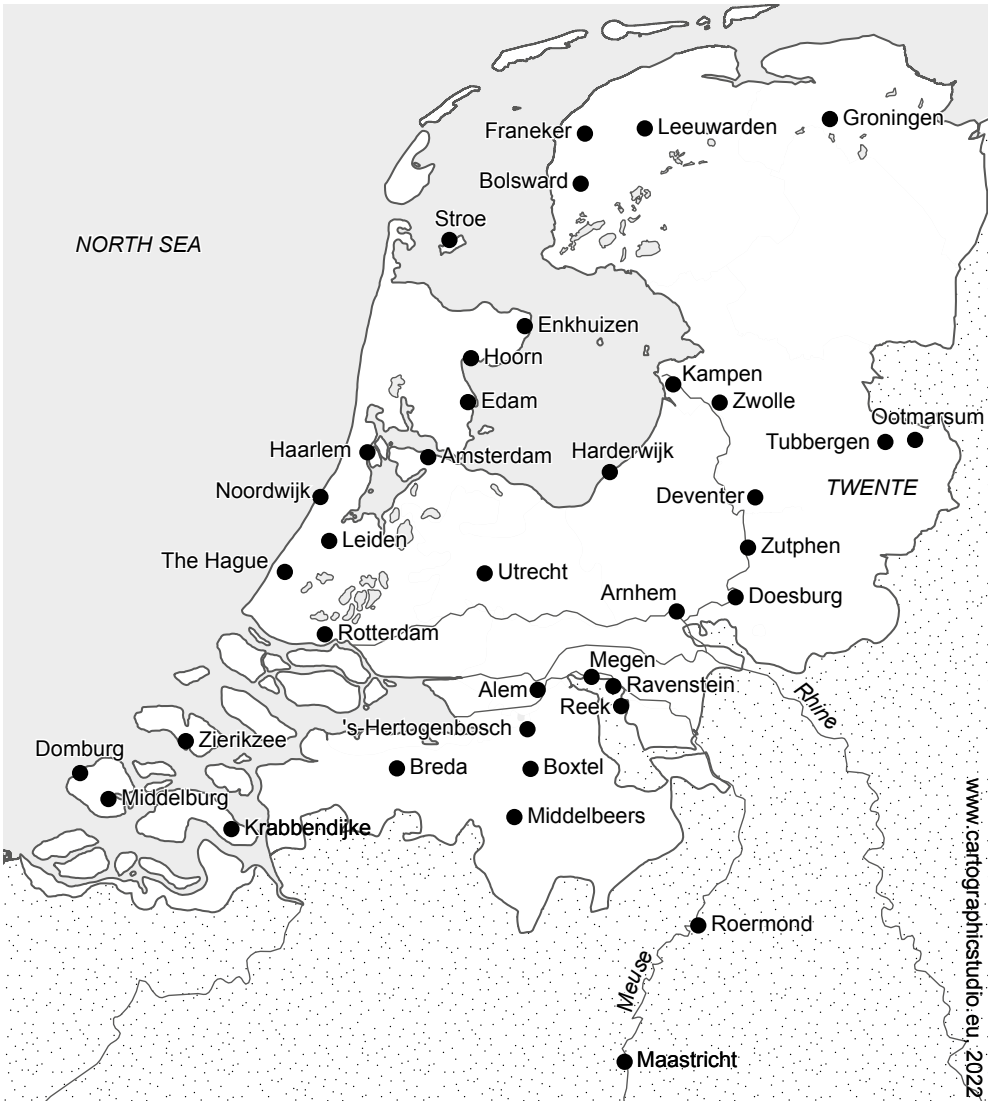
Introduction: Lightning after Franklin

The invention of the lightning rod by Benjamin Franklin (1706-1790) was one of the first major scientific and technological contributions (with cultural and philosophical significance) to transfer from the Americas to Europe, rather than the other way round. This book broadly describes its European reception. And while the focus is on reactions in the Netherlands, it relates those to American, German, French, and British developments. More importantly, the responses to the invention of the lightning rod are used here as a window on cultural developments, among them the reception of science and technology, but also the diverse variants of religious life, from the traditional to the esoteric, and the experience of nature in the context of the Enlightenment and Romanticism. The result is an intriguing combination or rather a reconnection of such relatively dissimilar scientific disciplines as meteorology, disaster research, and the study of religious and cultural mentalities. In short, this book traces both the physical and creative thunderstorms that reverberated in the Western consciousness during the second half of the eighteenth century and the first decades of the nineteenth.

The history of the Low Countries is one of a millennia-long battle against the elements, particularly water. From the west, the North Sea posed a constant threat; from the east, the great rivers Rhine and Meuse all too often flooded the land. Between 1568 and 1648, man-made disasters were added to natural ones as the Netherlands fought an eighty-year-long war of independence from Spain. Only with the signing of the Peace of Westphalia in 1648 was the Republic of the Seven United Netherlands, commonly referred to as the Dutch Republic, formally recognised as a sovereign state. It was the political culmination of the Dutch Golden Age. It also made permanent the position of the Reformed Church as a privileged denomination. Calvinists predominated, but they were by no means the only Protestants. Lutherans, Mennonites, and Remonstrants formed a significant and often very culturally active minority, despite being treated as second-class citizens. And while taken as a whole these congregations resulted in a population that was for the most part Protestant, a sizeable Roman Catholic minority still remained – albeit subject to discrimination. However much the economic and political position of the Dutch Republic may have declined in the course of the eighteenth century, there was little change in the diverse nature of its religious landscape. That diversity will also be apparent when we look at the way in which, in the second half of the eighteenth and the early nineteenth centuries, pious folk of all kinds reacted to the challenges of nature, especially thunder and lightning.



▲ Map of the Netherlands

Strikingly, those reactions were by no means always fearful. After all, the Dutch Republic was far from being a cultural backwater; it boasted a vibrant scholarly community, a comparatively tolerant spiritual milieu, and a lively press. In that confident climate, enlightened inquiry and fascination with the wonders of nature soon overcame any lingering superstitious dread, as is well illustrated by the reaction of a Calvinist minister, Johannes Florentius Martinet (1729-1795), who hailed from Zutphen in the east of the Republic, to a thunderstorm. "In all nature," he wrote in 1778, "no phenomenon is more striking to the eye, awesome to the ear, tremendous to the senses and useful to the world."[1] Moreover, he continued in lyrical vein, if a storm should arise while he was working, "I throw everything aside in order to hear and see it (...). Did not the holy poet also listen to it when he sang 'The God of Glory thunders' (Ps. 29:3), or were we not supposed to notice it? I never hear it and see it without feeling great reverence, deep amazement, and humble delight, devoid of foolish fear; unless it is very violent, and this blessing is turned into a judgment."[2]

◀ Portrait of Joannes Florentius Martinet, by Reinier Vinkeles, 1778

Martinet's liking for thunderstorms was not just a personal idiosyncrasy. His younger contemporary, the prolific man of letters Willem Emmery de Perponcher (1741-1819), was equally enthusiastic. Indeed, his biographer called the thunderstorm "an eminently Perponcherian theme",[3] though that overly credits this now-forgotten author, for as we shall see below, thunderstorms enjoyed a good deal of popularity in the culture of the time, not only in burgeoning science but also religion and art. The subject would become all the rage, in fact, particularly in the last quarter of the eighteenth century,[4] no doubt because in the declensionist mindset of that period it provided an obvious metaphor – storm clouds signifying moral, economic, and political decay gathering menacingly over the Republic and culminating in a transfer of power by revolutionary France in 1795.[5] But we must draw the circle wider still, for not only thunder and lightning but meteorological phenomena per se enjoyed a growing degree of popularity in this period of emerging Romanticism, in the Netherlands as well as the rest of Europe.[6]

◀ Silhouette of Willem Emmery de Perponcher Sedlnitzky, by Casparis Haanen (1778-1849)

In the late spring of 1752 Benjamin Franklin invented the lightning rod, and interest in thunderstorms increased. Franklin, a self-taught polymath, was the first to prove what many scholars, including himself, had already suspected – that lightning was electrical in nature. Not content with theory, he put his invention to practical use, guiding the potentially destructive lightning via a simple metal wire to the ground, where it could do no harm. That same summer at his home in Philadelphia he installed the very first lightning rod, now no longer as an instrument of scientific research but a means of protecting the building from lightning strikes.[7] In the decades that followed, in the American colonies and Europe as well, especially at-risk edifices such as powder magazines, windmills, lighthouses, and church towers were fitted with lightning rods.

▲ Portrait of Benjamin Franklin, by Pierre Michel Alix, after Louis-Michel van Loo, 1793-1795

▲ The lightning rod installed by Franklin on the Philadelphia home of banker Benjamin West demonstrates its effectiveness during a thunderstorm in 1760, engraving, maker unknown

The long-term influence of the invention and introduction of the lightning rod, particularly among proponents of the Enlightenment, should certainly not be underestimated. Despite the initial scepticism among Franklin's contemporaries and the sometimes faulty installation of the rod, it was quite possibly the eighteenth century's most spectacular example of progress in controlling nature, a discovery with symbolic, even paradigmatic significance.[8] In retrospect that significance becomes all the greater when we consider that the lightning rod's lustre has faded simply because its utility now seems so self-evident.[9] But in the eighteenth century the fact that a natural phenomenon which had always been so unruly and unpredictable as the thunderstorm could apparently now be tamed must have been seen as a milestone. Enlightenment thinkers such as the German philosopher Immanuel Kant (1724-1804) described Franklin as a modern Prometheus, who had stolen fire from the gods.[10] And even though Kant's early characterisation might also have been meant as a caution against hubris – Prometheus was, after all, condemned to eternal punishment[11] – as time went by man's self-confidence certainly increased: more than sixty years later, for instance, the English poet Percy Bysshe Shelley (1792-1822), author of the lyrical drama *Prometheus Unbound* (1820), exulted that lightning was now man's slave.[12] Two years earlier his wife, Mary Shelley (1797-1851), had already gone a step further, likening her famous protagonist Victor

Frankenstein – who harnessed lightning, produced electricity, and with it created a sapient being – to a modern Prometheus.[13] Was it not the Titan Prometheus who in Greek mythology created man from clay? This opened up wide perspectives for those who had an eye for such things, for surely what man had accomplished in the matter of the lightning rod should be achievable in other areas too? In such fantasies of technological mastery there was, in other words, a certain suggestiveness that was not always easy to resist. Whatever the case, to enlightened minds it was obvious that a major step had been taken on the long path of progress. Moreover, Francis Bacon's (1561-1626) dictum that "we cannot command nature except by obeying her" had once again been proved valid: a conclusion that held great promise for the future.[14]

For others, however, this assertion was too bold. Conforming, consciously or not, to what would later become a somewhat caricatural Romantic perception of the Enlightenment,[15] they wondered – contemporaries as well as historians – whether the pursuit of a theoretical and above all practical control of nature had not made man so drunk with his own success that his sense of religious dependence was shaken. By examining the contemporary debate apropos the changing perception of the thunderstorm and its philosophical implications, we can therefore learn something about secularising trends in European culture in the late eighteenth and early nineteenth centuries. Some decades ago the German theologian Manfred Büttner even concluded that it was pre-eminently climatology – regarded by him as "the theory of weather events" – which in the eighteenth century "becomes the 'spokesman' in the discourse between theology and science."[16] And his fellow-countryman Richard van Dülmen also cited that same apparently insignificant phenomenon, the introduction of the lightning rod, as a striking example of the secularisation of everyday life.[17]

In Enlightenment eyes, what was being waged was nothing less than a war between "superstition" and "sensible" empirical knowledge. Considering the scarcity of sources documenting the views of lower social groups, earlier historiography has been rather too prone to giving literal credence to Enlightenment thought. Consequently, the lightning conductor has acted as a catalyst for an overly simple linear transition from "myth" to "science", resulting in a certain enlightened triumphalism.[18] Yet as we shall see, in reality the invention of the lightning rod – let alone its practical introduction – could hardly be described as an unqualified success. In the decades following its creation it was a constant topic of debate among scholars and it took a long time to become commonplace in society. Moreover, as mentioned briefly above, it was sometimes installed incorrectly and for quite some time its effectiveness in foiling lightning strikes was modest at best.

Enlightened minds, meanwhile, were not in the least daunted. As they perceived it only ignorance, superstition, and prejudice were to blame and they fought those enemies with total conviction and unwavering dedication. Was it not that very phenomenon, the

thunderstorm, that throughout the ages had given rise to all kinds of magical fancies and irrational behaviours? In that respect the thunderstorm acted as such a point of crystallisation at the time that its study can still be used today as a conduit to understanding a number of interesting aspects of popular culture and how they were confronted and countered.

But the importance of such a study extends further still: it offers an insight into the eighteenth-century experience of nature and the ways in which that experience was then changing. Ever since Isaac Newton (1643-1727) had shown that the universe was arranged with order and system and could be understood by the human mind, the enlightened citizen could cast off fear and superstition. Indeed, with a sigh of relief or perhaps of "enlightenment" he could now more easily regard natural phenomena as so many proofs of the existence, goodness, and majesty of the providential God. The numerous adherents of that "physico-theology", a form of (mainly Protestant) natural theology that sought to comprehend the Creator from his creatures, basked in a harmonious universe. For those representatives of the Christian Enlightenment, the teaching from the book of nature was an instructive prelude to the teaching from the book of Revelation, which is to say the Bible. Moreover, the study of nature or the works of God was a source of knowledge and virtue, while also offering an excellent opportunity to counteract the influence of radically enlightened writings by all kinds of irreligious folk.

That old enlightened preference for uniformity, order, controllability, and computability had invariably led to a distaste for dramatic phenomena such as comets, volcanoes, gales, earthquakes, and thunderstorms. But Edmond Halley (1656-1742) had already discovered the periodicity in the appearance of his eponymous comet. And now yet another major step had been taken: since Franklin had shown by his invention of the lightning rod – the ultimate enlightened triumph – that even "wild" nature could be tamed by technology, that utterly uncontrollable natural phenomenon had been allotted a neatly defined place in the harmoniously enlightened universe. The German physicist Georg Christoph Lichtenberg (1742-1799) strikingly referred to Franklin's invention as a *Furchtableiter* – literally a "fear diverter".[19] That process had consequences not only in religious but also aesthetic terms, since there was now less reason for that distaste. Indeed, in the eyes of the cultural elite, fierce natural phenomena now fell into the aesthetic category of the sublime, and in that guise became the cynosure of artistic fascination. For in a broader sense it is not going too far to suggest that man's newly-gained (relative) mastery of lightning created the necessary precondition for being able to revel in incalculable, majestic nature. Precisely because lightning was not necessarily dangerous any longer – nay, had even become "an affair of man" to a certain extent,[20] – "sensitive" souls could afford to play with it in literature, music, and painting. As Johan Huizinga (1872-1945) put it, there was a transition from a scientific-intellectual to an aesthetic approach to nature,[21] whereby the former approach was, in my view, a precondition for the latter.

◀ Portrait of Georg Christoph Lichtenberg, by Friedrich Wilhelm Bollinger, after a painting by Johann Ludwig Strecker, 1818-1832

Thus, many nervous inhibitions disappeared and, especially when they were replaced by a hidebound bourgeois self-satisfaction, there was plenty of room and reason for "sensitive" shuddering at nature's caprices as a kind of emotional compensation. Do we catch here, in this sort of Hegelian "sublation" of the weak spot of the Enlightenment, one of its pivots towards the Age of Romanticism? For it was precisely in this cultural period – to the whole of which another meteorological phenomenon has not coincidentally given the name *Sturm und Drang*[22] – literally "Storm and Stress" – that such expressions of the sublime received so much attention. It is not the least ambition of this study, therefore, to shed some light on the transition from Neoclassicism to Romanticism – a problem "generally acknowledged to be one of the most perplexing and difficult to account for in literary history."[23] The fact that the study of wild weather "can help us to calibrate the transition from Classic to Romantic" is therefore an important argument.[24] In other words, the study of the thunderstorm also has its importance in the history of aesthetics, particularly the sublime and the *Unheimliche* or "uncanny".[25] Both are dealt with at length in Chapter 7. For although it had been a while developing since the early eighteenth century, in a sense the new interest in nature in the second half of that century became a link between the Enlightenment and Romanticism, with the Romantics celebrating the discoveries that enlightened natural philosophers had made.[26]

The key theme of this book is the reception of the lightning rod in the various layers of society in the Netherlands and elsewhere in the eighteenth and early nineteenth cen-

tury. The subsequent and more specific aim, however, is to explore the changes which that invention brought about in the perception and interpretation of the thunderstorm in the broadest sense of the word. Ultimately, therefore, the focus is on the symbolic significance of both the lightning rod and the thunderstorm in the Western world.

This study has had the good fortune of being able to build on some pioneering works in the field. Foremost among those are *Playing with Fire, Histories of the Lightning Rod*, a collection of essays published in 2009 which are fundamental to the cultural history of the lightning rod, and the monograph by the German historian Oliver Hochadel, who published a broad study of the rod's introduction in Augsburg.[27] Even so, it is still the case that in the examination of changing perceptions of thunderstorms induced by the introduction of the lightning rod, literature, music, and painting are important but hitherto barely explored sources.[28]

If we broaden our artistic parameters, however, we find a splendid monograph on the reception of the lightning-bolt-hurling god of thunder in the history of poetry.[29] There are, moreover, several recent German, English, and French studies which establish an intriguing relationship between the more general theme of the burgeoning science of electricity – that enigmatic phenomenon which many scholars of the period could only describe through imagery and analogy – and developments in the cultural and particularly the literary field, though their authors are sometimes seemingly unaware of each other's research.[30] In Germany a compendium of literary meteorology was published recently, and in the US a magnificent study on severe weather and the theological reaction to it has appeared;[31] while in Paris a workshop on "Electricity and Imagination" held in 2012 led to a special issue of *Centaurus. Journal of the European Society for the History of Science, in* 2015.[32] Also highly relevant is the collection of essays on the cultural representation of climatic and meteorological phenomena, including thunderstorms, that was published a number of years ago in France, while a more recent English monograph offers a cultural history of volcanoes that is comparable in many ways.[33]

At this point, we come up against a curious paradox, however. For on the one hand it should be obvious that such a literary study must be multidisciplinary almost by definition, with the requisite data sometimes having to be gleaned from crumbling articles that have long been stashed away and seemingly irrelevant books whose dusty whereabouts are half forgotten. And even though we focus at first on the predominantly Protestant Netherlands between 1752 and around 1830 for our source material (mostly eighteenth-century printed matter such as sermons, almanacs, poems, and scientific treatises, plus objects like landscape paintings), the simple need to give all the various Christianities due attention forces us to look beyond the national borders to gauge Catholic reactions. A comparative European, indeed Western perspective is essential. And because the weather is a subject on which everyone has an opinion, our approach must also have a very broad social base. This implies that both the High Enlightenment and its subtle, popularised influences in the capillaries of society must be addressed,

or in other words that we must consider not only the increasingly specialist scholarly discourse of Franklin and other leading figures, but also the demonstrators, sometimes barely distinguishable from fairground showmen, who entertained their audiences with their "mysterious" and sometimes spectacular electrical experiments.[34] After all, in the early study of electricity, everyone was an autodidact.

But on the other hand, however broad our approach may be and however heterogeneous the source material, the subject itself – the changing perception of the thunderstorm in the transition from Enlightenment to Romanticism – is very limited. Hence the best we can hope for is that this book resembles an hourglass: ideally, when all the research has passed through its narrow waist, a broad perspective opens out that incorporates numerous subjects and reveals the extent to which the experience and interpretation of the thunderstorm reflect the cultural changes of the late Enlightenment and early Romantic periods.[35]

▶ Stormy scene, painting from 1775 by Francesco Giuseppe Casanova (1727-1802). Terrified travellers are overtaken by a thunderstorm, while lightning strikes an oak tree