

and absolute adaptation. "Becoming Stone" is the name I give to this dream. But when I get really, really high I dream ...

[The Greek]

The funniest part of a very funny treatise is when the sophist says ...

[The Theorist]

What?

*Postscript:* only some of these comments are based on the author's actual experience.

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Italo Calvino  
Blood, Sea (1967)

in *t zero*, tr. William Weaver. London, New York, NY and San Diego, CA: Harcourt Inc., 1969, pp. 39-46 (excerpt)

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Stefan Helmreich  
Blood, Waves

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The wondrous short stories by Italian author Italo Calvino in his collection *t zero* find their starting point in scientific curiosity - in "Blood, Sea," it is the discovery, published by physiologist René Quinton in 1904, that blood plasma has an almost identical chemical composition as sea water. Reflecting the evolutionary processes taking place over the course of eons, the primordial environs of life gradually turned inwards, from the boundlessness of marine space to the hollow cavities of blood circulation. Thus, complex life still finds itself immersed, in an interiorized manner, in the sea, and its special composition of substances. Biogeochemistry, which traverses the chemical routes and the constant recycling of elements through which the Earth shapes life and life shapes the Earth, links human and animal liquids with planetary ecologies; connecting the bloody faith of our existence to deep time, and dissolving our alleged exceptional position as humans into a sea of kindred substances. It is not by accident, then, that the narrator of the short story, "Qfwfq" - a volume of blood holding the full memory of the Earth's past - seems indifferent to the events that shake up personal lives, or even the planet. "Qfwfq" - possibly an allusion to the thermodynamic feats of a heat engine ("heat (Q) for work (W) for heat (Q)") - flows within the confines of a passenger sitting in a car that is winding through the streets of northern Italy.

Longing to commingle, it invokes its deep past of swimming freely, and finally breaks out in a predictable car crash, sea-spraying itself over the metal bodywork of the car. Stefan Helmreich's essay demonstrates a structural violence within the ways that the modern medicinal-algorithmic complex operates, where a car crash is a mere statistical event, and cardiogrammatic-wave profiles of patients are tracked remotely. As Helmreich poignantly observes, "far from tracking the 'primordial wave' moving from the ancient earthly ocean into today's human bodies, these collections of EKG waves track a bloodscape of difference."

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Italo Calvino

(1923-1985) was an Italian journalist and author of many short stories and novels. The son of an agricultural scientist and a botanist, both of whom flirted with anarchic socialism, Calvino's intellectual formation was strongly influenced by the study of nature and his exposure to anarcho-ecological thought, an interest clearly traceable in his works. Politically active in the Italian Resistenza, Calvino began his writing career after the Second World War. At the time of his death, he was the most translated contemporary Italian writer.

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Stefan Helmreich

is Professor of Anthropology at MIT. His research has examined the works and lives of contemporary biologists, thinking through the limits of "life" as a category of analysis. He is the author of *Alien Ocean: Anthropological Voyages in Microbial Seas* (University of California Press, 2009), a study of marine biologists working in realms usually out of sight and reach: the microscopic world, the deep sea, and oceans outside national sovereignty. He has more recently become interested in tracking the cultural circulation of such abstractions as "water," "sound," and "waves."

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## Italo Calvino Blood, Sea

*The conditions that obtained when life had not yet emerged from the oceans have not subsequently changed a great deal for the cells of the human body, bathed by the primordial wave which continues to flow in the arteries. Our blood in fact has a chemical composition analogous to that of the sea of our origins, from which the first living cells and the first multicellular beings derived the oxygen and the other elements necessary to life. With the evolution of more complex organisms, the problem of maintaining a maximum number of cells in contact with the liquid environment could not be solved simply by the expansion of the exterior surface: those organisms endowed with hollow structures, into which the sea water could flow, found themselves at an advantage. But it was only with the ramification of these cavities into a system of blood circulation that distribution of oxygen was guaranteed to the complex of cells, thus making terrestrial life possible. The sea where living creatures were at one time immersed is now enclosed within their bodies.*

Basically not much has changed: I swim, I continue swimming in the same warm sea, — *Qfwfq* said, — or rather, the inside isn't changed, what was formerly the outside, where I used to swim under the sun, and where I now swim in darkness, is inside; what's changed is the outside, the present outside, which was the inside before, that's changed all right; however, it doesn't matter very much. I say it doesn't matter very much and you promptly reply: What do you mean, the outside doesn't matter much? What I mean is that if you look at it more closely, from the point of view of the old outside, that is from the present inside, what is

the present outside? It's simply where it's dry, where there is no flux or reflux, and as far as mattering goes, of course, that matters too, inasmuch as it's the outside, since it's been on the outside, since that outside has been outside, and people believe it's more deserving of consideration than the inside. When all is said and done, however, even when it was inside it mattered, though in a more restricted range or so it seemed then. This is what I mean: less deserving of consideration. Well, let's start talking right now about the others, those who are not I, our neighbor: we know our neighbor exists because he's outside, agreed? Outside like the present outside. But before, when the outside was what we swam in, the very dense and very warm ocean, even then there were the others, slippery things, in that old outside, which is like the present inside, and so it is now when I've changed places and given the wheel to Signor Cècere, at the Codogno service station, and in front, next to him, Jenny Fumagalli has taken the passenger's seat, and I've moved in back with Zylphia: the outside, what is the outside? A dry environment, lacking in meaning, a bit cramped (there are four of us in a Volkswagen), where all is indifferent and interchangeable, Jenny Fumagalli, Codogno, Signor Cècere, the service station, and as far as Zylphia is concerned, at the moment when I placed my hand on her knee, at perhaps 15 kilometers from Casalpusterlengo, or else she was the one who started touching me, I don't remember, since outside events tend to be confused, what I felt, I mean the sensation that came from outside, was really a weak business compared to what went through my blood and to what I have felt ever since then, since the time when we were swimming together in the same torrid, blazing ocean, Zylphia and I. The underwater depths were red like the color we see now only inside our eyelids, and the sun's rays penetrated to brighten them in flashes or else

in sprays. We undulated with no sense of direction, drawn by an obscure current so light that it seemed downright impalpable and yet strong enough to drag us up in very high waves and down in their troughs. Zylphia would plunge headlong beneath me in a violet, almost black whirlpool, then soar over me rising toward the more scarlet stripes that ran beneath the luminous vault. We felt all this through the layers of our former surface dilated to maintain the most extended possible contact with that nourishing sea, because at every up and down of the waves there was stuff that passed from outside of us to our inside, all sustenance of every sort, even iron, healthful stuff, in short, and in fact I've never been so well as I was then. Or, to be more precise: I was well since in dilating my surface I increased the possibilities of contact between me and this outside of me that was so precious, but as the zones of my body soaked in marine solution were extended, my volume also increased at the same time, and a more and more voluminous zone within me became unreachable by the element outside, it became arid, dull, and the weight of this dry and torpid thickness I carried within me was the only shadow on my happiness, our happiness, Zylphia's and mine, because the more she splendidly took up space in the sea, the more the inert and opaque thickness grew in her too, unlaved and unlavable, lost to the vital flux, not reached by the messages I transmitted to her through the vibration of the waves. So perhaps I could say I'm better off now than I was then, now that the layers of our former surface, then stretched on the outside, have been turned inside out like a glove, now that all the outside has been turned inward and has entered and pervaded us through filiform ramifications, yes, I could really say this, were it not for the fact that the dull arid zone has been projected outward, has expanded to the extent of the distance between my tweed suit and the

fleeting landscape of the Lodi plain, and it surrounds me, swollen with undesired presences such as Signor Cècere's, with all the thickness that Signor Cècere, formerly, would have enclosed within himself—in his foolish manner of dilating uniformly like a ball—now unfolded before me in a surface unsuitably irregular and detailed, especially in his pudgy neck dotted with pimples, taut in his halfstarched collar at this moment when he is saying: “Oh, you two on the back seat!” and he has slightly shifted the rear-view mirror and has certainly glimpsed what our hands are doing, mine and Zylphia's, our diminutive outside hands, our diminutively sensitive hands that pursue the memory of ourselves swimming, or rather our swimming memory, or rather the presence of what in me and Zylphia continues swimming or being swum, together, as then.

This is a distinction I might bring up to give a clearer idea of before and now: before, we swam, and now we are swum. But on sober reflection I prefer not to go into this, because in reality even when the sea was outside I swam in it the same way I do now, without any intervention of my will, that is to say I was swum even then, no more nor less than now, there was a current that enfolded me and carried me this way and that, a gentle and soft fluid, in which Zylphia and I wallowed, turning on ourselves, hovering over abysses of ruby-colored transparence, hiding among turquoise-colored filaments that wriggled up from the depths; but these sensations of movement—wait and I'll explain it to you—were due only to what? They were due to a kind of general pulsation, no, I don't want to confuse things with the way they are now, because since we've been keeping the sea closed inside us it's natural that in moving it should make this piston effect, but in those days you certainly couldn't have talked about pistons, because you would have had to imagine a piston

without walls, a combustion chamber of infinite volume as the sea appeared infinite to us, or rather the ocean, in which we were immersed, whereas now everything is pulsation and beating and rumble and crackling, inside the arteries and outside, the sea within the arteries that accelerates its course as soon as I feel Zylphia's hand seeking mine, or rather, as soon as I feel the acceleration in the course of Zylphia's arteries as she feels my hand seeking hers (the two flows which are still the same flow of a same sea and which are joined beyond the contact of the thirsty fingertips); and also outside, the opaque thirsty outside that seeks dully to imitate the beat and rumble and crackling of inside, and vibrates in the accelerator under Signor Cècere's foot, and all the line of cars stopped at the exit from the superhighway tries to repeat the pulsing of the ocean now buried inside us, of the red ocean that was once without shores, under the sun.

It is a false sense of movement that this now-motionless line of cars transmits, crackling; then it moves and it's as if it were still, the movement is false, it merely repeats signs and white stripes and roadbeds; and the whole journey has been nothing but false movement in the immobility and indifference of everything that is outside. Only the sea moved and moves, outside or inside, only in that movement did Zylphia and I become aware of each other's presence, even if then we didn't so much as graze each other, even if I was undulating in this direction and she in that, but the sea had only to quicken its rhythm and I became aware of Zylphia's presence, her presence which was different, for example, from Signor Cècere, who was however also around even then and I could sense him as I felt an acceleration of the same sort as that other one but with a negative charge, that is the acceleration of the sea (and now of the blood) with regard to Zylphia was (is) like swimming toward each other, or else like

swimming and chasing each other in play, while the acceleration (of the sea and now of the blood) with regard to Signor Cècere was (is) like a swimming away to avoid him, or else like swimming toward him to make him go away, all of this involving no change in the relationship of our respective distances.

Now it is Signor Cècere who accelerates (the words used are the same but the meanings change) and passes an Alfa Romeo in a curve, and it is with regard to Zylphia that he accelerates, to distract her with a risky maneuver, a false risky maneuver, from the swimming that unites her and me: false, I say, as a maneuver, not as a risk because the risk may well be real, that is to our inside which in a crash could spurt outside; whereas the maneuver in itself changes nothing at all, the distances between Alfa, curve, Volkswagen can assume different values and relationships but nothing essential happens, as nothing essential happens in Zylphia, who doesn't care a bit about Signor Cècere's driving, at most it is Jenny Fumagalli who exults: "My, isn't this car fast?" and her exultation, in the presumption that Signor Cècere's bold driving is for her benefit, is doubly unjustified, first because her inside transmits nothing to her that justifies exultation, and secondly because she is mistaken about Signor Cècere's intentions as he in turn is mistaken, believing he is achieving God knows what with his showing off, just as she, Jenny Fumagalli, was mistaken before about my intentions, when I was at the wheel and she at my side, and there in back next to Zylphia Signor Cècere, too, was mistaken, both concentrating—he and Jenny—on the reverse arrangement of dry layers of surface, unaware—dilated into balls as they were—that the only real things that happen are those that happen in the swimming of our immersed parts; and so this silly business of passing Alfas meaning nothing, like a passing of fixed, immobile, nailed-down objects which continues

to be superimposed on the story of our free and real swimming, continues to seek meaning by interfering with it, in the only silly way it knows, risk of blood, a false return to a sea of blood which would no longer be blood or sea.

## Stefan Helmreich Blood, Waves

The narrator of Italo Calvino's "Blood, Sea," Qfwfq, is a volume of blood—possibly a cell, a drop, the quantity encapsulated in a single human body, or maybe all blood everywhere, ever.<sup>1</sup> Qfwfq's biography stretches back to a time "when life had not emerged from the oceans," and Qfwfq spends the span of the narrative doing two things: remembering a past of flowing freely within a salty sea, and making sense of a present-day circumstance in which Qfwfq finds itself swirling through the veins of a passenger in a Volkswagen automobile, an automobile that is speeding along a snaky road in northern Italy. Calvino's story pulls the reader into a tale of primal and ongoing communion between the substances of blood and seawater, tracking what Calvino, in an italicized scene-setting, names as the "primordial wave" travelling from Earth's oceanic past into today's human bloodstreams, a portion of which, at the end of "Blood, Sea," splashes onto the metal of Qfwfq's Volkswagen car after it swerves to avoid an oncoming Jaguar, and crashes.

Religious studies scholar Gil Anidjar has dissected Calvino's "Blood, Sea" for the way it veers around the politics of blood. Far from unifying all things—let alone all humanity—blood has historically been called into service to create differences and inequalities: by bloodlines, races, sexes, sexualities, health chances, and more.<sup>2</sup> From Patristic Christian fears of menstrual blood, to Iberian Catholic notions of the purity of blood lineage, to those one-drop rules and blood quanta policing African American and Native American identities, to the semiotics of sexuality that suffuse HIV-infected plasma, to cross-species experiments in xenotransfusion, the flow of blood

1 In other Calvino stories, Qfwfq has been a subatomic entity, the first mollusk, and a dinosaur—all pockets of consciousness at turning points in the unfolding of the universe.

2 Gil Anidjar, "The Blood of Freedom," in Annalisa Oboe and Shaul Bassi (eds.), *Experiences of Freedom in Postcolonial Literatures and Cultures*. London: Routledge, 2011, pp. 122–31.

has been less like an unbounded journey on an open sea and more like a passage through striated rivers and channels.<sup>3</sup>

How, then, to conjure with Calvino's "primordial wave," his unifying formal abstraction arcing from the ancient to the contemporary? How to historicize this wave? The history of blood waves might start with William Harvey's 1628 call to recognize that blood circulates through the body, a call that made human veins look a lot like the channels of exchange being set up in Harvey's day to make money circulate from one part of the political economic body to another.<sup>4</sup> By 1698, English mercantilist Charles Davenant would describe trade and money as "like blood and serum, which though different juices, yet run through the same veins together."<sup>5</sup> Blood as formal flow, as rise and fall and rise, becomes a kind of managerial abstraction. These days, cardiologists continue to characterize a variety of waves that travel through human blood. Mayer waves, for example, are low-frequency blood-pressure oscillations in the arteries, speedings or slowings of which may point to conditions of hyper- or hypotension.<sup>6</sup> Pressure waves of various other sorts move through the bloodstream (with three primary orientations: radial, axial, and circumferential), and their velocity and amplitudes can be indicative of cardiovascular health. Drinking coffee turns out to increase the velocity of pressure waves, leading to an increase in "wave reflection"—that is, waves bouncing off arterial walls and returning to, say, the heart's left ventricle, which can suffer an increased workload as a result.<sup>7</sup> Blood waves sit inside bodies. Far from being primordial, they are formed inside biographies, histories, and environments.

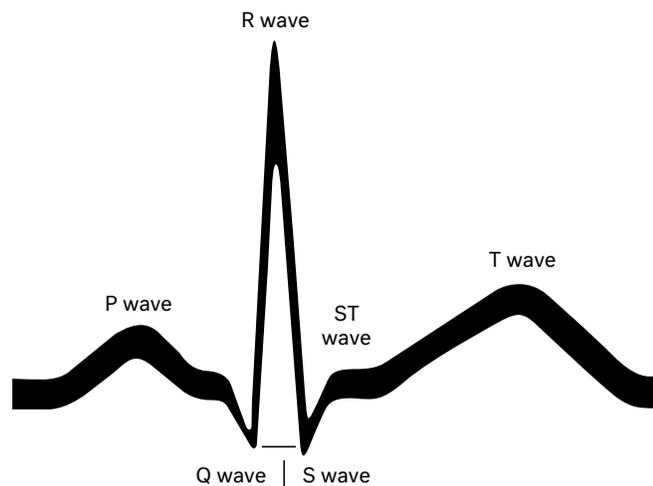


Figure 1 Waves labelled in an electrocardiogram

The same can be said for another sort of wave associated with the movement of blood, the wave described by the beating of the heart, often visualized in the electrocardiogram or EKG, which registers changes over time in the heart's electrical potential and permits the monitoring of individual heart health (Figure 1). Consider one arena within which these representations circulate: networks of implantable cardioverter defibrillators (ICDs), devices implanted into heart patients in order to monitor and manage their heartbeats. EKG wave profiles from these devices can be transmitted wirelessly to hospital computers, where they can be accessed remotely to track patient health (see Figure 2). Once EKGs arrive at hospital websites, automated algorithms and on-call medical technicians sort through them for concerning waveform tracings. Behind the abstraction of a

3 Unless the blood has been spilled in war or violence—mixing up the order of things—in which case the image of the "sea of blood" often emerges as a go-to trope, as in the 1971 North Korean opera *Sea of Blood*, about the killings of Koreans during the years of Japanese occupation in the first half of the twentieth century. See Adam Cathcart, "The Sea of Blood Opera Show: A History of North Korea's Musical Diplomacy," *The Atlantic* (March 19, 2012), accessed June 2, 2014, [theatlantic.com/international/archive/2012/03/the-sea-of-blood-opera-show-a-history-of-north-koreas-musical-diplomacy/254697/](http://theatlantic.com/international/archive/2012/03/the-sea-of-blood-opera-show-a-history-of-north-koreas-musical-diplomacy/254697/). Images of "seas of blood" also appear in the Bible—in Exodus, in Psalms, and in the New Testament's Book of Revelation, where they foretell the coming of the last judgment.

One notable appearance of a wave of blood in popular culture is in Stanley Kubrick's 1980 film adaptation of Stephen King's novel *The Shining*. Bill Blakemore, in a 1987 essay in *The Washington Post*, argues that a key scene in the movie, in which a wave of blood floods out of a hotel elevator, symbolizes the blood spilled by European settlers in the genocide of Native Americans. He notes the Calumet, Navajo, and Apache symbols that decorate the movie's Overlook Hotel, and writes of the wave of blood from the elevator: "The blood squeezes out in spite of the fact that the red doors are kept firmly shut within their surrounding Indian artwork embellished frames. We never hear the rushing blood. It is a mute nightmare. It is the blood upon which this nation, like most nations, was built, as was the Overlook Hotel." (Bill Blakemore, "Kubrick's 'Shining' Secret: Film's Hidden Horror Is the Murder of the Indian," *The Washington Post* (July 12, 1987).) Kubrick marketed the film in Europe, after its success in America, with the line: "The wave of terror which swept across America." Blakemore wonders whether Kubrick, famous for superimposing multiple meanings in his films, meant this line not in reference to a surge of 1980 movie-going freak-outs among the American populace, but rather as an allusion to the historical waves of violence that washed across the Americas as Europeans slaughtered native peoples.

4 Thomas Wright, *William Harvey: A Life in Circulation*. Oxford: Oxford University Press, 2012.

5 Charles Davenant, "Discourses on the Public Revenue and on the Trade of England (1698)," in *The Political and Commercial Works of that Celebrated Writer Charles Davenant, Collected and Revised by Sir Charles Whitworth*, vol. 1. London: no publisher, 1771, p. 350.

6 Claude Julien, "The Enigma of Mayer Waves: Facts and Models," *Cardiovascular Research*, vol. 70, no. 1 (2006), pp. 12–21.

7 See Gérard M. London and Alain P. Guérin, "Influence of Arterial Pulse and Reflected Waves on Blood Pressure and Cardiac Function," *American Heart Journal*, vol. 138, no. 3, part 2 (1999), pp. 220–4; and Emmanouil Karatzis et al., "Acute Effects of Caffeine on Blood Pressure and Wave Reflections in Healthy Subjects: Should We Consider Monitoring Central Blood Pressure?," *International Journal of Cardiology*, vol. 98, no. 3 (2005), pp. 425–30.

web page full of EKG profiles are individual biographies, biographies structured by the politics of who has heart problems, who has insurance, who gets an ICD, and more (in 2007, the *Journal of the American Medical Association* reported that “black women were 44% less likely to get an ICD than were white men; white women were 38% less likely to get an ICD than white men, and black men were 27% less likely to get an ICD than white men”<sup>8</sup>). Far from tracking the “primordial wave” moving from the ancient earthly ocean into today’s human bodies, these collections of EKG waves track a bloodscape of difference, of health disparities and inequalities, perhaps markers of public health crises and slow, structural violence. Like data about wave heights and profiles gathered by ocean buoys around the world—data transmitted to shoreside computers to put together a picture of global ocean weather—this information about cardiac waves maps out a sea of difference, an ocean of blood burbling inside people and populations with different life chances.<sup>9</sup>

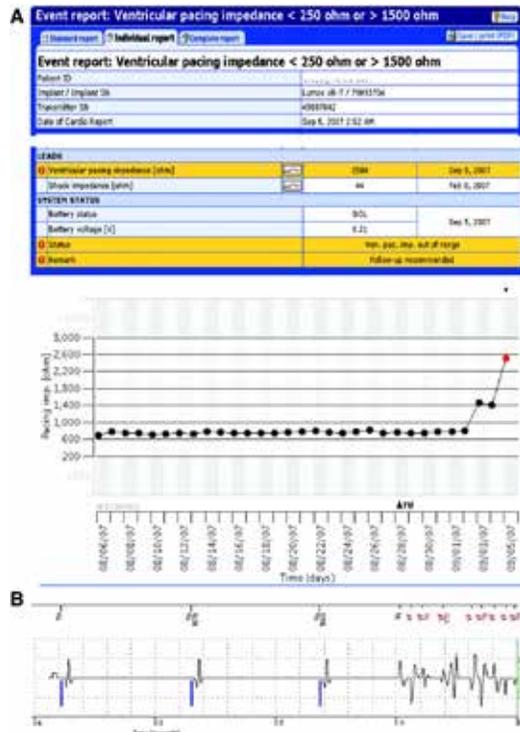


Figure 2 “HM patient’s web page shows flagged event notification—indicating a lead impedance alert (red exclamation mark on yellow background [sic])”  
Source: N. Varma et al., “Automatic Remote Monitoring of Implantable Cardioverter-Defibrillator Lead and Generator Performance,” *Circulation: Arrhythmia and Electrophysiology*, vol. 3, no. 5 (2010), pp. 428–36.

The crash that carries Calvino’s Qfwfq from the salty insides of a human body to spilled crimson over the metal of a crumpled Volkswagen is, as Calvino writes at the story’s end, “a number in the statistics of accidents over the weekend.” Qfwfq, then, may be imagined as less of a singular figure than as a number, perhaps a data point in a wave of bloody car accidents, a wave consequent on such historical forms as speed limits, seat belts, blood-alcohol levels, and more. Reckoning with *blood sea* as a substance requires us to account for the forms that blood waves take, forms less primordial than historical, more social than primal.

Stefan Helmreich: Blood, Waves

- 8 “This is true even when the researchers compared people with the same medical conditions, the same age, and the same insurance coverage”; Daniel J. DeNoon, “ICD Gap for Women, African-Americans,” WebMD (posted October 2, 2007) accessed June 2, 2014, [webmd.com/heart-disease/news/20071002/icd-gap-for-women-and-african-americans](http://webmd.com/heart-disease/news/20071002/icd-gap-for-women-and-african-americans). Summarizing results in Lesley H. Curtis et al., “Sex Differences in the Use of Implantable Cardioverter-Defibrillators for Primary and Secondary Prevention of Sudden Cardiac Death,” *Journal of the American Medical Association*, vol. 298, no. 13 (2007), pp. 1517–24; and Adrian Hernandez et al., “Sex and Racial Differences in the Use of Implantable Cardioverter-Defibrillators among Patients Hospitalized with Heart Failure,” *Journal of the American Medical Association*, vol. 298, no. 13 (2007), pp. 1525–32.
- 9 There are so many other kinds of oceans of blood crying out for attention, and I cannot survey them all here. Blood banks. The Tuskegee syphilis experiment. The spilled blood of battlefields and seas. The blood of animals, too. Consider the slaughter of marine animals, as so viscerally portrayed in films such as *The Cove* (directed by Louie Psihoyos for Lionsgate/Roadside Attractions, 2009), which documents the bloody slaughter of dolphins in Taiji, Wakayama Prefecture, Japan, killings that turn the sea red.