

Building Bridges: The Importance of Bringing Together the Empirical Sciences & the Humanities

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Within René Magritte's renowned painting, *The Treachery of Images*, a simple yet profound declaration challenges the viewer's perception: «Ceci n'est pas une pipe» («This is not a pipe»). This enigmatic statement forces us to confront the fundamental distinction between truth and appearance, between the physical object and its representation. As we navigate the digital landscape of the 21st century, where images, information, and experiences are seemingly transported to our fingertips through digital means, the question of what constitutes reality and how it is mediated through digital aesthetics becomes increasingly complex.

In confronting the complexities of reality and representation in the digital age¹²³, it becomes evident that addressing these questions requires a collaborative effort between the empirical (social) sciences and the humanities. Throughout this paper, therefore, we suggest a reciprocal relationship: While scientists possess the tools and methodologies to empirically investigate phenomena, they may look to the humanities for inspiration as to what phenomena are worth testing in the first place. And, though empirical approaches necessarily

¹ W. Benjamin, *The work of art in the age of mechanical reproduction* (1935/2008) (E. Jephcott & H. Zohn, transl. by), Harvard University Press.

² B. Latour, *We Have Never Been Modern* (2012), Harvard University Press.

³ E. Morin, *Method: Towards a Study of Humankind* (1977/1992) (R. Bélanger, transl. by), Peter Lang.

are reductive to some extent, a portion of this may be mitigated by a collaborative effort involving scholars from the humanities – as empirical scientists often require assistance in capturing the intricacies of philosophical inquiry in a nuanced way. Furthermore, empirical scientists generally lack the skills to work with other sources of evidence – such as historical texts – and how to incorporate them in their process of knowledge construction.

Conversely, where philosophers excel in elucidating conceptual frameworks and theoretical underpinnings, their theories may benefit from the insights gleaned through empirical methods to ground their analyses in empirical evidence. Within the digital humanities, quantitative approaches are increasingly frequent. The humanities also use various sources of data, such as historical texts and databases, to ground their theories in evidence. That said, we argue that adding empirical and, specifically, experimental approaches is another source of evidence worth considering.

We believe that such an approach can be mutually beneficial. As both fields can benefit from the skills and knowledge generated by the other, we can come to a truly comprehensive form of knowledge acquisition that pools evidence from many sources to gain fundamental insights. This is a general and elementary point, which we aim to illustrate by taking the specific example of digital aesthetics. In the current paper, we show how interdisciplinary collaborations have the potential to advance our understanding of digital aesthetics by using philosophical frameworks to guide us to fruitful questions and leveraging empirical methods as powerful explanatory tools.

To this aim, we first elaborate on the reciprocal relationship between each discipline, and specifically address how variation in people creates a challenge for understanding art and aesthetics (for both disciplines). Then, we aim to show how problems concerning theoretical definitions and synonyms can be addressed through synergy between the sciences and humanities. Finally, we specifically consider authorship in the digital age as a case study to show how a synergy between the humanities and social sciences can be mutually beneficial. To do so, we first elaborate on how perspectives from each scholarly tradition can offer insights into this concept, to then conclude with a more general perspective on digital aesthetics as a case study for bridge-building.

To be sure, we are not the first to write on the intersection or bridge building between approaches of the humanities to aesthetics and the arts vs. approaches of the (social) sciences to aesthetics and the arts. Nonetheless, previous work has focused on highlighting parallels between art and science⁴⁵ critiquing either empirical approaches⁶⁷, humanitarian interpretations of empirical work⁸, or both sides⁹¹⁰, as well as providing guidelines for how empiricists could do better¹¹¹²¹³¹⁴.

In contrast, as far as we are aware, either because the humanities have been less interested incorporating scientific approaches into their work or because scientists have been less active in reaching out to the humanities by way of providing constructive criticism on their work (rather than only receiving it), we cannot speak currently of a true *reciprocal* approach. This paper aims to fill this gap by explicitly reaching out to the humanities, and specifically proposing a general approach of working together that is reciprocal and could be applied to various topics.

1. The Reciprocal Relationship between Empirical Sciences and Humanities

In the pursuit of knowledge, empirical sciences and the humanities often operate in parallel, each contributing distinct yet complementary insights. As Bruno Latour argues in *We Have*

⁴ A. Chatterjee, *Neuroaesthetics: A coming of age story*, in "Journal of Cognitive Neuroscience", 23(1) (2011), pp. 53-62.

⁵ S. Zeki, *Art and the brain*, in "Journal of Consciousness Studies", 6(6-7) (1999), pp. 76-96.

⁶ M. Rampley, *The Seductions of Darwin: Art, Evolution, Neuroscience* (2017), Penn State Press.

⁷ A. D. Makin, *The gap between aesthetic science and aesthetic experience*, in "Journal of Consciousness Studies", 24(1-2) (2017), pp. 184-213.

⁸ R. Tallis, *The limitations of a neurological approach to art*, in "The Lancet", 372(9632) (2008), pp. 19-20.

⁹ E. Dissanayake, *The arts after Darwin: Does art have an origin and adaptive function*, in "World Art Studies: Exploring Concepts and Approaches" (2008), pp. 241-263.

¹⁰ L. Kesner, *Saving the humanities from evolutionary and neuroscientific imperialism*, in "Journal of Art Historiography", (20) (2019), pp. 1-10.

¹¹ M. Kubovy, *Neuroaesthetics: Maladies and remedies*, in "Art & Perception", 8(1) (2020), pp. 1-26.

¹² A. Kranjec, *Conceptual art made simple for neuroaesthetics*, in "Frontiers in Human Neuroscience", 9 (2015), p. 267.

¹³ N. J. Bullot & R. Reber, *The artful mind meets art history: Toward a psycho-historical framework for the science of art appreciation*, in "Behavioral and Brain Sciences", 36(2) (2013), pp. 123-137.

¹⁴ A. Chatterjee, *Neuroaesthetics: Growing pains of a new discipline*, in A. P. Shimamura & S. E. Palmer (Eds.), *Aesthetic Science: Connecting Minds, Brains, and Experience* (2012), Oxford University Press, pp. 299-317.

Never Been Modern (2012), the modernist academic practice has artificially "purified" disciplines, separating nature from culture, facts from values, and sciences from the humanities¹⁵. While Latour's critique highlights the importance of bridging this divide, a complete integration of these domains risks diluting their unique strengths. Instead, we argue, the key lies in fostering a relationship where these disciplines remain independent yet actively enrich one another, leveraging their differences to produce insights that neither could achieve alone. To do so, understanding the nature of this reciprocal relationship is crucial for fostering productive interdisciplinary collaboration. For clarity, we do not mean to imply that collaborative efforts have not occurred¹⁶¹⁷¹⁸ in the past (or present). Rather, we aim to discuss how we believe this collaboration should be organized to be mutually beneficial, which can be used as a guideline.

1.1 Role of Empirical Sciences

From the perspective of empirical sciences, the academic's role is to systematically investigate phenomena through observation, experimentation, and statistical analysis. Within the social sciences, this necessitates an approach that includes testing hypotheses with data from many people, and this methodological rigor allows for the development of theories based on empirical evidence, providing a robust framework for understanding complex human behaviors and experiences. A simple thought experiment will not suffice, as a truth for one individual that may not hold for another.

Empirical scientists employ a variety of quantitative methods to explore and measure human experiences. These methods range from controlled laboratory experiments to large-scale surveys, all designed to generate data that can be analyzed statistically. Such approaches are invaluable for identifying patterns, testing hypotheses, and developing predictive models.

¹⁵ B. Latour, *We Have Never Been Modern*, cit.

¹⁶ J. Boddy, H. Brinkmann, E. Specker, M. Forster, H. Leder, & R. Rosenberg, *The universality of aesthetic effects. An empirical and historical assessment of a dominant paradigm*, in "Zeitschrift für Ästhetik und allgemeine Kunstwissenschaft", 68(2) (2023), pp. 147-171.

¹⁷ L. Kesner, *Saving the humanities from evolutionary and neuroscientific imperialism*, cit, pp. 1-10.

¹⁸ D. Freedberg & V. Gallese, *Motion, emotion and empathy in esthetic experience*, in "Trends in Cognitive Sciences", 11(5) (2007), pp. 197-203.

For example, in the study of digital aesthetics, empirical methods can quantify how different digital art forms affect viewers' emotional responses, attention, and cognitive engagement.

Despite their strengths, however, empirical methods have inherent limitations. The reductionist nature of empirical science often necessitates that complex phenomena are broken down into measurable parts, oversimplifying the intricacies of individual human experience to be able to find generalizable patterns across people's experiences. Additionally, the selection of phenomena to investigate is frequently driven by prevailing scientific paradigms as well as what can be easily captured with the currently available methods, which can limit the scope of inquiry.

1.2 Role of Humanities

This is where the humanities can play a critical role. Philosophical inquiry, for example, encourages a broader and deeper (often qualitative) exploration of concepts that may not be immediately amenable to empirical testing. Philosophers question underlying assumptions (including the very assumptions of scientific practice¹⁹), challenge existing frameworks, and propose new ways of understanding the world. They are sensitive to subtle nuances between closely related, but conceptually different, constructs and investigate how these small – and to the empirical scientist, potentially negligible – differences can further deep insights into the properties of a phenomenon. By doing so, they can inspire scientists to expand their research horizons and explore phenomena that might otherwise be overlooked. For instance, philosophical discussions about the nature of authenticity and representation in art can guide empirical studies to examine these concepts in more nuanced ways. Furthermore, this may inspire the development of new methods that are able to capture nuances or concepts that have been overlooked by prevailing empirical paradigms. Or, at least, clarify the need for complementary evidence that can address these aspects.

¹⁹ B. Latour, J. Salk & S. Woolgar, *Laboratory Life: The Construction of Scientific Facts* (2013).

1.3 Mutual Benefits

While the humanities are often associated with qualitative analysis, there is a growing recognition of the importance of grounding theoretical insights in empirical evidence. At an easily realizable level, humanists and social scientists can make a practical effort to include one piece of work from outside their domain; a sociologist might cite a philosopher, or a historian might cite a psychologist, for example. And to do so in a deeper manner, i.e. not just as a “nice” quote at the beginning of the introduction, but as a real building block towards their argumentation. This simple action might serve as the gateway for more intensive collaboration, such as philosophers who might collaborate with empiricists to design studies that test philosophical theories, providing concrete data to support or refine these ideas.

To give a concrete example, a philosophical theory about the impact of digital reproduction on the perceived value of art can be empirically tested through experiments that measure viewers' reactions to digital versus original artworks. This empirical grounding helps to bridge the gap between abstract theory and observable reality, enhancing the credibility and applicability of philosophical insights. Furthermore, this integration is mutually beneficial, because it results in knowledge that is both more comprehensive and better defended with robust evidentiary support. By combining the strengths of both empirical sciences and humanities, we can achieve a richer, more nuanced understanding of human experience. Empirical data provides a solid foundation of evidence, while philosophical analysis offers a deep conceptual understanding. This dual approach allows for the development of theories and models that are both empirically validated and conceptually sophisticated.

2. People Differ: The Challenge of Understanding Art and Aesthetics

As a fundamental starting point that likely will have mutual agreement from both sides, we can say that: people differ. The age-old saying “beauty is in the eye of the beholder” encapsulates how especially large this variation may be. This fundamentally makes the job of any scientist or scholar aiming to understand the role and importance of art for humans difficult.

2.1 Variation in Perception (And in Approaches to Studying It)

To illustrate, consider the immense variability in human perception, particularly in art and aesthetics. Social scientific research shows that the perception of art has more individual variability compared to natural objects, emphasizing the subjective nature of aesthetic experience²⁰²¹²². Importantly, though psychologists have always been aware that people differ (hence always testing more than one person per empirical study), these idiosyncratic contributions have generally been overlooked in favor of identifying generalizable “rules” as to what *on average* people do, think, feel, and experience. Only very recently, validated approaches to separate stimulus variance from idiosyncratic – or personal – variance have been systematically developed and consequently tested²³²⁴.

To understand this, “stimulus variance” is the portion of variation (e.g., in an evaluation of beauty) that is due to differences between stimuli. For example, say we have one of Claude Monet’s *Waterlily* paintings, and we have Picassos’ *Guernica*, and we ask people to rate how harmonious each of these artworks is. Then, likely, you and the authors may differ in how harmonious we think each of them is, but we likely both rate the *Waterlilies* as more harmonious than the *Guernica*. This is captured by the stimulus variance. In contrast, “idiosyncratic/person variance” is the portion of variation that is due to differences between people. So, whereas the authors may find the *Waterlilies* very beautiful and *Guernica* not so much, you may have exactly the opposite opinion, and this is captured by the person variance.

²⁰ H. Leder, J. Goller, T. Rigotti & M. Forster, *Private and shared taste in art and face appreciation*, in "Frontiers in Human Neuroscience", 10 (2016), p. 155.

²¹ E. A. Vessel, T. Ishizu & G. Bignardi, *Neural correlates of visual aesthetic appeal*, in "The Routledge International Handbook of Neuroaesthetics" (2022), Routledge, pp. 103-133.

²² E. A. Vessel, N. Maurer, A. H. Denker & G. G. Starr, *Stronger shared taste for natural aesthetic domains than for artifacts of human culture*, in "Cognition", 179 (2018), pp. 121-131.

²³ J. Hönekopp, *Once more: Is beauty in the eye of the beholder? Relative contributions of private and shared taste to judgments of facial attractiveness*, in "Journal of Experimental Psychology: Human Perception and Performance", 32(2) (2006), pp. 199-209.

²⁴ J. E. Martinez, F. Funk & A. Todorov, *Quantifying idiosyncratic and shared contributions to judgment*, in "Behavior Research Methods", 52 (2020), pp. 1428-1444.

Going back to the previous example, these studies²⁵²⁶²⁷ show that when evaluating humanmade objects, such as art or architecture, the majority – roughly 80% – of the variation is due to person variance. This means that when we try to understand people’s experience with artworks (at least in terms of beauty) only 20% of the variation in experience can be explained by differences in the stimuli (i.e. the difference between the *Waterlilies* and *Guernica*) and as much as 80% can be explained by differences in people (i.e. the differences between you and the authors).

In addition to individual variation in perception, we also hold immensely varied ideas about what constitutes perception itself. Let us take the field of philosophy as a case to examine how the ways in which we experience the world around us vary. Even within philosophy itself, there are diverse views on the subject of perception. Empiricism, for example, argues that all knowledge stems from sensory experience, with philosophers like John Locke viewing the mind as a blank slate filled by sensory input over the lifetime²⁸. In contrast, the concept of rationalism posits that reason and innate ideas play a crucial role in understanding the world. This idea was explored in the works of René Descartes²⁹ and Immanuel Kant³⁰, who both emphasized the mind’s role in shaping our perception. Phenomenology, advanced by philosophers like Edmund Husserl³¹ and his student, Martin Heidegger³², focuses on exploring how we engage with the world through our conscious experiences. Finally, Realism debates the nature of our perception of reality, whether that be directly as it is or as indirect representations of the external world. These varied perspectives highlight intricate interactions between sensory data, cognitive processes, and the nature of reality in our understanding of perception.

²⁵ H. Leder, J. Goller, T. Rigotti & M. Forster, *Private and shared taste in art and face appreciation*, cit., p. 155.

²⁶ E. A. Vessel, T. Ishizu & G. Bignardi, *Neural correlates of visual aesthetic appeal*, cit., pp. 103-133.

²⁷ E. A. Vessel, N. Maurer, A. H. Denker & G. G. Starr, *Stronger shared taste for natural aesthetic domains than for artifacts of human culture*, cit., pp. 121-131.

²⁸ J. Locke, *An Essay Concerning Human Understanding* (1847), Kay & Troutman.

²⁹ R. Descartes, *Meditations on First Philosophy* (1641/2024) (J. Cottingham, transl. by), Cambridge University Press.

³⁰ I. Kant, *Critique of Judgment* (1790/2007) (J. C. Meredith, transl. by), Oxford University Press.

³¹ E. Husserl & D. Moran, *Ideas: General Introduction to Pure Phenomenology* (1913/2012) (W. R. Boyce Gibson, transl. by), Routledge.

³² M. Heidegger, *Being and Time* (1927/2010) (J. Stambaugh, transl. by), SUNY Press.

2.2 Bridging Approaches to Studying Perception

Although the variegated nature of approaches to studying perception across different philosophical and empirical traditions do well to reflect its complexity, this variability also poses a significant challenge for interdisciplinary scholars. From the perspective of the social sciences, understanding variability requires testing hypotheses with extensive data collection from diverse populations. Often, this approach is criticized for ignoring the individual. Unlike the social sciences, the aim of humanities is to undertake theoretical exploration. These fundamental insights are gleaned without necessarily collecting data from humans. Still, the goals remain aligned: both seek to uncover fundamental truths about human interaction with art and aesthetics through an understanding of human perception.

How then, can scholars in both fields bridge these (surface-level) differences? Philosopher Edgar Morin argued for understanding of phenomena as parts of an interdependent whole and proposed that they should be studied in relation to the systems in which they are embedded³³. A tangible place to start in digital aesthetics might be to encourage greater interdisciplinary collaboration that uses mixed methods research in a contextually sensitive way. It is perhaps a tired call to suggest that humanists and social scientists should collaborate more. However, the key between successful (and not just “more”) collaboration lies, in our view, in effectively mapping philosophical ideas to scientific approaches. Philosophical perspectives, for example, suggest different methodologies for studying perception. Empiricism might prioritize quantitative, sensory-based experiments, while phenomenology might call for qualitative, introspective methods. Therefore, examining the philosophical roots of hypotheses formatted for scientific examination reveals more robust frameworks for answering such questions. Psychologists must navigate these methodological differences to design studies that can be scientifically rigorous yet sensitive to the complexities of perception. In addition to leveraging diverging methodologies, philosophical debates about the sources and limits of knowledge (e.g., rationalism vs. empiricism) can influence how psychologists interpret their findings. For example, if a scholar adheres to a strictly empiricist

³³ E. Morin, *Method: Towards a Study of Humankind* (1977/1992) cit.

viewpoint, they might undervalue insights derived from introspective or cognitive approaches that don't directly rely on sensory data. Overall, nuanced theoretical frameworks are necessary to interpret patterns meaningfully and suggest new avenues for empirical investigation.

3. Realness, Genuineness, and Authenticity: Helpful Synonyms or Subtle Traps?

In addition to bridging differences in methodological approaches to addressing variation in human experience, humanists and scientists also need to address definitional differences that form the base of understanding. Different philosophical approaches provide varying definitions and frameworks for understanding topics like aesthetics. For instance, philosophical empiricists focus on sensory experience, while phenomenologists emphasize the subjective structures of consciousness. This variability can lead to challenges in operationalizing perception in a consistent manner for empirical studies. To articulate this point more clearly, we in the following focus on one specific example from (digital) aesthetics as a “case study” approach – to illustrate the general point we made above, and to show where the humanities and sciences differ and how they can, in our view, enrich each other.

A critical issue in digital aesthetics is the conflation of terms such as "real," "genuine," "original," and "authentic." While these terms are often used interchangeably in scientific studies, they possess distinct meanings that can significantly impact the interpretation of results. For instance, the concept of "aura" in art, introduced by Walter Benjamin's *The Work of Art in the Age of Mechanical Reproduction*, distinguishes the unique presence of an artwork in time and space from its reproduction. This concept is set apart from and more specific than words such as “real” or “genuine”, which may be used to refer to works of art that exist in a mechanically produced series or even works of art that exist in simultaneous digital forms. Using terminology with more theoretical distinction can guide more precise empirical investigations. Likewise, many other conceptual definitions can be improved with the help of the humanities as well.

Developing clear conceptual definitions begins with collecting a set of potential attributes for a concept³⁴. This might include a set of definitions, specific examples, and closely related synonyms or antonyms. It might also include examining the histories of concepts and their etymological development over time. While some social scientists might be equipped to attend to the former, few are trained to consider the latter. Scholars in the humanities, meanwhile, are skilled at analyzing and refining complex concepts using both sets of information. As such, they can work with social scientists to dissect vague or broad concepts into more precise and operationally definable terms. In social science research, terms like "authenticity," "value," or "happiness" are common but can be interpreted in multiple ways. Philosophers, for example, can help to delineate these concepts, making clear distinctions between different facets (e.g., emotional vs. cognitive aspects of happiness) and providing clear definitions that can be empirically tested. The end results of such collaborations provide solid foundation for empirical investigation by reducing the risk of misinterpretation and enhancing the reliability of research outcomes.

4. Authorship in the Digital Age

As a case study in the digital aesthetics, we turn to the notion of authorship as an area in which enhanced collaboration between the social sciences and humanities might be particularly beneficial. The concept of authorship has become increasingly complex in the digital age, particularly with the rise of AI-generated art. Historically, authorship – or attribution of an individual’s work on a specific piece of art, technology, or literature – is a relatively recent idea. Concepts surrounding the attribution and ownership of intellectual property expanded as automation and individualism took root in Europe, starting in the later Middle Ages, and took several centuries of refinement to reflect the concept we recognize today³⁵ (Ede, 1985). Insights from historical and theoretical analyses reveal that authorship

³⁴ P. M Podsakoff, S. B. MacKenzie & N. P. Podsakoff, *Recommendations for creating better concept definitions in the organizational, behavioral, and social sciences*, in "Organizational Research Methods", 19(2) (2016), pp. 159-203.

³⁵ L. Ede, *The Concept of Authorship: An Historical Perspective* (1985).

has always been a contested concept³⁶ (Long, 1991). For instance, medieval artworks were often created by anonymous craftsmen, and the notion of individual authorship only gained prominence in the Renaissance. During this time, it became more common for individual artists to sign their work and gain individual acclaim for their creative products. At the same time, however, it was also customary for apprenticing artists to sign their work only indicating their master's name and common for artists to rely on large teams of craftsmen to complete major projects. Under these models, authorship in the form of intellectual direction or artistic vision was recognized, but authorial workmanship was not formally recognized.

Modern ideas about authorship go beyond simple ownership and legal matters; attribution of creative works affects their psychological perception. In a social learning process known as *prestige bias*, perceivers use indirect cues of success as short-cuts to make judgements about environmental stimuli³⁷. While this phenomenon is common in many areas of social life, during aesthetic judgement-making prestige bias is evident when aesthetic products are evaluated on the basis of the creator's reputation rather than the perceptual qualities of the object itself. This socially based evaluative inflation has been observed in studies of music preference, namely when researchers artificially label musical work as coming either a professional or student composer³⁸³⁹. It has also been observed in the realm of visual art, where artworks described as being produced by more prestigious artists are commonly evaluated as being more beautiful, interesting, and monetarily valuable than identical artworks said to be produced by less prestigious artists⁴⁰. Even more so, when participants are explicitly told that the artwork is a fake (vs. an authentic work) it influences both how the artwork is valued on various levels such as its artistic quality and monetary value, as well as

³⁶ P. O. Long, *Invention, authorship, "intellectual property," and the origin of patents: Notes toward a conceptual history*, in "Technology and Culture", 32(4) (1991), pp. 846-884.

³⁷ Á. V. Jiménez & A. Mesoudi, *Prestige-biased social learning: Current evidence and outstanding questions*, in "Palgrave Communications", 5(1) (2019).

³⁸ G. L. Duerksen, *Some effects of expectation on evaluation of recorded musical performance*, in "Journal of Research in Music Education", 20(2) (1972), pp. 268-272.

³⁹ C. Kroger & E. H. Margulis, "But they told me it was professional": Extrinsic factors in the evaluation of musical performance, in "Psychology of Music", 45(1) (2017), pp. 49-64.

⁴⁰ S. Mastandrea & W. D. Crano, *Peripheral factors affecting the evaluation of artworks*, in "Empirical Studies of the Arts", 37(1) (2019), pp. 82-91.

people's visual engagement with the work, and how people judge the artist's talent^{41,42}. Presumed authenticity also weakens the liking-familiarity relationship, which is the idea that we tend to favor stimuli that we are more familiar with⁴³.

Questions about and psychological implications of authorship extend into the digital sphere as well. Kirk and colleagues⁴⁴, for example, employed neuroimaging methods to understand how context modulates the aesthetic value attributed to art objects. Their approach demonstrated that people gave higher subjective ratings to artworks labeled as being sourced from a gallery than artworks labeled as being computer generated. These ratings were further substantiated by neural activation in areas of the brain linked to perceptual processing, reward, and decision-making. Similarly, this gets also at the point of why or how authentic artworks are valued. Here, work by Newman and Bloom⁴⁵ provides insight. They show that authenticity in artworks is valued through two mechanisms: the assessment of the art object as a unique creative act (performance) and the degree of physical contact with the original artist (contagion). Furthermore, performance seems to attribute the most greatly to authenticity evaluations, suggesting a possible psychological mechanism for the early recognition of artistic masters over craftspeople in historic conceptions of authorship.

These mechanisms fit within a traditional view of authenticity as rooted in human creativity and intentionality, with the artwork as a unique end product of the creative process of a specific individual (i.e. the author). This view is challenged by the ability of modern algorithms. This shift raises important questions about the nature of authorship and its significance in art appreciation⁴⁶.

⁴¹ P. Locher, E. Krupinski & A. Schaefer, *Art and authenticity: Behavioral and eye-movement analyses*, in "Psychology of Aesthetics, Creativity, and the Arts", 9(4) (2015), pp. 356-367.

⁴² S. H. Wolz & C. C. Carbon, *What's wrong with an art fake? Cognitive and emotional variables influenced by authenticity status of artworks*, in "Leonardo", 47(5) (2014), pp. 467-473.

⁴³ H. Leder, *Determinants of preference: When do we like what we know?*, in "Empirical Studies of the Arts", 19(2) (2001), pp. 201-211.

⁴⁴ U. Kirk, M. Skov, O. Hulme, M. S. Christensen & S. Zeki, *Modulation of aesthetic value by semantic context: An fMRI study*, in "Neuroimage", 44(3) (2009), pp. 1125-1132.

⁴⁵ G. E. Newman & P. Bloom, *Art and authenticity: The importance of originals in judgments of value*, in "Journal of Experimental Psychology: General", 141(3) (2012), pp. 558-569.

⁴⁶ D. J. Gunkel, *Rethinking art and aesthetics in the age of creative machines: Editor's introduction*, in "Philosophy & Technology", 30 (2017), pp. 263-265.

If one compares these traditions to present-day debates about authorship in the digital age, it reveals some striking questions about how we view AI tools. Recent evidence suggests that aesthetic judgements also vary based on knowledge about a work of art being generated by AI tools and indicates some resistance to accepting AI in the production of art⁴⁷. But given the contemporary practice of acknowledging the work of e.g., creative teams, what does this mean for artistic projects aided by AI tools? Should contributions to creative products by AI tools be treated as unnamed craftspeople, similar to what we see throughout history? Likewise, how should we treat AI generated images that were created based on training data from specific artists? Should they be marked with “school of” or “in the likeness of” similar to students of the great Raphael Sanzio da Urbino and other old masters? Understanding these historical contexts can help us navigate contemporary debates about AI-generated art.

To further complicate matters, a shift into the digital doesn't only challenge authenticity/authorship, it also presents a shift of medium. Rather than engaging with real-world objects that can be both authentic or not^{48,49}, and that can be presented in a variety of media from a genuine piece (i.e. the original painting) to various forms of reproductions (e.g., postcards, posters, or perfect – but inauthentic – replicas), within digital aesthetics we engage with artworks through digital means. These can be “digital natives” (i.e. artworks that were created in and for a digital medium) as well as digital reproductions of artworks (i.e. online databases of artworks, or e.g., seeing a picture of an artwork on Instagram) or present a complete digital engagement through an often-immersive virtual reality (VR) environment. Notably, these instances differ in that both digital natives and digital reproductions can be incorporated in a “real world” space (e.g., in a museum), whereas VR represents a move towards a completely digitally mediated engagement. Nonetheless, though both digital natives and digital reproductions present the same digital medium, only the first one is

⁴⁷ C. Di Dio, M. Ardizzi, S. V. Schieppati, D. Massaro, G. Gilli, V. Gallese & A. Marchetti, *Art made by artificial intelligence: The effect of authorship on aesthetic judgments*, in "Psychology of Aesthetics, Creativity, and the Arts" (2023).

⁴⁸ C. Hampp & S. Schwan, *Perception and evaluation of authentic objects: Findings from a visitor study*, in "Museum Management and Curatorship", 29(4) (2014), pp. 349-367.

⁴⁹ S. Schwan & S. Dutz, *How do visitors perceive the role of authentic objects in museums?*, in "Curator: The Museum Journal", 63(2) (2020), pp. 217-237.

“genuine” whereas the other is a reproduction of a genuine artwork. Furthermore, VR can be used to create both a digital native, or a digital environment to present digital natives in (i.e. both genuine representations), but also represent a reproduction of a real-life environment including digital reproductions. Additionally, differences between these instances *can* overlap with authenticity, such that all examples of the previous sentence are in principle authentic (i.e. no forgeries here). However, especially in the case of digital native artworks, these can be created with the use of modern algorithms which question authorship and as such authenticity.

Navigating this complex space where authorship, authenticity, and medium intersect is best addressed by collaborative efforts between the humanities and social sciences. Philosophers, with their deep understanding of the historical and conceptual underpinnings of authorship and authenticity as well as genuineness and medium, can help disentangle these concepts and explore how they might evolve in digital contexts. Their insights can guide social scientists in formulating precise hypotheses and designing experiments that capture the nuances of how digital mediums and AI-(co)generated works are perceived. On the other hand, empirical research conducted by social scientists can provide concrete data on how these perceptions manifest in real-world settings like museums, online platforms, or virtual reality environments. By examining variables like emotional response, cognitive engagement, and behavioral outcomes, social scientists can validate and refine philosophical theories, ensuring that they remain relevant to contemporary issues in digital aesthetics and answering questions like “when do people consider AI to take authorship of a work?” or “why do people anthropomorphize AI, particularly when it comes to creative products?” In a digital climate where authorship is highly contested, data-driven perspectives can help explain the “why” of a debate that, without it, leaves us with a “sometimes this, and sometimes that” obstacle. This interdisciplinary collaboration not only enhances our understanding of authorship and authenticity but lays groundwork for more informed discussions on the ethical implications of AI in the creative process, the value of digital art, and the future of cultural heritage in a digital world.

Conclusion

As reality and representation become increasingly complex in our digital age, this paper underscores the necessity of a collaborative approach to understanding digital aesthetics. The blending of empirical sciences and the humanities allows for a more comprehensive examination of human experience, where empirical rigor is complemented by deep philosophical inquiry. While empirical methods provide robust frameworks for testing hypotheses and generalizing findings across populations, we must acknowledge they often benefit from the conceptual clarity and nuanced perspectives offered by the humanities. This interdisciplinary synergy is not merely advantageous, but essential for addressing the multifaceted challenges of our digital age.

Of particular interest in this discussion is the variability inherent in human perception – especially in the realm of art and aesthetics. As the work referenced in this paper demonstrates, individual differences significantly influence how people engage with and evaluate artistic works. The empirical sciences, with their focus on quantifiable data, and the humanities, with their emphasis on subjective experience, together provide a fuller picture of this variability. By acknowledging and addressing these differences, scholars can develop more refined theories that account for the complexities of human perception, thereby advancing both fields.

In addition to acknowledging individual variability, our discussion of the importance of precise conceptual definitions suggests that future research should prioritize the refinement of key terms and ideas in the study of aesthetics. This will involve not only interdisciplinary collaboration but also a commitment to integrating historical and theoretical insights into empirical research. By doing so, scholars can avoid the pitfalls of vague or inconsistent terminology and instead build a more solid foundation for both scientific inquiry and philosophical debate. This approach will lead to more robust and reliable research outcomes, ultimately contributing to a deeper understanding of the human condition in a digital world.

Moreover, growth in the digital aesthetics relies on exploring the intersections between empirical evidence and philosophical theory, particularly in emerging areas like digital aesthetics. Examining authorship in the digital age as a case study highlights the need for ongoing dialogue between disciplines as technology continues to evolve. As AI-generated art

and digital reproductions become more prevalent, questions about authenticity, authorship, and the value of art will only grow more pressing. Collaborative efforts between the humanities and social sciences will be crucial in navigating these new challenges and in developing frameworks that adapt to the rapidly changing technological landscape.

The authors conclude by advocating for a bridge-building approach between the empirical sciences and the humanities, recognizing that each field brings unique strengths to the table. By working together, scholars can overcome the limitations of their respective disciplines and develop a richer, more nuanced understanding of the complexities of digital aesthetics. This interdisciplinary collaboration is not just a theoretical ideal but a practical necessity in addressing the challenges of our time. As we continue to grapple with the implications of digital technology on art, culture, and society, the combined efforts of empirical scientists and humanists will be essential in shaping the future of knowledge.