

# Waves and Faces: Notes for a Semiotic Oceanography

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The face of a civilized human being is a summing-up, an epitome of a million acts, thoughts, statements and concealments. (*Woolf, Walter 2*)

## 1 Introduction: Waves and Texts

There is no sea without waves.<sup>1</sup> The openness, the vastity, the amplitude of the immense surface of water is intrinsically associated with the idea of movement, from the little ripples that come ashore in the calm days of the Mediterranean to the gigantic tidal waves of the oceans. Agitated by both internal and external forces, by submarine currents, winds, and, in the Anthropocene, also by human navigation, the sea is perennially striated, as Deleuze would have put it. The liquid essence of the sea makes it the instable counterpart of the terrestrial world, a continuously changing mass of water that, exactly because of this mutability, both fascinates and terrifies. Waves are the visual patterns of the sea. They are a promise of topological order that constantly suggests a rhythm but constantly alters it into a myriad of variations. Waves are, also, the curvilinear result of the encounter between the rectilinear essence of water and the forces that bend it, that move it upwards or downwards, that cause its inflation and deflation, its inflexion and deflection. Waves are, then, an element of conjunction between two worlds, between earth and sea, between land and water, and between water and air. Winds touch the sea, the sea touches the land, and what results is an ungraspable spectacle of particles of water arranged into complex configurations. There lies the charm and the mystery of waves: they break the order of water, yet they also compose the visual order of the sea. They elude any attempt at calculation (thus representing a conundrum even for present-day physics), yet they constantly promise an order, or at least a range of patterns. Waves are also a force in themselves, combining the energies of water and air, of sea and wind, able to destroy but also to create power, that of ancient myths as well as that of modern wave-power-plants. Thus, whenever an instable material is inflected by forces that imprint on it some rhythmic, curvilinear configurations, humans recognize waves, not only in water, but also in air (soundwaves) or in even light, to such a wide extent that a certain quantum physics identifies waves as the primary constituent of the universe. Thus defined, waves are indeed everywhere in nature, in the rhythms and sounds of the human body, in those that are used to compose the voice of language, in the semantic patterns that grow and

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dwindle in culture, exactly like waves. Yet the most famous waves, the epitomic waves of all, remain those that seem to emerge from nothingness in the middle of an ocean, then run for long distances as delicate white horses, and finally break their crests against the cliffs of the world. The theory of catastrophes seeks to pattern this evolution, yet before modern mathematics, traditional cultures too have sought to come to term with waves, denominating them, articulating them into types, naming these types in more or less detailed categorizations depending on how important waves were in the meshes of each culture. Waves are words, but waves are images too, in countless representations, and they are metaphors as well, of a force that mounts and declines, of a sudden burst of energy, of a rhythmic arrival, of everything that is wavy and undulating, that comes and goes, that rocks and breaks, that splashes and washes, that advances and withdraws, in the perennial, liquid oscillation that seems to beat at the heart of nature.

Given the vastity of the field, the article that follows must limit itself to gather some notes that situate the waves at the crossroad of words and images, human and divine agency, but also chaos and order, configuration and confusion. Kären Wigen summarizes the three most common perspectives in the current study of seas and especially oceans:<sup>2</sup>

Broadly speaking, historians tend to view the ocean as a highway for intercontinental exchange, highlighting transoceanic interactions and the creole cultures they have spawned. Social scientists more often approach the sea as an arena of conflict, whether for trading privileges or resource rights. And humanists prefer to probe the elusive contours of the oceanic imaginary in film and fiction, map and metaphor. (Wigen 1)

Within this tripartition, it is certainly the discursive approach that suits semiotics and related disciplines the best, seeking to understand the meaning of both representations of waves and wavy texts.

## 2 Divine Agency in the Gigantic Wave

Ripples and modest waves are probably the majority in nature, yet waves attract and catalyze the attention of humans especially when they manifest themselves with immense singularity. As Stewart (74) puts it in her study of the gigantic:

the gigantic presents us with an analogic mode of thought [involving] the selection of elements that will be transformed and displayed in an exaggerated relation to the social construction of reality.

Among images of gigantic waves, probably no representation has exerted more impact, in both 'the East' and 'the West', than Hokusai's<sup>3</sup> multiple depictions of the impressive

2 It reformulates the categorization already contained in Steinberg (32): uses (political economy), regulations (territoriality), and representations (discourse).

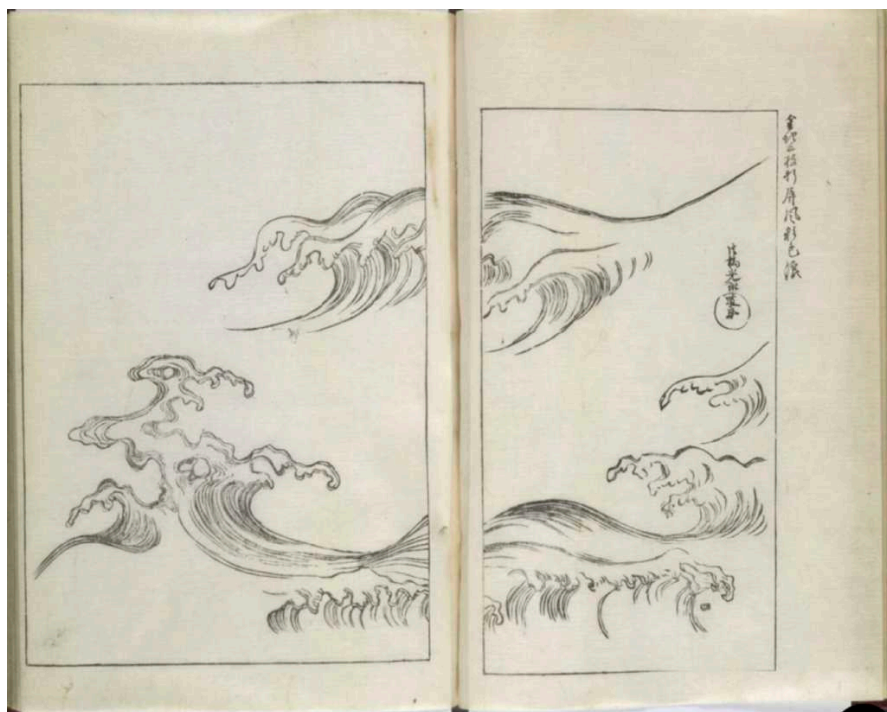


Fig. 1: Sakai Hōitsu (酒井抱), Double-page illustration from One Hundred Designs (光琳百図, *Kōrin hyaku zu*) after Ogata Korin (尾形光琳), 1826. Woodblock-printed book. Page 25.5 x 17.5 cm. London: British Museum. 1915.0823.0.185. Artwork in the public domain. Photograph © Trustees of the British Museum.

phenomenon. Guth (2011) explores the cultural iconography of the wave in the Japanese artist's visual production and its consequences on western reception; the article also dwells on themes involving a spiritual or religious dimension, such as Hokusai's depiction of a boat fighting waves to enter the famous Cave of the Three Deities or that of a Taoist magician conjuring waves from the palm of his hand (Guth, *Art Bulletin* 468).<sup>4</sup> Hokusai refers to a traditional trend in Japanese culture, which attributes divine agency to waves. In 8<sup>th</sup>-century treatise *Nihon Shoki* (日本書紀), which mythologizes Japan's history, the wave is the means through which the legendary Empress Jingu<sup>5</sup> (神功皇后, *Jingū-kōgō*) rules on the present-day Korean peninsula, uplifting the billows without the labor of the oar or helm. In this mythological account, the rising tide-wave pushes the Japanese ships toward the invasion of the peninsula (*Nihongi* 230). The divine agency of waves is not only offensive but also defensive. It is thought to protect Japan from Mongols in the 13<sup>th</sup> century (Conlan), from Europeans in the 18<sup>th</sup>. The name of the divine

3 Katsushika Hokusai, (葛飾北齋, Tokitarō, c. 31 October 1760–Edo, 10 May 1849).

4 The study was then expanded in a book (Guth 2015).

5 169–269, according to tradition.

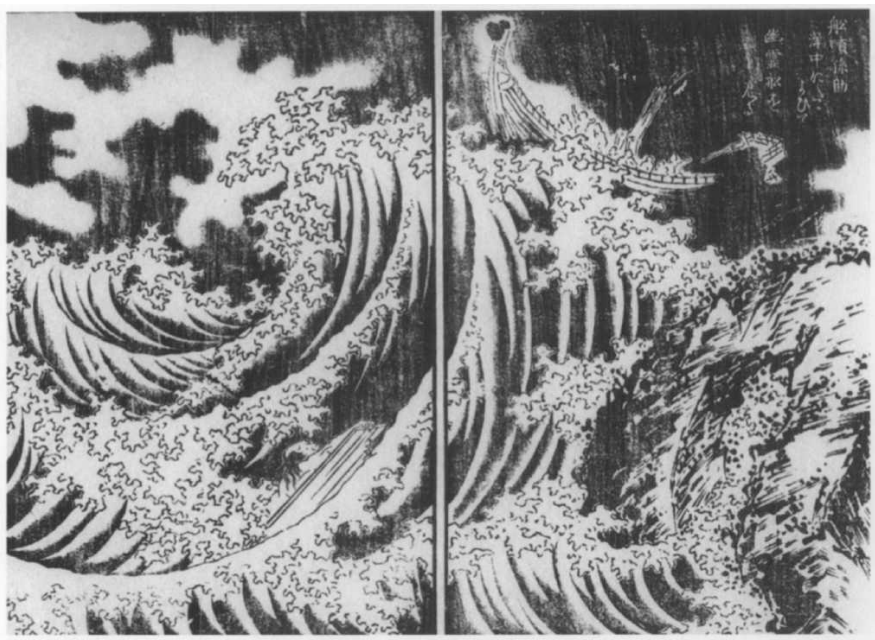


Fig. 2: Katsushika Hokusai (葛飾 北斎), Illustration from *Strange Tales of Northern Echigo* (北越奇談, *Hokuetsu kidan*), 1813. Woodblock-printed book. Artwork in the public domain. Photograph in Guth 2011: 472. Photograph © Trustees of the British Museum.

wind that, according to the legend, destroyed the Mongol fleet is now globally known: *kamikaze* (神風, “divine wind” or “spirit wind”).

Japanese visual depictions also anthropomorphize waves, for instance in the *Battle of Waves* by Sakai Hōitsu (酒井抱; Fig. 1),<sup>6</sup> a double-page illustration from *One Hundred Designs* (光琳百図; *Kōrin hyaku zu*; 1826) after Ogata Korin (尾形光琳)<sup>7</sup> (Hillier 2: 659–61).

The theme of the deity interceding for the appeasing of the turbulent waves is also a frequent motive in Japanese depictions, for instance in one of Hokusai’s illustrations of the *Tales of Northern Echigo* (北越奇談, *Hokuetsu kidan*; 1813; Fig. 2), in which Captain Magosuke fervently prays to the deity Kannon, the one that, according to the lotus sutra, protects from dangerous seas (and was then used as a cover for Mary by Japanese crypto-Christians (Leone, *Il sacro*)).

Kannon is also invoked by hero Minamoto no Yoshitsune (源 義経)<sup>8</sup> in an 1851 depiction of Kuniyoshi (歌川 国芳; Fig. 3),<sup>9</sup> featuring ghosts as threatening presences looming above the crests of the waves.

6 Edo, 1 August 1761–4 January 1829.

7 Kyoto, 1658–2 June 1716.

8 Ushiwakamaru (牛若丸), c. 1159–Battle of Koromo River, 15 June 1189.

9 Edo, 1 January 1798–14 April 1861.



Fig. 3: Utagawa Kuniyoshi (歌川国芳), Yoshitsune's Ship Attacked by Ghosts of the Taira, c. 1851. Color woodblock print. Triptych. 36.2 x 74.5 cm. London: Israel Goldman collection. Artwork in the public domain. Photograph in Guth 2011: 483, © Israel Goldman collection.



Fig. 4: Utagawa Kuniyoshi (歌川国芳), On the Waves at Kakuda on the Way to Sado Island, from Concise Illustrated Biography of the Monk Nichiren (高祖御一代略圖, Koso go-ichidai ryakuzu), c. 1835. Color woodblock print. 25.4 x 37.8 cm. London: British Museum. 2008.3037.12109. Artwork in the public domain. Photograph © Trustees of the British Museum.

A defensive more than offensive instance of wave invocation appears in Utagawa Kuniyoshi's (歌川 国芳) depiction of Nichiren (日蓮; Fig. 4),<sup>10</sup> facing a threatening wave.

As he utters the name of the Lotus sutra, his words “Nam(u) myōhō renge kyō” (南無妙法蓮華經) (honor to the wonderful Lotus sutra), are inscribed on the water beneath the wave (Clark 198).

If these images remind one of those of Catholic saints appeasing the waves through their prayers (Leone, *Saints* 409–10), another iconography is purely Japanese or in any case ‘Eastern’ (but think about Poseidon!), since it embodies the idea of a deity that merges with natural elements and actually incarnates them under the form of *kami*. Thus, the effigy of the deity materializes into waves in Hokusai 1833’s depiction of the dragon king of the sea emerging from a great wave in front of warrior Nitta no Yoshisada (新田 義貞; Fig. 5).<sup>11</sup>



Fig. 5: Katsushika Hokusai (葛飾 北斎), Nitta no Yoshisada (新田 義貞), double-page illustration from *Heroes of China and Japan Illustrated* (絵本和漢誉, *Ehon wakan no homare*), c. 1859 [1833]. Woodblock printed book. Page 22 x 16 cm. London: British Museum. 1979.0305.0.468. Artwork in the public domain. Photograph © Trustees of the British Museum.

Yoshisada offers his sword with prayers so that the seas might recede and let him capture Kamakura and restore Emperor Go-Daigo.

10 Kominato village, Awa province, 6 February 1222–Ikegami Daibo Hongyoji Temple, Musashi province, 13 October 1282.

11 1301–August 17, 1338.

### 3 From Divine Waves to Cosmic Waves

A cultural memory of the spiritual potential of waves in Japanese culture reemerges also in present-day visual creations, like in the 2003 installation *Wave Rings* by Nodoka Ui. The artist is aware of the axiological connotations of water movements in Japanese (and, more generally) in Asian aesthetics: water is seen as natural and pleasant when moving downwards, whereas its movement upwards is either imported (like in 18<sup>th</sup>-century Chinese fountains (Leone, *Introduction*)) or manifests a supernatural agency, which can be both benevolent or malevolent. In the installation, eight loudspeakers are submerged at equal distances in an eight-foot basin (150 cm in diameter and 70 cm in height). There are eight infrared receptors, one at each foot of the basin, each receptor being connected to the adjacent speaker. When someone approaches, the nearest infrared receptor sets off an underwater sound facing the viewer, and at once waves spread out in concentric rings at the surface of the water. If only one individual approaches, the sound and rings are produced by a single source, but if several persons come close at nearly the same time, several loudspeakers produce sounds, and kaleidoscopic water (Ui 284). Waves therefore function as an inter-semiotic operator enabling synesthetic translations among acoustic, visual, and tactile configurations.

Another installation that exploits the cross-semiotic properties of waves is described in Daw (1991): as a contribution to kinetic wave art from the field of acoustics, the normal mode structure of standing waves in an acoustic cavity is made visible by means of gas flames on a two-dimensional flame table, which is related to other devices used to make the same patterns visible.

These and other similar experiments do not have an explicit religious underpinning, yet their spiritual inspiration is evident, making them akin to the more traditional representations of waves as expression of a cosmic and mysterious agency (like in Hokusai and other Japanese coeval artists, for instance). Indeed, the ultimate goal of these trans-semiotic experiments is to use waves as a key to understand—but also to experience—“the cosmic music of the universe”, a music that seems to manifest itself through elaborate wave patterns. Domnitch and Gelfand (2004), for instance, aim at exploiting sonoluminescence so as to create “a sonic rainbow”, translating the wave behaviors of sound into those of light. Such understanding of waves as a primigenial constituent of the universe is not only metaphoric but also translates into techno-artistic research recent astronomical findings about the “afterglow of creation”, whose patterns were caused by sound shock waves shortly after the Cosmos was born (Whitehouse).

The waves of quantum physics inspire the imaginary of countless contemporary artists, whose works translate into images both the morphology of sea waves and the imaginary visual features of quantum waves. That is the case of contemporary New York artist Sandra Lerner, whose painting *The Particle and the Wave* art critic Aliza Edelman describes as follows:

the motion of light is manifest through an articulation of constantly jostling wavelengths, frequencies and interference patterns, equating the maximum amplitude

or height of its peaks, and depths of its troughs. Lerner's undulating patterns, flat, roughened and exaggerated, animate wavelength's modulations. (Edelman 35)



Fig. 6: Sandra Lerner, *The Particle and the Wave*, 1993-96. Triptych. Oil and mixed media on canvas. 84 x 282 cm. Photo in Edelman 39, © Sandra Lerner.

#### 4 Waves as Liquid Complexities

Transversal to the old imaginary of the natural waves and to the new imagery of quantum waves is an idea that relates to Deleuze and Guattari's opposition between smooth spaces and striated ones; waves incite creativity for they epitomize the sudden complication of smooth visual orders into striated configurations whose internal logic remains often mysterious. A good example is in Douglas D. Peden, a US artist who seeks to go beyond Cartesian space and adopt a totally curvilinear geometry, labelled "GridField Geometry". This develops recursively through any number of wave fields, where a wave field is defined as a series of parallel waves one unit apart, whose parameters are freely chosen (Peden 2004, 208). In Peden's creativity space, two constituent wave fields "intersect in a manner analogous to the mutually perpendicular horizontal and vertical lines of the Cartesian grid" (Peden 2012, 378), giving rise to a visual alphabet of geometrical waves that the artist seeks to associate to a parallel alphabet of emotional states (while being conscious of the subjectivity of such association).

Waves therefore turn into spatial configurations that both express an abstract geometrical pattern with its intrinsic qualities and the occurrences of it in nature. Sine waves, for instance, in their various configurations, end up symbolizing mountains and waterscapes, through a double process that finds geometry in nature and nature in geometry. Such mental, artistic, and representative process is typical of wave art of several artistic periods and was a feature also in Hokusai's wave aesthetics.

The combined efforts of physicists, mathematicians, and artists long for a thick decoding of both the structure of the waves and their phenomenology. This exploration has often metaphysical undertones, for instance in the search of the grammar of the 'breaking of the waves.' As Tejerina-Risso and Le Gal (2014) point out, "several types of wave-breaking have been recognized by oceanographers"; relying on the topological theory of catastrophes, the two authors use a parabolically shaped wave maker to focus on water waves in a region of the water surface called 'the Huygens cusp' in optics and then record



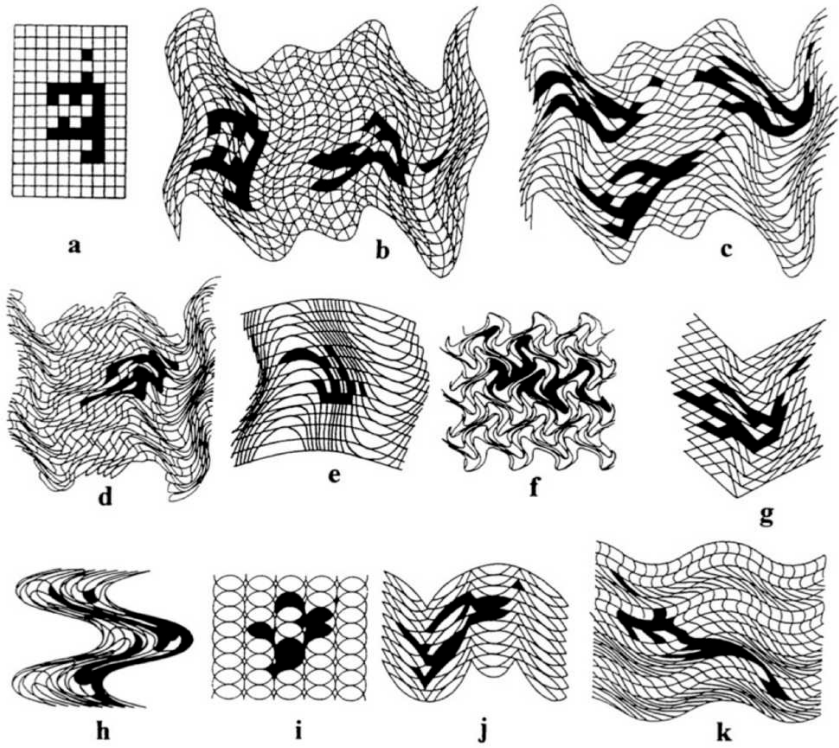


Fig. 7: Gridfield and shape variations. Photo in Peden 2004, © Douglas Peden.

these breakings using a fast video camera. The result is a visual exploration into the mysterious singularity that is consubstantial to the breaking of a wave.

The relation between mathematical topology of the waves and their artistic exploration runs also in the opposite direction. Cartwright and Nakamura (2009), for instance, try to determine what kind of wave was Hokusai's *Great Wave Off Kanagawa* (1831),<sup>12</sup> reaching the conclusion that the Japanese artist did not intend to represent a tsunami, but rather a large tidal wave, like one of those that the contemporary physics of the waves calls "rough waves". Yet, from the 1960s on, the global recognition of Hokusai as quintessential Japanese artist and of the tsunami as both a Japanese word and a typical Japanese event have led to Hokusai's wave being mistakenly identified as a tsunami, to the point that it was even included as an icon among the UNESCO visual warning signs of the phenomenon, potentially with misleading effects: a tsunami wave does not usually behave like the large tidal wave depicted by Hokusai and globally represented in countless reproductions.

12 神奈川冲浪裏, *Kanagawa-oki Nami Ura*, lit. "Under the Wave off Kanagawa".

## 5 Waves and Singularity

Perhaps Hokusai was interested in tidal waves, instead, exactly because it was not possible to visually subsume them into a type, like tsunami waves, and it was necessary, on the contrary, to both conceive and depict their singularity. The uniqueness of their rising, focusing, reaching a cuspid, and breaking seemed indeed to be animated by a mysterious agency, whose presence permeates the whole Japanese conception of nature as kingdom of the kami. The modern science of the waves does not study them in terms of kami, of course, but is still puzzled by the riddle of their singularity. Recent investigations seem to relate the morphology of rogue waves to the physics of dispersion. In physics, dispersion is the mechanism where a system decomposes into simpler systems, each moving in a different way; the overall effect is to render this system decoherent. All the while energy is being conserved, and the dynamic is time-reversible, yet this often leads to the system simplifying over long periods of time. This is different from dissipation, amplification, and friction. The physics and mathematics of dispersion have been applied to the study of several natural phenomena, among which waves, and in particular rogue waves, that is, unusually large, unpredictable and suddenly appearing surface waves. Rogue waves are currently the object of active research and evidence is accumulating that they can appear in any medium, including in liquid helium, in quantum mechanics, in nonlinear optics and in microwave cavities, in Bose-Einstein condensation, in heat and diffusion, and in finance (Yan; Rail; Orsucci).

Research on the physics of dispersion might seem very remote from the preoccupations of the arts, but is not. The mystery of singularity, the conundrum of its formation, the paradox of its blending with other singularities into a community, and the catastrophe (in both topological and existential terms) of its fading into annihilation, have been key especially to modernist arts. A visual artist like Hokusai drew from the Japanese literary tradition to depict the otherworldly agency behind a rogue wave. But literary creations too deal with these riddles. Virginia Woolf's masterpiece *The Waves* (1931) adopts the topology of the watery movement to explore the merging and blending, as well as the emerging and breaking, of six voices and as many personae, of six stories of "ethos of male education". Waves appear in the title of the book and in several crucial moments of the intricate, liquid narration, wherein the six monologues splash into each other, textually colliding and breaking on nine brief third-person interludes describing a coastal scene at various stages of the day from sunrise to sunset:

The sun rose higher. Blue waves, green waves swept a quick fan over the beach, circling the spike of sea-holly and leaving shallow pools of light here and there on the sand. A faint black rim was left behind them. The rocks which had been misty and soft hardened and were marked with red clefts. (Woolf *The Waves*: digital edition)

And again:

The waves broke and spread their waters swiftly over the shore. One after another they massed themselves and fell; the spray tossed itself back with the energy of their fall. The waves were steeped deep-blue save for a pattern of diamond-pointed light

on their backs which rippled as the backs of great horses ripple with muscles as they move. The waves fell; withdrew and fell again, like the thud of a great beast stamping. (Woolf *The Waves*: digital edition)

Waves rhythmically appear and disappear in the novel, yet the structure itself of the prose reproduces, in the weaving of broken enunciations, the phenomenology of erratic, rhapsodic, elusive waves. No other literary text has so subtly rendered into words the visual capriciousness of waves, their liquid and fragile singularity. The cover of the first edition of the book seems to suggest a visual mimicry between the undulating shape of the waves, the first letter of the word “waves” itself, and the initial “W” of the author’s own surname, as though, through the novel, Virginia Woolf had sought to come to terms with the wavy nature of her own identity, with the multiple personae agitating in her soul through a whirl of thoughts, words, and enunciations.

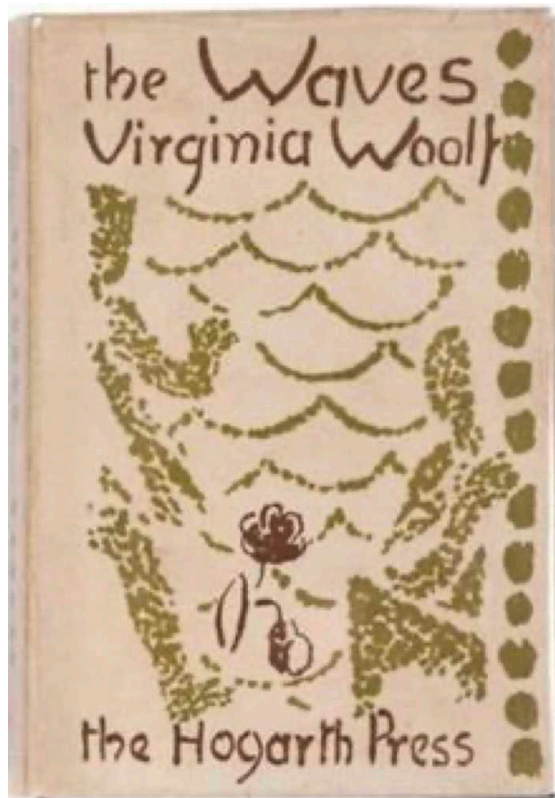


Fig. 8: Cover of the first edition of Virginia Woolf's novel *The Waves*, 1931.

In Virginia Woolf's *The Waves*, the everchanging configurations of water, merging and mixing through splashes, foams, and roars, only to then separate as curls, curbs, and

crests, mirror the equally protean appearance of the face, which is the second protagonist of the novel. Faces, Virginia Woolf indicates in incomparable writing, are like waves, perennially agitated by both internal and external forces, seeking to maintain a composure, a countenance, but then inevitably broken by the strong winds of existence. Old patterns of knowledge, like physiognomy, are applied to this magmatic surface in the attempt at capturing it, at linking it with a stable personality (Sandberg; Gharib). But each of these trials, as Woolf's novel indicates, is destined to be shattered, jagged into a myriad of liquid irregularities, splendid in their variety, yet unredeemably chaotic, impossible to reduce to the order of a face.

## 6 Conclusion: Wave Pareidolias

Yet sometimes these chaotic configurations suddenly recompose in fleeting orders, and even into the ephemeral stability of a face. On July 8, 2021, BBC photographer Jeff Overs was walking along the coast of Newhaven, East Sussex, during a storm. As the waves crashed over the harbor, he took a picture of the high tide splashing at more than 80 km/h against the rampart at the exact moment when it was blown back, 'boiling' in high wind into a myriad of foam particles... locals often come to observe the phenomenon because, occasionally, the random configurations of water coagulate in coherent forms, which sometimes trigger impressive face pareidolias.



Fig. 9: Jeff Overs. The 'face' of Neptune appears over Newhaven harbor wall, 2021.

One of them was captured by Overs during his walk: a gigantic bearded face shaped by foam resulting from the clash of the wave against the harbor, giving the vivid impression that Poseidon, or Neptune, or another sea deity had suddenly materialized into the wave,

like the Japanese deities that would emerge from the waves in ancient myths and in their more recent depictions by Hokusai and other Japanese artists.

Faces of malicious demons that suddenly appear on the crests of waves, threatening the course of navigation; visages of deities that materialize in the curbs of stormy waters, invoked so as to appease the sea, or to dispel its malicious inhabitants, or to incite destructive waves against the enemy; waves that turn themselves into belligerent countenances facing each other, fighting at sea; this ancestral imaginary, which is common to all marine cultures but is particularly exuberant in animistic cosmologies like that of ancient Japan, does not disappear with modernity but rather transmogrifies into a new episteme, where mythology is replaced by spirituality first, then by cosmology and even by the mystics of physics calculus. Humans remain attracted by the mysteriousness of sea movements, by their unpredictability, by their continuous changeability, by the singularity of forces, energies, and shapes that animate the aqueous surface. They still wonder: Is there a logic to waves? Pre-modern myths and artists sought to seize it in the intervention of deities, showing their faces amidst the particles of water, whereas post-modern artists and cosmologists strive to capture it through complex formulae, or through elaborate assemblages of technological devices. Between old myths and new epistemologies, between traditional depictions and innovative translations, literary voices at the threshold of the modern world interrogate waves and faces through the subtlety of verbal images, and find that both, waves and faces, preserve the mystery of uniqueness, and the anguish of fragility. Prose seeks to immortalize such consubstantial waviness through complex, undulating movements, but only to be washed away by the inanity of the task, like a delicate, marine Sisyphus, not pushing rocks up along the steeped mountainside but tracing evanescent calligraphies on sand, perennially written and rewritten, perennially annihilated by a writing that surpasses the human one, by the mysterious and otherworldly writing of waves.

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