

Wave Theory ~ Social Theory

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Anthropologist David Graeber, in his 2013 study *The Democracy Project*, tells of “a wave of resistance sweeping the planet” (64), an “insurrectionary wave” (108).¹ According to Graeber, the wave began in Tunisia in January 2011, moved across the Middle East—Egypt, Libya, Yemen²—to manifest as the “Arab Spring,”³ and traveled on to the Occupy movements that materialized across the United States later that year (see also Didi-Huberman 2016). Public protests in Brazil, Greece, and Turkey in 2013 rolled into view next, all framed as “waves” (see Tuğal 2013).⁴ More recently, the election of Donald Trump to the United States presidency in 2016 prompted a November 9 *New York*

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1. “Insurrectionary wave” first appears in accounts of the European revolutions of 1848 (Knight 1855: 217).

2. Recall also the ill-fated “Green Wave” protests in Iran, after 2009’s contested election (Fischer 2010; Manoukian 2010).

3. The term *Arab Spring* is “not simply an arbitrary or even seasonal choice of nomenclature, but rather a US strategy of controlling . . . [the] aims and goals [of social movements]. . . . While the first use of ‘Spring’ was used in reference of ‘The Spring of Nations,’ describing the 1848 European revolutions, the term ‘Spring’ as a reference to liberalising regimes deemed dictatorial [see 1968’s ‘Prague Spring’] has an American Cold War anti-Soviet genealogy” (Massad 2012).

4. See Ebru Yetişkin’s “Waves” exhibition at BLOK art space, Istanbul, on waves of protest in 2013 at Gezi: www.waves-waves.com/.

Times headline to describe “Waves of Emotion from Coast to Coast as Trump Turns to the Work of the Presidency” (see García Molina and Cossette 2016). By 2018, in the United States, Democrats were hoping for a “blue wave” election to unseat Republicans in Congress (C. Walker 2018).

In this essay, I assemble materials for a history of the wave metaphor in social theory, asking how waves became figures with which to think about social change. I begin with usages that first emerged in the nineteenth century, contemporaneous with the invention of “the social” as an object of analysis (and see Schwartz 2015). I then track the idiom of the wave through twentieth-century social theory to now, reading the wave as an increasingly prevalent figure in popular social theorizing. Although the word *wave*, referring to motion in water, first appeared in English in the sixteenth century, its use in referring to a form or force that might propagate through a social medium arrives later. A survey of the *Oxford English Dictionary*,⁵ picking out phrases that use “wave” to describe the movement of social energy, yields “waves of population” (1852), “waves of opinion” (1870), “crime wave” (1889), “wave of immigrants” (1893), “new wave” (1960), and “first-wave,” “second-wave,” and “third-wave feminism” (1970s–2000s).

Where and when and how did the idea emerge that social phenomena manifest in waves? What models of social reproduction and rupture have motivated these ideas?

The analytic of the wave wavers between high theory and popular model, between objectivist sociological explanation and hand-waving sociobabble, between vanguardist predictions of social revolution and conservative prognoses of political inevitability, between accountings of formal change and claims about material transubstantiation. The “wave” has affinities with such abstractions as “the people,” “the public,” “the population,” “the crowd,” and “the network” (see Keltly, Irani, and Seaver 2012)—all of which implicate analytics of scale, linking the everyday to the epochal. But the wave analytic differs from these other abstractions, too—at once a grander and more capacious frame as well as a less robust one, too imprecise and folkloric to appear in the social theory canon. It is in part because of this unstable cast that the wave is good to think with about the shape of social theorizing. The wave is a *cartoon* of social theory—bringing into relief puzzles about how to account for aggregate social phenomena, before and after their unfoldings.

The historical itinerary I offer below of the wave model in social theory by no means connects all the causal and cross-discourse dots one might want to in order

5. A proper study would look to other language sources, not least French and German.

to narrate nearly two hundred years of social theory. I hope, however, with this aphoristic, roving approach to explore two things: first, relations between materialism and formalism in social explanation, and, second, shifting claims about the relation of top-down social structure to bottom-up individual and collective agency.

I move in two loosely historical steps.

Noting that the figure of the wave of social phenomena emerges in the nineteenth century, I claim that as social analysts began to employ new kinds of inscriptions—statistical charts, maps, diagrams—to describe the social world, those inscriptions, visualizing the rise and fall of collective phenomena, began to anchor the notion that there existed really real wave dynamics in the social world. Representational strategies, in other words, formatted claims about ontology. In some cases, the figure of waves of social change made it seem as though such transformations were “natural,” inevitable. Moving to twentieth-century materials, I propose that the wave becomes a vehicle through which social analysts grapple with scale and causality. Social analysts ask whether waves are either (1) such overpowering forces of social structuration that individual or group agency is merely epiphenomenal or (2) signs of the animating effects of world-transforming, from-the-ground-up, collective social agency. Waves, so queried, pose questions about *structure* versus *agency*. That tension is still in play into the twenty-first century, although metaphors of “surfing” waves of social change now sometimes suggest the possibility of operationalizing social theory for instrumental, often privileged and elite, individual ends.

The title of this essay, “Wave Theory ~ Social Theory,” is amenable to a couple of readings. For logicians, the tilde symbol means “is not”: “Wave Theory Is Not Social Theory.” For those of a mathematical bent, the tilde denotes “is approximately equivalent to,”⁶ a meaning usually rendered in speech as “twiddle,” thus: “Wave Theory Twiddles Social Theory.” Whether twiddle or twaddle, wave theory has a wavering relation to concepts used in more sober social theory. This essay offers ways of thinking about that relation.

Waves as Material and Formal

There are two social senses of *wave* that emerge early in the nineteenth century, motivating a *double life* for wave theory in social theory.

6. To be more precise, ~ means “is approximately equivalent to, at large scales” (≈ means “is approximately equivalent to” in most other cases).

One sense emphasizes the *materials* or *bodies* bound up in aggregate through processes of motion. Definition 2c of the noun in the *Oxford English Dictionary* has *wave* as “a forward movement of a large body of persons (chiefly invaders or immigrants overrunning a country, or soldiers advancing to an attack), or of military vehicles or aircraft, which either recedes and returns after an interval, or is followed after a time by another body repeating the same movement.” An early example appears in Sharon Turner’s *History of the Anglo-Saxons: Comprising the History of England from the Earliest Period to the Norman Conquest*, from 1820, in which Turner writes that, though much human migration has proceeded over the sea, “the great waves of population have rolled inland from the east” (1:24). An 1829 article in the *Foreign Review* compares ancient Greek migrations to those that shaped the populace of England: “Of such successive waves of population, each one overlaying or swallowing up its forerunners, the history of our own island affords a good example, where the Celts were overborne by the Saxons, and both by the Normans” (329).⁷ In this definition, it is the substance and movement of bodies that matters.

A second sense of *wave*, *OED* definition 3b of the noun, also from the nineteenth century, has it as “a swelling, onward movement and subsidence (of feeling, thought, opinion, a custom, condition, etc.); a movement (of common sentiment, opinion, excitement) sweeping over a community, and not easily resisted. Also, a sharp increase in the extent or degree of some phenomenon.” This meaning names the *form* of a process—and it is not always the case that the component substances caught up in the form of a wave always themselves necessarily move; a sentiment may “sweep over a community,” without bodies being carried from one place to another. An early instance comes from 1809, in the *Panoplist, and Missionary Magazine United*, which suggests a maritime derivation, as the magazine warns believers against being “cast afloat upon the waves of opinion . . . with no fixed star and no unvarying needle to direct us” (303). “Waves of popularity” appears in the early nineteenth century, too, with a more positive cast; nautical images have politicians riding high, “buoyant” on waves of popularity.⁸ Such waves are maritime in their metaphorical reference, emerging at a time when, as Alain Corbin

7. Sociocultural evolutionist Lewis Henry Morgan offers a similar usage, though shaped by a later evolutionary lexicon. In *Ancient Society*, Morgan (1877: 378) writes, “When the gens had become fully developed in its archaic form it would propagate itself over immense areas through the superior powers of an improved stock. . . . Such a stock would spread in wave after wave until it covered the larger part of the earth’s surface.”

8. See Harford 1831: 110.

(1995) has shown, maritime activities are bringing Europeans to the sea as a site of work and danger, as well as of leisure and aesthetic production.⁹

The material and formal endure as the primary modes through which social waves are described, though the boundary between the two modes is always blurred in practice. Understanding how the material and the formal (indexical, suggestive, and/or conventional) are co-constituted as well as confused (productively, unproductively) is key to understanding how “waves” function as social scientific objects at all.

Inscribing Waves in the Nineteenth Century: Formalisms and Materialisms

In nineteenth-century Europe, techniques of inscription—graphical, numerical, diagrammatic—produced formal claims and hypotheses about rising and falling tendencies in the social body, claims that suggested that material sociality itself could harbor wavelike dynamics, perhaps as a matter of physical fact.

Let me anchor this claim by beginning not in the social sciences, but in the natural sciences, with an example that brings into relief how inscriptional practices may produce claims about putatively a priori material realities. The example comes from meteorology and shows how graphically rendered waves suggested to some interpreters the possibility that such drawn tracings could correspond to, or be isomorphic with, real phenomena in the world, even if such phenomena may be evanescent, or even impossible finally to verify.

Between 1843 and 1850, British astronomers Sir John Frederick William Herschel and William Radcliffe Birt postulated the existence of a meteorological phenomenon they called a “barometric wave” (fig. 1). They were keen to discover whether the atmosphere followed legible laws and, as historian Vladimir Jankovic (1998: 28) has written, worked hard “on the reduction, tabulation and graphical representation of barometric data.” The pair became convinced that the undulating curves they drew on their graphs, changes in barometric pressure over time,

9. Cori Field (pers. comm., October 25, 2018) reminds me that “the nineteenth century was quite preoccupied with ocean metaphors in general—the voyage of life, the ship of state, financial ruin as shipwreck.” See also Miskolcze 2007.

Jeffrey Schnapp (2006: 4) discerns in nineteenth-century literature a form he calls the “oceanic crowd.” So, for example, “When Victor Hugo describes a fifteenth-century Feast of Fools in *The Hunchback of Notre Dame* (1831), he famously compares the gathered multitude to a body of water: ‘To the spectators at the windows, the palace yard crowded with people looked like a sea. . . . The waves of this sea, incessantly swelled by new arrivals, broke against the corners of the houses’” (Schnapp and Tiews 2006a: xiii). There may be earlier precedents, including “the long-standing conflation in Greco-Roman culture of *turbulence*, whether maritime, meteorological, or political, with the *turba* (τὸ ὄβριον), which is to say, the mob” (Schnapp 2006: 4).

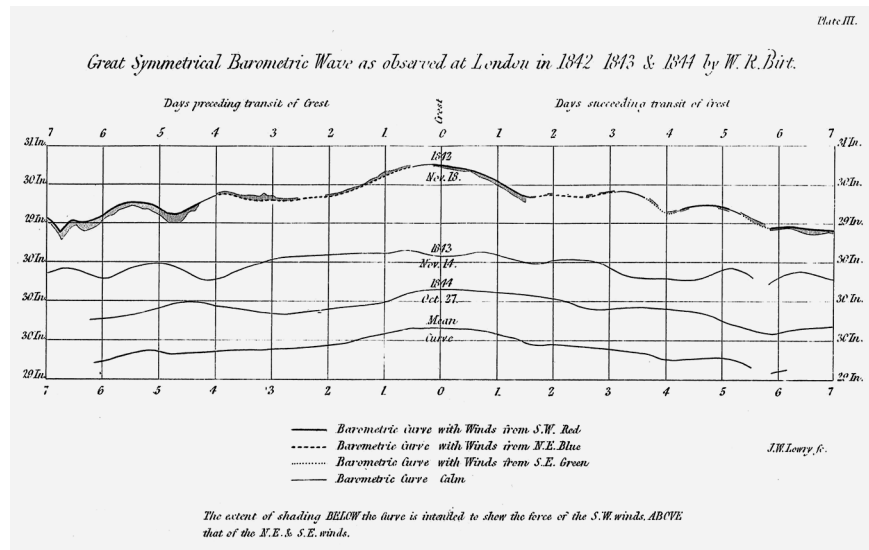


Figure 1 From Birt 1846, plate 3.

corresponded to a material force. When Herschel saw the image come together, he wrote that it was “a simple result of direct observation. Such a fact *must have a meaning*” (quoted in Jankovic 1998: 28)—that is, point to something in the world. But, as Katharine Anderson (2005: 90) writes in *Predicting the Weather: Victorians and the Science of Meteorology*, “Birt was increasingly, and uncomfortably, aware that . . . the term ‘wave’ in his promising empirical analysis merely described the curve traced on a graph, rather than any motions in the atmosphere that might lend themselves to a hydrodynamical analysis.” Disambiguating formal representation from material causation made Herschel and Birt’s barometric waves vanish as physical things.

But formal representations, graphically rendered, would continue to conjure wavelike phenomena. Historian of science Robert Brain (2008) has proposed that such technologies as the *sphygmograph*, invented in the mid-nineteenth century, in Germany and France, to graph changes in blood pressure, were part of a European trend that saw graphing devices encouraging the notion that physical processes were not only *representable* through wave tracings, but were the *result* of oscillatory dynamics; that is to say that they were bodily, physical, in the first instance. As the nineteenth-century physiologist and chronophotographer Étienne-Jules Marey excitedly observed, “Inscribing instruments are to be found everywhere,

in the observatories of astronomers and meteorologists, in physics laboratories, and in those of physiology” (quoted in Kroker 2007: 94; and see Roberts 2019). The epistemic effect of such wave inscriptions was the isolation of waves as such, which now gathered status as processes in the world at once material and abstract.

The social sciences soon signed on to kindred engagements with inscription. Those swelling waves of community feeling, thought, and tendency that the *OED* designated in its definition 3b (*above*) became more formally describable beginning around the 1830s, with the emergence of statistics. Originating as “state numbers,” statistics muster the possibility of representing—and *revealing*—aggregate social phenomena. As Ian Hacking (1982: 282) reports in “Biopower and the Avalanche of Printed Numbers,” the period between 1820 and 1840 in Europe saw the emergence of data collection by bureaucratically minded nation-states and “friendly societies” dedicated to self-insurance for workers, which sought to project average rates of worker sickness. Such record-keeping inscriptions made tendencies in the social body visible, often graphically indicating the rise and fall of indicators within a populace, which representation in turn secured the notion of a knowable, measurable social body through which processes could propagate.

Alain Desrosières (1998: 8, 10), in *The Politics of Large Numbers*, argues that statistics combines “the norms of the scientific world with those of the modern, rational state” and that the “creation of administrative and political spaces of equivalence allows a large number of events to be recorded and summarized according to standardized norms” (see also Jonsson 2006). In the process, a collection of individuals losing their jobs becomes “unemployment,” a number of babies born becomes “the birth rate”—new kinds of objects, *things* accorded the status of phenomena in the world, emerging through what Desrosières calls “the realism of aggregates” (68). He writes that

The regularity of the annual rates of births, deaths, marriages, crimes, or suicides in a given country, opposed to the contingent and random nature of each of these occurrences, suggested that these additions were endowed with properties of consistency quite different from those of the occurrences themselves. . . . In the nineteenth century, statistical arguments were used above all to make macrosocial entities hold. (1998: 73, 96)

The *form* of tabulation picked out *processes* that then raised the question of whether there were locatable causes that might exist as material forces.

Take as one example an 1865 medical paper by surgeon Alfred Haviland, read at the British Association for the Advancement of Science. Entitled “The Hour of Death,” Haviland’s paper sought to lay bare which hours of the day saw the highest mortality of patients suffering from chronic disease. Haviland had

collected over 5,000 cases of death, with the hour of death and other circumstances recorded, which he had tabulated and exhibited on a large chart, the different results being distinguished by colored diagrams. By this chart he showed that in 1,000 cases of death in children under five years of age, the periods of the greatest mortality took place during the hours of one and eight a.m. . . . He then compared these statistics with 2,891 deaths from all causes, and the chart showed how remarkably the *wave lines* of death compared. (359; emphasis added)

In a later book on the geographical distribution of disease, Haviland (1892: 361) would forward the notion of the “disease-wave,” by which he meant the rise and fall of rates, not necessarily material processes—though many of his contemporaries in epidemiology would soon map waves onto and into bodies and territory.

Around the time Haviland wrote of the “disease-wave,” Robert Felkin theorized, in his 1889 *On the Geographical Distribution of Some Tropical Diseases*, about “pandemic waves” (7). In Felkin’s text, the wave shifted from a line discerned by a record keeper between a run of printed numbers to a new life as a line physically inscribed on a map, a line with an indexical relationship to a material process (fig. 2). The process animating disease is, by Felkin’s historical moment, beginning to be understood as organic—the germ theory of disease has just been formulated—replacing earlier theories, such as those of Robert Lawson (who coined the term “pandemic wave,” in 1861), which had held that such waves followed the flow of the Earth’s magnetic flux, which Lawson and his followers believed could create a “miasma” capable of conveying disease from one place to another (see Altonen n.d.). Even though Felkin’s map preserves lines indicating prevailing wind direction (important in miasmatic theories of disease travel), it will soon suggest to his successors that pandemic waves might propagate through the medium of a biological population of bodies, human and microbial.

Data collection would continue to authorize wave lines as well as claims about waves as material-processual things in the world. Let me move to an example that social scientists know well: Durkheim’s 1897 study, *Suicide* (see fig. 3).

In a key passage, Durkheim ([1897] 1951: 47) interprets data on changing rates of suicide by writing that “the evolution of suicide is composed of undulating movements, distinct and successive, which occur spasmodically, develop for a time, and then stop only to begin again. On the above table one of these waves is seen to have occurred almost throughout Europe in the wake of the events of 1848.” Desrosières (1998: 21) has argued that the format of such tables—their techniques of inscription—were crucial to arguments about the realism of macrosocial objects: “The possibility of using the two dimensions of a page in a book

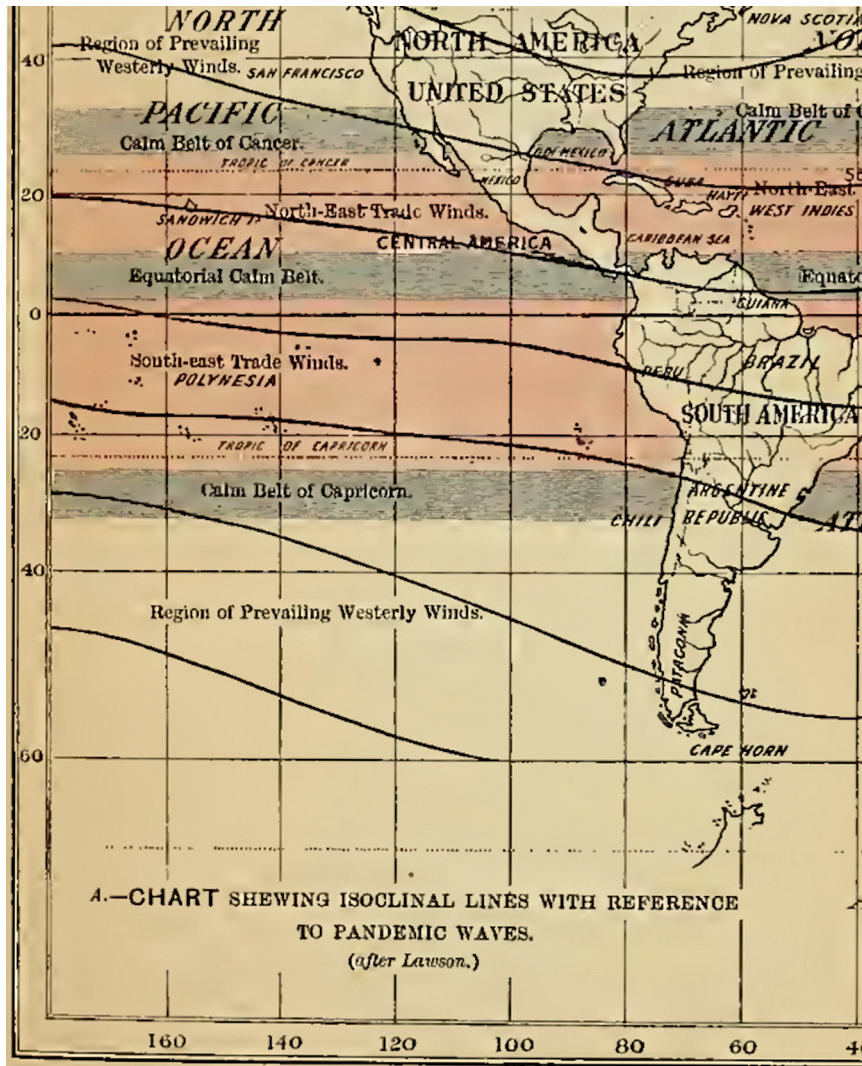


Figure 2 Detail from "A Chart Shewing Isoclinical Lines with Reference to Pandemic Waves," map 14 in Felkin 1889.

ANNÉES.	FRANCE.	PRUSSE.	ANGLE- TERRE.	SAXE.	BAVIÈRE.	DANEMARK.
1841.....	2.814	1.630		290		337
1842.....	2.866	1.598		318		317
1843.....	3.020	1.720		420		301
1844.....	2.973	1.575		335	244	285
1845.....	3.082	1.700		338	250	290
1846.....	3.102	1.707		373	220	376
1847.....	(3.647)	(1.852)		377	217	345
1848.....	(3.301)	(1.649)		398	215	(305)
1849.....	3.583	(1.527)		(328)	(189)	337
1850.....	3.596	1.736		390	250	340
1851.....	3.598	1.809		402	260	401
1852.....	3.676	2.073		530	226	426
1853.....	3.415	1.942		431	263	419
1854.....	3.700	2.198		547	318	363
1855.....	3.810	2.351		568	307	399
1856.....	4.189	2.377		550	318	426
1857.....	3.967	2.038	1.349	485	286	427
1858.....	3.903	2.126	1.275	491	329	457
1859.....	3.899	2.146	1.248	507	387	451
1860.....	4.050	2.105	1.365	548	339	468
1861.....	4.454	2.185	1.347	(643)		
1862.....	4.770	2.112	1.317	557		
1863.....	4.613	2.374	1.315	643		
1864.....	4.521	2.203	1.340	(545)		411
1865.....	4 946	2.361	1.392	619		451
1866.....	5.119	2.485	1.329	704	410	443
1867.....	5.011	3.625	1.316	752	471	469
1868.....	(5.547)	3.658	1.508	800	453	498
1869.....	5.114	3.544	1.588	710	425	462
1870.....		3.270	1.554			486
1871.....		3.135	1.495			
1872.....		3.467	1.514			

Figure 3 Table 1 from Durkheim (1897) 1951.

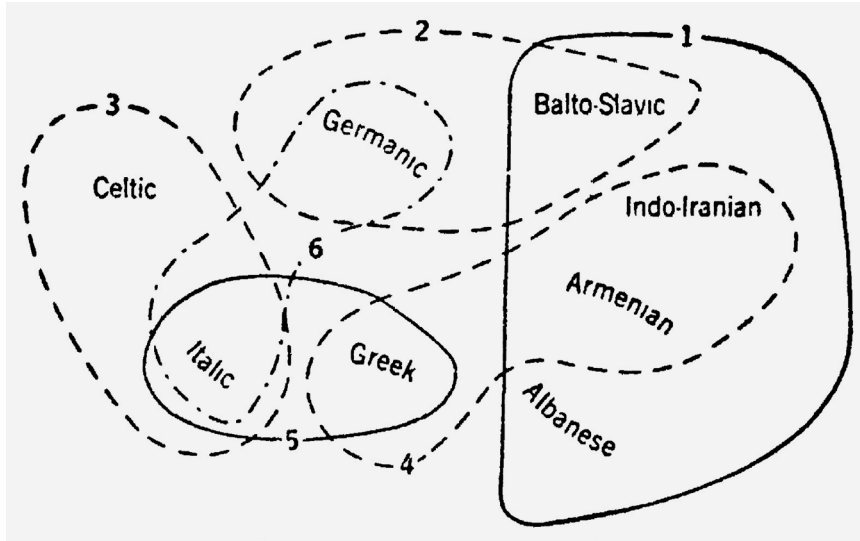


Figure 4 An illustration of a non-tree-like relation among languages for which Schmidt's *Wellentheorie* might account, from Bloomfield 1933: 317.

to classify objects—thus enabling the observer to view them simultaneously—established a radical distinction between written and oral material, between graphic reasoning and spoken reasoning.”

Statistical data that present wavelike patterns come to imply wavelike behavior among people. Durkheim does not use a graph, of course, but rather a table in which he invites the reader to see a pattern. The pattern points to social—and not psychological or individuated—causes of suicide. Those social causes are to do with what Durkheim ([1897] 1951: 257) calls *anomy*, his term for a widespread sense among people in industrial society of disconnection from one another. Such a sense as well as the aggregate mode of suicide is, for Durkheim, a social *thing*. As he put it a few years earlier, “The first and most basic rule is *to consider social facts as things*” ([1894] 1982: 60). The shape of those *things* can take the form of a wave (and see sociologist Charles Horton Cooley [1897], who worked to “liken modern social movements to waves” [80]).

Waves are in the air—or, better, on paper—in other social sciences. German linguist Johannes Schmidt in 1872 proposes the *Wellentheorie*, or wave theory of language change, a model (fig. 4) he counterposes to the tree model of the neo-

grammarians, who held that languages branch off from one another in ways that can be described as arborescent patterns.

Leonard Bloomfield, writing in 1933, summarizes the intuition: “Different linguistic changes may spread, like waves, over a speech-area, and each change may be carried out over a part of the area that does not coincide with the part covered by an earlier change. The result of successive waves will be a network of isoglosses” (316). As Schmidt ([1872] 1998: 27) wrote, “A more realistic image of the relationship of the Indo-European languages would represent them as situated on concentric circles with the parent language at the centre and the individual languages more or less distant from it but still linked to each other; the model was that of waves in water which spread from a central point in concentric rings which progressively become weaker and weaker.” In this model, the medium through which waves travel is spoken language and its phonology, a “thing” materialized in the articulations of language speakers. Once again, the wave model takes social phenomena and claims that these can yield to naturalistic explanation; history becomes not so much a zone of contingent chronology as a formal grid against which numerically describable tendencies can be discerned.

Soon, too, comes the appearance of the *crime wave*, as well as the *heat wave* (cf. Procupez 2016). Sometimes, the former is imagined to follow from the latter. An editorial in the August 13, 1892 issue of the *Journal of the American Medical Association* speculates, calling on statistical data, that instances of crime increase in hot weather. In “Disease and Crime Due to Hot Weather,” the journal reports that

The experience of the recent heated term, if gathered up by competent students, would furnish a chapter of remarkable facts . . . [that] . . . have a direct bearing on the crime wave theory which seems so often supported by statistics. This theory assumes that crime is due to cosmical and physical causes, which at long intervals gather and burst like storm clouds. . . . The teachings of science show that disease and crime are literally interchangeable terms. . . . If certain extreme changes of temperature are followed by increase of one or both, this fact indicates the operation of physical laws. (*Journal of the American Medical Association* 1892: 201)

This bringing together of the crime and heat waves makes a 1920 cartoon from *Punch* possible, a cartoon in which an awkward party guest, seeking to strike up conversation with an intimidating interlocutor, opens with “Extraordinary crime wave we’re having—er—ah—for the time of year” (fig. 5).

All of these waves emerge because of techniques of inscription that animate formal claims about rising and falling tendencies, claims that then produce hypoth-



Figure 5 *Conversationalist* [on right]: “Extraordinary crime wave we’re having — er — ah — for the time of year.” From *Punch*, February 11, 1920.

eses about material correlates and conditions. Haviland’s “wave lines,” Felkin’s “disease-wave,” and Durkheim’s “waves” of suicide are representations that suggest, through semiotic back-formation, that there are real phenomena causing them. They are indices that represent a *real*, with *representation*, as Timothy Mitchell (1988: 6) refers to it in *Colonising Egypt*, as “everything collected and arranged to stand for something . . . ; everything set up, and the whole set-up always evoking some larger truth.” Mitchell argues that the gaze of nineteenth-century governance rendered the “world as a picture.” Nineteenth-century social theory as wave theory delivers the world as a table, a map, and/or a diagram that shows the rise and fall, the undulation, of aggregate phenomena. The social world becomes wavelike.

Interlude on Vibration

I have left to one side another species of wave that captured nineteenth-century imaginations: the wave described by physics, which offered the wave as the form

through which light, sound, and even, for a while, heat were understood to travel. As literary scholar Gillian Beer (1996: 298) observes, “Nineteenth-century scientists from Helmholtz to Thomson, Clausius to Clerk Maxwell, were pursuing a single explanation of cosmic processes that would include light, heat, and sound and that would construe them all as motion”—all, more exactly, as vibration (see Trower 2012). My *OED* examples, formal and material both, designate successive motions, rising, falling, sweeping, washing over one another, crashing. But wave theory in physics was about something different: oscillation, periodicity, *repetition*—about the wavy texture of the world all the way down.

Before I leave the nineteenth century, let me provide two examples of the travel of undulatory physics-styled waves into natural and social science theory.

Take, first, the undulatory theory of inheritance forwarded by biologist Ernst Haeckel (fig. 6). In *Die Perigenesis der Plastidule oder die Wellenzeugung der Lebenstheilchen* (*The Perigenesis of Plastidules; or, The Wave-Procreation of Life Particles*), from 1876, Haeckel proposed, as Robert Brain (2008: 403) reports, that organisms were made of a “protoplasmic substance [that] served as the medium for the recording and transmission of continuous forces. . . . [Haeckel] described the proteinaceous chemistry of the protoplasm, capable of generating colloids which possessed the rigidity of an elastic solid, as uniquely suited to assimilate vibratory waveform movements.” As Haeckel put it, “The evolutionary movement presented by this series of our ancestors can be depicted simply by an undulating line in which the life of each individual corresponds to one wave. But we do not limit our view to the series of our direct ancestors: let us extend our vision and embrace the ensemble of our near relatives. . . . The genealogical tree as a whole presents the image of *one ramified waveform movement*” (quoted in Brain 2008: 404). This scheme has the tree of life with waves for branches, wave lines that, to use terminology Tim Ingold develops in his 2007 book *Lines*, are simultaneously *threads*—physical, filamentary lines (e.g., tightropes or electric wires)—and *traces*—sometimes enduring, sometimes evanescent, marks of connection (e.g., walking paths).

Sociologist Gabriel Tarde, one of Durkheim’s contemporaries, also enunciated a vibratory vision, one that traveled from atomic to social. He believed Durkheim was setting up unreal abstractions with such notions as the *division of labor*, *conscience collective*, or even *society*. Franklin Giddings, in a 1903 introduction to an English translation of Tarde’s *Laws of Imitation*, wrote that the author

perceived that imitation, as a social form, is only one mode of a universal activity, of that endless repetition, throughout nature, which in the physi-

Schema der Perigenesis

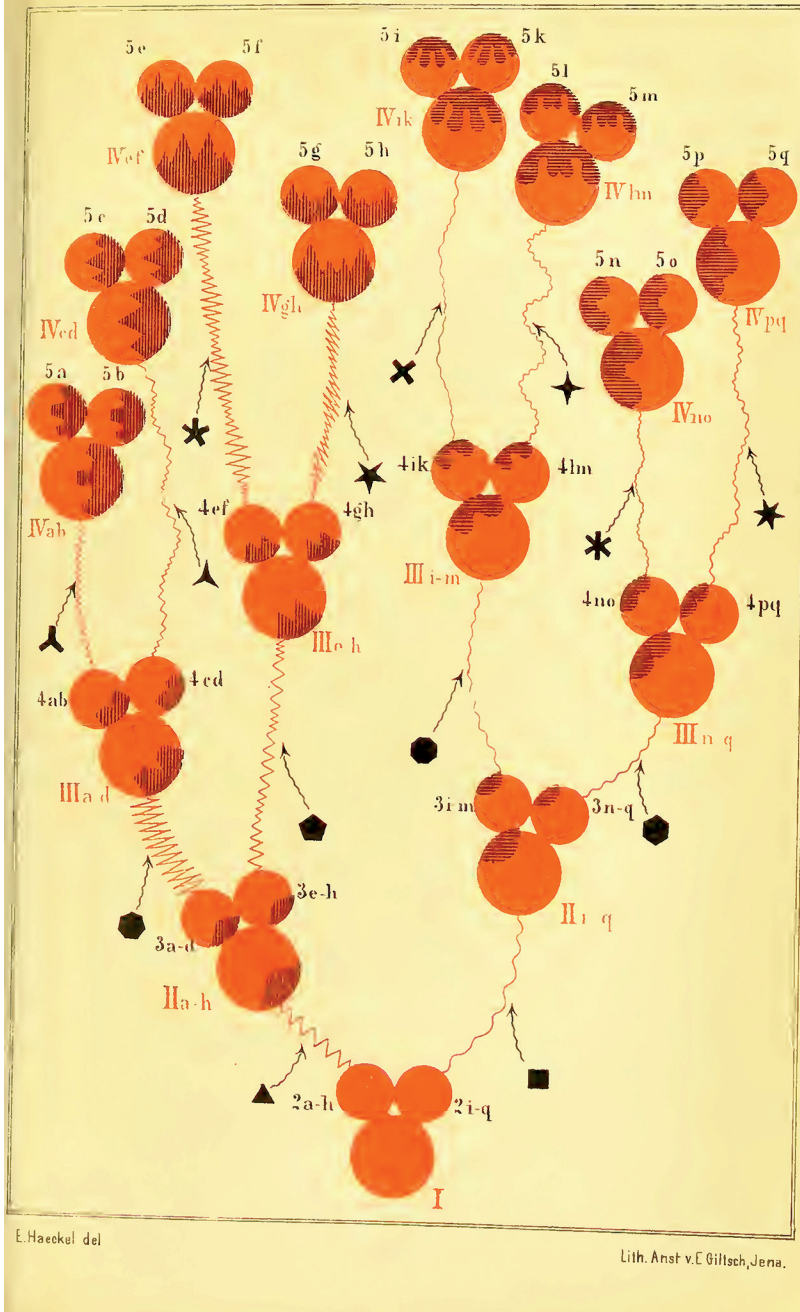


Figure 6 From Haeckel
1876: 81.

cal realm we know as the undulations of ether, the vibrations of material bodies, the swing of the planets in their orbits, the alternations of light and darkness, and of seasons, the succession of life and death. Here, then, was not only a fundamental truth of social science, but also a first principle of cosmic philosophy. (Tarde 1903: v)

Tarde (1903: 370) himself suggested, of the travel of inventions through the social world, “wherever a happy initiative might show itself in the whole mass of humanity, its transmission by imitation would be almost instantaneous, like the propagation of a wave in a perfectly elastic medium.” Tarde sat squarely in an episteme shaped by wave-speaking physics.

As the twentieth century opened, wavy imagery for describing social reality had been established in two genealogies. One had waves as large-scaled transformations, often successive, that either dissipate with propagation or wash over predecessors. The other, more vibratory, tradition, had waves as periodic repetitions organizing the world from the atomic scale up. In both cases, waves were *formal*—appropriately rendered through wavy lines on charts—as well as *material*—substantive, constituting the very texture of nature itself.

Beer argues that the modern/modernist moment in Europe and the United States was tuned to worries about the relation between the formal and material, reality and representation. Moderns were fascinated by the weird world that contemporary physics posited, in which matter was no longer solid: “By the late 1920s waves in motion are all the universe consists in—and they are probably fictitious, ‘ondes fictives,’ as de Broglie called them, or as Jeans suggests in *The Mysterious Universe*: ‘the ethers and their undulations, the waves which form in the universe, are in all probability fictitious . . . They exist in our minds’” (Beer 1996: 295). And human minds, in turn, might exist in a field of waves. Virginia Woolf’s modernist novel *The Waves* can be read as an experiment in construing the intersubjective world this way. Woolf (1931: 278–79), mixing in imagery of the sea, has one character articulate a wavy account of experience: “The sound of the chorus came across the water and I felt leap up that old impulse, which has moved me all my life, to be thrown up and down on the roar of other people’s voices, singing the same song; to be tossed up and down on the roar of almost senseless merriment, sentiment, triumph, desire.” As feminist theorist of sound Tara Rodgers (2016: 208) writes of this moment in Woolf, “This subject position within the waves, far from being detached and controlling, is characterized by being affected by, and connected to, modes of experience beyond the boundaries of oneself.” Water waves, electromagnetic waves; all waves become implicated. Physicist Erwin Schrödinger comes in 1926 to see the world in the image of his own theory of the

quantum wave, writing of “conscious awareness as something emerging in individuals like tips of waves from a deep and common ocean” (quoted in Beer 1996: 315). A moving particle was, he said in 1926, “nothing but a kind of ‘crest’ on a wave radiation forming the substratum of the world” (quoted in Joas and Lehner 2009: 344). Woolf and Schrödinger grapple with human agency and its place in a wavy world; for them agency is an illusion, perhaps a temporary emergence, always ready to dissolve back into the ephemeral.

Cyclical and Successional Waves in the Twentieth Century: Structures and Agencies

Pronouncements about the vibratory, wavy phenomenology of experience mostly vanish after the 1920s, reappearing only in the countercultural 1960s. Once the twentieth century begins in earnest, vibratory ontologies are eclipsed by more solemn wave talk, this time with respect to large-scale economic, sociological, and cultural processes. The mysteries of the mass of the electron are replaced by the mysteries of mass society (see Mazzarella 2017). Questions of structure and agency move into a register beyond Woolf and Schrödinger’s individuated experiential mode, remade as social and institutional.

There come to be two primary modes of conceptualizing waves. The first treats waves as *cycles*—repeating undulations that may either fluctuate in steady states or build. The second treats waves as forces that *succeed* one another, with waves washing over their predecessors. These modes—*cyclical* and *successional*—summon divergent claims. Cyclical waves emphasize the power of large institutional *structures* to format social action, well above individual agency or power. Successional waves, which highlight irreversible historical change, on the other hand, are rendered as manifestations of social or collective *agency*, and some theorists seek to discern their genesis in everyday embodied action. The distinction between cyclical and successional waves in explanatory practice is never that sharp; the two modes often blend. Even so, I find it useful to split my chronicle between the two.

Waves ~ Cycles

Cyclical explanations of social history have a long history, dating back—at least—to the Tunis-born historian Ibn Khaldūn, whose 1377 *Muqaddimah* forwarded a model of dynasties rising and falling in cycles of warfare. But what distinguishes twentieth-century models are the degrees to which they appeal to numerical data, statistics, the sorts of measures made available for mass society.

One place to begin is in economic planning, with an example from a large-scale command economy, the 1920s Soviet Union. In 1922, economist Nikolai Kondratieff forwarded the idea that economic dynamics follow fiftyish-year-long economic cycles, with waves of expansion followed by waves of decline (see fig. 7, drawn from Kondratieff and Oparin 1928).

Kondratieff was instrumental in shaping the five-year plan of 1923 for Soviet agriculture. As he worked for the People's Commissariat of Agriculture, he began to believe that transnational markets were essential to the development of industry; interacting with these markets would put Soviet production in the thick of global waves of exchange—waves the state would do well to understand. When Lenin died, Kondratieff's theory came into conflict with Stalin's commitment to state control over production, and Kondratieff was executed. But Kondratieff waves signaled an ascendant twentieth-century model for understanding the economic lives of nation-states and beyond (see also Morgan 1990: 67–68). Harvard political economist Joseph Schumpeter (1939: 213), in *Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process*, revived Kondratieff waves and argued that they had nested within them intermediate cycles of investment (Juglar cycles) as well as shorter business cycles created by the delayed decision making of companies responding to the inherent information lag of markets (Kitchin cycles) (fig. 8).

Decades later, Marxist economists rehabilitated Kondratieff waves. Ernest Mandel (1980: 1) modified them in his book *Long Waves of Capitalist Development* to characterize late capitalism. Eric Hobsbawm (1994: 87) wrote, “That good predictions have proved possible on the basis of Kondratieff Long Waves—this is not very common in economics—has convinced many historians and even some economists that there is something in them, even if we don't know what” (see also Day 1976). That last “even if we don't know what” marks an intuition that this formal framing picks out a set of forces in the world, though also continues a nineteenth-century faith in inscription as revelatory rather than as (possibly) self-referential and self-reinforcing.

Economists in the United States, in the wake of the Great Depression, went scouting for accounts of what had just happened. In 1938, accountant Ralph Nelson Elliott ([1938] 1980) wrote *The Wave Principle*. Elliott argued that economic periods were keyed to oscillations between optimistic and pessimistic sentiments in the behavior of crowds, building on the social psychology inaugurated by Gustave Le Bon in his 1896 book *The Crowd: A Study of the Popular Mind*, which suggested that crowds were prone to unreason, hyperactive sentimentality, and impulsive behavior. Le Bon had written that “such ideas as are accessible to crowds . . .

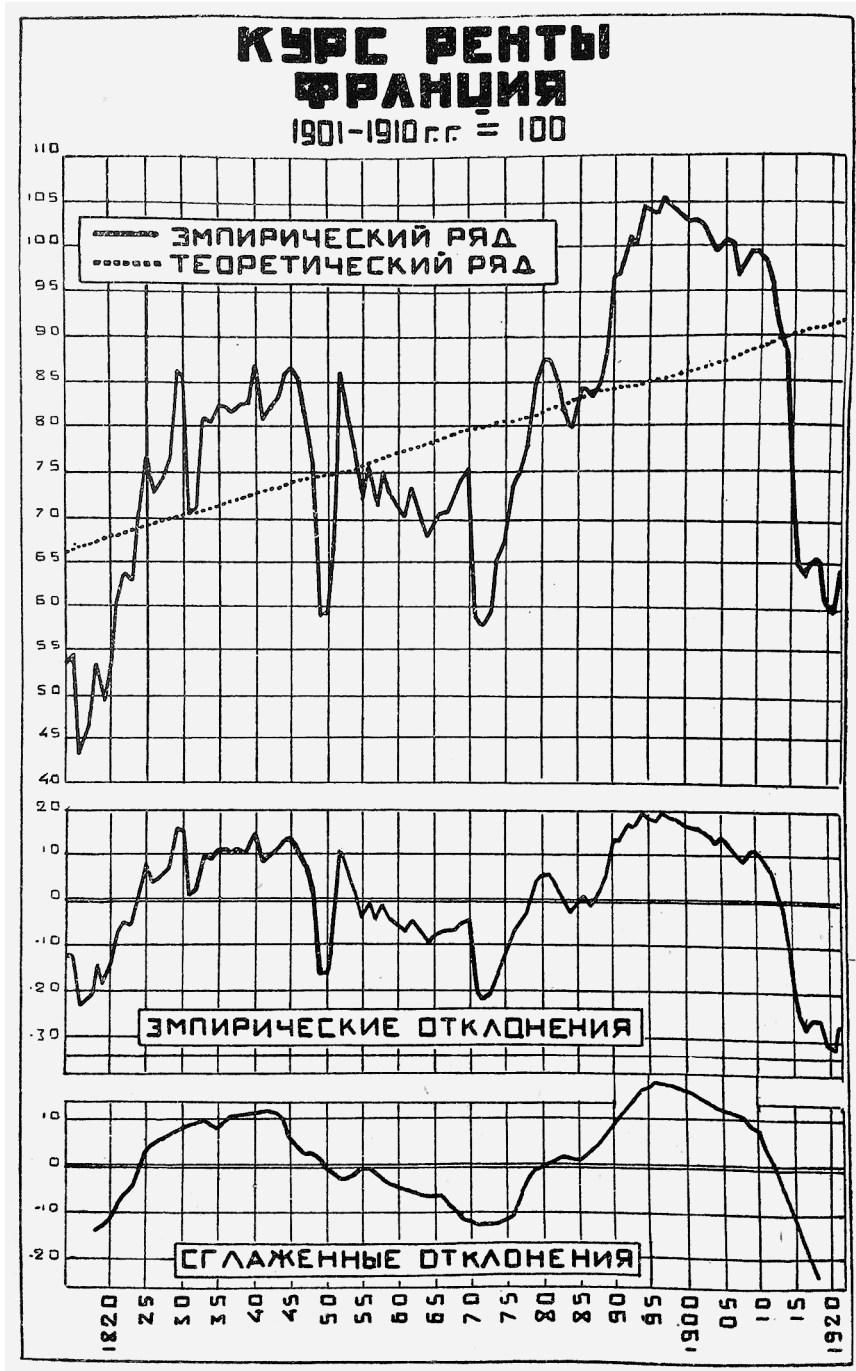


Figure 7 Kondratieff waves, tracking the course of rent prices in France, 1820–1920, from Kondratieff and Oparin 1928.

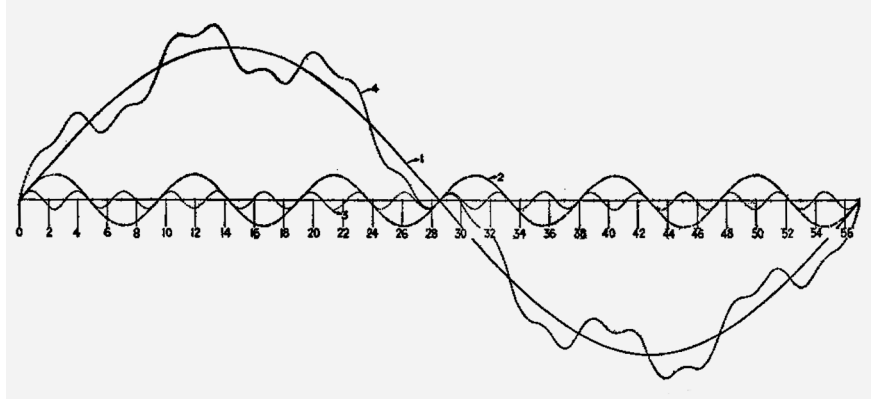


Figure 8 Ideal-typic time series, left to right, showing nested Kondratieff (long), Juglar (intermediate), and Kitchin (short) economic cycles. Chart 1 from Schumpeter 1939. Compare figure 25, Pareto [1916] 1935.

resemble the volume of the water of a stream slowly pursuing its course . . . [with] transitory ideas . . . like the small waves, for ever changing, which agitate its surface” (48).¹⁰ Elliott’s vision of economic waves saw these waves naturalistically, as inevitable, and therefore predictable. Elliott rejected the idea that a stock market could suffer anything as dramatic as a “crash.” What happened in 1929, he claimed, was the result of five waves superimposed, all hitting a trough at the same time. These were not waves, like ocean waves, that washed away their predecessors, but waves, more like sine waves, repeating. Such imagined stabilities only became possible when it was assumed that domains of “society”—“economy,” “market”—could be construed, managed, as stable over long time frames.¹¹

Elliott elaborated his view in his book *Nature’s Law* ([1946] 1980), which developed a cosmology that saw market waves as part of the vibratory ontology of the universe. What disappeared in formulations like Elliott’s was the assumption that the state could or would control these waves; it was up to the savvy investor to

10. This idea got an update in the early 1960s, when Elias Canetti ([1960] 1962: 80), in *Crowds and Power*, wrote, “The sea is multiple, it moves, and it is dense and cohesive. Its multiplicity lies in its waves. . . . The dense coherence of the waves is something which men in a crowd know well.” And see note 9 above, on the “oceanic crowd.”

11. Economic and cultural waves are later joined by accounts of political waves and there emerges a slippage between *wave* and *cycle* (e.g., in Jerald Brown’s [1992: 31] “wave model” of US politics: “I use the term *wave* to underline the regular periodic oscillations throughout American history, and to better examine the rituals and regulatory mechanisms that appear at the crest of both human-rights and property-rights waves. . . . Further, the wave concept more accurately describes historical phenomena that ‘swell and die away.’”).

take advantage of economic waves as naturalistic processes, a mode of apprehending waves that would return in the late twentieth century with calls for clued-in people to “surf” waves of change. The question of how waves could embed agentive social choices would now preoccupy theorists of wave theory ~ social theory.

Waves ~ Successions

Models of successive waves, in contrast to models of waves as cycles, often map history as an irreversible flow of changes, in which one moment washes away another. Anthropologist Alfred Kroeber, in 1945, suggested that “cultural materials,” along with “ways of thinking,” could travel across space “sometimes, rapidly, almost like a wave or pulsation” (17). He first proposed this model of culture change in a 1919 article entitled “On the Principle of Order in Civilization as Exemplified by Changes of Fashion” in which he graphed changes in women’s fashion—skirt length, waist width, necklines—between 1844 and 1918 (his data came from fashion magazines), revealing (he claimed) that fashion trends had “wave-lengths” and “amplitudes” (fig. 9). Daniel Reichman (n.d.) suggests that Kroeber’s diagrams of what he would later call “the wavelike character of culture” (Kroeber 1944: 15) sought to refute models of “progress,” even as they pos-

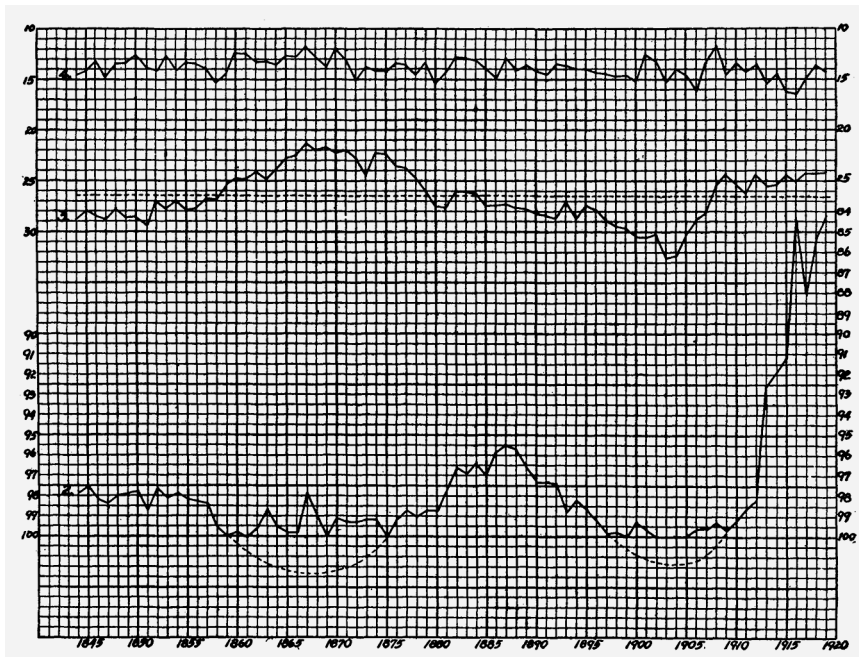


Figure 9 The rise and fall of skirt length and other markers of American women’s fashion, 1845–1920, from Kroeber 1919.

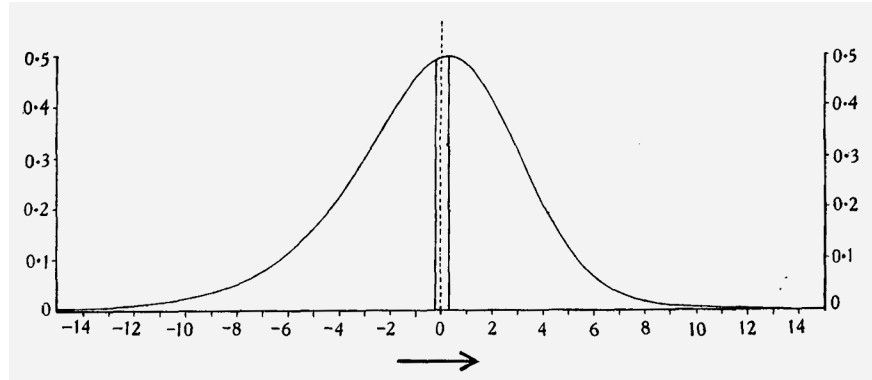


Figure 10 Statistician R. A. Fisher (1937: 360) puts a bell curve into forward motion (follow the arrow), turning a statistical distribution into a moving wave.

ited the rise and fall—the succession—of tendencies. Change was not progressive even if it *was* characterized by the travel of waves.

Different in politics, discipline, and vision of progress was British statistician and geneticist R. A. Fisher, whose 1937 article, “The Wave of Advance of Advantageous Genes,” sought a more biological, hereditarian—and mathematically phrased—account of how wavelike changes might unfold in populations. Writing in the pages of the *Annals of Eugenics*, Fisher postulated that some populations might, over generational time and geographical space, exhibit “a steadily progressive wave of gene increase due to the local establishment of a favourable mutation,” a trend that, he argued, could be described using diffusion equations from physics. He also offered examples of what such changes over time might look like on a graph (fig. 10). Here—and this became crucial for his eugenic account—he enlisted a key visual convention from statistics: the Gaussian (or normal, or bell) curve. A pivotal illustration in his article suggested that the mode of a bell curve might, with “the advance of advantageous genes,” slide toward higher (more desirable) values. In making that connection, Fisher invited the reader to imagine, in a mind’s-eye movie, the bulge of a bell curve moving forward, like a wave (thereby temporalizing what had usually been the more snapshot formalism of the bell curve). Fisher’s was a wave model of eugenics, an enterprise for which he was a dedicated advocate.¹²

12. For a history of the bell curve, its emergence as a so-called natural distribution, and its use in racist accounts of the distribution of “intelligence”—most notably in Herrnstein and Murray 1994—see Fendler and Muzaffar 2008. For further history of the “normal,” consult Kruskal and Stigler 1997 and Stigler 2002.

Whether in the hands of radical, middle-of-the-road, or conservative social theorists, successive waves of change (of fashion, of genes) were—and are—often described as processes that wash away entrenched ways of being, acting, and thinking. In many cases, those descriptions invite political readings, even prescriptions. On the one hand, such forces can be read as demanding the dissolution of traditional social ties in favor of those created by modern, reflexive, agentic selves, selves that can discern the structures in which they are bound up and perhaps act recursively to take advantage of them—“riding” the waves of change (see Zaloom 2009). On the other hand, such waves may herald collective, perhaps revolutionary agency, refusals to think of liberal methodological individualism as the best motor of social change or justice. Accounts of both kinds can prompt worries about selves misled, peoples following false hopes, perhaps toward submission to totalitarianism.

One influential mode of wave thinking comes from futurology. *Fortune* associate editor Alvin Toffler’s *The Third Wave* (1980) posited that “information era” society represented a third wave in human development, absorbing and superseding the “second wave” of the industrial era, which had itself subsumed a “first wave” of human advance represented by agriculture. Toffler’s waves were successive forces of progress, each wave sweeping away the effects of the previous. Toffler wrote, “One powerful new approach might be called social ‘wavefront’ analysis. It looks at history as a succession of rolling waves of change and asks where the leading edge of each wave is carrying us. . . . It views each of these not as a discrete one-time event but as a wave of change moving at a certain velocity” (13). Toffler suggested that when waves were singular and powerful enough, prediction of the future—the “wave of the future”—would be straightforward. However, he wrote, “When a society is struck by two or more giant waves of change, and none is yet clearly dominant, the image of the future is fractured” (15). Toffler’s theory mixed waves of different kinds, including “shock waves,” waves that travel faster than a medium can carry them, an idea he developed in his earlier book, *Future Shock*, from 1970. Such shock waves leave in despair those people unable to adapt—a wave theory version of anomie.

Not far below the surface of Toffler’s model is a neoliberal social theory (albeit one with a certain Marxian flair, predicting that the industrial era will be washed away by its own information era creations), one that posits overpowering structural forces but *also* claims that analysts who can see the whole thing synoptically have power to master those forces. Such accounts of waves as forces to “surf” can reach toward a beachy, tourist sublime. Here’s midcentury countercultural guru and psychedelic drug advocate Timothy Leary, in 1978, in *Surfer* magazine:

“Everything is made of waves. At the level of electrons and neutrons, it’s part of a wave theory. Historical waves, cultural waves . . . sequential, cyclical, moving, ever-changing forms.”

Such pronouncements also work from a perspective of privilege, of the person who is confident enough to “ride” (see 2010’s *Wave Theory for Alternative Investments: Riding the Wave with Hedge Funds, Commodities, and Venture Capital*, by Stephan Walker; look ahead to fig. 12). Toffler’s work has become a go-to model for conservative thinkers; Newt Gingrich, Republican Speaker of the United States House of Representatives under President Bill Clinton, signed on as an adherent. Wave models like Toffler’s operate as what James Ferguson (1994) would call “anti-politics machines,” formalisms that, in describing social reality, depoliticize the functioning of institutions as well as the unequal distribution of resources that can be installed by regimes of governance—a depoliticizing of the social world that naturalizes inequality and neutralizes historical explanation. Note, too, that, with the introduction of “surf” imagery, the figure of the wave now functions not only as a putatively indexical map of social processes (that is, as at once the form and trace of an aggregate phenomenon), but explicitly activates metaphorical and symbolic association as part of its animating rhetorical work.

Conservative social theorist Samuel Huntington’s *The Third Wave* (1991), which claims that democratization is an abstract “force” that sweeps over societies, delivers a story similar to Toffler’s, in which benighted traditional societies risk being washed over by progress (see Gaonkar 2007 for a critique). Political scientists and sociologists Håvard Strand, Håvard Hegre, Scott Gates, and Marianne Dahl, in “Why Waves? Global Patterns of Democratization, 1820–2008,” seek to “test” Huntington’s ideas through simulation. In “The Impact of Social Theory on Model Development,” a 2008 paper delivered at a workshop in human social, cultural, and behavioral modeling held at the United States’s National Defense University, mathematician Loren Cobb writes that computer models can map “the wave-like geographic spread of violence, disease, deadly weapons, or people.” Much of this modeling talk is essentialist. Jos Gamble (2003: 65), in his critical reading of wavelike imagery used to describe change in contemporary China, makes explicit what might already be clear: “‘watery metaphors’ . . . [often] portray the consequences of human actions as though they are uncontrolled natural phenomena, such as waves and tides. Thus to see immigration as a ‘tide’ or ‘flood’ seems to involve a denial of human agency.”

At some moments, the “wave” stands for a worry about the vanishing of individual judgment. The wave, in this guise, appears as a symbol of fascism. Take the Palo Alto high school class that, in 1967, was led by a history teacher in a simula-

tion of fascism dubbed “The Third Wave” (see Strasser 1981 for a novelization of the events). The canonical story, often told alongside tales of the Milgram and the Stanford Prison experiments—other 1960s investigations into social psychologies of obedience—emphasizes how the will of individuals can be submerged under authoritarian rule (see Arendt 1951) (see fig. 11). Ron Jones (1976: 8), the high school teacher who led the simulation—one in which his students came, under his experimental hand, frighteningly to embody proto-fascist sentiment—tells an origin story about the imagery of the wave, one part discipline-and-obey, one part California surf party:

As the class period was ending and without forethought I created a class salute. It was for class members only. To make the salute you brought your right hand up toward the right shoulder in a curled position. I called it the Third Wave salute because the hand resembled a wave about to top over. The idea for the three came from beach lore that waves travel in chains, the third wave being the last and largest.¹³

As my invocation of David Graeber at this essay’s outset suggests, the wave image is also thickly in play in descriptions of and prescriptions for *progressive* social action (see also Freeman and Johnson 1999). Social movement theory has long been invested in the promise of the wave. The “insurrectionary wave” as revolutionary form is an early example.¹⁴

The wave metaphor in feminism is another case. First-wave feminism canonically refers to suffrage movements, second-wave feminism to the 1970s women’s liberation movement, and third-wave feminism to critiques of liberal feminism, mostly from women of color and queer women.¹⁵ Here the wave is a collective agent, a force for liberation, upheaval. The common wisdom has become so settled that many feminist thinkers have started to question the metaphor. Lynn Spigel

13. “Third Wave” also echoes “Third Reich.”

14. In *Waves of Decolonization: Discourses of Race and Hemispheric Citizenship in Cuba, Mexico, and the United States*, David Luis-Brown (2008) calls for a recognition of the physical power of waves of mid-twentieth-century decolonization and its concomitant movements of immigrants. Picking up on (and quoting from) a 1920 essay by W. E. B. Du Bois entitled “The Souls of White Folk,” in which Du Bois wrote, “Wave on wave, each with increasing virulence, is dashing this new religion of whiteness on the shore of our time” (1), Luis-Brown calls for a rescripting of waves of (nonwhite) immigration as waves of liberation from the power of whiteness.

15. Historian Cori Field (n.d.) argues that turn-of-the-twentieth-century white American suffragist women, seeking to shore up a narrative of generational succession—whereby figures such as Susan B. Anthony passed leadership on to younger women—also often elevated white women (above, for example, black women, who had been central to the movement) as the vanguard of women’s rights, in this way attaching the first “waves” of feminism to whiteness—even to white supremacy.



Figure 11 Still from *The Wave*, directed by Alexander Grasso, a TV dramatization of Ron Jones's "Third Wave" experiment, showing a student giving the wave salute next to a television stand featuring the logo of the student group. "The Wave" © 1981 ELP Communications, Inc. Courtesy Sony Pictures Television.

(2004: 1211–12) writes, “with both its oceanic and avant-garde connotations, the waves thesis works to place old feminists on the beach—washed up like fish on the shore”—displaced by a fresh group of young feminists, at least until they get washed up (see Wylie 2006; Helmreich 2017). Ednie Kaeh Garrison (2005) argued that the “feminist oceanography” (a term coined by Deborah Siegel [1997]) of the wave narrative homogenizes women within generational cohorts (often privileging white women), linearizes movement, and posits times of lulls, all of which mismeasures histories of activism.¹⁶ Garrison suggests that feminists might tune in to a radio wave metaphor, which affords different possibilities—frequencies, interferences, and so forth.

Political scientist Alexander Wendt (2006), in “Social Theory as Cartesian Science: An Auto-Critique from a Quantum Perspective,” offers a quantum model of social change: “I offer three conjectures . . . : 1) social systems have wave functions that constitute a collective unconscious; 2) these wave functions collapse [that is, one potential social state is realized] by a process of ‘intra-action’ described by quantum game theory; and, most speculatively, 3) social systems are super-organisms with collective consciousness” (197). Wendt here integrates into his account the famous wave-particle duality posited by quantum mechanics, suggesting that social action unfolds in a field of probabilities (a wave function) only to “collapse” into descriptions of particles with definite locations at the moment of observation. Such interdisciplinary borrowing, while provocative, risks taking at face value scientific descriptions of wave phenomena, as though these provided obvious correctives, remedies—as though, if one just got the objective description of wave phenomena correct, then wave-based social analysis would become sharper, too. I suggest that such borrowing is not only a sign of, say, physics envy, but also a pointer to uncertainties—by now in part a consequence of the overflowing polysemy (indexical, iconic, symbolic) of the wave figure—about how to operationalize wave analytics in social theory.

It is also in this unsettled setting that attempts to wrest waves from a neoliberal analytic might be understood. Kanaka Maoli writer Karin Amimoto Ingersoll, in her *Waves of Knowing* (2016), seeks to activate a Native Hawaiian “seascape epistemology,” one that operates in an anti-colonial register, and that, drawing on surfing as a genre of resistance (see I. H. Walker 2011), “reinforces the image and idea of the physical structure of the wave as a way of knowing the past” (10),

16. A number of feminist scholars have queried the wave metaphor along similar lines. See Aikau 2007; Hewitt 2010; Bardsley 2018. Field n.d. provides a list that includes additional critiques, notably Hogeland 2001; Laughlin et al. 2010; Henry 2012; Chazan and Baldwin 2016; and Reger 2017.

underwriting an oceanic literacy that uses waves as modes of tracing, but also of countering, imperialist histories of Pacific colonialism.

In some ways, these reaches toward oceanography, physics, and cosmology draw waves into the analytic of “the nonhuman,” much like those microbes, rocks, trees, atmospheres, and other entities many social theorists now enlist to press against human exceptionalism (Grusin 2015), to motor a post-human or more-than-human turn. Waves of human social forms and forces could in this tradition be imagined as *human nonhumans* (or nonhumans composed of humans). To put a point on it: if human sentiment and action are described in waves, it is because of a folded image of humanity—enacting superorganic social *forms* while also existing in *material*, bodied, multiplicity. Such waves may be imagined as both positive and negative. In 2016, the city of San Sebastián, Spain, took “Waves of people’s energy” as its motto for its tenure as a 2016 European Capital of Culture (and see Bruno Latour’s [2017: 101] celebration of “waves of action” in his *Facing Gaia*). After the US election of 2016 (what Michael Taussig called “that *mana* wave called Trump” [quoted in Mazzarella 2017: 2]), one read of “populist waves,” “waves of nationalist sentiment,” “a wave of economic angst,” “a wave of angry white voters,” “a wave of hate crimes.” Invocations of social waves today continue to pose questions about social causality, about the causal relations of structure to agency.

Waves ~ Networks?

Like their nineteenth-century predecessors, today’s social waves continue to be summoned by *inscription technologies* (see also Van Reekum and Schinkel 2017)—and, in the days of social media reason, these are up-to-the-Internet-minute. Think of algorithmic tracking of tweets as proxies for social worlds. In “The Revolutions Were Tweeted: Information Flows During the 2011 Tunisian and Egyptian Revolutions,” for example, media studies scholar Gilad Lotan and colleagues (2011) examine the unfolding of the revolution in terms of its enabling “flows” of information, including one significant “wave of retweets” (1395). Anthropologist Nick Seaver (2015: 32, 31) has spied in “big data’s oceanic imaginaries” recurring graphics of waves, “made of blue 1s and 0s”—symbols of fear and excitement about a big data wave, a force that computer scientists, investors, pollsters, and many others must learn to manage (see fig. 12, a stock image of a white man, in business casual, surfing a data wave made of 0s and 1s, against a background featuring a graph of business cycles). And, as danah boyd and Kate Crawford (2012: 668) caution, calling allied attention to the complexities of inscription, “Too often, Big Data enables the practice of apophenia: seeing pat-



Figure 12 Stock illustration of white man in business casual surfing a data wave made of 0s and 1s, against a background featuring a graph of business cycles. ID 130557873
© Aleutie | Dreamstime.com.

terns where none actually exist, simply because enormous quantities of data can offer connections that radiate in all directions.”

Burbling beneath these data waves is another figure of the sociological imagination, the more recent figure of the *network*—and particularly its form as the “actor network”—which, as Christopher Kelty (2014) argues, has often allowed “analysts of science and technology to get around concepts like agency and structure, or social relations, or institutions,” substituting nodes and links between monadic entities for nation-states, political organizations, hierarchical social structures, patriarchal forces, racism, and more. Like the wave, the network means to address matters of scale, to connect the individual to the aggregate, though often without recourse to “the social” (and its possible meso-scale components: the household, the neighborhood, the school, and more . . .). And these days, if one looks close enough, waves themselves seem frequently to be described as patterns emanating from a bottom-up network logic.

Around the time I was finishing this essay, many in US public culture were hoping for what they called a “Blue Wave,” a term used optimistically to name an election in which Democrats would take a large number of seats in the US Congress from Republicans (overcoming, among other structural dynamics, the gridded logics of Republican gerrymandering). Although the figure of the “wave election” seems to have made an appearance as early as the late nineteenth cen-

tury, to describe the “tidal wave” election of 1874 (*New York Times* 1876),¹⁷ in the twenty-first century it is subtended by a sense that any such “wave” will be in large measure animated by networks—that is, by the node-to-node physics of social media. Even as the social theoretic vagueness of both the “wave” and the “network” can operate to occlude structured political operations, however, such elusiveness can—and often means to—be politically generative. Consider political campaigns under the banner of #WaveofWomen (where “Wave” stands for Women Acting Visibly Everywhere; see Wave of Women 2018). These call upon the formal, material, political, emotional, and crowd power of the January 2017 Women’s Marches in the United States, simultaneously exhorting people to act as individuals and to leverage social collectives and institutions—and see fig. 13, from the June 30, 2018 “Families Belong Together” march in New York City, across the Brooklyn Bridge, in which a participant, wearing a Gay and Lesbian Surf Association T-shirt, carries a sign featuring Hokusai’s *Great Wave off Kanagawa*, a juxtaposition that resonates with then emergent “blue wave” discourse. Networked political mobilizations such as #WaveofWomen, for reasons that are sometimes politically strategic (though also sometimes historically amnesiac), often leave aside mention of participants’ structuring differences (by class, race, and citizenship). In the event, as election day loomed, #WaveofWomen was hopeful about the power of the aggregate: “Our WAVE will crash into the polls on November 6.”¹⁸ The image of the “crash” reveals a mixed rhetoric in the simultaneous invocation of network and wave. On one reading, both waves and networks are patterns—material forms whose constitutive particles (water molecules / people / nodes) do not themselves move but are rather more or less stationary matrices through which action propagates. On another reading, waves can crash, flow, and move material in a way networks do not.¹⁹ Wave, then, ~ network—where ~ (as I noted

17. Notions of the “ship of state” are still at work today. Historian of the United States Jill Lepore (2018: 788), in *These Truths: A History of the United States*, for example, asked whether, after the “tidal wave” of Trump’s election, the people of the United States—“an electorate that had been cast adrift on the ocean of the Internet”—were “fated to be ruled, forever, by accident and force, lashed by the violence of each wave of a surging sea?”

18. www.facebook.com/WaveofWomenMA/posts/2225137581101562.

Do the wave and the network meet in philosopher Peter Sloterdijk’s ([2004] 2016: 303) claim that modern “society” should properly be understood as “foam”—as an “unstable synthetic snapshot of a teeming agglomeration”? Sloterdijk writes that “the political realm would need to be studied using a theory of fluid dynamics for semantic loads or vectors of sense” (quoted in Jongen 2011: 214). This model has something of the water-wavy to it, though it would seem to come without a necessary directionality.

19. As I was responding to copyedits on this piece, fall 2019 pro-democracy protests in Hong Kong, inspired by Bruce Lee’s “Be Water” philosophy, found their strategies and rhetoric adopted by Catalanian protesters, who, rising up against Spanish state repression, advocated for what they called a “Tsunami Democràtic” (Hui 2019).



Figure 13 Snapshot from the June 30, 2018 “Families Belong Together” march in New York City, across the Brooklyn Bridge, in which a participant, wearing a Gay and Lesbian Surf Association T-shirt, carries a sign featuring Hokusai’s *Great Wave off Kanagawa*. Photo by author.

in the introduction) has two meanings, the mathematician's and the logician's: "is approximately equivalent to" as well as "is not."

In the days after the 2018 US election, commentators disagreed about whether what had unfolded—Democrats taking control of the House of Representatives, Republicans holding on to the Senate, many women winning positions in local and state governments—constituted a "blue wave." Megan Garber, writing in the *Atlantic*, noted that, once data was in about the outcome, observers had to face the fact that they hadn't set up a measure of what would *count* as a wave, leading some to name the result as an affirmation of a long-in-coming prediction, while others rebranded the outcome as merely a "ripple" or a "splash"—or even changed its color to mix red with blue: a "purple puddle." The *New York Times* produced a series of representations mixing numbers and evocative graphics playing on the wave image (Watkins et al. 2018). One showed a wave rising onto a beach dotted with icons representing individual Republican seats turned Democratic (Cohn 2018), mixing measure with metaphor, underscoring the way the wave often *expresses* but does not *explain*.²⁰

As I hope I have illustrated here, when social transformations are described as waves, we should ask questions about causality, and about what mix of form and material is being invoked. Who or what produces such waves, physical and affective? Are waves formed by large-scale historical structures, frameworks that overdetermine social action? Or are they, rather, expressions of collective agencies—networks?—fracturing previously stable structures and finding until now unrealized materializations? Wave talk can make it difficult to describe social structures. But one can ask, presented with a given wave account: are there legible structuring forces that are being whisked out of view by the rhetoric of the account? For an election, for example, are matters of gerrymandering, racial redlining, and corporate consolidations of media outlets kept out of dominant accounts? For movements of people, are works of community and institutional organizing—such as legal advocacy for immigrant rights, religious efforts at protecting asylum seekers—giving form to larger-scale trends? The figure of the wave in social commentary, I submit, is often invoked when structural, analytic, or causal accounts are either being obscured, muted, strategically downplayed, aspirationally sailed over, or have become difficult to settle on, when they waver, when social theory ~ wave theory.

20. Thanks to Cori Hayden for this phrasing.

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