggest that sensory-motor appraisal of art can exist even in the absence of visual input. Many sound artists exploit this human ability to create art of compelling intensity and beauty, as in the case of the installation "FOREST (for a thousand years . . .)" (2012) by Janet Cardiff and George Bures Miller. Placed in a real forest, it blurs the boundaries between the noise coming from the environment and that from the speakers, which play a variety of sounds that are meant to evoke a temporal journey through history, such as "sounds of war: whistling screeches, big explosions, the rat-a-tat of machine gun fire. There is a brief but shocking scream, a crashing tree, sounds of a mother and child, clanging metal. Singers come close, but then leave. You hear the trees and the wind again, and the crickets and birds" (Volk, 2012).

The ability to appraise art through our sensory-motor system works just as well in unnatural situations. One such paradoxical example is Dave Cole's large-scale installation, "Cranes Knitting," presented at MASS MoCA (North Adams, Massachusetts) in 2005. It featured two cranes facing each other that were electronically controlled to knit an enormous American flag through needles as big as lampposts. One of the reasons for the work's great appeal to the public was the fact that two machines, normally used for heavy-duty tasks such as digging soil or lifting cement, implausibly performed the feminine yet mechanical operation of knitting. Those of us who have tried our hands at this work know that there is a rhythm and a repetitiveness that characterizes the act of knitting, which has the power to virtually transform the knitter into a human machine (and vice versa—in "Cranes Knitting," the machines appear almost humanized). Beyond the critical interpretation of this work as addressing the passage of time and the concept of national identity, it is precisely this sensory-motor knowledge that informs the public of the message of this artwork—so much so that organizing a knitting class before confronting the work may be a good way to convey the core concept through a bodily experience, rather than leaving this aspect to a descriptive verbal approach. Also, trying to maneuver the big poles to knit may prove an interesting way to capture the surreal dimension of this piece.

TOUCHING IS NOT ALWAYS THE SOLUTION

If bodily sensations cannot be reduced to touch, and they are part of our overall multisensory-motor experience, then touching alone may not necessarily be the best approach to experience art for the blind. It is undeniable that persons who do not have the use of the sense of sight are accustomed to deploy their training in touching to acquire the desired information. But it is important to remember that the experience of art is something radically different from any other experience of everyday life, and as such it requires specifically tailored forms of communication in order to convey its meaning. When confronted with an everyday object, we can predict in most cases how the visual characteristics will feel when touched, as we have accumulated several experiences with that type of object. In the case of art, this predictability, this consistency across different sensory modalities is rarely maintained. It is therefore not enough to permit visually impaired audiences to touch the art, as this may often not be the best way to convey the artwork's meaning. Finding new ways to translate across sensory modalities requires passion, creativity, and a deep understanding of the senses, along with an undefeatable will to pass on the artwork's meaning and message.

Let us provide an example of a common situation in which the touch of the hand may fail in allowing full appreciation of an artwork. Sculptor Duane Hanson is deservedly celebrated for his hyperrealistic representations of everyday persons. His sculptures of housewives pushing a shopping cart or tourists sightseeing are visually stunning, as they can easily be mistaken for real people (and were indeed made through casting from live models). If approached visually, they elicit touch only as a strategy to reassure the viewer that, surely enough, the figures are not alive. But the attempt to render this uncanny sense of life-likeness through touch alone would hardly be effective. The sculpture's visual clues, such as its rosy cheeks and convincing skin tone, would translate under the fingers into something very different from the feel of a human face. Although perfectly faithful to their originals in shape, these figures are made of fiberglass, bronze, or sometimes polyester fibers, which surely do not feel, when touched, like human flesh would. Mimesis, the crucial characteristic of this work, must find ways other than mere touch to reach the awareness of the visually impaired visitor.

CONCLUSIONS: BIG CHANGES CAN START SMALL

When museums acquire works of contemporary art, it would be useful if they would implement the good curatorial practice of collecting from the artist some indication of whether it is acceptable to touch the piece. It would be simple enough to adopt a form with some standard questions to attach to the other technical information customarily provided with the work: Is touching allowed? If yes, to everyone or just to the visually challenged visitors? Are there any exceptions to this prescription? If not, how would the artist wish to convey the essence of his/her artwork through alternative modalities?

If standardized, this procedure would present two advantages. First, artists would become responsible for the modality of fruition of their works which, if decided by museum officers, is by default restrictive rather than permissive. After all, most contemporary art is privately owned and, as such, is constantly touched—and, when needed, repaired. Second, it would gradually augment the presence of touchable works in public collections, thus increasing awareness of the different needs of diverse museum populations.

Another helpful hint that could prove useful to museum educators is to acquire a deeper knowledge of the many senses gathered under the umbrella term "touch," and think about how each of these senses is called to contribute to our understanding of the pieces on show, as we detailed with several examples above. This could lead to more effective nonvisual communication of the key aspects of the artworks to be experienced.

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