Disaster Studies

Throughout history disasters such as floods, famines, earthquakes, and epidemics have affected human experience in myriad ways. Disasters are given historical meaning through the impact of socioeconomic and political conditions, trauma support on a regional and national scale, and how transnational ties between global communities have ignited relief campaigns. Furthermore, for centuries, news about catastrophic events has been disseminated via media such as documentary, pamphlets, chronicles, newspapers, poems, illustrations and prints. As such, disasters have also been mediated through recurring cultural repertoires of representations.

This series seeks to address the ways in which communities in and beyond Europe have intervened in, coped with or given meaning to disasters that occurred close by or far away, in terms of both time and space. We invite submissions (both monographs and edited collections) in the fields of (political, socioeconomic and cultural) history, cultural studies, religious studies, art history, memory studies, gender studies, literary studies, and media studies.

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Dealing with Disasters from Early Modern to Modern Times

Cultural Responses to Catastrophes

Edited by
Hanneke van Asperen and
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Hanneke van Asperen and Lotte Jensen

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Temporality, Emotion, and Gender in Leonardo da Vinci’s Conceptualisation of Natural Violence

Susan Broomhall

Abstract
This chapter explores how the Italian engineer and artist Leonardo da Vinci conceptualised forms of violence in nature, to nature, or by nature. In using the term ‘natural violence’, this chapter aims to capture Da Vinci’s broad-ranging consideration of such violence related to the natural world upon which he reflected across his work and to which he gave varied and ongoing responses over the course of his life. It argues that his perception of temporality, emotion, and gender were important aspects that helped Da Vinci make sense of natural violence. In doing so, the chapter suggests that while Da Vinci may have been radical in some aspects of thinking, in others he was representative of his era, and that investigating his conceptualisation of natural violence brings these distinctions into sharper focus.

Keywords

Throughout his life, the Italian engineer and artist Leonardo da Vinci (1452–1519) reflected upon violence in nature, to nature, or by nature, which could wreak destruction upon human and non-human species alike. These complex forms that I will consider under the term ‘natural violence’ were phenomena that he sought to understand, and he also worked to understand the relationships between them. In his work, Da Vinci theorised natural violence, responded to it, and aimed to guard against it. He explored natural
violence in different forms and multiple sites – sketches, engineering designs, artworks, and writings across scattered pages of notes and notebooks. Central to his conceptualisations was an understanding of particular dimensions that underpinned natural world systems. Scholars of natural sciences in particular have tended to express these dimensions in terms of laws that Da Vinci sought to articulate through experimental investigation and upon which he drew within his engineering and artistic practices. As a consequence, other elements of his thinking – about dimensions such as time and emotion – have been less often explored in this scholarship. In this chapter, I suggest that analysis of Da Vinci’s perception of temporality, emotion, and also gender is important to help to make sense of his conceptualisation of natural violence.

Early modern thinking about a world in transition has long formed the backdrop for modern scholars’ consideration of the Anthropocene age. Temporality is of course central to this conceptualisation of our world, but so too is a certain historical vision of the early modern. When historian Dipesh Chakrabarty speaks of how anthropogenic explanations of climate change collapse a humanist distinction between natural and human histories, he is thinking of a mode of history widely attributed to philosopher Giambattista Vico, ‘that we, humans could have proper knowledge of only civil and political institutions because we made them, while nature remains God’s work and ultimately inscrutable to man’.1 Sociologist and philosopher Bruno Latour similarly articulates a ‘European prescientific vision of the Earth ... as a cesspool of decay, death, and corruption from which our ancestors, their eyes fixed toward the incorruptible spheres of suns, stars, and God, had a tiny chance of escaping solely through prayer, contemplation, and knowledge’, while philosopher and historian Michel Serres considers how ‘nature acted as a reference point for ancient law and for modern science because it had no subject’.2 As modern scholars continue to reflect on the relationship between human agency and the world around us, further study of early modern conceptualisations of this relationship is also fruitful. Da Vinci may have been radical in some aspects of his thinking, as has long been claimed, but in others he was representative of his era. Investigating

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his conceptualisation of natural violence brings these distinctions into sharper focus.

Knowledge production about natural violence occurred in a wide range of genres in the early modern period, including fables, sketches, engineering, poetry, paintings, essays, and journal accounts. Although they produced very different forms of knowledge, collectively, they suggest that perception of such violence as disaster might only be one position, or perhaps juncture, temporal and emotional, on the interpretive spectrum of such destructive events. Moreover, as Gerrit Jasper Schenk has explored, terms such as ‘disaster’ and ‘catastrophe’ held different valency in different early modern linguistic and cultural traditions. Disaster as much as nature is thus a concept that finds meaning in specific cultural contexts. Scholars are increasingly demonstrating how early moderns narrated events in which the natural world produced catastrophic consequences for human populations through historically specific cultural frames but did not always conceptualise such devastation as disastrous. For some authors and diarists, damage that the natural world created in the lives of humans was witnessed for posterity in enumerations that appeared to operate as part of an eschatological framework pointing to end-times. For others, these could be affirmative of specific community identities and faith positions, since they could potentially demonstrate God’s mercy towards those who survived to attest to the experience. Additionally, there were other early moderns who emphasised the relativity of human perceptions of disaster. Thus, the studied philosophical response of essayist Michel de Montaigne could utilise a dramatic language of feeling for devastating natural world

5 On nature, see Schenk, ‘Historical Disaster Experiences’, 4, 13–14.
violence that he recognised as life-changing for some specific communities and not others, without providing explanation for activities that he perceived as beyond human understanding.\(^7\)

Da Vinci’s understanding of natural violence does not fit neatly within modern scholarly analysis of environmental events perceived by early moderns as disaster.\(^8\) Schenk distinguishes between ‘extreme natural events, which can take place, so to speak, in the absence of human society’ from disasters that were ‘always society-related’.\(^9\) In using the term ‘natural violence’, I seek to capture Da Vinci’s broad-ranging consideration of violence wrought in nature, to nature, and by nature upon which he reflected across his work and to which he gave varied and ongoing responses over his life. I employ this term to open up rather than foreclose the diverse avenues of his thought, in order to express the numerous relationships between violence and nature that he articulated, the different causative agents for such violence in different contexts, and the possibilities of such violence to produce creative as well as destructive consequences. Da Vinci’s thought offered reflections upon natural violence and its relationship to humans and other species, considering its potential to be both generative and devastating and the human capacity to express affective and imaginative (both artistic and engineered) responses to it.\(^10\)

Feelings about Destruction

Natural violence forms a special place in Da Vinci’s works, his thoughts produced across written, visual, and material texts. He articulated, in the sense of conceptualising and interpreting, acts of violent intensity for which he saw evidence past and present in the world around him. Understanding natural violence mattered to Da Vinci. He explored it in drawings and paintings, in experiments and sketches, in designs for engineering works, and in those writings termed the literary works, which include riddles, fables, prophecies, and what may be experimental fiction. This suggests the

\(^10\) Raingard Esser has explored the importance of engineering responses to early modern disaster responses in her “Ofter gheen water op en hadde gheweest”. Narratives of Resilience on the Dutch Coast in the Seventeenth Century’, *Dutch Crossing* 40:2 (2016), 97–107.
strongly interconnected nature of Da Vinci’s work as part of his thinking process. The exploration of nature’s destruction in these diverse genres, text types, and sites also suggests its affective power to consume and drive him. Indeed, in a first-person narration among his notes, Da Vinci, seemingly reversing the allegory known as Plato’s Cave, described powerful emotions that underpinned his search to delve deeper into nature’s crevices:

Unable to resist my eager desire and wanting to see the great ... of the various and strange shapes made by formative nature ... I came to the entrance of a great cavern ... two contrary emotions arose in me, fear and desire – fear of the threatening dark cavern, desire to see whether there were any marvellous thing within it.\footnote{E tirato dalla mia bramosa voglia, vago di uedere la gran cō... delle varie e strane forme fatte dalla artifiziosa natura, ... pervenni all’ēntrata d’una grā caverna ... si destarono in me 2 cose, paura e desiderio; paura · per la minacciosa oscura spilonca, desidero per vedere se là ētro fusse alcuna miracolosa cosa'. The Literary Works of Leonardo da Vinci, ed. and trans. Jean-Paul Richter, 2 vols (New York: Dover, 1970), vol. 2, 395, no. 1339.}

We might even say that Da Vinci found natural violence good to think with. Da Vinci was intensely interested in human emotions, both the value of their experience and their expression, and he frequently utilised an explicitly affective vocabulary himself. In what was perhaps a work of experimental fiction, Da Vinci penned a letter describing a powerful weather event in the Taurus Mountains of Armenia to which the narrator appeared to be a witness. Scholars have debated whether Da Vinci could have been present at such an event, but the view of art historian Daniel Arasse is now widely shared, that it numbered among other literary writings as a site in which Da Vinci ‘allowed his imagination to run loose on subjects he was passionately interested in: the creative and destructive omnipotence of nature and the infinite mutation of shapes’.\footnote{Daniel Arasse, Leonardo Da Vinci. The Rhythm of the World, trans. Rosetta Translations (New York: Konecky & Konecky, 1998), 45. See also the commentary by Carlo Pedretti on The Literary Works of Leonardo da Vinci, 2 vols (New York: Phaidon, 1977), vol. 2, 294.} The text provides an insightful example of how Da Vinci’s thinking about natural violence is articulated through explicit attention to responses of human feeling. He expresses natural violence as a deeply affecting experience for humans:

during the last few days I have been in so much trouble, fear, peril, and loss, besides the miseries of the people here, that we have been envious of the dead; and certainly I do not believe that since the elements by their
separation reduced the vast chaos to order, they have ever combined their force and fury to do so much mischief to man.\textsuperscript{13}

Da Vinci’s descriptions of emotional responses to natural violence could also extend to expressions of feeling about the cruelty of nature and of nature’s creations to each other, not least of which was the cruelty of humankind itself: ‘such a cruel and horrible monster’.\textsuperscript{14} Thus, in a brief musing within his notebooks that considered humans’ violent activities to extract metals from the earth, Da Vinci laments: ‘O monstrous creature! ... For this the vast forests will be devastated of their trees; for this endless animals will lose their lives’\textsuperscript{15} ‘Why did nature not ordain that one animal should not live by the death of another?’ he asks in another reflection in his notes on the cruelty of nature.\textsuperscript{16} These expressions of and about feeling deserve attention as we think about his articulations of natural violence.

Analysis of the power and meaning of emotional expression has been an important feature of recent scholarly literature exploring early modern disaster.\textsuperscript{17} This literature has emphasised the importance of setting these affective productions, displays, or performances in different cultural forms within early modern social and rhetorical conventions that made sense to their authors and to their readers, audiences, or viewers. Culturally specific memory and emotion templates for acts and texts could strengthen or dissipate feelings...

\textsuperscript{13} ‘ne’giori · passati · sono stato · in tāti affanni, pavre, pericoli e danno · insieme con questi miseri paesani, che avevano d’averia invidia ai morti, e cierto · io nō credo · che, poichè gli elemēti con lor separatione · disfeciono · il grā caos, che essi riunissino · lor forza, anzi rabbia ·, a fare tanto nocimēto alli omini’. Richter, \textit{The Literary Works}, vol. 2, 392–93, no. 1337.

\textsuperscript{14} ‘si crudele e spietato mōstro!’ Richter, \textit{The Literary Works}, vol. 2, 365, no. 1296.

\textsuperscript{15} ‘o animal mostruoso! ... per costui rimarrā diserte le grā selue delle lor piāte; per costui infiniti animali perderanno la uita’. Richter, \textit{The Literary Works}, vol. 2, 360, no. 1295.

\textsuperscript{16} ‘Perchè la natura non ordinò che l’uno animale nō uivesse dalla morte dell altro?’ Richter, \textit{The Literary Works}, vol. 2, 310, no. 1219. Pedretti notes that this text and no. 1162 may be two parts of a dialogue, \textit{The Literary Works}, vol. 2, 240 and 257.

of traumatic events at individual and collective levels.18 So too is temporality critical to early modern ideas and emotions about disaster. Descriptions of fear, for example, within a particular moment of devastating experience could be rhetorically resolved within the work’s overarching narrative that attested to the continuation of the author, and community, in the long term. Narrating such an event then became not a story of a disaster but one of survival.

That Da Vinci articulated feelings throughout his work about such violence has not been ignored by scholars. Arasse suggests that Da Vinci’s texts ‘reveal certain collective anxieties and sometimes ... personal fantasies and pessimism’, and that his ‘consciousness of these obscure, violent pulses’ informed his expression of the self in his art.19 Literary scholar Michael Jeanneret argues that it is in regard to ‘natural disasters’ that Da Vinci is inspired to develop some of his most personal works, in which he allowed imagination to prevail over analysis.20 I suggest here, by contrast, that Da Vinci’s analysis of emotions and the expression of emotions were fundamental alongside temporality to the way he engaged with natural violence and that these dimensions formed part of his intellectual process. This practice is somewhat obscured, however, as Da Vinci returned to this topic repeatedly throughout his life, leaving his thought to be reconstructed only imperfectly from scattered texts as they were subsequently arranged by others.21

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Destructive Thinking

Da Vinci’s thinking about natural violence appears to be animated by a conceptualisation of nature in constant flux as matter moves through different forms and is created and destroyed, and as nature interacts with time. Da Vinci is hardly alone in his deep and abiding fascination with the metamorphosis of matter; creative forces of swirling energy are seen in myriad art forms at this period. For Da Vinci, such metamorphosis was commonly narrated through elemental forces, as he characterised fire in a brief passage of his notes:

One shall be born from small beginnings which will rapidly become vast. This will respect no created thing, rather will it, by its power, transform almost every thing from its own nature into another.

Nature in flux was inherently destructive even to itself, he suggested in another passage that seemed to imagine the end of life on earth, which would ‘end with the element of fire ... its surface will be left burnt up to cinder and this will be the end of all terrestrial nature’. Destruction, in these articulations, was embedded in nature’s dynamic and transformative processes of the movement of matter from one form to another.

In his thinking about matter’s transformation, Da Vinci echoed ancient ideas encountered through extensive reading and vibrant interactions with his contemporaries. The influence of the pre-Socratics appears strong, especially the Ionian philosophers of the sixth century, Heraclitus, Anaxagoras, and Democritus among them. Heraclitus, for example, conceptualised a process of continual flux in aphorisms such as ‘Fire lives the death of earth and air lives the death of fire, water lives the death of air, earth that of water’. Heraclitus’ ideas were well known to the early modern community of intellectuals and artists of which Da Vinci was a

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22 Jeanneret, Perpetuum mobile.
part. The Italian painter Raffaello Sanzio da Urbino depicted the ancient philosopher with the features of fellow Italian artist Michelangelo di Lodovico Buonarroti Simoni in his fresco *The School of Athens* around 1510. Da Vinci’s own attachment to Heraclitan ideas is suggested by another, earlier artwork by Donato Bramante around 1486, in which the philosopher, paired with Democritus, is presented with features reminiscent of Da Vinci himself. The intellectual connections between Da Vinci and Bramante, recently explored by art historian Jill Pederson, leave no doubt that the latter knew much of Da Vinci’s developing thought. Anaxagoras is mentioned by name in a short commentary among Da Vinci’s notes, providing a similar conceptualisation of dynamic flux to that of Heraclitus:

Anaxagoras. Every thing proceeds from every thing, and every thing becomes every thing, and every thing can be turned into every thing else, because that which exists in the elements is composed of those elements.

Roman authors Ovid and Plutarch provided further influences upon Da Vinci’s metamorphic vision of nature. In relation to such works as well as his own experiences, Da Vinci developed a conceptualisation of the dynamic flux of all nature, in which destruction as part of transformation appeared an inherent and inevitable process.

This transformation of nature’s matter was informed by temporality in Da Vinci’s work. He considered time’s transformative influence at the individual human scale, as one red chalk work on paper portraying old and young men together suggests. His notebook reflections pondered the same question at the scale of humankind as a species. In one exploratory passage, he considered different scales of time in which humans, as part of nature, were embedded:

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27 In the Apostolic Palace, Vatican City.
28 In the Pinacoteca di Brera, Milan.
32 See *Heads of an Old Man and a Young Man*, c. 1495, red chalk on paper, 208 x 150 mm, Galleria degli Uffizi, Florence, Gabinetto Disegni e Stampe, 423 E r.
O time, swift robber of all created things, how many kings, how many nations hast thou undone, and how many changes of states and of various events have happened since the wondrous forms of this fish perished here in this cavernous and winding recess. Now destroyed by time thou liest patiently in this confined space with bones stripped and bare; serving as a support and prop for the superimposed mountain.33

In another, his musings on the end of life on earth, Da Vinci suggested that human destruction was simply one small part of what will succumb to the inevitable flux, a process that was conceptualised and narrated as both past and future.34

The watery element was left enclosed between the raised banks of the rivers, and the sea was seen between the uplifted earth and the surrounding air which has to envelope and enclose the complicated machine of the earth, and whose mass, standing between the water and the element of fire, remained much restricted and deprived of its indispensable moisture; the rivers will be deprived of their waters, the fruitful earth will put forth no more her light verdure; the fields will no more be decked with waving corn; all the animals, finding no fresh grass for pasture, will die and food will then be lacking to the lions and wolves and other beasts of prey, and to men who after many efforts will be compelled to abandon their life, and the human race will die out.35

33 ‘O tēpo, velocie predatore delle create cose, quāti rē, quāti popoli ài tu disfatti, e quāte mutazioni di stati e vari casi sono seguite dopo che la maravigliosa forma di questo pescie qui morì per le caverne e ritorte interiora; ora disfatto dal tēpo patiēte giacci i questo chiuso loco; colle spolpate e ignivde ossa ài fatto armadura e sostegnio al sopra posto mote’. Richter, The Literary Works, vol. 2, 310, no. 1217.
35 ‘Rimase lo elemēto dell’acqua richiuso ìfra li cresciutì argini de’ fiumi, e si vede l mare ìfra la cresciuta terra e la circunatricie aria, avēdo a fasciare e circonscrivere la moltificata machina della terra, e la sua grossezza, che staua fra l acqua e lo elemēto del fuoco, rimāga molto ristretta e private dalla bisogniosa acqua, la fertile terra nō māderà piv leggieri frōde, nō f ieno piv i cāpi adorniti dale ricascāti piāte; tutti li animali nō trovādo da pasciere le fresche erbe, morranno, e mācherà il cibo ai rapaci lioni e lupi e altri animali che vivono di ratto, e agli omini dopo molti ripari coverrà abādonare la loro vita, e mācherà la gienerazione vmana’. Richter, The Literary Works, vol. 2, 310, no. 1218.
Existential destruction of humankind by nature was part of a large process of transformative flux that in Da Vinci’s texts appeared inevitable.

A number of Da Vinci’s drawings depicted what seem to be such cycles of transformation innate in nature. Ten such drawings are similarly sized and mostly in black chalk, suggesting their possible relationship as a kind of thought experiment and visual theorisation (Fig. 1.1).36 Such images were not observations of nature, although they may have been informed by observation: they were natural philosophical and artistic articulations.37


These depictions of natural violence communicated repeated swirls and spirals that churned all in their wake. The overwhelming, existential nature of the disaster is barely contained within the frame of paper on which Da Vinci sought to articulate it. There was nothing beyond, nothing that remained outside the path of such violence.

Nature as Mistress and Mother and Masculine Generation

If nature’s cycle of destructive and generative transformation was aided by time in Da Vinci’s work, so too was his conceptualisation shaped by the gender ideologies of his era. Gender mattered to the complicated pedagogical and power relationship between nature, normatively female in Da Vinci’s works, and the artist, normatively male. When he reflected upon the art of painting in his notes, Da Vinci conceived of painting in a filial relationship with nature, its mother: ‘for painting is born of nature – or, to speak more correctly, we will say it is the grandchild of nature; for all visible things are produced by nature’. Elsewhere, engaging with a long-standing debate within ancient and contemporary artistic discourse about imitation, emulation, and invention, Da Vinci argued, in his writings on the history of artistic achievements, that only by direct engagement with nature, ‘the mistress of all masters’, could painting as an artform be renewed and developed.

Nature’s creations could even be surpassed, Da Vinci suggested, for painting

is of such excellence that it keeps alive the harmony of those proportionate parts which nature, for all her powers, cannot manage to preserve. How many paintings have preserved the image of a divine beauty, which in its natural manifestation has been rapidly overtaken by time or death. Thus the work of the painter is nobler than that of nature, its mistress.

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38 ‘perché la pittura · è partorita da · essa natura ·; ma per dire pivi corretto dirremo nipote di natura ·; perché tutte le cose evidentemente sono state partorite dalla natura’. Richter, The Literary Works, vol. 1, 326, no. 652.
Here time assisted the male painter’s copy to assert supremacy over female nature’s original and imperfect creation.\textsuperscript{41} Nature’s maternity could be rivalled by the male artist’s act of generation. Moreover, the artist created not only through the production of a painted simulacrum. If the painter did more than draw ‘merely by practice and by eye, without any reason ... like a mirror’, he could participate in the creation of ‘true knowledge’.\textsuperscript{42} Nature, simultaneously mistress and mother, Da Vinci suggested, could and should be controlled, subordinated by a certain kind of skilled individual who could disclose her inner workings at a time of his choosing.

**Nature’s Desire**

Da Vinci feminised the cycle of destructive violence in the natural world. Nature was of course commonly presented as female, both in the ancient sources and among his contemporaries. Da Vinci may thus have been following a standard view. Historian of science Marco Beretta proposes that his terminology suggests a conceptualisation of natural processes in the model of Epicureanism that was advanced by the Roman poet and philosopher Lucretius. Da Vinci’s vision of progressive decay of fertile nature to a state of barrenness within a single earth-scaled transformative cycle echoed the path of Lucretius’s industrious Venus Daedala and Genetrix to her inevitable desolate end over the course of his *De Rerum Natura* (‘On the Nature of Things’).\textsuperscript{43} Da Vinci’s characterisation of nature as female was not unexpected within his cultural worldview, just as within that of Lucretius, but we should not take it for granted. Firstly, Da Vinci may have been among the most radical of the era’s thinkers about movement and metamorphosis, as Jeanneret suggests, but gender ideology appears one area in which his ability to think outside contemporary socio-cultural systems was more limited.\textsuperscript{44} Secondly and importantly, the consequences of this particular characterisation shape Da Vinci’s thinking about natural violence.

Da Vinci’s nature as both mistress and mother would display particular feeling characteristics consistent with contemporary gender ideologies, which were fundamental to his consideration of natural violence. The

\textsuperscript{41} A claim by no means unique to Leonardo, see Jeanneret, *Perpetuum mobile*.

\textsuperscript{42} ‘Il pittore che ritrae per practica e gividio d’ochio, sanza ragione è come lo specchio’, ‘veramête questa è sciētia’, Richter, *The Literary Works*, vol. 1, 18, no. 20, and 326, no. 652.

\textsuperscript{43} Marco Beretta, ‘Leonardo and Lucretius’, *Rinascimento* 49 (2009), 341–72, at 363–64.

\textsuperscript{44} Jeanneret, *Perpetuum mobile*, 59.
affective dimensions of nature’s maternity appeared to confound, perhaps even confront, Da Vinci. In a brief reflection in his notes about the cruelty of humans towards asses, he expounded: ‘O Nature! Wherefore art thou so partial; being to some of thy children a tender and benign mother, and to others a most cruel and pitiless stepmother?’ Da Vinci’s depiction of nature’s forms of motherhood has attracted scholarly attention because of the strong feeling with which he expresses his perception of nature’s ambivalence towards its creations and the violence rendered unto them. In another notebook, a single sentence jotting observed: ‘nature appears with many animals to have been rather a cruel stepmother than a mother, and with others not a stepmother, but a most tender mother’. Da Vinci’s repeated connection between particular affective dispositions of different forms of female parenting emphasised normative expectations of maternal affections and, furthermore, the assumption that these were forged by direct blood relations that distinguished them from the care of a stepmother. It may be tempting to draw reference to Da Vinci’s own experiences in such relationships, for he was not the child of any of his father’s three wives. Da Vinci likely intended that humans held no privileged position in relation to nature, as historian of science Paolo Galluzzi argues. Yet Da Vinci’s framing of this idea is distinctly emotive. A rich literature has examined how early moderns voiced strong expectations of women as mothers, especially where a breach in performing culturally normative affective displays or acts of care led to the abandonment or death of a child and could incur severe punishment for the women concerned. Da Vinci’s powerful emotive exclamations and questions about nature’s actions for her creations are deeply embedded in cultural expectations about maternal care.

Contemporary gender ideologies that assumed women’s inherent desire for maternity and constructed how that maternity should be affected were thus reflected in Da Vinci’s works via the emotions with which he accredited his mistress/mother nature. Da Vinci’s ideas about human women and their reproductive organs are suggestively complex in their simplicity. As cultural historian Sander Gilman observes, his depiction of a woman and man in coitus figures her as ‘but womb and breasts’.49 Just as women were widely perceived to be driven to procreate by the urges of the wandering animal inside them, a widespread early modern (mis)understanding of Greek philosopher Plato’s description of the uterus, so too did nature desire generation.50 However, like a woman, nature’s generative potential would eventually be exhausted, as time ensured that her fertility was inevitably followed by sterility. Nature’s time-limited capacity for creative production, subsequent natural world change, and, ultimately, destruction were within and indeed central to natural world processes. The feeling force that drove feminised nature was, in Da Vinci’s mind, hugely powerful. As a sustained speculative commentary among his notes records, against time’s inevitability to destroy, nature’s urge to create was, for Da Vinci, ferocious:

taking pleasure in creating and making constantly new lives and forms, because she knows that her terrestrial materials become thereby augmented, is more ready and more swift in her creating, than time in his destruction.51

Nature’s desire for continual diversity of forms involved all kinds of her production, even where one of her creations endangered others among them.

Nay, this not satisfying her desire, to the same end she frequently sends forth certain poisonous and pestilential vapours upon the vast increase


and congregation of animals; and most of all upon men, who increase vastly because other animals do not feed upon them.\textsuperscript{52}

Thus, nature’s desire to generate delivered its own forms of violence. And ‘so she has ordained that many animals shall be food for others’, the speculation continued, as ever-new forms of life upon the earth were forced into confrontation and contest with each other.\textsuperscript{53}

Da Vinci referred here to nature as ‘inconstant’.\textsuperscript{54} However, what he articulated was the predictable outcome of a state of desiring generation, perceived to be specific to women, that was inherently irrational. This would produce in nature, as in women, affects and their consequences that would appear unpredictable at a local scale. Nature’s intense emotions, her desire for maternity that pushed her even to neglect the creations she produced, might be irrational, but these feelings were logical and consistent with the expectations of her feminine characterisation. It was thus not only time that brought about nature’s violence to herself and her creations as her generative capacity waned, but the consequences of her generative desire that would destroy them too: ‘This earth therefore seeks to lose its life, desiring only continual reproduction’.\textsuperscript{55}

For Da Vinci, emotion, interpreted through contemporary gender templates that produced specific affects in women, informed his understanding of nature’s processes and particularly its violence. Feminised irrational emotion, as Da Vinci constructed it, provided a logical key to nature’s acts of both generation and destruction within a cycle of transformation. Nature’s powerful maternal desires were as critical to understanding natural world systems as was time, which contributed to pushing the generative desire of nature and, ultimately, encouraged nature to destroy even herself.

Nature’s Affective Legacy: Feeling as Logos

Da Vinci appeared to identify both humans and other species as having capacity for emotions; after all, they were all nature’s children. One set of

\textsuperscript{52} ‘e nō soddisfaciēdo questo a simile desiderio, e’ spesso màda fuora cierti avelenati e pestilēti vapori sopra la grā moltiplicazioni e cōgregazioni d’animali, e massime sopra gli omini, chef anno grade accrescimēto, perché altri animali nō si cibano di loro’. Richter, \textit{The Literary Works}, vol. 2, 311.

\textsuperscript{53} ‘e pero à ordinato che molti animali sieno cibo l’uno dell’altro’. Ibid.

\textsuperscript{54} ‘vaga’. Richter, \textit{The Literary Works}, vol. 2, 310, no. 1219.

\textsuperscript{55} ‘adūque questa terra cierca di màcare di sua vita, desiderādo la continva moltiplicazione’. Richter, \textit{The Literary Works}, vol. 2, 311, no. 1219.
drawings on a sheet of paper placed expressions of intense emotion displayed on the bodies and heads of horses, a lion, and a man, side by side, seemingly in comparative analysis.\textsuperscript{56} For Da Vinci, humans were not above nature but a deeply integrated part of it. He sometimes foregrounded the capacities of humans above other of nature’s creations to shape the world around them; indeed his own engineering designs functioned to enhance human experience of the natural world. Yet his was a highly ambivalent position.\textsuperscript{57} In one long set of prophetic reflections in his notes, the topic to which he gave most attention was the cruelty of humankind. Here, he opined that, despite hopes and aspirations to be more than earthly, humans were pulled back to the earth: ‘from their immoderate pride they will desire to rise towards heaven, but the too great weight of their limbs will keep them down’.\textsuperscript{58}

Moreover, Da Vinci suggested that humans fully participated in natural world processes with the affective inheritance that they had been given from nature. Humans were not only subject to nature’s desires and processes, but they reproduced them in their turn. Da Vinci depicted humans driven

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\textsuperscript{56} Jeanneret, \textit{Perpetuum mobile}, 63.
\textsuperscript{58} ‘e per la loro smisurata superbia questi si vorranno leuare inverso il cielo, ma la superchia gravezza delle lor membra gli porrà in basso’. Richter, \textit{The Literary Works}, vol. 2, 365, no. 1296.
\end{flushright}
to acts of violence, sharing nature's inherent desire for both creation and destruction. The same prophetic musing on the cruelty of humankind in his notes thus continued:

there will be no end to their malignity; by their strong limbs we shall see a great portion of the trees of the vast forests laid low throughout the universe ... Nothing will remain on earth, or under the earth or in the waters which will not be persecuted, disturbed, and spoiled.\textsuperscript{59}

Plants and animals consumed by humans became matter once more transformed, ‘their bodies will become the sepulture and means of transit of all they have killed’.\textsuperscript{60} Da Vinci suggested that the forces driving humans’ violent tendencies were expressed as strong feeling processes, for ‘the satisfaction of their desires will be to deal death and grief and labour and wars and fury to every living thing’.\textsuperscript{61} Human destruction also involved humans as well; humankind was driven to self-destruction. They were, Da Vinci opined, no more than animals ‘who will always be fighting against each other with the greatest loss and frequent deaths on each side’.\textsuperscript{62} Emotion, for Da Vinci, was then not simply the recorded witness to destruction, to human existence and the transformation of nature. In a musing among his notes concerned with morality and the meaning to life, Da Vinci considered how emotions were integral to violence itself, because it was in human nature to desire it.

Now you see that the hope and the desire of returning home and to one’s former state is like the moth to the light, and that the man who with constant longing awaits with joy each new spring time, each new summer, each new month and new year – deeming that the things he longs for are ever too late in coming – does not perceive that he is longing for his own destruction.\textsuperscript{63}

\textsuperscript{59} ‘questi non avrà termine nelle lor malignità; per le fiere mēbra di questi uerranno a terra grà parte deli alberi delle gran selue dell’universo ... nulla cosa resterà sopra la terra e l’acqua che nō sia perseguitata , remossa o guasta’. Ibid.

\textsuperscript{60} ‘Il corpo di questi si farà sepultura e transito di tutti i già da lor morti corpi animati’. Ibid.

\textsuperscript{61} ‘il nutrimēto de’ loro desideri sarà, di dar morte e affanno e fatiche e guerre e furie a qualūche cosa animata’. Ibid.

\textsuperscript{62} ‘I quali senpre conbatterranno infra loro e con danni grandissimi e spesso morte di ciascuna delle parti’. Ibid.

\textsuperscript{63} ‘Or vedi la sperāza e’l desiderio del ripatriarsi e ritornare nel primo caso fa a similitudine della farfalle al lume, e l’uomo che có cotìnvi desideria sēpre có festa aspetta la nvova primavera, sempre la nvova state, sempre e nvovi mesi, e nvovi anni, parēdogli che le desiderate cose, venēdo, sieno trope tarde, E’ non s’avede che desidera la sua disfazione’. Richter, The Literary Works, vol. 2, 291, no. 1162.
Nature had bestowed her propensity for both feeling and violence upon humankind.

Da Vinci saw how humans perceived violence in and of nature through intense emotional frameworks. Whether or not he ever witnessed the Armenian event narrated in the draft letter composition, he attested to it as an emotional experience: ‘those few who remain unhurt are in such dejection and such terror that they hardly have courage to speak to each other, as if they were stunned’.\(^{64}\) This was beyond words, perception through feeling. Just as he asserted painting could operate to discover natural world processes, feeling became for Da Vinci an alternative mode of knowledge in relation to natural violence. Emotions held power in Da Vinci’s work because they helped him make sense of the status of humankind. Nature could silence not only human tools of language but also human records of expression, as he reflected in a passage concerned with forms of authority for geographical knowledge:

> Since things are much more ancient than letters, it is no marvel if, in our day, no records exist of these seas having covered so many countries; and if, moreover, some records had existed, war and conflagrations, the deluge of waters, the changes of languages and of laws have consumed every thing ancient.\(^{65}\)

Time would erase even the expression of these emotions. But the experience of feeling here and now reminded humans, at least Da Vinci, that they too were part of a larger inevitable process. As he wrote in a musing about life,

> this desire is the very quintessence, the spirit of the elements, which finding itself imprisoned with the soul is ever longing to return from the human body to its giver. And you must know that this same longing is that quintessence, inseparable from nature, and that man is the image of the world.\(^{66}\)

\(^{64}\) ‘E que’ pochi, che siamo restati, siamo rimasti · cō tanto sbigottimēto e tata pavra che appena come balordi abbiamo ardire di parlare · l’uno coll’altro’. Richter, *The Literary Works*, vol. 2, 393, no. 1337.

\(^{65}\) ‘Perchè molto sō piv antiche le cose che le lettere, non è maraviglia, se alli nostri giorni non apparisce scrittura dellí predetti mari essere occupatori di tanti paesi; e se pure alcuna scrittura apparia, le guerre, l’incēdi, li diluvi dell’acque le mutationi delle lingue e delle leggi àno cōsumato ogni antichità’. Richter, *The Literary Works*, vol. 2, 207, no. 984.

Understanding that humans’ nature was to desire violence held its own significance, as it became a new emotional, experiential knowledge. The reflection above is matter of fact, consequential and knowledge-forming: ‘now you see’ flows to ‘and you must know’. Da Vinci presents his thought as ultimately a path towards existential enlightenment, from discovery to acceptance of humanity’s inclusion within nature and her emotional cycle that would involve inevitable annihilation.

Conclusions

Leonardo da Vinci articulated natural violence – that is, violence to, within, and by nature, in creative and striking terms, which themselves formed a rich and complex set of relations and which implied diverse consequences and responses for human and non-human species alike. Natural violence was not systematically conceptualised as disaster, even when it could elicit intense and negative emotional responses. It was importantly shaped by temporal and affective dimensions. More conventionally but no less consequentially, natural violence was for Da Vinci further informed by assumptions arising from contemporary gender ideologies. Human relationships to nature were affectively complicated by ‘her’ identity as both a mistress and mother. Yet the experience of intense emotions was also a reminder of humankind’s inheritance from nature, a legacy that subjected humans to natural world systems both as they spurred humans to produce violence upon nature’s creations and to accept future existential destruction in turn. Da Vinci’s conceptualisation of natural violence across timescales that were both human and geological invites comparison with Chakrabarty’s call that ‘the Anthropocene requires us to think on the two vastly different scales of time that Earth history and world history respectively involve’, scales of time ‘tinged with different kinds of affect’. As we consider our agency to arrest the course of climate change, emotions have thus returned to our discussions. Or, as the title of scientist James Lovelock’s influential work The Revenge of Gaia. Earth’s Climate Crisis and the Fate of Humanity suggests, perhaps the emotions of a feminised nature have always been entrenched in our conceptualisations. What we embed, what we allow, and how we respond as a result of seeing nature and human relations in gendered and emotional terms deserve closer attention not only as a matter of historical interest but as one of urgency in our own historical moment.

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