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Emotion, Language and Aesthetic Expression: On Motherwell and His Art

Anjan Chatterjee[1]

Abstract
Robert Motherwell is regarded as one of the great American abstract expressionists. He was highly intelligent and articulate about his art. In this essay, I explore the thesis that the ability to make fine category discriminations, which can be indexed by language, is necessary to produce great art. I argue that Motherwell might not have been as great an artist if he were not so articulate. Relying on a constructivist view, I argue that fine-grained categories of human emotions can be represented in language; language carves out affective space in a way that makes these states explicit and easier to communicate. Ineffability in art implies exhausting the effable. Being articulate about emotions allows one to reach for higher states of ineffability and aspire to great art.

Keywords
emotion, expression, language, Motherwell, ineffability

Could Robert Motherwell Have Been as Great an Artist If He Were Not So Articulate?

In this article, I propose that the answer to this question is, no. Specifically, I argue that the ability to make fine category discriminations, which can be indexed by language, is necessary to produce great art. This constructivist claim is especially relevant to art that

[1]Department of Neurology, Penn Center for Neuroaesthetics, The University of Pennsylvania, Philadelphia, PA, USA

Corresponding Author:
Anjan Chatterjee, Department of Neurology, Penn Center for Neuroaesthetics, The University of Pennsylvania Perelman School of Medicine, 3400 Spruce Street, Philadelphia, PA 19104, USA.
Email: anjan@pennmedicine.upenn.edu

expresses emotions that are subtle and nuanced. My argument is a general one about the relationship between emotion, language, and aesthetic expression using the case of Robert Motherwell to illustrate the point.

Motherwell

Motherwell was an American abstract expressionist. Throughout his rich career, he explored formal motifs and themes repeatedly as exemplified by the Open and the Elegy to the Spanish Republic series. With his fellow expressionists, he wished to liberate form and color from their descriptive roles and direct them to explore deep emotions. He described abstract expressionists as "filled with desperation and depression" (Tatge, 1990). His paintings expressed emotions that were rooted in his personal history. According to Fineberg in *Modern Art at the Border of Mind and Brain* (Fineberg, 2015), Motherwell explored meaning and value in the human condition through these expressions.

Motherwell said, "the subject of painting is feeling and emotion, and for the most part warmth … I do have a tendency to search for the essence of something, the bare bones of it. The attraction that Zen paintings have for me is its effort to convey a great deal in a few uncorrected brushstrokes, and the fact that I sometimes use straight lines doesn't, I think, make them less spontaneous, or less spontaneously made" (Blackwood, 1972). Inspired by Dada and surrealist movements, he applied chance procedures and free associations to tap into his own unconscious. These procedures, known as "psychic automatisms," are gestures generated without explicit conscious control, a method presumed to mine one's psyche that is otherwise hidden from consciousness.

With his paintings, Motherwell could "transform conflicts from his unconscious to make a great body of paintings in which others could find meaning and value" (Fineberg, 2015, p. 9). His "highly developed pictorial actors acquire further elaboration with each new work in a series. He wanted his paintings to feel 'real and present'." Psychic automatisms provided a formal device to produce subjective content with immediacy and directness (p. 18). His paintings fed off the opposition between free, expressive gestures and formal structuring (*Robert Motherwell's Abstract Expressionism South of Union Square*, 2021). After the initial gestural expression, Motherwell would modify and paint over and shape the painting covering them with "more formal and architectonic surfaces" (Tuchman, 2014).

Motherwell leaned towards melancholy and was affected deeply by the deaths of fellow artists, Jackson Pollock, Franz Kline, and David Smith. He contemplated suicide when painting his first Elegy in 1949 (Fineberg, 2015, p. 30) and he described the series as an obsession about life and death. "Because I still haven't painted the ultimate one and probably will die without having painted it. Or maybe [I] have painted it … and don't realize that one…" (Tatge, 1990). Referring to the philosopher Alfred North Whitehead, with whom he studied, he thought the point of abstraction is "to throw the thrust of the work onto its meaning." By a process of selection and emphasis,

abstraction was to "arrive at the residue of essences of what you are interested in" (Tatge, 1990). For him, "the subject is very humanly poetic." He regarded his work as atavistic and primordial (Motherwell, 1977).

With these facts and observations in hand, what can we make of the thesis that Motherwell's verbal agility had any bearing on his artistic greatness? With good reason, the claim might be viewed as problematic. We often consider visual and verbal means of expression as distinct. Evidence from neurology, including observations I have made (Chatterjee, 2004), are consistent with these different modes of expression view. Artists with brain damage profoundly affecting their language systems can still produce art of considerable expressive power. For example, the artist Katherine Sherwood had a large stroke severely affecting her left hemisphere language system. After she resumed painting, she found herself to be more expressive and fluid in her production, as if freed from the confining deliberative style she had before her stroke (Chatterjee, 2008; Sherwood, 2012). In some cases, language development worsens artistic production. Nadia (Selfe, 1977), who had autism, drew remarkable images of horses from unusual angles and with amazing dynamism at the age of three. At the time her cognitive development was severely delayed. When she got older her language improved—and her drawings became prosaic. The general view of her loss of drawing ability is that gains in her language abilities signaled greater semantic knowledge and what she knew cannibalized what she saw. Many art teachers implore students to free vision from knowledge so as not to fall into this trap. Art therapy is also predicated on distinguishing language and artistic expression. This clinical approach is motivated by the belief that artistic expression can release emotions that are opaque to language and then become a vehicle for therapy. Finally, Motherwell's use of psychic automatisms was designed to intentionally avoid language.

Emotions and Cognition: A View From Neuroscience

To connect Motherwell's paintings to his verbal agility, I frame the argument within the neuroscience of aesthetic experiences and contemporary constructive views of emotion.

In several publications (Chatterjee & Vartanian, 2016; Chatterjee, 2014), we proposed that aesthetic experiences emerge from interactions between three large-scale neural systems—our sensory-motor, emotional-reward, and knowledge-meaning systems. The design of our sensory and motor systems places constraints on what and how we can engage in aesthetic experiences. As trivial examples of this point, we cannot have an aesthetic experience of swathes of infrared color in a sunset; nor can we dance in a manner that violates the bio-mechanical properties of our body. Aesthetic experiences link sensations with our emotion and reward systems. Beauty links sensory features to rewards, like the pleasure many experience from gazing at a sensuous curve. Less straightforward are links to nuanced emotions. By nuanced emotions, I mean a granularity that can distinguish between similar emotions such

as melancholy and mournfulness (Smidt & Suvak, 2015), which might otherwise be regarded as "sad." Such nuances of emotions, their granularity, and even the possibility of experiencing mixed valences (Russell, 2017) are states that expressionists plumb. Psychic automatisms, in this framework, involve emotional systems driving motor gestures with minimal involvement of knowledge and meaning. The point for abstract expressionists, after all, was to free emotions from the chains of cognition. Their goal was not to picture a thing; it was to give visual form to an emotional experience.

What, then, are emotions, and is such freedom from cognition possible? Most contemporary researchers agree that emotions have three characteristics. Firstly, emotions have a physiological component (Strigo & Craig, 2016). This physiology is often linked to bodily responses serving homeostasis (Damasio, 2001). That is, we have biological imperatives to keep our bodies within a narrow physiological range to function optimally; this range applies to temperature, hunger, thirst, energy, stress, and so on. Different external and internal conditions are accompanied by complex changes in our autonomic, visceral, cardiac, and respiratory systems. These changes are accompanied by hormonal cocktails coursing through our bodies. Awareness of these homeostatic calibrations constitutes interoception. Interoception tells us about our internal body. Interoception is contrasted with more familiar exteroceptive sensations, such as seeing color and form or hearing tones and rhythms. Exteroception tells us about the external world.

Secondly, emotions organize actions (Beall & Tracy, 2017; Cosmides et al., 2000). This action principle fits with a homeostatic role for emotions. Emotional triggers drive different responses (Scherer & Moors, 2019). Higher arousal accompanied by negative valance is typically expressed in fight or flight responses. Pain and disgust make us withdraw. Delight and pleasure make us approach. Other cognitive systems, like attention, memory, and perception can be co-opted by emotions to serve actions. For Motherwell, emotions organized his actions specifically in the form of automatic gestures and more generally in his exploration of atavistic themes. One could speculate that the homeostatic function of these actions is more abstract than quelling thirst or hunger. The actions very well could be serving the need for personal integration given an unresolved need for maternal love as suggested by Fineberg, or coming to terms with life and death as alluded to by Motherwell himself.

Thirdly, in humans, these physiological responses have a phenomenological counterpart (Frijda, 2009). That is, we have a subjective impression of what it feels like to have these emotions. To be clear, not all physiological processes are accompanied by a phenomenal component. We are not aware of glucose metabolism in our muscles, oxygen exchange in our lungs, or nutrient absorption in our gut.

For discussion here, the issue is the relationship between physiology and phenomenology (Scherer & Moors, 2019). How does one get mapped onto the other? The key to this mapping is categorization. That is the process by which our mind chunks continuous information into discrete bits. To illustrate this point, take two examples of

exteroceptive perception—of color and space—before returning to interoception and then to Motherwell and his art.

Our retina responds to a range of electromagnetic radiation frequencies which sets off a cascade of physiological events to give rise to our perception of color. At the lower range of these frequencies to which we are sensitive are reds and at the higher range are violets and blues. There are no natural joints in nature at which our minds carve this range of radiation. It turns out that the same range is chunked differently by different cultures. Some languages have few words for color (Kay & Regier, 2006) such as only black, white, and red. Others combine blue and green. Our minds construct categories of color that are not present discretely in nature. The specific color categories in any given language are shaped by cultural evolution, presumably for local adaptive purposes (Henrich, 2015).

Our phenomenology of color is grounded in a continuous sensory variable that varies on a single dimension-electromagnetic frequency. To expand the general argument to a multidimensional construct, consider spatial relations among two or more objects. These relations are expressed in language by prepositions, such as *on*, *over*, *behind*, and *within*. The relationship between two objects can vary, at a minimum, by distance and radial angle. Prepositions select and highlight specific relations among infinite possibilities. Every culture apprehends a full range of spatial relationships, yet they vary in how the relations are clumped by local languages. To a non-English speaker, the fact that "ring on the finger," "cup on the table," and "picture on the wall" use the same preposition is bewildering. Korean has a preposition that describes how tightly one object fits in another (Choi et al., 1999), a spatial relationship not captured by any single English preposition. The general point is that we discretize spatial relationships (Chatterjee, 2001) with language corralling complex multidimensional and mostly continuous sensory variables into distinct groups.

Why would our minds make such analog to digital conversions (Chatterjee, 2001)? At the very least, we do so for two reasons. Firstly, language enhances our sensitivity by highlighting distinctions within complex sensory stimuli that might otherwise remain obscure. Having words for mauve and violet and lilac makes it easier to notice subtle distinctions and enriches our phenomenal experience of objects we might otherwise simply think of as purple. Categorization, as expressed in words, also helps us communicate. If I say, "use the blue mug next to the coffee maker," you narrow the range of possibilities of which mug I mean.

The same principles apply to mapping multidimensional interoceptive information into emotion categories (Osgood, 1962; Cowen & Keltner, 2017). Our sympathetic nervous system activates us and increases our heart rate, raises our blood pressure, makes us sweat, dilates our pupils, and inhibits our bowel motility. Our parasympathetic nervous system working in concert does the opposite and slows us down. Our endocrine system pumps hormones through our bloodstream, operating over a slower time course. Cortisol prepares us for stress, insulin stores energy, thyroxin speeds our metabolism, and melatonin dampens our arousal. Our gut also comes

into play. We feel queasy or dyspeptic or sated. We are just beginning to learn more about the gut–brain axis and the way that bacteria in our gut affect our physical and emotional health (Mayer et al., 2022). The chemical milieu of the gut contains many of the same neurochemical signals percolating in the brain. In an analogous way that we categorize colors and spatial prepositions, we categorize emotions from multidimensional interoceptive sensations. We are typically more aware of arousal and valence (feeling good or bad, sometimes referred to as core affect) than other internal sensations. We label high arousal and negatively valenced states as anger or fear, and low arousal negatively valenced states as boredom or depression. We are also typically aware of physical expressions of emotions, such as chills, goose bumps, gasps, and yawns. What we regard as emotional categories are constructed from appraisals of otherwise dynamic and context-dependent internal sensations that have no natural joints at which our minds might carve them (Barrett & Satpute, 2019; Russell, 2017).

As we saw with words categorizing colors and spatial relationships, a vocabulary for emotions enhances our sensitivity to distinctions between nuanced emotions, take account of pragmatic considerations (Sabini & Silver, 2005), and communicate those emotional states more effectively. For example, we might distinguish between dejection, sorrow, and melancholy. Underlying these discrete lexical descriptors often lie continuous gradients in emotional states like anxiety, fear, horror, and disgust as demonstrated empirically by Cowen and Keltner (Cowen & Keltner, 2017). For salient events, we might even experience mixed emotions (Russell, 2017) such as those that occur in bitter-sweet encounters. As parents encourage their children to "use your words," such a vocabulary allows us to notice and then communicate nuanced emotions, rather than oblige others to interpret what we are feeling. Non-verbal emotional expressions are notoriously unreliable in the messages they communicate. Our pupils dilate when we are angry and also when we are afraid. Our skin gets sweaty when we are anxious and when we are excited. Our eyes tear up when we are sad and when we are joyous. Words, when used aptly, limit this ambiguity.

My Core Thesis

The points about language enhancing sensitivity and communication bring us back to Motherwell and his expressionist explorations. Automatisms may have generated the paintings with minimal cognitive control. But after the initial output, he appraised his paintings for whether he succeeded in expressing the feelings he was trying to put into a picture. In an interview with Barbaralee Diamonstein (Motherwell, 1977), Motherwell says "I have never really solved any of them [serial paintings]. The day I can make an elegy that really satisfies me, then I'll stop." He described the series as: "It's like a lifelong relationship with a person whom you really love, their different moods, different nuances, and in one sense there's a basic continuity that never alters, but in the duration of time there are more or less emphasis at any given moment" (Blackwood, 1972). Motherwell appraises his artwork and judges whether what he

placed on canvas or paper matched the emotional state he was trying to convey. He says, "So you start with an approximation, and ultimately by trial and error, you reach it if you're lucky" (Blackwood, 1972).

I wish to be clear about what I am not saying. I do not think that Motherwell looked at one of his elegies and explicitly thought to himself (something along the lines of) the image expressed sorrow when the feeling I was attempting was melancholy. He almost certainly conversed with himself in reworking paintings and themes, but I do not mean he necessarily used specific labels to describe the work to himself. As Fineberg says, the meaning behind Motherwell's iconography cannot be fully articulated by words (Fineberg, 2015, p. 11). Ineffability is an important ingredient of the power of his paintings.

I am suggesting that, when unsatisfied with a painting, Motherwell was reacting to a mismatch between his felt emotions and the emotions expressed in the paintings. His sensitivity to nuanced mismatches, even when this sensitivity seems intuitive at the moment, rests on a store of fine-grained emotional categories. Once the categories are established, a process supported by language, and one's emotional/perceptual acuity is sensitized, matches and mismatches are recognized and the adequacy of an internal to external mapping can be sensed. This recognition of a mismatch might very well draw on well-recognized neural systems of predictive coding (Friston, 2018) and resolving errors as a mechanism of learning. Thus, even if emotional expressive forms are not reducible to language, refined categories aided by language helps detect subtle mismatches—which is why so many artists are unsatisfied with their work and keep pushing themselves to get it right as they repeat motifs. On this account, it is no surprise that Motherwell said, "I in my life have never met a first rate painter, who was not highly intelligent and extremely articulate in his own terms" (Motherwell, 1977).

Loose Ends

My thesis raises several issues worth further consideration. Here are a few, framed as questions.

What do i mean by "articulate"?. By articulate, I mean the ability to form categories that invite discrimination at different levels of granularity. Animals, even pigeons, form some categories (Wasserman & Castro, 2021). However, to index the extensive and complex catalog of categories humans possess, words are helpful and might even be necessary. For example, our potential vocabulary for nouns is open-ended. We continue to develop new words that capture elements of a changing world that increases in complexity. A nuanced vocabulary identifies the capacity for fine-grained categories and the distinctions that follow.

Can an artist be great if they are not articulate?. The ability to appreciate fine-grained distinctions is critical for my argument. That claim might not mean that artists

themselves generate those distinctions. Motherwell observed that "the poets were able to express what Modernism was better than painters" (Motherwell, 1977). Artists can learn categories from others. To use an example from another complex sensory experience, if an expert describes the taste of a specific bourbon as having a rounded caramel finish with lingering hints of vanilla, I can identify that taste as a feature of bourbons I enjoy without having generated the description myself. With that description in my appraisal toolkit, I can now pick out that experience when present in other spirits. It also means, I have become just a little bit more articulate about my taste. Poets and critics and art historians and friends and lovers and haters might help artists become just a bit more articulate about their work and viewers just a bit more sensitive in their art appreciation. It is worth noting that being articulate in this sense is necessary but not sufficient to being a great artist. Otherwise, every sensitive critic would also be a great artist.

Do these speculations apply to other artists?. The iterative process of working and reworking specific motifs gives some credence to my claim of the role matches and mismatches when artists evaluate their own output of emotional expression. I suspect that artists who produce a body of expressive work continue to refine and adjust their themes, even if not with the same formal similarity that is obvious from a perusal of Motherwell's series. A comparison of output with intent is critical to the iteration. This iteration presumably applies to an artist reworking an individual painting as well as when they make new paintings in series.

Do these speculations apply to other kinds of art?. My thesis about Motherwell is based on a constructivist view of emotions (Barrett, 2019). What about the nonemotional aspects of great art? What about renderings of light and shape? Language in a literal sense might not be as critical for nuanced depictions of form. Elsewhere, we have discussed the importance of visual schemas as a form of representation that lies intermediately between fully realized visual depictions and fully symbolic words (Amorapanth et al., 2010; Kranjec et al., 2013). Pared-down visual forms might be the basis for a visual vocabulary rather than a lexical one. A rich visual vocabulary can add nuance to depicting form and create subtle compositional structures that scaffold an image. The role of rich schematic visual vocabularies in the creation of art is worth exploring.

Can this thesis be tested empirically?. A prediction from my claims is that a nuanced vocabulary can enrich art appreciation. We recently developed a taxonomy of the potential impacts that an artwork can have on a viewer (Christensen et al., 2023). One could educate relatively naïve art viewers with these categories of potential impacts and assess changes in their appreciation of art. One could interview artists with a body of work in which they pursued similar themes over several pictures. They could be queried about their process and what led to return to the theme in their series. Their qualitative responses, if enough such responses were available

from interviews or their own writings, could be subject to thematic and sentiment analyses to assess levels of satisfaction or dissatisfaction with their output. While methodological challenges for such an approach are not trivial, machine learning techniques are evolving rapidly (Wankhade et al., 2022).

What about ineffability?. Motherwell noted that many abstract expressionists, like musicians, numbered their paintings rather than name them "because naming seemed to pin down specifically a content that was less specific, but nevertheless there" (Blackwood, 1972). There is no such thing as a lossless analog-to-digital conversion. Some information is lost in translation. The current attempts to categorize the emotional impacts of artworks and their critics (Christensen et al., 2023; Fingerhut & Prinz, 2020; Menninghaus et al., 2019; Schindler et al., 2017; Skov & Nadal, 2020) speak to the interest in empirical aesthetics to identify the effable. The notion of ineffability, so commonly associated with art, implies that words cannot capture what makes an artwork great. However, we only approach the ineffable after the effable has been exhausted. This question may be the most difficult loose end to address for my argument. Perhaps Wittgenstein's concluding aphorism in the *Tractatus Logico-Philosophicus* is relevant (Wittgenstein, 2013): "Whereof one cannot speak, thereof one must be silent." Approximating Wittgenstein's analogy preceding the concluding aphorism that his propositions are a ladder to be discarded after one has climbed it, I am suggesting that exhausting the effable (and the mismatches they highlight) is a ladder that an artist climbs to reach an ineffable state. The higher one ascends on the ladder, analogous to reaching more fine-grained categories, the more likely the artist arrives at rarified heights where they might be satisfied with their work without being able to describe reasons for that satisfaction in words.

Conclusion

As is common in science, my claim in addressing a specific question raises new ones. I hope, I have made the case that neuroscience can offer insight into the relationship between emotions, language, and aesthetic expression in ways that apply to artists and aesthetic experiences. These insights and the questions they raise are thrown into sharp relief by focusing on a great painter like Motherwell.

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ORCID iD

Anjan Chatterjee https://orcid.org/0000-0002-9092-8560

References

Amorapanth, P. X., Widick, P., & Chatterjee, A. (2010). The neural basis for spatial relations. *Journal of Cognitive Neuroscience*, *22*, 1739–1753. https://doi.org/10.1162/jocn.2009.21322

Barrett, L. F. (2019). *How Emotions are Made*. New York City: Pat Mcmillan.

Barrett, L. F., & Satpute, A. B. (2019). Historical pitfalls and new directions in the neuroscience of emotion. *Neuroscience Letters*, *693*, 9–18. https://doi.org/10.1016/j.neulet.2017.07.045

Beall, A. T., & Tracy, J. L. (2017). Emotivational psychology: How distinct emotions facilitate fundamental motives. *Social and Personality Psychology Compass*, *11*(2), e12303. https://doi.org/10.1111/spc3.12303

Blackwood, M. (1972). *Robert Motherwell: Summer 0f* 1971.

Chatterjee, A. (2001). Language and space: Some interactions. *Trends in Cognitive Science*, *5*, 55–61. https://doi.org/10.1016/S1364-6613(00)01598-9

Chatterjee, A. (2004). The neuropsychology of visual artists. *Neuropsychologia*, *42*, 1568–1583. https://doi.org/10.1016/j.neuropsychologia.2004.03.011

Chatterjee, A. (2008). Apoplexy and personhood in Katherine Sherwood's paintings. In K. Sherwood (Ed.), *Golgi's door* (pp. 44–52). Washington DC, National Academy of Sciences.

Chatterjee, A. (2014). *The Aesthetic Brain: How we evolved to desire beauty and enjoy art*. New York City: Oxford University Press.

Chatterjee, A., & Vartanian, O. (2016). Neuroscience of aesthetics. *Annals of the New York Academy of Sciences*, *1369*(1), 172–194. https://doi.org/10.1111/nyas.13035

Choi, S., McDonough, L., Bowerman, M., & Mandler, J. M. (1999). Early sensitivity to language-specific spatial categories in English and Korean. *Cognitive Development*, *14*(2), 241–268. https://doi.org/10.1016/S0885-2014(99)00004-0

Christensen, A. P., Cardillo, E. R., & Chatterjee, A. (2023). What kind of impacts can artwork have on viewers? Establishing a taxonomy for aesthetic impacts. *British Journal of Psychology*, *114*(2), 335–351. https://doi.org/10.1111/bjop.12623

Cosmides, L., Tooby, J., Lewis, M., & Haviland-Jones, J. M. (2000). Evolutionary Psychology and EmotionsM. L. M. H Jones (Ed.), *Handbook of Emotions* (pp. 91–115). New York City: Handbook of emotions, Guilford.

Cowen, A. S., & Keltner, D. (2017, 2017/09/19). Self-report captures 27 distinct categories of emotion bridged by continuous gradients. *Proceedings of the National Academy of Sciences*, *114*(38), E7900–E7909. https://doi.org/10.1073/pnas.1702247114

Damasio, A. R. (2001). Emotion and the human brain. *Annals of the New York Academy of Sciences*, *935*(1), 101–106. https://doi.org/10.1111/j.1749-6632.2001.tb03475.x

Fineberg, J. (2015). Motherwell's mother: An iconography in abstraction. In *Modern art at the border of mind and brain* (pp. 9–39). Lincoln, Nebraska: University of Nebraska Press.

Fingerhut, J., & Prinz, J. J. (2020). Aesthetic emotions reconsidered. *The Monist*, *103*(2), 223–239. https://doi.org/10.1093/monist/onz037

Frijda, N. H. (2009). Emotion experience and its varieties. *Emotion Review*, *1*(3), 264–271. https://doi.org/10.1177/1754073909103595

Friston, K. (2018, 2018/08/01). Does predictive coding have a future? *Nature Neuroscience*, *21*(8), 1019–1021. https://doi.org/10.1038/s41593-018-0200-7

Henrich, J. (2015). *The Secret of Our Success*. Princeton, NJ: Princeton University Press.

Kay, P., & Regier, T. (2006, 2006/02/01/). Language, thought and color: Recent developments. *Trends in Cognitive Sciences*, *10*(2), 51–54. https://doi.org/10.1016/j.tics.2005.12.007

Kranjec, A., Ianni, G., & Chatterjee, A. (2013). Schemas reveal spatial relations to a patient with simultanagnosia. *Cortex*, *49*, 1–6. https://doi.org/papers2://publication/doi/10.1016/j.cortex.2013.03.005

Mayer, E. A., Nance, K., & Chen, S. (2022). The gut–brain axis. *Annual Review of Medicine*, *73*(1), 439–453. https://doi.org/10.1146/annurev-med-042320-014032

Menninghaus, W., Wagner, V., Wassiliwizky, E., Schindler, I., Hanich, J., Jacobsen, T., & Koelsch, S. (2019). What are aesthetic emotions? *Psychological Review*, *126*(2), 171. https://doi.org/10.1037/rev0000135

Motherwell, R. (1977). *Robert Motherwell.* 1977 [Interview]. Video Archive at the David M. Rubenstein Rare Book and Manuscript https://www.youtube.com/watch?v=6axj9NTHL9w

Osgood, C. E. (1962). Studies on the generality of affective meaning systems. *American Psychologist*, *17*(1), 10. https://doi.org/10.1037/h0045146

Robert Motherwell's Abstract Expressionism South of Union Square. (2021). Village Preservation. https://www.youtube.com/watch?v=ukzyZq9D8dg&t=3063s

Russell, J. A. (2017, 2017/04/01). Mixed emotions viewed from the psychological constructionist perspective. *Emotion Review*, *9*(2), 111–117. https://doi.org/10.1177/1754073916639658

Sabini, J., & Silver, M. (2005). Why emotion names and experiences don't neatly pair. *Psychological Inquiry*, *16*(1), 1–10. https://doi.org/10.1207/s15327965pli1601_01

Scherer, K. R., & Moors, A. (2019). The emotion process: Event appraisal and component differentiation. *Annual Review of Psychology*, *70*(1), 719–745. https://doi.org/10.1146/annurev-psych-122216-011854

Schindler, I., Hosoya, G., Menninghaus, W., Beermann, U., Wagner, V., Eid, M., & Scherer, K. R. (2017). Measuring aesthetic emotions: A review of the literature and a new assessment tool. *PLoS ONE*, *12*(6), e0178899. https://doi.org/10.1371/journal.pone.0178899

Selfe, L. (1977). *Nadia. A case of extraordinary drawing ability in an autistic child*. New York City: Academic Press.

Sherwood, K. (2012). How a cerebral hemorrhage altered my art [10.3389/fnhum.2012.00055/abstract]. *Frontiers in Human Neuroscience*, *6*, 55. https://doi.org/10.3389/fnhum.2012.00055

Skov, M., & Nadal, M. (2020. There are no aesthetic emotions: Comment on Menninghaus et al. *Psychological Review*127), 640–649.

Smidt, K. E., & Suvak, M. K. (2015). A brief, but nuanced, review of emotional granularity and emotion differentiation research. *Current Opinion in Psychology*, (3), 48–51. https://doi.org/10.1016/j.copsyc.2015.02.007

Strigo, I. A., & Craig, A. D. (2016). Interoception, homeostatic emotions and sympathovagal balance. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *371*(1708), 20160010. https://doi.org/10.1098/rstb.2016.0010

Tatge, C. (1990). *Robert Motherwell and the New York School: Storming the Citadel* Kulture Video.

Tuchman, P. (2014). Robert Motherwell: The East Hampton Years, 1944-1952 - Panel Discussion [Interview]. GUILD HALL OF EAST HAMPTON INC.

Wankhade, M., Rao, A. C. S., & Kulkarni, C. (2022). A survey on sentiment analysis methods, applications, and challenges. *Artificial Intelligence Review*, *55*(7), 5731–5780. https://doi.org/10.1007/s10462-022-10144-1

Wasserman, E. A., & Castro, L. (2021). Assessing attention in category learning by animals. *Current Directions in Psychological Science*, *30*(6), 495–502. https://doi.org/10.1177/09637214211045686

Wittgenstein, L. (2013). *Tractatus logico-philosophicus*. Philadelphia: Routledge.

Author Biography

Anjan Chatterjee is professor of Neurology, Psychology, and Architecture. Director of the Penn Center of Neuroaesthetics. University of Pennsylvania.