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Lightning and Series – Event and Thunder

Friedrich Kittler

Editors' Notes

THIS DIFFICULT text – a lecture first published in 1993 as *Blitz und Serie – Ereignis und Donner* – opens with a striking declaration: ‘As temporal beings nothing is denied more to us than to know time.’ By way of response, Kittler explores the interplay and separation of being, time and technology in three historical settings: Greek, early modern and modern. Kittler observes that, for the Greeks, the force of events was seen to be outside of human control. For this reason, he sees the event as the supreme god of ancient Greek culture: a god who ‘does not announce himself’, ‘who vanishes before we perceive him’, and before whom ‘we mortals vanish’, as embodied by Zeus who appears in, and as, a flash of lightning. This changed dramatically, however, with the onset of the early modern period, and particularly with the emergence of new technologies of communication (the printing press) and warfare (the cannon). Such technologies ushered in a new culture in which events were seen to be the outcome of new, heightened human powers. Kittler explains: ‘No Greek ever presumed to command lightning. In early modern canons, however, Zeus returns to earth. By virtue of technology humans become gods.’ It is in no small measure due to increased capabilities of time measurement that, for Kittler, the West started to view itself as an event, and at the same time learned ‘to surpass the Greeks’. This process (which to a certain extent may be labelled enlightenment, though this is a term Kittler remains hostile to) is, however, double-edged, not least because it comes by ‘virtue’ of technology. For while in the early modern period, humans assumed a new position of centrality, two ‘parallel’ events maintained a separation of being and time that continued to elude human control. The first, which Kittler sees as being ‘infinitely short’, involves a new dependence of sensory beings on technology, especially insofar as it enables ‘access to times that are beyond human thresholds of perception’. The second, an infinitely long event, concerns cultural transformation through the ‘continuum of historical time’, which is often brought about by the lightning strike of a new technology, the thunder or effects of which rumble on for many generations. This, in turn, feeds into Kittler’s analysis of what he calls ‘modern times’. In such times – the era of computational technology – machines rather than humans take on god-like qualities. Kittler gives the example of new technologies for measuring frequencies: ‘When we measure frequencies we are on the other side of death, in an immortality that has replaced

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the old gods . . . Of course it is not we who drift into that Olympian frequency domain, but our computers and measuring devices.’ In such a world, thunder and lightning are no longer experienced simply as events, rather, they can be predicted and simulated by machines. This gives rise to the possibility of a new, ‘third kind’ of event that is the product of the ‘computer link-up’. It also gives rise to a new meshing of bodies and machines because of the limitations of the former (particularly in so far as they ‘restrict us to a limited spectrum in the immeasurable range of frequencies’). For this reason, Kittler echoes Heidegger in seeing technology not as something that separates subjects from objects (the Cartesian view), but instead ‘as a supreme danger that yokes together humans and things’.

Lightning and Series – Event and Thunder

Ladies and Gentlemen,

It is the duty of thought to return the tragic to a culture that has lost it. This was written many years ago in a subsequently suppressed preface to a *History of Insanity in the Age of Reason* (see Foucault, 1988: xii). In my experience, both this loss and this duty apply especially to graduate colloquia of so-called experience societies.¹

1. The Greeks

As temporal beings nothing is denied more to us than to know time. When have you read your sources often enough to have a firm grasp on them? On the other hand, when are you finally going to hand in your dissertation? The answer, as you well know, is blowing in the wind.

I therefore want to propose a detour that will take us from the lightning and thunder of the Greeks to the events and series of today. Some may recall that in 1970 Michel Foucault transferred the word-pair ‘event and series’ from his beloved serial music to the contentious debate on how history and time could be conceptualized in a different way. Jean Barranqué and Pierre Boulez, he hoped, might be able to disabuse Jean-Paul Sartre, Jürgen Habermas *e tutti quanti* (see Eribon, 1991: 65–8; Foucault, 1972: 230). Others may have encountered, as I did, a sentence that Martin Heidegger threw into his 1966/67 seminar on Heraclitus: ‘I remember an afternoon during my journey in Aegina. Suddenly I saw a single bolt of lightning, after which no more followed. My thought was: Zeus’ (Heidegger and Fink, 1979: 5).

It may help to know that Aegina, the pirate island off Athens, is a single mountain rising out of the deep blue sea, crowned by a temple and immersed in the scent of pines. When we stood on its peak, the sky was blue; Heidegger experienced a single flash. The explanation may be that there are no surrounding valleys to break and multiply the lightning thrust. An electrical charge of ten thousand amperes out of the clouds cleaves the air, flashes for one thousandth of a second and is gone before its light and sound reach our brain. The time it takes to travel through the nerve passages of our dull flesh is one thing, the lightning discharge in open air is something altogether different. We dwell in stories and histories in order not to feel the lightning’s short circuit. What connects heaven and earth is aslant to all knowledge.

We may assume, therefore, that the supreme god of the Greeks was the event. In his presence we mortals vanish as did Semele and so many others. The god does not announce himself, and he vanishes before we perceive him. That is the reason for his thunder. The event is followed by the series in the valleys with echoes resounding off the slopes, dull and increasingly weak, and lightning upon lightning strikes until everything has been gathered into a storm. It is one and the same lightning that rolls out in many thunders, but enriched by the knowledge of all the earth's mountains and valleys that rumble in response. At least that is how one of the latest mathematical concepts, spectral geometry, hopes to work its way back from the many to the one.

Thus we may assume: it is not until the thunder that the god is present.² Which is why Pegasus, the horse, 'left the earth, the mother of flocks, and came to the immortals', bringing 'thunder and lightning for Zeus the resourceful' (Hesiod, 1988: 11). Only that which returns discloses itself. Recognition itself needs time and returns to its echoes. 'The Realm of the God of Thunder' was the name of the oldest Indo-European kingdom that for over 37 centuries has been preserved on stone tablets: the Empire of Hattusa. And it was with this very God, or with one of his repetitions, that the Greeks invaded the Home of the Great Mother from the North. Lightning steers the universe, Heraclitus wrote (Freeman, 1957: 29), but the goal of thunder and its reverberations, Pythagoras continued, is to threaten those in Hell (Aristotle, 1975: 66–7). Only these reverberations can be heard and pondered.

Following these early horrors revealed by thunder and lightning, the Greeks stuck to measuring that which is agreeable to our ears. Using taut catguts, Pythagoras's hearers – as his first students in Greater Greece, today's Lower Italy, were called – invented three beautiful harmonies: octave, fifth, and fourth. As long as the chord is vibrating, it sings to Odysseus 'like the beautiful trill of a swallow' (Homer, 2004: 315), but it is a precisely measured stretch or length of the plucked string that produces the sound.

When Odysseus tightens his old bow and plucks the string in the middle, it may sing like a swallow or a lyre, yet it remains a weapon that on that same night will kill a hundred false suitors. If his one hand were to hold the bowstring in the middle, and his other hand were to pluck the middle of this middle, the outsize bow would produce an octave.

Thus Greek eyes (and nobody else's) placed the time of sound into space and with the help of lyres or bows – which, according to Heraclitus, are one and the same – gained a first measure they called canon, which in Assyrian was simply a word for reed or cane (Burkert, 1992: 38). But what is taking measure of itself in the night of being?

2. Early Modern Time

Cannon, the hollow tube of death, is derived from the same word as canon. In persistently mystifying ways Europe was not able to confront the Greeks

until it had invented or imported (all at the same time, incidentally) three incendiary devices: gunpowder, zero, and distilled firewater. Ever since the days when François Rabelais had Gargantua write an elegantly humanistic letter to his son Pantagruel, student at the Sorbonne, the cannon has been referred to as a invention that came about by ‘diabolical suggestion’ (Rabelais, 1990: 158), separating our time from that of the Ancient Greeks in the same way as the divine gift of the printing press. The flash from firearms is no more than a bolt of lightning; the thousand Bibles that go to print in Gutenberg’s Mainz are the endless return of the one word *word*, that the Greeks, and evangelists pretending to be Greek, had heard in the beginning: *ho lógos*. In his attempt to prove that science and technology are capable of infinite improvement, Francis Bacon’s most striking example is firearms. The ancients, Bacon wrote in 1605 in *De augmentis*, had erroneously separated a nature commanded by gods from human art, which like an ape was said to be a mere imitator and incapable of reproducing nature in all its power. No Greek ever presumed to command lightning. In early modern cannons, however, Zeus returns to earth (see Rossi, 2001: 128). By virtue of technology, humans become gods.

Two parallel events are at work here, one infinitely short and the other infinitely long. One concerns the access to times that are beyond human thresholds of perception: a recently invented lightning crafted by human art. The other is a clear cut, a shot, as it were, through the continuum of historical time. The centuries do not simply roll on, generations no longer follow each other as they did from the fall of Troy to the ascent of imperial German or royal French dynasties; rather, all that has happened is divided into two separate beginnings and their long aftershocks. Thanks to firearms and printing presses, the West starts to view itself as historical, as an event; and using them as a great example, it learns to surpass the Greeks. Technology is the space in which the innovations can proceed without finding a hold in nature. For Aristotle, ‘man begets man’ (1994: 10), but ever since Bacon an ever-new technology replaces good old *teknopoíia*: the Greek ‘begetting of children’ (Xenophon, 2002: 65). On this exponential function of continuous accretion, to refer to Leonhard Euler’s mathematical studies on ballistics, we continue to ride *Gravity’s Rainbow* forever: from the catapult to the cannon to the rocket, until the lightning out of clear skies destroyed the first city. Hiroshima – 67 billionth of a second, the duration of a uranium explosion.

And it is also in this space that music changes its character. It no longer obeys the canon, the Greek measure of length, but truly the cannon, this murderous temporal event. Just as the bow of the hero repeated the lyre of the bard who sang the former’s praise, modern music retrieves the cannon that facilitated its acoustic measurement in the first place.

In 1628, Cardinal Richelieu, Louis XIII’s all-powerful minister, sent a Catholic army to La Rochelle, the last fortified Huguenot port north of Bordeaux. Then, as now, waves and frequencies reached the shore: *la mer, la mer*, you know, *toujours recommencée*.³ But, on 28 October, La Rochelle

was taken and all the power over France now rested with Richelieu in Paris. The *lógos* of Greece degenerated into the *raison d'état* which, in turn, became the *ultima ratio regum*: the cannon.

But there, in front of the fortress walls on the shores of the Atlantic, stood a nameless captain in the king's service who was cold-blooded enough to measure his pulse whenever he saw a Huguenot muzzle flash. He counted until the roar of guns hit his ears, noted the number of pulse beats, and then divided it by the distance that separated him from the life-threatening cannons. He then entrusted the number salad to a messenger who took it to the Minim monastery in Paris, where Father Marin Mersenne took it upon himself to empirically verify his philosopher friend, René Descartes. A simple beat such as lightning produced mere noise; but many consecutive beats in one measure would result in music (Descartes, 1953: 917). Mersenne, the pious practitioner of precise experiments, concluded that God's light reaches our eyes with infinite velocity – nobody had yet thought of the speed of light – while sound traverses air at a measurably slower pace. Thus, it was established that the 330 meters traveled by sound correspond to one second, or that one meter equals three thousandths of a second.

For the next experiment, which was conducted during target practice rather than in open combat, Mersenne focused on the problem of pitch. On his signal a cannon and a musket fired simultaneously, but the dull roar of the former and the sharp crack of the latter reached his ears at the same time. The ancient Pythagorean teaching that high strong tones travel faster through air than dull weak ones was refuted (Freeman, 1957: 79).

Finally, Mersenne approached the third, conclusive experiment. Just as his friend Descartes experimented with a simulated giant raindrop, Mersenne stretched out a couple of oversized, musically useless strings between two walls, took hold of his pulse and started counting. The time of the heart came into force but only in order to measure the tones' frequencies – *frequentia*, the return, the repetition, the up and down of waves in an imperceptibly short time. Unlike Mersenne's long and soundlessly dull strings, the standard pitch, to which all current instruments defer, performs 440 vibrations per second. This and nothing else is beauty to our ears. What men and women have been able to do for a hundred thousand years – to vibrate in unison – becomes music.

Thus, the lethal time of cannon fire established a new measure of beautiful time, a time in which something remains or returns rather than vanishing into nothingness like stars or history. In 1370, Apollo himself, 'accompanied by the Muses and Sciences' (Oresme, 1971: 285), revealed to a bishop of Lisieux that no planet follows the orbit of any other. This was the strange time which we lived in until Alan Turing. Periodicities are the great exceptions of a universe that is no longer, as it was to the Greeks, *kósmos* or order. Which is why, ever since Gesualdo, music has become all the more sacred.⁴ His wife may have committed adultery, and the prince, who had her and her lover killed, became a composer of polyphonic music. On islands that succumb to as well as defy the death drive of engineers,

return itself returns thanks to metallic instruments. As long as a turntable is spinning or a CD is running, an old magic emerges despite the fading of years, hair and strength. Time stops, what more do hearts want?

‘Music,’ the old Leibniz wrote in 1714 to Prince Eugen in Vienna,

music enchants us although its beauty consists of nothing but ratios between numbers and a counting that we are not conscious of though the soul cannot refrain from doing so: beats or vibrations of sounding bodies that meet at specific intervals. (Leibniz, 1985: I: 436)

In an even more concise Latin letter that Leibniz wrote in the very same year to the young mathematician Christian Goldbach, music is referred to as the *exercitium arithmeticae occultum nescientis se numerare animi* – ‘an unconscious exercise in arithmetic in which the mind does not know it is counting’ (Leibniz, quoted in Schopenhauer, 1958: 256). Thus Mersenne’s experiment with the huge vibrating strings migrates, experimentally or philosophically, into the soul itself, where it mutates into a tiny dark counting apparatus of tiny but all the more rapid vibrations. The soul itself no longer takes its measure from the length of strings, as it did with the Greeks; in order to teach it the new measure called frequency, Leibniz equips it with a subconscious that is able to perform the mathematical analysis of infinitely small quantities. ‘*Dum DEUS calculat et cogitationem exercet fit mundus*’ (Leibniz, 1985: IV: 30), while God is calculating events and differentials, the world becomes an integral of all the entities that subconsciously mirror each other. Bach’s *Art of the Fugue* as calculus.

This is so beautiful that even clockmakers go along with it. Leibniz was not coincidentally a long-time friend of Christian Huygens, the mathematician of the pendulum clock. First, Huygens taught Leibniz analytic geometry, then Leibniz taught Huygens calculus. Even if we are unable to count along when violin frequencies ascend into the highest heaven, we can at least wear watches equipped with second hands where Mersenne still had to take his pulse. Luminous dial on his left, carbine in his right: that is how Ernst Jünger stood on a cold early morning in March 1918 in his ‘Storms of Steel’. The Ludendorff Offensive meant that all the troops lined up for attack would not be able to see the deadly missiles of their own artillery, but that they would be able to discern each individual weapon in the roar of guns. Thus, our technology has learned from our music and we learn from our technology. The marvelous ability of drivers to react in split seconds did not come out of nowhere. It is a mobilization that since the days of Franz Liszt steadily accelerates fingers on keyboards and since the First World War steadily shortens reaction times. Ever since the Olympic Games have roamed the planet like a giant circus fair and no longer tarry in the sacred grove of Elis, every hundred meter dash is run against the stopwatch and is thus already lost. No longer are there champions like Orsippus, who won the race at Olympia by dropping his girdle (Pausanias, 1965: 67). Our athletes are not celebrated by marble statues but by single-frame exposures

(Bergson, 1923: 268), whose 24 pictures per second transfer modern music's notion of frequency into optics. Mersenne was already enthused by the fact that a piece of coal attached to a thread and spun around its axis paints a red circle in the dark (Mersenne, 1975: 270). Despite increasing acceleration, rest settles in once again. We perceive a standing image that perpetuates the frequencies themselves, and only a slight flickering reveals that it came about in Leibniz's subconscious empire.

3. Modern Times

In honour of this transition, mathematicians and information technicians since Joseph Baron Fourier, departmental prefect under Napoleon, have created a new realm: the frequency domain. Thanks to the Fourier analysis, everything that is going on can be transferred into the frequency domain and back into irreversible hard time. While the Fourier series can handle beautiful harmonics such as those emitted by a violin string, complex sounds like gongs or chimes, which in Christian times marked time itself, demand Fourier integrals in order to write down their sound events in the shape of innumerable frequencies. Analysis and synthesis in the frequency domain therefore are windows that depict the changing world in standing waves. When it comes to living and dying, we are still left with their opposite, the domain of time, but, when it comes to measuring and calculating, anything that displays some kind of recurrence or periodicity moves into the frequency domain.

Take an earthquake like the one in Kobe with thousands of casualties, seismographically record its inaudible slow vibrations, replay the signals of the entire horrific day in 10 seconds – and a sound will emerge. In the case of earthquakes that, like those in the Pacific, result from the clash of two tectonic plates, the sound will resemble a high-pitched slap, in the case of those that, like those in the Atlantic, are the result of the drifting apart of two continental plates, it will, conversely, sound like a soft sigh. Thus, the spectrum, that is, a frequency composition, gives the violent events timbre or quality: America becomes Asia. A short time ago I was privileged to hear the timbre of such quakes and I will not forget it for the rest of my life.

When we measure frequencies, we are on the other side of death, in an immortality that has replaced the old gods. 'The works of Gods may die,' Sophocles said, 'but not the gods' (Plutarch, 1971: 43). Of course, it is not we who drift into that Olympian frequency domain, but our computers and measuring devices, which is why we inhabit the very first culture that up to a point is able to predict thunder and lightning, though not yet earthquakes. Without weather reports – that is, without computer simulations – no leisure activities, without leisure activities, no experience society. So whenever it is summer, give thanks to our computers. The Greeks read their future from the flight of the swallows, the Etruscans from the livers of their sacrificial animals: but Zeus and his messengers were highly unreliable. Only in the darkness of his will or his clouds did he remain the supreme god. And this,

I believe, is the reason why the Greeks were unable to think how pure thatness could be united with whatness (see Heidegger, 1973: 1–10).

Without computer support, ontology and aesthetics remain insoluble questions. *Hyle* and *eidōs*, existential and essential, event and being – ever since Plato, philosophy has erected and traversed this single opposition. Even Descartes silenced his doubts with the beautiful, yet empty formula that God's existence follows from the supreme perfection of God's essence. It was only Pascal who realized in his fateful night that God is not the 'God of philosophers'. But even his reminder, a parchment note, had to be sewn into his jacket, in order to be at hand whenever he was beset by religious doubts. Hence the immemorial event of 'Thursday, the 23rd of January in the Year of Grace 1654' (Pascal, 1954: 553f.) continues to depend on its frequencies. Gods are cruel and never reveal when they are approaching, which is why Pascal was so petrified by the silence of the eternal spaces between the stars. Just as modern microscopes have done to sperm, modern telescopes have locked the stars into predictable paths and thus, in Lacan's words, succeeded 'in getting them to shut up' (1988: 238). If today gigantic computer link-ups are searching the skies night and day for electric signals, they are neither pursuing the sheer white noise in the background nor the predictable periodicities of double-stars in the foreground of this truly Pascalian spectrum. Rather, they are looking for a third kind of event. If they were to hit upon a star emitting a fixed frequency in a non-fixed way, then and only then will our computer link-up be tracing a twin intelligence in space. But the time has not yet come, the heavens continue their silent noise, but yet we know what to look for.

For obviously, to speak with Heralitus, *logōs* is the one that has to be read with the many in mind. The many correspond to the fixed frequencies, which that astral god is permutating just like his letters, the one corresponds to the message that in the middle of these ongoing changes suddenly appears like lightning. But as Claude Shannon demonstrated with mathematical rigor, the measure of the one is our degree of surprise. That something is and what something is no longer constitute opposites but a quantifiable relationship between regularity and improbability, law and arbitrariness. For instance, we can tell down to several decimal points how much information, or how much superabundance, is packed into simple German sentences. If I were to speak with angelic tongues to your perfect ears, one quarter of my sounds could be eliminated without jeopardizing a single thought. That is how redundant, or rather accommodating, the German language is as long as it is not compressed into tight structures by Hölderlin.

Over the course of three millennia, mathematics, as it once arose from Greek language and music, has learned to measure language itself, regardless of whether it is emitted by men, machines, or milky ways. The time of the event and the law of the series are intertwined, lightning and the eternal rumble of thunder only two extremes that can both almost be wired. In the mountain valleys of Greece, every thunderstorm once came to an end; no reverberation on earth returns louder than its source. Ovid's

nymph Echo, with ‘only her voice and bones left’ (Ovid, 1986: 63), is witness to this. But ever since there have been electric amplifiers, tubes, transistors, and so on, amplifications of the original signal are no longer a problem. ‘Cosmic echoes’ was the name the Beatles (or rather their sound engineers) gave to reverberation times of more than 10 seconds. Jimi Hendrix only needed to hold his electric guitar as close as possible to his good old nonlinear Marshall amplifier until guitar and amplifier exploded in an endless rumble of thunder. Just as an aside we should note that the sound emanating from plucked Greek lyres never lasted as long as that from our violins.

On the other hand, for the last eight centuries muzzle flashes have been proclaiming that lightning bolts of infinitely short duration are – almost – doable. Strangely enough, there are signals that exist in all mathematical purity, such as on the one hand the sinus tones that have lasted for eternities and that will continue to sound for eternities, and on the other hand signals like the Dirac Impulse, whose large but finite energy discharges itself in an infinitely short time. Between these two extremes our life is made up, in the words of Sophocles, of ‘mere phantoms, shadows of nothing’ (1953: 22). For the boundaries, to speak with Dietmar Kamper, are a crux, a cross, or, in more mathematical terms: a dilemma.

In order to know what something is, we need time to recognize it, thus we always miss when it happened; if, conversely, we want to know when something happens, there is no time left to say what it was. Either we don’t know when something was, or we don’t know what was what. Before a deep organ tone can turn into an event, many high trebles have already been recognized. If our ears could descend into the vibrations caused by sea and earthquakes, we could hear them approach. If, on the other hand, our eyes could ascend the scale and reach those frequencies that produce colors we could play with light as we do with tones, that is, with lightning as we do with thunder. But just as the gods confined us to finite lives in the temporal domain, our bodies restrict us to a limited spectrum in the immeasurable range of frequencies. We are completely dependent on quantities that enable our filters (eyes, ears, and so on) to tell the difference between quantity and quality.

‘Everything for which only the term “cognition” makes sense refers to the domain of counting, weighing, measuring, that is, to quantity’, Nietzsche (1974) wrote at the very end. He therefore proposed to eliminate the phrase ‘I think something’ (*Ich denke etwas*) from philosophy, since in a roughly Heraclitean manner the phrase ‘there is lightning’ (*es blitzt*) describes matters in a far more precise fashion. Dennis Gabor, who like Claude Shannon drew the mathematical consequences of the Second World War in the shape of information theory, went a step further. The dilemma not only applies to the animal and human senses but to everything that can be technically constructed: emitters, filters, receivers, civil and military radio, analog media and digital computers. Enemy agents who shrink down thousands of typed pages to the size of a single period, or who in one millisecond send entire recordings back to their headquarters, know what

they are doing. That is how clairaudient an event called the world war has made us.

Hence Heidegger proclaimed that technology is no longer a world-view that, as Descartes would have it, separates subjects from objects, but a supreme danger that yokes together humans and things. Hence Gabor retrieved Heisenberg's uncertainty principle that describes the relationship between the spin and location of elementary particles (*stoicheia* in Greek) and applied exactly the same elegant formula to the relationship between event and frequency. Using Leibniz's notations, let there be an error of measurement in the time domain dt and one in the frequency domain df , and (*nota bene*) $f = 1/t$, then, according to Gabor, $df * dt = \frac{1}{2}$. Or, to use more simple-minded signs: the measuring inaccuracy remains constant no matter what we do. Either we apprehend the agent or his message, but never both at once. Every possible choice between being and time comes at the cost of knowledge. Therefore, however I may die, the 'strange things' and all that I have seen, 'is God' (Sophocles, 1953: 206).

But I had better break off before you start checking your watches because I am saying the same over and over again. As you know, watches are by their very form periodic entities, with two small hands circling a dial. Not so the truth. Heidegger conducted his last seminar – the one on the lightning over Aegina and Heraclitus in the dark – in the winter semester 1966/67 at the University of Freiburg, where next door people like me had to make do with inferior thinkers. The minutes record the end of the fifth session that apparently went slightly over time: 'Heidegger: . . . I look at my watch and find that it is three minutes before 7 P.M. Where is the time there? Try and find it' (Heidegger and Fink, 1979: 60).

(Translated from the German: Geoffrey Winthrop-Young)

Translator's Notes

1. This article was originally presented to an audience composed primarily of graduate students. The term 'experience society' is a reference to Gerhard Schulze's well-known sociological study *Die Erlebnisgesellschaft*. The Preface to the English translation of Foucault's *Madness and Civilization* is (much like the main body of the text) considerably shorter than the German translation and only very briefly touches upon the concept of the tragic.
2. The original German reads *der Gott west erst im Donner an* – a clearly Heideggerian expression that cannot be rendered adequately into English.
3. A line from Paul Valéry's poem, *Le Cimetière Marin* ('The Graveyard by the Sea').
4. A reference to Carlo Gesualdo, Prince of Venosa (c. 1561–1613), a composer of devotional works and chromatically highly complex and advanced madrigals, who in 1590 surprised his wife with her lover and had them both killed.

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