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 Ordering Our Attributions-of-Order: Commentary on McMahon

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Abstract

In her target article, Jennifer McMahon argues that we understand art not by explicitly interpreting “raw percepts,” but rather by engaging with our implicit tendencies to interpret complex stimuli in terms of culturally-engrained preconceptions and narratives. These attributions of order require a shared conceptual and cultural background, and thus one might worry that in denying access to raw percepts, the view dulls art’s critical edge. Against this worry, McMahon argues that art can continue to create and innovate by inviting us to critically reflect upon the very preconceptions on which our engagement with it necessarily depends. In this commentary, I place these attributions of order in historical and empirical context. In addition, I discuss a lingering, related mystery — the possibility of the occasionally punctuated character of artistic evolution, in which prevailing aesthetic conventions are replaced with almost entirely new ones. I suggest that such radical breaks with the past are possible even given the concept-ladeness of perception, but are only likely to succeed when they tap into a culturally-invariant bedrock of more basic attributions of order.

In the classic Heider-Simmel demonstration (1944) — a foundational experiment in psychological research on social cognition — subjects watched a two-and-a-half minute animation depicting a stationary box and three moving geometric shapes: a large triangle, a small triangle, and a circle. During the animation, the large triangle enters from the left and moves to the right; subsequently, one of the box’s sides is divided in two and a smaller segment pivots outward, the large triangle then moving inside the box. Afterwards, the smaller segment pivots inwards and once again the box is whole. Then, the smaller triangle and the circle appear from the left and move near the part of the box that had pivoted, which pivots again. The larger triangle moves out of the box and comes near the smaller triangle, and they both shake for approximately five seconds, and…

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1 In the Heider-Simmel demonstration, the animation showed a box with a side divided into two segments. The large triangle enters, the side divides, the triangle moves inside, and the segments pivot back together. Later, the smaller triangle and the circle appear, and the segments pivot again before the larger triangle moves out and shakes with the smaller triangle.
Perhaps the most remarkable thing about the animation (which can be found with a cursory Internet search) is how excruciating it is to describe its contents in this manner. Let us instead use some terms favored by subjects in the experiment: A burly villain breaks into the home of two young lovers and is discovered by them after they return from an evening on the town. This hardened criminal is overcome by malice at the sight of the happiness and innocence of the startled young lovers; he vigorously beats the poor young man and traps the terrified woman in the house, cornering her with dark motives brewing in his evil, triangular mind. After recovering from his thrashing, the weakened young man opens the door and rescues his love and, after a brief but harrowing pursuit by the burglar, they flee to safety.

In her article, McMahon argues that the sort of narrative attribution-of-order vividly demonstrated in the Heider-Simmel experiment is both endemic to human cognition and essential to artistic experience. Perception is conceptually and culturally loaded, but this embeddedness is actually a prerequisite, rather than a threat, to art’s ability to engage in cultural critique. She grounds this embeddedness in what she calls the principle of aesthetic form, the key idea being that art needs some “aesthetic syntax” in order to transmit a message — including in this category perhaps mundane symbolism such as that in Medieval European art holiness is indicated by the presence of floating golden halos, as well as more complex aesthetic conventions such as that in Cubism scenes are simultaneously depicted from multiple angles. However, she augments this principle with a corollary principle of art, which holds (echoing Kant and Adorno) that despite necessarily relying upon such syntactic conventions, the artist remains free to critically comment upon them and to suggest new ones.

Two questions are raised by McMahon’s contribution that I will briefly address in this commentary. First, if attribution-of-order is ubiquitous in human cognition, what is distinctive about the sort of attribution-of-order that occurs during the appreciation of artworks? Attribution-of-order occurs any time we explain an event in terms of a causal principle or interpret the actions of another as goal-directed, yet we are not entering the artistic mode every time we e.g. watch an object roll downhill or infer that the dog wants to go outside because it paces near the door. We want a kind of architectonic of attributions-of-order which would place all of these processes with respect to one another and show their dependencies. McMahon is rightly well-known for the sophisticated, empirically-grounded account of such processes offered in her latest book, but I briefly summarize empirical work in this area below for the purposes of context. Second, if art must make use of shared cultural background in order to communicate with a viewer, how are artists able to create
fundamentally new techniques and conventions? Notably, art does not remain trapped in a particular cultural milieu that it gradually tweaks and modifies — Western art is not merely footnotes to Da Vinci — but rather engages in occasional dramatic paradigm shifts that deploy an almost wholly distinct “aesthetic syntax.” One might worry that while McMahon has opened up some room for innovation, affirming the culture-ladenness of perception still renders mysterious the occasionally punctuated character of artistic evolution.

First, let us consider a taxonomy of attributions-of-order. The first cut in the taxonomy might concern the type of regularities perceived: are they of causal principles or the actions of intentional agents? While, if we be physicalists, agency will be just another more complex sort of causal principle, it is certainly a distinct form that requires distinct biases and responses. Another cut would involve the hierarchical level of the perception, for another important shift occurs when the principles of attribution-of-order are applied recursively to themselves. For example, an organism capable of recursive attribution-of-order could begin to wonder about the status of its own perceptual apparatus, learning to confront cases of perceptual illusion and to compare the qualities of certain perceptions to those of others. And finally we might ask whether the predictions are generated implicitly or explicitly, for all of the principles discussed thus far can likely be mastered tacitly, through passive habituation — whereas explicit engagement of these capacities may introduce another degree of flexibility and control.

Cognitive science has a great deal to contribute to this architectonic, as processes at every level of this scheme have been studied empirically. In particular, the idea that the mind consists of a hierarchical layering of attributions-of-order has recently been on the upswing. From this perspective, the brain can be characterized as a “prediction machine;” its goal is to quickly and efficiently predict the widest range of perceptual regularities across the widest range of situations. It lacks adequate space and processing power to simply memorize every statistical regularity in the environment, however, and so it must economize on representational resources. It accomplishes this trade-off by dividing the job into a multi-level, hierarchical process, where the task is broken down into layers, with each successive layer operating only on the output of the previous layer. Bi-directional inter-layer learning is governed by error-correction processes; when an important outcome is not predicted, the features that would have led to a correct prediction become more salient in the future.

Over time, with enough learning (and perhaps some hardwired biases), the brain learns to organize raw perceptual experience into a fully-assembled, predictable world. Raw retinal input is broken down into features such as colors and locations, features are assembled into edges and boundaries, boundaries into shapes, shapes into figures, figures into scenes, and,
eventually, scenes into narratives. This hierarchical process is governed by what neuroscientists call “convergence,” a progressive winnowing down and abstraction; at each stage, only part of the possible input is attended to, the part deemed important or diagnostic given an inductive crystallization from prior experience. Babies may begin with something like James’s “buzzing, blooming confusion,” but once the systems get set up, raw sensory input is progressively broken down into its most essential features and re-assembled into meaningful objects, scenes, and narratives (and as McMahon correctly notes, conscious awareness typically only comes in at the later stages of the process). At each step the system gains predictive power by focusing only on the most valid aspects; but at the same time efficiency comes at a cost, for the brain must ignore a large amount of potential information from the previous layer. Crucially, these views often predict top-down regulation of perception, where the features that are consciously perceived (with many actual details ignored and some entirely fabricated) are determined in part by the high-level narratives those features might support.

On this scheme, perhaps McMahon’s distinctive mode of art appreciation consists in a recursive, explicit deployment of attributions-of-order simultaneously to an artwork and to the form of one’s own aesthetic experience. As McMahon suggests, artworks can place us into a mode of explicit reflection; we appreciate not only the structural features of the artwork, but also the effects these features induce in our sensory experience. And by triggering such a process of reflection, artists can critically comment upon our perceptual biases and cultural presuppositions. In short, art can point out how quickly we rush to conclusions, ask us why we find certain arrangements of features pleasing or jarring, and lead us to question whether we should experience those arrangements of features as such. And in so doing, art can teach us what we have gained through the bargain struck by the brain between prediction and economy — and perhaps even more interestingly, it can show us what we have lost.

If McMahon is right, perception is necessarily culturally-laden, and it can reach us only by engaging our perceptual preconceptions and biases. But this raises the second question; if we cannot access a basic foundation of raw sensory experience, how are radical breaks in “aesthetic syntax” possible, as occurred in the transitions in painting from Romanticism to Expressionism or from Expressionism to Cubism?

A suggested solution — consonant with McMahon’s own Neo-Kantian viewpoint — is to hold that there are indeed no “raw percepts” as such (at least, not available to consciousness), but at the same time there is a large stock of relatively hard-wired and culturally invariant perceptual tendencies and biases that artists can engage to develop new aesthetic conventions. This process can be viewed as a kind of aesthetic technology; such
innovation typically requires a lengthy period of experimentation and false starts (viz. Picasso’s extensive collection of pre-Cubism sketches and drawings) before an artist hits upon a new aesthetic syntax that is both intelligible and flexible enough to ground a new aesthetic language. Not every new syntax will land on a “natural” foundation — a century later, symphony conductors still struggle to educate audiences in the aesthetic mysteries of Schoenberg — but in the absence of such dramatic paradigm shifts, artistic technique becomes stale and top-heavy with obscure references, losing its ability to place the viewer in the distinctively reflective state of aesthetic appreciation.

I suggest that there is thus a tension common to art, one which perhaps explains its variable fortunes with the public. Unlike other communicative processes, in making art, artists constantly comment and innovate upon their distinctive communication channels, and to engage the audience must maintain a kind of equilibrium between boredom and surprise. \(^5\) Wholly predictable art — art which only exemplifies prior conventions and expectations — can convey a narrative and meaningful aesthetic experience to an observer, but becomes boring and thereby loses its ability to induce reflection. Wholly unpredictable art — art which makes use of no prior shared conventions — is surprising but unintelligible. Thus the artist, if she wishes to be understood by the public, must constantly seek a cognitive balance between predictability and surprise. She can develop new languages — perhaps training viewers as she goes along, as does von Sturmer — but in so doing she would do well to exploit our shared core of hardwired perceptual endowments.

Cognitive science can usefully contribute here also, for it is increasingly studying the developmental and evolutionary history of our attribution-of-order. These will include the aforementioned abilities to quickly master a variety of causal principles, but especially relevant are the numerous special capacities and biases that allow humans to understand each other and their social world. More so than any other animals, humans are built to detect other agents and respond appropriately to their actions, intentions, and mental states. These mechanisms include highly-attuned facial recognition and expression-emotion mapping, a suite of perceptual biases towards organic-seeming movement, an automated capacity for imitation and proprioceptive sense of others’ movements, and various capacities to track the eye-gaze of others. In a series of recent experiments, developmental psychologists have shown that babies as young ten months appear ready to spin scant perceptual evidence into rich narratives. Surian, Caldi, and Sperber (2007), for example, showed 13-month-old infants videos of a caterpillar inching its way towards either an apple or a piece of cheese; infants were surprised (operationalized in terms of longer looking times) when the caterpillar later preferred the other food item — but only when the caterpillar is apparently able to see the goal. \(^6\) Hamlin, Wynn, and Bloom (2007) showed 10-month-olds videos in which one shape would slowly climb up a hilltop, only to be “pushed”
down by a second shape; when later offered a choice between shapes, the babies overwhelmingly preferred the “good guy” shape (and sometimes rewarded the “bad guy” with a hearty smack).  

Putting aside the troubled divide between nativism and empiricism, for present purposes it is enough to note how remarkably sparse is the perceptual evidence to which the babies respond. These features provide an arsenal of basic components out of which artists can assemble new aesthetic languages. Notably, in most of the experiments on infants, the “actors” (shapes, caterpillars, puppets) are given “eyes” involving dark pupils on white sclera (humans notably being the only primates with white sclera). In conditions without such cues, the babies apparently did not interpret the objects as agents and thus did not demonstrate the experimental effects. Subtly cuing the same system, Modern artists like Miró can suggest agency with but two dots in a lighter field. Another oft-studied system is our specialized capacity for detecting faces; by merely arranging a scant bit of geometry face-wise, Picasso in his later period paintings and sculptures cued us to recognize his minimalist globular heads as fully-animated faces. And Heider-Simmel and in turn von Sturmer conjure simple shapes into vibrant actors by playing to our biases for organic-seeming and emotion-indicating movement.

A brilliant engagement with the form of our perceptual experience to convey a message can be found in Picasso’s Guernica. While the masterpiece is filled with ingenious devices to simultaneously invoke and frustrate our perceptual expectations, the most evocative touch, in my view, is the face of the fallen baby on the left-hand side of the canvas. The face is minimalist and relatively conventional, with one major exception — its limp, upside-down nose. This innovation produces a face at once both familiar and disturbing — we instantly recognize it as human, but are at the same time haunted by the unexpected realization that the nose, its most salient component, is entirely wrong. As a result, the face is difficult, almost painful, to survey. So much is conveyed on so many different levels with this one unexpected detail — that the baby is dead, that the death of one so young could not be expected and cannot be comprehended, and that war is horrible and unnatural.

We are only beginning to understand the processes driving these reactions. Psychologist Eric Charles has recently called for the development of a “psychophysics” of social cognition by systematically varying the dimensions of movement in stimuli such as the Heider-Simmel animation, in order to determine precisely which aspects are actually causing viewers to attribute the various emotions and intentions.  

Von Sturmer is engaging in a similar form of experimentation through the various forms of movement and spatial relations explored in his installations. There is an interdisciplinary project here to discover
why, when, and how we spin such rich narratives from such scant perceptual evidence — and perhaps also whether we should.


5 This equilibrium is similar but not identical to the one in which McMahon bases our sense of beauty; see McMahon (2007), ibid.

