Det Kongelige Norske
Videnskabers Selskabs Skrifter
(Kgl. Norske Videnskab. Selsk. Skr. 2011(2), 75-108)

Johan Ernst Gunnerus – a conservative theologian and an enlightened scientist (?)

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Abstract

The article demonstrates the connections between Gunnerus' scientific writings from his time in Germany and his years as a bishop and a pioneer in natural history research in Norway. Several topics were vital to Gunnerus throughout this period, primarily the theological and apologetic value of natural science research, the relationship between the body and the soul, the freedom of individuals, the two outcomes after death and his interest in scientific societies and collecting. Some comparison with scientific trends in other countries shows that the problems that concerned Gunnerus were among the most popular in that period. A closer examination of his scientific contacts would permit a clearer definition of his profile. There is no reason to regard Pietism and the Enlightenment as being mutually exclusive. Based on this, and supported by Gunnerus' own texts, it is possible to see how his edifying texts and the theological and other scientific articles are closely connected and shed light on each other.

Key words:
Johan Ernst Gunnerus, Carl von Linné, Norwegian scientific history, Enlightenment, Pietism.

The bishop as scientist

Johan Ernst Gunnerus (1718-1773) was a pioneer in Norwegian scientific history. He founded the first Norwegian scientific society in 1760 and started the first scientific journal in Norway in 1761. This edition of the *Skrifter* is therefore celebrating the 250th anniversary. As Bakken's article shows, he was a pioneer in natural history research and published many papers on philosophy and theology. In addition, he was the bishop of an enormous diocese that stretched from the county of Møre all the way to the northern boundary of the nation. This article will try to shed some light upon the connections between the various parts of Gunnerus' life and work. At the same time as he was publishing progressive articles in the *Skrifter* about animals, plants and birds, which impressed von Linné, he was also writing exegetic articles on sometimes obscure biblical texts. His very first article in *Skrifter* discussed the immortality of the soul, a topic that now seems dated in a scholarly context. How do these things hang together and how is it possible to make a connection between what Gunnerus presented as parts of the same project understandable in a time when the relative strengths of the different branches of scholarship are so radically different?

Part of the difficulty in getting to grips in the connections between the different parts of Gunnerus' life and work derives from three factors. *The first* is the subsequent development and specialisation within these branches of scholarship. *The second* is the controlling role subsequent epoch designations like Enlightenment and Pietism have for our understanding of historical phenomena. *The third* concerns how understandable the texts are for a reader nowadays. Gunnerus made highly specialised contributions in a variety of fields and published in different literary genres such as dissertations, articles and sermons. The diversity of the material itself makes it difficult for a modern reader to recognise the connections between the different contributions. The fact that some of his most important texts, including most of his philosophical and theological writings and also his *Flora Norvegica*, are only available in Latin does not make the task easier, of course. This lack of familiarity is further amplified because the references and the historical context for these texts are no longer common knowledge.

I do not believe it is appropriate either to postulate that a decisive shift in Gunnerus' scholarly production took place after he

was ordained as a bishop in 1758 or to claim that his interest in theology had no relationship with, and was subordinate to, his scientific interests.[1] Rather the aim must be to seek connections by applying a historical approach to his texts and their context. After a brief glance at the three problematical prerequisites for understanding Gunnerus, most of this article will be concerned with examining some key texts in more detail. I will conclude by reflecting on some other things Gunnerus learnt about before he came to Norway, and which are important for demonstrating the connection to the common European context: collections, interest in books and in societies.

Science and *specialisation*

Gunnerus' work was an important part of the modern history of science in Norway. It is well worth remembering that the founding of the scientific society and the publishing of *Skrifter* occurred in a period when the various branches of scholarship had only just begun to develop their distinctiveness. Some, like aesthetics, had only just been established and named. Well into the 18th century, a branch of science which we now know as chemistry consisted of experiments and notions that would now be called alchemical and chemical. Principe (1998: 8-10), a science historian, therefore proposed using the general term *Chymistry* to describe this complex scientific practice. The University of Copenhagen was primarily an institution to educate ministers, doctors and lawyers. The most important Chairs were therefore in theology, medicine and law. In addition, philosophy was an essential preparation for studying the various subjects. In other words, this was the situation *before* the division into social scientists, natural scientists and humanists.2 The discipline that was common to all these branches of science was philosophy and Gunnerus regarded himself, and functioned, primarily as a philosopher when he was appointed bishop. In his pastoral letter, he specifically mentioned how insight into philosophy had enriched his theological understanding (Gunnerus 1758: 14-15).

What Gunnerus understood by *science* is also made abundantly clear in this pastoral letter. It concerned everything from rhetoric, natural history, history, empirical psychology and aesthetics to theology (Gunnerus 1758). "Science", according to Gunnerus, was thus absolutely not identical with the usual definition of *science* in a

modern context. Moreover, he sometimes used it as synonymous with knowledge, as in his sermon from 1764, *Den Videnskab om Den korsfæstede Jesu Christo som den allervigtigste, en Lærer har at indskjærpe sine Tilhørere (The knowledge (science) of the crucified Jesus Christ as by far the most important thing a teacher must impress on his listeners)*. In his speech at the Founders Day for the society in 1768, Gunnerus stressed that the sciences must be useful for the state and the good of the people. By 'the sciences' he meant the metaphysics, the study of nature, what he called "the ethical sciences", which included law and the "Study about God", but also mathematics, history, philology and rhetoric. Just as in the pastoral letter, he underlined that scientific work must be understandable to everyone who is interested and that it is a joint project: "to work with common efforts". Science must shed new light on the state of reality and criticise established truths that are incorrect:

> "when they have unjustly sneaked in among the truths, to extirpate and reject them by diligently giving heed to Nature, by experiments and conclusions to make new and important discoveries, and to extend the limits of the land in the realm of truth which others have already discovered and sufficiently accepted. Not to detain oneself with futile abstractions, subtleties and sophistry, or be restricted to what is merely theoretical in the sciences, but to apply the theory to what is real and most useful in human life" (Gunnerus 1768: 13-14).

Science here is understood broadly and as what we would characterise as multidisciplinary. Theology and metaphysics quite obviously play an important role in the totality.

Enlightenment and Pietism

The second problem that has dominated how Gunnerus has been represented until very recently is that the epoch designations have guided subsequent views. In particular, the use of the concepts, *Enlightenment* and *Pietism*, have meant that the representation of Gunnerus' theological and scientific profiles has been distorted. These two concepts are, of course, really terms for two completely different phenomena. *Pietism* is a general term for a variety of spiritual reform movements since the 18th century. The most

important one in the Norwegian-Danish political context was Halle Pietism, but the movements for greater freedom, which the Moravian Church represented, also played an important role in 18th century Danish cultural history (Bredsdorff 2003). The concept of the Enlightenment is an attempt to put a name to the main element in a historic epoch. The concept has been used in many different ways. Many scholars have taken as their starting point the beginning of Kant's famous article and have portrayed the Enlightenment as a relatively uniform movement which argued for the liberating role of reason and scholarship in relation to repressive ideologies and traditions. This unambiguous and monolithic understanding of the Enlightenment has been problematised in recent years. It is now more common to speak of "enlightenments" and take into account major local and regional variations in how the Enlightenment developed in practice (Clarke et al. 1999, Reill 2005: 252). Several studies have also shown that it is meaningful to operate with different competing forms of Enlightenment in a geographically restricted place, as Ian Hunter did in an article about Halle a few years before Gunnerus came to the town (Hunter 2004). Hunter is not alone in including different forms of Pietism under the banner headline of "the Enlightenment". There are good reasons for this inclusion: the pietistic movements were strongly critical of tradition and the responsibility and freedom of the individual was important to them. In practice, the contribution from pietistic and Puritan scholars is an important aspect of the history of the Enlightenment. In keeping with this, there is no longer any point in maintaining that the Enlightenment and Pietism are unambiguous and mutually exclusive concepts, as has often been perceived. This has meant that some people have, in practice, been more preoccupied with the differences between two learned theologians like Erik Pontoppidan and Gunnerus than what unites them. They were both theologians who published extensively on various scientific issues and both of them were engaged in university reforms.

Volume 5 of the influential work *Dansk kirkehistorie* (Danish Church History), which deals with the 18th century, is divided into two equally long sections, "Pietism 1699-1746" and "The Enlightenment 1746-1799" (Koch and Kornerup 1951). Thus, here, it is the year when a new monarch came to the throne, as a political event, that marks the division between two epochs in church history. Precisely the same kind of division of epochs can be found in Trygve

Lysaker's standard work on the Bishops of Nidaros (Lysaker 1986). Section 5, "The Enlightenment", opens with Gunnerus, whereas his four predecessors from 1688 to 1758 are dealt with under "Pietism". Thus, in different contexts, this has resulted in Pontoppidan being portrayed as a prototypical Pietist whereas Gunnerus on the contrary was an equally typical Enlightenment theologian. This has reinforced the tendency to focus upon what *differentiates* them rather than what *unites* them. In a historical context, it is more important to show how Pontoppidan came to pave the way for Gunnerus in terms of both his scholarship and his career.

Contemporary context

The third problem, of course, is that it is quite difficult to understand the context of many of the texts Gunnerus wrote. It is easy to see that the natural history articles and larger works anticipate future branches of science, but how should one understand the other scientific texts? What was their historical context? Were they, as Gunnerus himself warned against in his lecture on the usefulness of science, simply something for a closed circle based on hair splitting and sophistry? To understand these texts, it is important to view them in the light of the history of science. Examples of such texts that are difficult to understand without such contextual knowledge are the book from 1748 on pre-established harmony and the articles in *Skrifter* on the immortality of the soul and the Books of the Pentateuch, and the references to what we can easily regard as alchemy in the dissertation on the Resurrection.

Reill (2005), in his important book on the Enlightenment, shows that its history is considerably more complex than the previously envisaged simple evolutionary trends. The problem of *epigenesis*, for instance, was not ultimately clarified in a German context before long after Gunnerus died, and vitality was a hot issue in various branches of scholarship (Reill 2005: 166, 171). According to Reill (2005: 106), pietist scientists like Georg Ernst Stahl from Halle played an important role in the development of science. The pietists, just like other Enlightenment philosophers, were interested in people having a choice and not being just machines that functioned according to predefined rules. For many in this period, alchemy was, as mentioned earlier, in practice insolubly linked with chemistry. Many of the influential scientists working in Holland and Britain on

empirical experiments in chemistry and physics and in natural history research, from the days of Nieuwentyt and Derham, were physico-theologians, that is, fundamentally and explicitly apologetic. It was to this tradition Gunnerus associated himself in various connections. In his lecture on the usefulness of science, he explicitly mentioned physico-theologians like Swammerdam, Nieuwentyt and Derham along with Bonnet and von Linné as natural historians who demonstrated the great acts of God in nature (Gunnerus 1768: 8).

I will now present two philosophical texts which Gunnerus wrote in Germany and will thereafter seek references to the same problems in texts written in Trondheim to find connections and continuity in his thinking. To illustrate how his thinking corresponded with what was taking place among important philosophers on the continent, I will make use of his contacts from his stay in Germany: Darjes, Michaelis and Hennings. Towards the end, I will mention and present some aspects which suggest formative experience during his stay in Germany, such as cabinets of natural curiosities, and learned and secret societies.

Two important texts from Germany as informative labels and applications

Johan Ernst Gunnerus, who was originally encouraged to become a student because of his good knowledge of Latin and classical literature, was granted a scholarship in 1742 from the pietist King Christian VI to study in Halle. The choice of university was obviously not fortuitous. Halle was the important seat of learning for the movement within Pietism which the Danish king had chosen to support. The Francke Foundation was situated in Halle and many of the teachers in theology and other subjects were pietists. However, the great Enlightenment philosopher, Christian Wolff, also lived in Halle. He had returned following many years in exile because of quarrels with the influential pietists. We know that Gunnerus studied with Wolff and was significantly influenced by the writings of pupils of Wolff, like Baumgarten and Meier. However, it would be too great a simplification to believe that he was not influenced at all by his pietistic teachers and fellow students. His encounter with the library and the *Kunst- und Naturalienkammer* in the Francke Foundation was a formative experience for the young Gunnerus. It is more relevant to stress the *reciprocal influence* between the Wolffian

and pietistic teaching as the most important benefit Gunnerus acquired from Halle and Jena. Gunnerus was opposed to some of Wolff's system and took with him important knowledge acquired from his teachers who were influenced by Pietism. This can be seen in some of the important texts he published in Jena in 1748. He used knowledge there which he acquired from the Wolff school, but was independently critical of it and also made use of pietistic teachers as authorities in these discussions. It is reasonable to start by examining these two early texts more closely. The first of them was also strongly influential in him being called back to Denmark in 1755.

In *Norges naturlige historie*, translated as *The Natural History of Norway*, which Pontoppidan dedicated to the influential ministers, Holstein and Moltke, he drew attention to Gunnerus in a long footnote paragraph concerning notable Norwegians (including Holberg and Schöning). Pontoppidan wrote (Pontoppidan 1755: note 398-399):

> "This Norwegian, born in Christiania, at present Mag. Legens at the University of Jena, is regarded by many learned people as one of the greatest metaphysicians and philosophers in this learned age, particularly since 1748 when he published proof of the existence of God and the unity of his Being, correcting and improving with great modesty and strength of reasoning the deficient reasoning of those who wrote before him on this important subject who failed to confute Atheists and Sceptics." See c. E. von Windheim Gotting's Philosoph. Biblioth. (sic) vol. 1 p. 299 and particularly p. 324 where one of his adversaries writes of him thus: I think they have with justification ranked Gunnerus amongst those profound philosophers who have left the others far behind (Pontoppidan 1755: 247).[3]

Proof of the existence of God

This section will examine the book on the proof of the existence of God, and its companion on the proof of pre-established harmony. These two books are not easy for a modern reader to understand. They aimed to evaluate the evidence that was considered valid in the 18th century in a way acceptable for the contemporary reader.

Beweis von der Wirklichkeit und Einigkeit Gottes aus der Vernuft was published in Jena in 1748. In the preface, Gunnerus said

that he had written the book to put the two most important parts of the natural knowledge of God, i.e. the existence and the unity of God, in their correct light. With the help of reasoning, he wanted to prove what he described as the two foundational pillars for all religion and to assess the value of other existing evidence. Gunnerus presented the book as a philosophical work. His aim was to show what could be proved or be held as likely using reasoning alone.

The proof of the existence of God is either *a priori* or *a posteriori*. The point of departure is the traditional proof of the existence of God from Anselm up to Descartes. In a sophisticated way, using a strictly logical method, Gunnerus showed the strengths and weaknesses of the various pieces of evidence. He referred to many theologians and philosophers and used their insight to criticise weak points and strengthen the evidence. Wolff, Leibniz, Darjes and Descartes, as might be expected, were referred to frequently. In addition, he made use of opponents of the Wolffian philosophy, like Joachim Lange and Christian August Crusius, in a constructive way. They and other theologians with more pietistic or orthodox leanings were especially used to avoid tendencies to determinism in the Wolffian system and emphasise the freedom and responsibility of the individual.

In addition to the various contemporary thinkers, Gunnerus referred extensively to some classical philosophers, Aristotle of course, but also Balbus, the stoic philosopher in Cicero's dialogue *De natura deorum* (Cicero 2008: xlii-xlv). In the original Latin and various translations, this treatise, *On the Nature of the Gods*, was important for various philosophers in Europe from the Early Renaissance onwards. Gunnerus quoted the book extensively, especially from the stoic arguments. In some of these lengthy quotations, it is not easy for a reader to decide whether it is Gunnerus or Balbus who is talking.

In the second part, on various *a posteriori* proofs, Gunnerus introduced the metaphor *The Book of Nature*. *Liber naturae* is a term that has played an important role since classical time as a supplement to the Book of God, the Scriptures, as a way of learning about God and reality. This flexible term has in fact played different roles in Western cultural history and underwent a radical transformation at the time of the Protestant Reformation (Harrison 2006). In the Book of Nature, Gunnerus differentiated between two kinds of experience, internal and external. The first referred to man's thoughts and

convictions and the second to the plurality of creatures and elements in the created world. The various pieces of evidence related to the first part of this Book of Nature did not convince Gunnerus. He did not acknowledge evidence that presupposed that notions of the existence of God were universal, and even if they were universal they could as well be false as true. It was impossible to decide in a rational way what was innate and what was learned. To reject the value of this kind of evidence, the author used many examples from the beliefs of people from other cultures, as well as stories about people who had grown up in solitude in the wilderness or in total isolation. Gunnerus also argued that the traditional scriptural support for such evidence, *Romans 1:20*, was a misinterpretation of the Greek text.

The second part of the Book of Nature is much more important; the numerous living species and elements in the world have a limited lifespan and are all contingent in the sense that they could as well be non-existent. Their existence is proof of an eternal and non-contingent Being, God. Gunnerus exemplified this by the existence of the heart; it could not have been created by itself, or by the soul, or by anything other than a God. In the discussion of the evidence drawn from the experience of the world, Gunnerus referred to many books on different topics often referred to as physico-theology; theologies of stones, stars, insects, lightning and individual parts of the human body, the heart, the eye, etc. He stressed that observations of small worms in a microscope were as impressive and important as stars observed with a telescope. The chapters dealing with this evidence make up an important part of the book.

It is possible to use the knowledge that all products of art must have a creator to make it probable that the world, too, is created. This is not real proof in Gunnerus' view, yet it is a convincing thought. The wonders in nature are challenging as we become familiar with them and therefore do not sense them fully. They include "limpid river waters, the banks clad in the fairest green, the hollowed recesses of caves, the jagged rocks, the lofty overhanging mountains, the boundless plains. Again, think of the hidden veins of gold and silver, and the limitless quantities of marble. And how many species of tame and wild animals exist?" (Gunnerus 1748a: 310-312).

Reading this paragraph, a modern reader is tempted to believe it is a description of Norwegian or Scottish landscape and nature, not Danish or Thuringian. The last question seems to be one Gunnerus

asked himself and which would be answered in his research and writings on natural history after he became bishop. More careful re-reading, however, shows that these words and most of Chapter 87 were not written by Gunnerus, but by Balbus, according to Cicero (2008: 94-99).

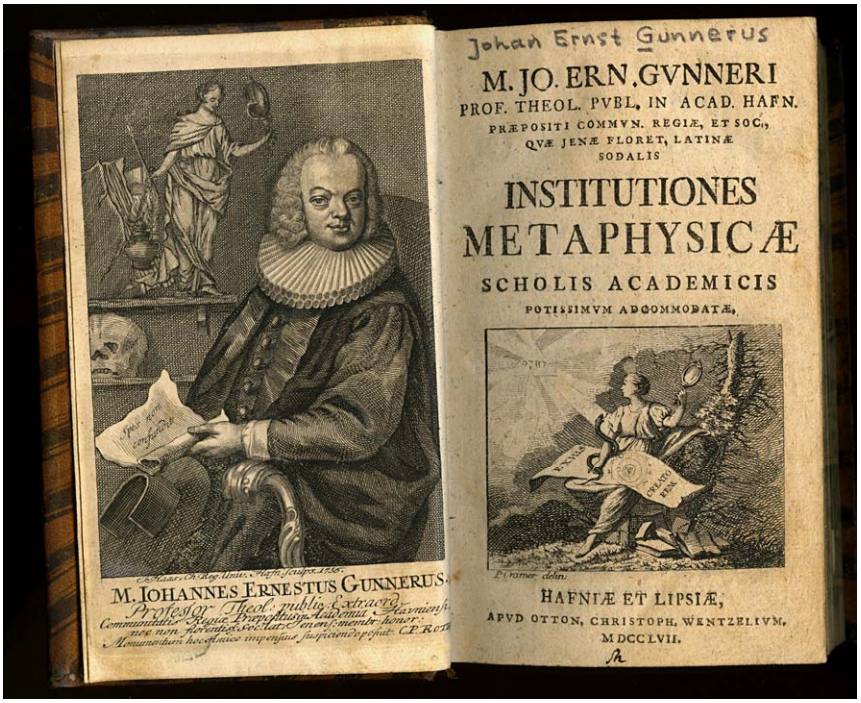
The extensive use of Cicero in this and other parts of Gunnerus' book from 1748 is significant. As a philosopher, Gunnerus needed *descriptions* of the wonders of nature to appeal to the senses and not only to the logical intellect. This demonstrates the importance of his classical education and is a precursor of his own description of the natural world years later. Cicero argued in a *rhetorical*, not a *logical* way, and Gunnerus probably also sensed the need to use other forms of proof in order to convince. If it is possible to prove the existence of God, this sort of argument touching the senses and feelings ("das ganze Gemüth") and not only the intellect ("meine obere Erkenntnisvermögen") is of the utmost importance. The cognition would then not only be clear, but also living and touching:

> "Meine Erkentnis ist nicht allein eine algemeine abgezogene, deutliche und gewisse Erkentnis, sondern sie ist zugleich ungemein lebhaft, sinlich klar, lebendig und rürend" (Gunnerus 1748a: 315).

In fact, Cicero's work functions as a kind of outline for this section of Gunnerus' book. In the next chapters, Cicero quoted and commented upon a classical poetic text about the wonders of the universe. Gunnerus, for his part, quoted from *Irdisches Vergnügen in Gott* by the famous, deceased poet Barthold Heinrich Brockes (1680-1747). Brockes described the sky as a blackboard where the stars seen together make up letters and words that are readable in the firmament, including the name Jehovah, i.e. God. Gunnerus introduced Brockes' text by stating that nature shows who God is in the most vivid way:

> "Die Macht, Weisheit und Güte Gottes ist in der Natur auf das allerlebhafteste abgeschildert. Wo man die Augen hinwendet, erblikt man nichts als Merkmale der Gottheit. Siehet man den Himmel an, so mus man daraus mit Ehrfurcht die götliche Eigenschaften erkennen" (Gunnerus 1748a: 316).

This is another form of cognition ("Erkenntnis") than a strictly rational one. It presupposes the intellectual proofs, but is ultimately more convincing.



The frontispiece of Institutiones metaphysicæ, a book written by Gunnerus in 1757, has two interesting engravings. On the left is one of Gunnerus himself, in his official costume, sitting with a manuscript bearing the words spes non confundit ("hope maketh not ashamed", Romans 5: 5). On a shelf in the background is a statue of a woman carrying a mirror with a snake in her left hand and holding a torch in her right hand. On the other engraving, made by P. Cramer, the same woman is sitting in front of a dead tree, once again with a mirror in her left hand, but here she is holding a snake in her right hand, and has three books on the ground beside her. The light falls from a triangular sun to her left with the Hebraic letters for Jehovah. On her lap is a poster showing the planets with the inscription EX HIS CREATOREM ("from this (we see) the

creator"). Most of this is, of course, allegoric representations with a long history in Western iconography, but it is possible to read some specific references to Gunnerus' work into several of them. The triangular sun (representing the Holy Trinity) with the word Jehovah can, in this context, allude to the quotation from Brockes in Beweise Gottes and the text of the poster makes the same point as Gunnerus stressed in the same book regarding the stars and the planets showing us who God is. The illustration and the text on the poster are taken from the illustration "Systema Solare et Planetarium" in Atlas novus coelestis (1742) by Johann Gabriel Doppelmayr (1671-1750).

The book as a whole is a balanced and well-informed discussion of the most common evidence for God's existence. The author not only displays a great deal of knowledge about the philosophy of religion, but also about different forms of natural science and classical and contemporary literature. This was also duly acknowledged in the review Pontoppidan referred to and also by remarks made by the philosopher Hennings to this and other writings by Gunnerus (Hennings 1774). Gunnerus repeatedly pointed to nature as a source of knowledge about God's attributes:

> "Ich halte deswegen dafür, dass ein jeder Mensch, /…./auf höchste verbunden sei, eine gründliche Einsicht in die Naturlehre zu bekommen, weil die metaphysische Erkentnis, und Ueberzeugung von Gott und seinen unendlichen Eigenschaften hierdurch sehr lebhaft und rürend gemacht wird." (Gunnerus 1748a: 362)

Throughout the book, Gunnerus used a Wolffian logical mode of writing and many of his insights were surely learned from Wolff. It is, however, unfair to describe the book as an unoriginal compilation of the Wolffian system of the philosophy of religion. Gunnerus discussed other topics than Wolff, and was capable of criticising both Wolff and Leibniz when the situation called for it. This is especially the case when he feared that the resulting system would be too deterministic and in danger of limiting space for human freedom and individual responsibility. In his insistence on freedom and responsibility, Gunnerus made use of scientists involved in pietistic

theology (e.g. Stahl), but also other contemporary scientists, some of whom were important figures in the development of science during the 18th century, as discussed by Reill (2005). The picture of Gunnerus that emerges through his various comments on other thinkers is that of a scientist acutely aware of the "Stand der Forschung" trying to intervene in the most hotly debated topics in contemporary science and philosophy. Such interventions may now appear dated and meaningless, constantly in danger of being forgotten or misunderstood.

Pre-established harmony?

An excellent example of this is the fate of the small booklet, *Beurtheilung des Beweises der vorher-bestimmten Übereinstimmung*, which followed his book on the proof of God and was also published in 1748. It was a critique of his teacher from Halle, Georg Friedrich Meier, who dealt with this topic in his aesthetic work, *Anfangsgründe aller schönen Künste und Wissenschaften* (Rudiments of all beautiful sciences) (Meier 1748). The relationship between the body and the soul was one of the most hotly debated themes in that period (Clarke 1999, Watkins 2005: 23-100). Were these two entities able to influence each other and if so how? Leibniz and Wolff claimed that they (or any other monads) were not able to influence each other at all. They believed the soul and the body existed independently and did not interfere with each other. Their theory of *pre-established harmony* stated instead that God made their relation harmonious from the outset. This resulted in parallel, simultaneous, movements, but no reciprocal influence. There were two other important scientific options. The theory of *occasionalism* also denied that the body and the soul were able to influence each other. The causes of events happening in the world were instead singular actions by God himself. This was a position held by many Cartesians in the early-18th century, most notably Nicolas Malebranche. The third option was the one that allowed for mutual influence. It was therefore named *influxionism*. Gunnerus preferred this position. It took care of the freedom of both God and the individual soul, and accounted for the difference between the body and the soul. Here, Gunnerus criticised the theory of pre-established harmony and allowed for the possibility that the body and the soul might influence each other. In other words, he was an *influxionist*.

This seemingly subtle discussion of a metaphysical and somewhat dated problem is interesting. It shows Gunnerus engaged in one of the most hotly debated issues of the early-18th century. Meier, who was criticised by Gunnerus, replied that the topic was unimportant and the fact that *even* Gunnerus had misunderstood him showed how complicated it was (Meier 1755: preface). This answer has to be read more as a way of avoiding further discussion than requiring to be taken at face value. The position Gunnerus held was most in tune with the actual development in the natural sciences and philosophy (Watkins 2005: 24). However, as the alternatives became obsolete, the position itself, with the accentuation of the independence of the soul, started to look increasingly strange and absurd from a scientific viewpoint.

The theological usefulness of nature research

Gunnerus' description of the *Book of Nature* as being useful for knowing about God also indicates his familiarity with classical Latin literature and his interest in contemporary poetry. Most biographical accounts of Gunnerus mention his classical upbringing from the Cathedral School in Christiania onwards, but very few mention his lifelong interest in literature and aesthetics. Gunnerus both read and taught aesthetics. He wrote several prefaces to books of poems. In his preface to a Danish translation of Boileau's satires, Gunnerus underlines how important it is to have an intimate knowledge of literature. He referred to Holberg's novel *Niels Klim* in his metaphysical writings and in a significant proposal in his pastoral letter in 1758 he included poets and orators as members of the future scientific society.

The use of Cicero in his book on the proof of God is a forerunner of the bishop's way of legitimising his interest in natural history. The second part of *Flora Norvegica*, printed after his death in 1774, quoted Cicero on the frontispiece. (The frontispiece belonged to the part of the work that had already been printed in 1772, so it is Gunnerus' reference to Cicero we are reading.)

> "Nec vero pietas adversus deum, nec quanta huic gratia debeatur, sine explicatione naturae intelligi potest: Homo enim ortus est ad contemplandum deum, & naturae contemplatio est ad dei admirationem proxima & apertissima via" ("It is not possible to understand the meaning of

> reverence for God, nor how great a debt of gratitude we owe him, unless we turn to nature for an explanation. Man has emerged for the contemplation of God, and the contemplation of nature leads to admiration of God and to uncover (the meaning of) life."

This is a strange quotation, made up of, and altered from, different parts of Cicero's text. The first sentence is from *De Finibus*, III, 22, 73 (Cicero, of course, talks of gods, not God (deos not deum): "Nec vero pietas adversus Deos, nec quanta his gratia debeatur, sine explicatione natura; intelligi potest". The second sentence is from *De natura deos*, but here the text is altered even more: Cicero, or Balbus, talks about the "contemplation and imitation of Universe (mundum)" (Cicero 2007: 60). The last part cannot be found in Cicero at all. Gunnerus' quotation is in fact an allusion to von Linné. The identical text appears in the 13th edition of von Linné's *Systema Naturae* from 1767 (von Linné 1767: 12). (In von Linné's 10th edition from 1758, the quotation from Cicero reads: "Nec pietas adversus Deum, nec quanta huic gratia debeatur, sine explicatione Naturæ intelligi potest" (von Linné 1758: 7). The important fact is that when Gunnerus set out to legitimise his research in natural history he used a classical author as a reference even if it was in a "baptised" form.

von Linné made use of the concept of *The Book of Nature* in his letters to Gunnerus and elsewhere. Gunnerus did not use the concept often, but his theatrical metaphor in the lecture on the usefulness of science, points in exactly the same direction:

> "Natur-Læren, tilligemed Natur-Historien tiener herligen til at overbevise os om, at der er en Gud til, og at forestille os hans uendelige Folkommenheder i sin fulde Glands, i det at de vise os allevegne i naturen de herligste Kunst-Stykker og drage tillige Forhænget tilbage, at vi kunde see den almægtige og uendelige vise Kunstner, som har dannet det altsammen" (Gunnerus 1768: 7).

The science of nature, even natural history, serves admirably to convince us that a God exists and to sense His infinite perfection to the maximum in that it shows us the most magnificent feats everywhere in nature and if we also draw the curtain back we will be able to see the Almighty and Infinite demonstrate His artifices that have created everything (Gunnerus 1768: 7).

The soul as a central theme

There are several allusions to the importance of the soul-body issue in Gunnerus' sermons from Germany. In a funeral sermon from Jena, Gunnerus characterised the body as "our machine". He returned to this discussion and made his position clearer in his metaphysical textbook from 1757: *Institutiones metaphysicæ* (§§ 465-466). In the Latin dissertation, *de existentia et possibilitate resurrectionis mortuorum*, which earned Gunnerus a doctorate in theology in 1760, the central theme was an attempt to show that resurrection from the dead is possible, not only on the basis of biblical sources but also from good sense, and that it is also supported by empirical experiments. After some arguments taken from the Bible and human experience, Gunnerus ended with a long quotation from a German translation of *The religious philosopher*, a book by the Dutch scientist and apologetic Bernard Nieuwentyt (1664-1718). The text described in detail what happens if you mix silver, copper and nitric acid. For modern readers, this is not very convincing as proof of the Resurrection.

The first article in *Skrifter*, "Betragtninger over Sjælens Udødelighed" (On the immortality of the soul), is a final elaboration of his standpoint regarding the relationship between body and soul. Gunnerus wrote this long article expressly as a philosopher and it was solely by employing rational reasoning he aimed to prove that the soul is immortal and therefore that philosophers who claimed that it perishes along with the body were wrong. He began by demonstrating that everything that occurs to the body and its matter is out of necessity and in an orderly manner. Bodies themselves have no freedom (Gunnerus 1761: 13). It is a completely different matter for all rational, indeed all thinking beings: "thi Tankerne er der altid en slags Frihed ved." ("thoughts therefore always have a sort of freedom") (Gunnerus 1761: 14). Even if the ability to think differs between people and animals; they all have freedom to act or not to act. This freedom cannot belong to the matter, it must derive from an immaterial, simple and indivisible being that cannot perish without God destroying it (Gunnerus 1761: 17), but there is no reason to think that God would wish any such thing. Consequently, it is philosophically proved, Gunnerus believed, that the soul is immortal. After death, it continues to have intellect, memory and the power of

imagination. Gunnerus, moreover, argued later in the article that the soul can exist without the body.

However, one can obviously imagine that God allows people to remain in an everlasting state of sleep after death. Many variations of this theory of everlasting sleep, or Christian mortalism, are to be found, but that which Gunnerus argued against here is probably a Lutheran opinion. Criticism of this theory was very widespread among 18th century protestant theologians. Gunnerus, on his part, criticised the notion because it did not comply with God's plan for the creation, i.e. His own glory and the fortune of humanity. Even though animals lack the intellect held by mankind, they have the ability to think and therefore also have an immortal soul, but one of lower rank. They will also exist after death, but cannot achieve salvation or be doomed to eternal damnation, like people. That the soul actually has two outcomes, heaven or eternal damnation, is something Gunnerus returned to several times during the article. Punishment after death is irredeemable and he also argued that this is important for those who are still alive, but also because being able to behold the fate of the doomed increases the joy of the souls of the blessed. These arguments for two outcomes, which Gunnerus took up strongly once more towards the end of the article, were important to him. However, he was, of course, aware that this emphasis meant that the whole debate was on the verge of shifting from philosophy to theology.

In his reasoning, Gunnerus referred to both human experience and rationality. He frequently cited his own textbooks on metaphysics and dogmatism, and also funeral sermons he held in Jena (Gunnerus 1761: 51-2, 67). He also drew on other philosophers like Wolff and the metaphysics of most of the Wolffians (Gunnerus 1761: 17), and cited Leibniz. However, he placed particular emphasis on the opinions of philosophers like Schubert, Meier (whom he criticised in the book on pre-established harmony), Müller (Gunnerus 1761: 32) and his own teacher, Darjes (Gunnerus 1761: 37). His opponents were ”atheists and Spinozists”, not least Voltaire. Gunnerus was convinced that if Voltaire ”had gone in for metaphysics as strongly as other attractive sciences” he would have ”philosophised” on the soul completely differently (Gunnerus 1761: 39) Finally, he pointed out that denying the immortality of the soul was also damaging to the state and society, and concluded by saying that those who supported such a doctrine demonstrated a

”contemptible and in many respects unphilosophical behaviour”. They cannot accept the plain speech of reason because they are victims of ”such a great eclipse in their reason” (“saa stor Formørkelse i deres Forstand”) (Gunnerus 1761: 70).

In 1771, an interesting exchange of letters took place between Darjes, who was now a Professor in Frankfurt, and Gunnerus. Darjes wrote that the scientific society in Frankfurt had elected Gunnerus as a member and told him that when he had some moments to spare he was occupying himself with studying the soul (”mit der Untersuchung der Seele”) (Dahl 1902: 23-24). He had promised the king he would find out the nature of the soul and had experienced that just when he believed he had discovered it, it disappeared; probably in electric fire.[4] Gunnerus responded by saying that Darjes had been elected a member of the society in Trondheim, and he did not think it was possible to find an unequivocal answer (”einer Vollkommenen Ergründung”) to the question, neither in this life nor the next. He was, moreover, not ashamed of his ignorance regarding the question, but was unable to admit that the French philosophers like Voltaire were right in dictatorially claiming that the soul is material, and that it dies simultaneously with the body. Whether the soul is a sort of fire, as many people had claimed, or specifically electric fire, made no difference. It would be very satisfying if it were possible to determine the solution, but if it is not possible to explain the spontaneity and randomness of the soul in a better way than on the basis of its individual nature, he did not think such a doctrine would have much value.[5]

Several things can be learnt from this exchange of letters. Darjes’ letter showed that the soul stood high on the scientific agenda in 1771 and it was probably King Friedrich II himself who had asked him to look into the matter. Darjes also seems to have changed his opinion after performing experiments by which he believed he could find out what the soul was. Perhaps it was electric fire? The nature of electricity was an important field of research in the 18th century and was one of several areas where attempts were being made to find out the life force or the soul.

Gunnerus, in his reply, clearly showed that he was aware of the research into electricity. This is not really surprising since Halle held an important position in this research and he had attended lectures given by Krüger in Halle (indeed he almost became a brother-in-law of one of Krüger’s best known pupils, Kratzenstein, in Copenhagen).

Nevertheless, it did not matter very much whether it was electric fire or just fire that was the ordering principle. By ”fire”, Gunnerus probably meant ”phlogiston”, so this was therefore a reference to the well-known Halle chemist, Georg Stahl (Reill 2005: 104-109), who was also a pietist. Gunnerus, however, was doubtful whether this topic could be given a proper answer (”Ergründung”) and, using a biblical quotation (*Romans 1: 16*), he wrote that he was not ashamed of this ignorance. To characterise this ignorance as ”a certain wise agnosticism”, as Landmark (1918: 77) did, is misleading. When he wrote “Ergründung”, Gunnerus was thinking of strictly scientific proof. It is that which was impossible, in this or the next life. However, he was convinced that there was a next life and that the soul lived on in that. This is what he wrote about in the article on the soul. The soul is not material as Voltaire and other philosophers claimed. As regards Voltaire, who was a supporter of freedom and had previously been a close friend of Friedrich II, Gunnerus could not restrain himself from characterising his mode of expressing himself as ”dictatorial”. Precisely the question of absolute, logical proof shows that Gunnerus always maintained that there was a distinction between irrefutable proof and empirical research, even in correspondence with his former teacher. Science had to be useful. A new theory on the soul based on electricity had little value if it was unable to offer a better explanation of the spontaneity and randomness of the soul. In other words, the freedom of the soul was still the most important thing for Gunnerus.

Research and philosophical reasoning on the afterlife of the soul, as well as appearances of ghosts and previsions were seen as appropriate scientific topics. A good example of this is the works of the philosopher Justus Christian Hennings (1731-1815), whom Gunnerus made a member of the society in 1770. In 1765, Hennings was appointed Professor of Moral Philosophy in Jena instead of Kant. Hennings wrote extensively on ghosts and previsions. He was initially sceptical of such phenomena, but considered in an empirical manner various stories of ghosts and alleged experiences which could not be explained scientifically. He was able to show that most of the stories either had no basis in reality or were in fact fully explainable. In a few cases, however, some of which Hennings himself had experienced, they could not be given trustworthy explanations. J.E. Gunnerus played an important role in one of these stories.

Hennings (1777: 721) told the story of a friend who had given him a glass which, on a given date, unexpectedly fell down from a pyramid. Later, they learnt that the friend had died at the same time. Even though his wife and friends believed the two events were somehow linked, Hennings argued that they could be independent and the fall of the glass could be explained by rats or mice. In an open letter to Hennings published by Schwarze the same year (Schwarze 1779: 21-23), it transpired that this story referred to the death of their mutual friend, Gunnerus. Schwarze believed there were several elements in the story which were not fully explainable. Schwarze also said that their mutual friend was the source of another of Hennings' stories, this time about ghosts on board a ship. In a book about ghosts and ghost-seers, Hennings (1780: 451-456) answered Schwarze, whom he considered "his very good friend", at some length. He related all the known facts about the incident and remained convinced that it must have a natural explanation. The careful way Hennings argued against the belief in ghosts and previsions showed that such discussions were of great public interest, even in 1780. It also showed that even some of the families and close friends of enlightened critics still had divergent opinions on these topics.

Exegetic articles and sermons

The exegetic article immediately following the article on the soul was an attempt to show that this philosophical teaching about the immortality of the soul was not contrary to what is written in the Bible. The wording of verses in *Ecclesiastes* 3:19-21 apparently does so:

> **"**For that which befalleth the sons of men befalleth beasts; even one thing befalleth them: as the one dieth, so dieth the other; yea, they have all one breath; so that a man hath no pre-eminence above a beast: for all *is* vanity.[20] All go unto one place; all are of the dust, and all turn to dust again.[21] Who knoweth the spirit of man that goeth upward, and the spirit of the beast that goeth downward to the earth?"

To interpret these verses such that there is no life after this one is contrary to both common sense and very many other verses in the Bible. Gunnerus found it impossible to envisage that different

passages in the Bible should contradict each other. He therefore tried to solve this apparent contradiction with philological and exegetic arguments: the Hebrew word for soul also means vital breath. In this context, Solomon must show that breath ceases to survive when the body dies. In this context, Solomon's reasoning is about the fact that everyone must die, not the doctrine of life after death. In a more relevant translation and with a closer look at the context, it is thus obvious that the word does not contradict the scriptures and the teaching of common sense. Here, too, as in the article on the immortality of the soul, it is a clear premise that common sense and the Bible cannot contradict each other. It is thus pointless for people to try to make use of this passage from the Bible to justify their own sinful life.

In the article "Betragtninger over De av Mose I. B. XXXVI opregnede Edomitiske Kongers og Fyrsters Regierings-Tid og Følge" in the second volume of the *Skrifter*, published in 1763, Gunnerus set out to defend the notion that Moses wrote all the first five books of the Bible by explaining the list of the Kings of Edom in *Genesis 36* up to the first kings in Israel. This text was usually regarded as a later insertion, not only by atheists like the followers of Spinoza, but also by pietistic theologians like Joachim Lange. Gunnerus' article represented a conservative position in exegesis in his time, and his manner of reasoning had more in common with the Orthodox theologians of the 17th century than the emerging interpretations of the Bible, which were more critical of history.

How is it possible to reconcile this very conservative position with Gunnerus' expressed willingness to have new ideas when it came to the various scientific disciplines? I believe it is important to underline that what Gunnerus did in this article was to try to construct a *historical* space where it was actually possible for this information to have been written by Moses himself. The passage in question was interpreted both *literally* and *historically*. By no means was any attempt made to read it as an allegory with an edifying meaning. The same can be observed as regards his works on natural history; Gunnerus was first and foremost concerned with describing the specimen in question and gave very little thought to edifying interpretations and traditions. The Bishop seldom drew theological learning from discoveries and was very little concerned with allegorical interpretations. In the article that goes furthest in linking readings of natural phenomena and biblical texts it is yet again a

historical question Gunnerus was seeking to find an answer to, namely whether the sea creature (a whale or a fish) that swallowed Jonah was actually a basking shark? The answer was yes (Gunnerus 1768). (This article was unfortunately never translated into English so that Melville could make use of it when discussing the question of the whale in the Book of Jonah in Chapter 85 of *Moby Dick*.) Gunnerus made little use of allegorical interpretations in his sermons either. It was primarily the historical and literal meanings of the text he was interested in. His Christmas sermon from 1760, for instance, considered in detail questions of a historical nature from the background for the Old Testament prophecies to the question of what really took place in Bethlehem (Gunnerus 1760). The posthumously published article on mermen and sea monsters (Gunnerus 1784) was a criticism of natural history descriptions, including those of Pontoppidan, which were based on tradition or written or oral accounts lacking physical evidence. In both natural science and theological texts, Gunnerus thus stands out as rejecting allegorical readings and being sceptical to the value of references to authorities.

In several books, Peter Harrison has examined how protestant notions have been important for the growth of modern natural science research (e.g. Harrison 1998, 2007). The Reformation was keen on reading the literal and historical meaning into the scriptures and criticised allegorical readings and dependence upon tradition. Based on material published in English, Harrison shows how this also came to apply to the way the book of nature itself was read and that this was a contributory explanation for the development of modern natural science. It is tempting to think that this also points towards a connection in the way Gunnerus approached the two books of God, the Scriptures and the Book of Nature. The historical and literal meanings were the most important ones; the value of allegorical readings and traditions was greatly reduced. Such an approach to texts and natural artefacts could lead to results that appeared conservative as regards biblical texts and innovative when it came to natural history.

Pietism and *Enlightenment*

The posthumous article written by Gunnerus shows a distinct difference in detail between him and Pontoppidan in relation to the trustworthiness of written and oral sources. Gunnerus demanded

physical proof and therefore denied that the sea monsters and mermen reported by Pontoppidan really existed. However, it is misleading to think that this criticism indicates fundamental differences between these two learned theologians.[6] What united them was more important than the differences.

The learned theologian, Erik Pontoppidan, is now best known for the catechism he wrote in 1737 on the direction of the pietistic King of Denmark. The image of Pontoppidan in posterity has to a large extent been coloured by this catechism. This is unfair, because it is by no means his most original text. This commissioned work was largely a revision of the catechism written by the pietist, Spener, in 1677, and several of the questions and answers are direct quotations (Neiiendam 1933: 82-85). The appointment of Pontoppidan as Bishop of Bergen in 1747, the year after the death of Christian VI, has been described as "a promotion which was a masked compulsory transfer" (Neiiendam 1933: 141). It was in Bergen that Pontoppidan wrote his monumental work, *Norges naturlige historie* (*The natural history of Norway*), which also came to play an important role for Gunnerus. As mentioned earlier, it had a bearing on his appointment to Copenhagen and Gunnerus often made reference to Pontoppidan's richly illustrated book in his own works on natural history.

For a well-informed, contemporary observer like the Danish historian Peter Suhm, who knew them both, the similarities between them were most important when he should briefly characterise them. He described Pontoppidan as an enlightened theologian ("En overmaade arbeidsom mand og en oplyst Theolog") (Suhm 1793: 30-31), and Gunnerus was described in almost the same words ("en overmaade flittig, driftig, arbeidsom og oplyst Mand"). Suhm regarded Gunnerus as the better scientist, but did not emphasise their theological differences. It is indeed not easy to discover clear signs of a willingness to distance himself from Pietism and contemporary pietistic theologians in Gunnerus' sermons and writings. In most of his early sermons, he addressed the congregation in a typical pietistic way, such as "Geliebte in den Herrn und mit Jesu Blut theuer erkaufte Seelen!"(Gunnerus 1758: 47) "Elskelige udi Herren og med Jesu Blod dyrekiøbte Siæle!" ("Loved souls in the Lord and dearly bought through the blood of Jesus Christ!") In his pastoral letter from 1758, Gunnerus recommended the ministers to read pietistic theologians like Spener, Arndt and Francke, and also Adam

Struensee (the father of Johann Friedrich Struensee who would later play an important role in his life). In his pastoral letter, Gunnerus explicitly said how important it was for a minister not only to be convinced about "the Truth of God's Word and the order of sanctification" ("Guds Ords Sandhed og Saliggiørelsens Ordens Rigtighed") (a formulation Pontoppidan and other pietists would gladly have endorsed), but also to be "born again" himself. Another example of how Gunnerus, in his scientific works too, used words with pietistic connotations is his preface to the book *Institutiones metaphysicæ* from 1757. The book has a dedication to one of his mentors, the influential Count Johann Ludvig Holstein. He was Prime Minister, but also played a leading role in the pietistic *Waissenhuset* and the Missionary Society (*Misjonskollegiet*), and was a co-founder of the Danish Scientific Society. In the dedication, Gunnerus used the term "pietas" several times to describe the count, who was influenced by Pietism.

A great deal suggests that *Enlightenment* and *Pietism* are not mutually exclusive; quite the contrary, it is wise to regard different forms of *Pietism* as an integral part of a manifold *Enlightenment*. It is therefore also perfectly possible to read a commissioned work like Pontoppidan's catechism as a text with strong elements of the Enlightenment (Rasmussen 2004). Several of the nuances between philosophical and theological statements from the early Pontoppidan and Gunnerus can be explained by the differences in the official ideology during and after the reign of Christian VI (1730-1746) and in the light of scientific developments. In both sermons and philosophical articles, Gunnerus stands out as a comparatively conservative theologian who shared several standpoints with contemporary pietists. This included both stressing the free will and insisting on two outcomes after death.

Gunnerus referred to some of the *philosophes* of the French Enlightenment on several occasions. As mentioned earlier, Voltaire was, for him, a minor and dangerous philosopher and in the letter to Darjes he characterised this leading figure of the French Enlightenment as a victim of darkness. In his aggressive criticism of the rule of Struensee from 1772, Gunnerus refers approvingly to Montesquieu's work *L'Esprit des lois* to show how important the Enlightenment was for the welfare of the people. In Gunnerus' view, however, such true enlightenment could only prosper in an absolute monarchy (Gunnerus 1772: 26-27).

Collections and societies

What Gunnerus experienced in Halle and Jena (as well as Copenhagen) were scientific societies almost obsessed with collecting books and naturalia. Bibliographical indexing of all kinds of printed material, both short articles and books, was important. The first bibliographical report of Gunnerus' own writings dates from Jena and is to be found in Mylius' *Zusätze zu dem blühenden Jena auf die Jahre 1745-1749.* Gunnerus later wrote an account of his life and writings, which appeared in Worm's lexicon (Worm 1771-1784), and this has become an important source for later studies of Gunnerus. The extensive bibliographical records in his pastoral letter from 1758 were indeed in this same tradition. Gunnerus had probably known several of the collections known as "Wunderkabinette" from his time in Copenhagen. When he came to Halle in 1742, the *Kunst- und Naturalienkammer* made for the pietists in the *Franckesche Stiftungen* was just finished. It was set up in its present form inspired by von Linné's descriptions of the three kingdoms in nature. This and similar collections, as well as vast libraries seen by Gunnerus in private homes in Halle and Jena, must have been an important inspiration for the intention of setting up a museum and a library in Trondheim. Gunnerus mentioned his museum several times in his letters to von Linné and was eager to learn more about how the different objects should be classified. The exchange of items and books was an important means he used to maintain scientific networks and secure good relations with patrons.

Gunnerus went to Germany at a time when societies of various kinds (nearly all of them just for men) were exploding in number. Numerous student groups, Masonic lodges and scientific and national societies were being set up. Gunnerus was a member of the early Masonic lodge *Zu den drei goldenen Schlüsseln* (The three keys) in Halle. After he went to Jena in 1745, he became one of the first members of *Zu den drei Rosen* lodge (The three roses). These societies, which researchers now prefer to call discreet rather than secret, dealt with esoteric knowledge which was part of and not opposed to the development of contemporary science. Important issues in the meetings of such societies were decisions about new members, greeting these members into the group in a memorable way, and socialising. Every member had to write an essay which was to be published. I have examined the protocol of the Halle lodge

where Gunnerus was first rejected and then a month later accepted as a member, as well as the index of members of the lodge in Jena. In many respects, these protocols resemble early protocols from the scientific society which Gunnerus later set up in Trondheim. The discreet societies were important networks for socialising and for informal discussions. The list of members in *The three roses* lodge in Jena shows that at least two of the other early members, Joachim Darjes and Lorenz Johann Daniel Succow, were later invited to become members of the society in Trondheim. As Brenna (2009) has pointed out, the Norwegian Governor, Prince Carl von Hessen (1744-1836), who Gunnerus wished to be the president of the society, was a prominent Mason.

Such demonstration of the existence of common features and continuities between Masonic lodges and the scientific societies can easily give the impression that secret notions and rituals were attached to the scientific societies. I think it is more relevant to stress a connection the opposite way; the various discrete societies, including lodges, were early meeting places for the exchange of new scientific and political ways of thinking (Kosseleck 1956: 21).

Networking and constellations

From his time in Halle and Jena, Gunnerus personally knew at least eight of the German scientists he made members of "his" society. They were Balthasar Münter, Johann David Michaelis, Joachim Darjes, Lorentz Succow, Johan Georg Walch, Johann Friedrich Hirt, Justus Hennings and Johann Ernst Basilius Wiedeburg. The correspondence with these scientists and with von Linné provides interesting material for a detailed study of how scientific networking and constellations functioned. It is tempting to underline the way memberships, publications and naturalia were used strategically to promote Gunnerus' career and reputation. Scientists were asked to be members of the society to both raise the scientific credibility of the society and maintain and establish important relations for scientific purposes. It was, of course, expected that new members donated books and naturalia in return. The correspondence with von Linné is highly illuminating regarding the mutual usefulness of such networking. Some members were appointed not for their scientific expertise, but because of the political and financial support they could offer. As shown by Hagland (2003) and Brenna (2009),

Gunnerus used his position as bishop to get information and natural and cultural artefacts for his collections and to make exchanges with influential collectors and scientists.

A more detailed survey of the people with whom Gunnerus corresponded and exchanged books and naturalia tells us more about his scientific network and how knowledge and ideas were passed on at that time. In this article, I have so far only mentioned his links with von Linné, Darjes and Hennings. Further research on these contacts may also give a clearer picture of his scientific profile. For instance, Gunnerus got to know Johann David Michaelis (1717-1791), the exegete, when he attended his lectures in Halle. Michaelis was strongly attached to history and grammar and was therefore an important reference for understanding why Gunnerus placed so much emphasis on the historical and literal meaning of the scriptures. Michaelis played an important part in the planning of the Royal Danish historical expedition to Arabia (1761-1767). It is also not without interest to mention that he translated one of the very first novels from English to German: four parts of Samuel Richardson's *Clarissa*, published from 1748 to 1753.

Looking at the dedications in his various publications from the Jena years and onwards, it is easy to see that they were all used strategically. Some expressed gratitude for gifts received, like the Medems in the book from 1748 on proof of the existence of God, while others were written in expectation of gifts in return. This is the case for Gunnerus' book on pre-established harmony from 1748, which was dedicated to the influential minister Christian Thestrup. Many of the dedications were addressed to the highest officials in Copenhagen and most likely contributed to Gunnerus' appointment to Copenhagen in 1755 and as Bishop of Nidaros (Trondheim) in 1758. This strategic use of dedications was, of course, common. In this area, too, it is easy to draw associations with Pontoppidan's career. The *Institutiones metaphysicæ* (Gunnerus 1757) contained a dedication to the Prime Minister, Johan Ludvig von Holstein. He was also the dedicatee of the first volume of Pontoppidan's *Natural History of Norway*, dating from the same year. The next volume of the natural history, published in 1753, in which Pontoppidan mentioned Gunnerus, was dedicated to Adam Gottlieb Moltke. Gunnerus for his part dedicated his *Ars Heuristica Intellectualis* to Christian Magnus Frederik Moltke and Frederik Ludvig Moltke in

1756, and appointed the four Moltke counts as members of the Royal Norwegian Society in 1770.

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Notes

[1]Both options are to be found in the literature about Gunnerus. Midtbø (1960: 38), for example, described a transformation from an interest in abstract philosophical questions before he was made bishop to an empirically oriented interest in natural history afterwards. For Landmark and others, Gunnerus was an enlightened philosopher without deep religious feelings: ”He has an intellectual nature…But he is by no means a particularly religious person. His thinking lacks the inspiration of feeling. When one reads Gunnerus’ lucid and, in keeping with the style of the time, rhetorically constructed sermons … one finds it very difficult to endorse that the speaker’s own intimate emotional life corresponds to the outer warmth of the words.” (Landmark 1918: 70)

[2] It is, indeed, difficult to write about this in English since the term science is almost exclusively used in connection with natural science or social science and not the humanities and theology.

[3] The original reads: ”Denne Nordmand, født i Christiania, nu Mag.Legens i Jena, agte mange Kiendere for een af dette delicate Seculi allerstørste og sublimeste Philosophis, særdeles siden han An. 1748. utgav sit *Beviis paa Guds virkelige Værelse og Væsens Enighed*, rettende og forbedrende lige saa grundig som modeste alle sine Forgjængere paa denne vigtige Vey, i det han viser, hvad deres Argumenter fattes endnu for at kunde blive ret tilstrekkelig

conkluderende contra Atheos & Scepticos." (Pontoppidan 1752: note 398-99)

[4] "Ich habe es unserm Monarchen versprochen mir alle mögliche Mühe zu geben, die Natur die Seele zu ergründen. Ein verwegenes versprechen! wenn ich glaube Sie bald zu entdekken, so ist die Seele wiederum weg. Ich befürchte Sie werde zuletzt in Electrisches Feuer werden."

[5] "Was die Seele betrift, so kann man sich schwerlich in diesem Leben Hofnung machen, sie zu ergründen, und vielleicht auch nicht in jenem Leben, wenn von einer volkommen Ergründung die rede ist. Ich schäme mich gar nicht meiner Unwissenheit in dieser Sache, kann aber nicht dem Philosophen von Sans Souci, dem Voltaire und andrene beypflichten, welche dictatorisch die materielle Beschaffenheit der Seele behaupten und das Ende derselben mit dem Leibe versichern. Ob sie ein Feuer, wie verschiedene behauptet haben, und speciatim ein electrich Feuer sey, non liquet. Könnte was zur Gewisheit gebracht werden, wäre es freilich gut. Allein, wenn man nicht besser aus den Gesetzen dieses Feuers die Spontanitet od. das Wilkühr der Seele aus ihrer einfachen Natur erklären kann, so verspreche ich mir keinen Nutzen von dem neuen Lehrgebaude."

[6] As several authors have claimed: "His sound and human view on life also places him beyond the strict pietistic trend that was particularly dominant in the first half of the century, and whose most influential, yet moderate, representative was the former Bishop of Bergen, Erik Pontoppidan the Younger" (Petersen 1918: 29). Nordhagen (1961: 71) pointed out the huge difference between the two theologians, Gunnerus and Pontoppidan.