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In the last chapter of *Musik und die Ordnung der Dinge* (Music and the Order of Things) Karsten Mackensen quotes Athanasius Kircher’s explanation of music’s deep connection with the emotions based on an experiment with six glasses filled with different fluids (pp. 298–299). If you rub your finger along the rim of a glass, Kircher explains, not only will it produce a subtle tone, but under the law of sympathetic vibration the adjacent ‘passive’ glasses will respond to the vibrations of its sound to which they have a harmonic likeness. The subtler the fluid in the glass, the stronger the sympathetic resonance. In a similar way, he continues, our bodily fluids react sympathetically to external sound and in so doing produce emotions: ‘If our spirit would be subtle and warm, music will induce proud, intemperate, and passionate movements, but if our spirit would be subtler and of a moderate quality, music will arouse love, delight, joy, and amorous affects’ (Athanasius Kircher, *Musurgia Universalis*, 1650, p. 212, English translation mine).

Against the backdrop of the Scientific Revolution, this seems a surprisingly unscientific explanation. However, as Mackensen explains in his introduction, this initial observation points us to a different epistemology, a fundamentally different understanding of what constitutes the cosmos and its operations that remained intact until far into the seventeenth century. In his explanation...
Kircher is creatively elaborating an older notion of the harmonious cosmos that comprises religious and magical elements such as universal sympathy. The idea underlying his explanation of music’s power is related to theories of world harmony, positing a transcendental hierarchy that all things and living beings in the cosmos obey.

Throughout his book, Mackensen argues that in medieval and early modern world views such as the one of Kircher, music was not only a component of knowledge among many others but a constitutive principle. Inspired by Foucault’s *The Order of Things: An Archaeology of the Human Sciences* (1966), the book examines the role of music within the universal order of things, as it appears in encyclopedic texts that deal with subjects that cannot easily be explained in terms of modern disciplinary discourse. On the basis of a few central themes such as world harmony, combinatorics and productivity, it presents a wide overview ranging from Ramon Llull’s medieval logic, through music theories of numerous other scholars, to Athanasius Kircher’s harmonic conception of the world. It argues that until far into the seventeenth century the role of music can best be understood against the backdrop of the continuing effectiveness of religious, mystical, magical and cosmological ways of thinking.

Kircher, just like all the music theorists discussed in Mackensen’s book, did not ask whether music was connected with the cosmos, but how it was connected with it. These scholars underpinned their music theories with a cosmology, because in so doing they could demonstrate that the rules of their systems were founded on the very laws of nature. Moreover, they founded their cosmologies in harmonics and music theory to demonstrate that their conception of ‘cosmos’ exemplified the rational harmonic blueprint of God’s creation.

Although Mackensen argues that the purpose of his book is not to access the validity of competing concepts of world harmony but rather to examine their interaction with musical knowledge, in my view the book would have been more interesting if he had more critically discussed his protagonists’ strategic use of a perennial conception of a harmonious cosmos. The very fact that we are not familiar any more with Kircher’s scientific explanation quoted above demonstrates that our understanding of what constitutes cosmos and music, and how they interact, changes constantly. While it is at the heart of the tradition of the harmony of the spheres to rely on the assumption of an eternal conception of world harmony independent from its historical or cultural context, the many stories told in this book in support of this idea reflect the cultural and historical age in which they arose.

In addition, it would have made much more sense to me to take the Pythagorean concept of *musica mundana* (the music of the cosmos) as focal point of the book – as did James Haar in his unpublished classic ‘Musica mundana’ (1960), which is conspicuously absent from the bibliography – rather than Ramon Llull’s *Ars Magna* (a combining logical system to discover the truth) in order to be able to critically analyse the different variations on the theme of world harmony and its link with musical and confessional practices.

It is praiseworthy that Mackensen offers a sympathetic reading of the encyclopedic harmonic world views of all his different scholars, but by using this approach, the continuities in the tradition are overemphasized and the transformations, changes, flaws and weaknesses remain little exposed. This problem, intensified by using Foucault’s magical episteme as a conceptual tool, was already signalled and solved by Gary Tomlinson in his *Music in Renaissance Magic: Toward a Historiography of Others* (1993, p. 53). Mackensen only summarily addresses this methodological debate and offers a combination with Clifford Geertz’s method of a ‘dichte Beschreibung’ (‘thick description’, pp. 21–22) as a corrective to a Foucauldian discourse analysis in terms of epistemes. As a result of this choice he gets hung up on details every now and then in the long descriptive sections of the book, so that one cannot see the wood for the trees any more.

Having said this, by offering an account of the search for musical principles and patterns in nature and the natural underpinnings of a music theory, the book opens a whole new range of possibilities to study the intertwined history of science and the humanities from a perspective that is
close to the ones of its historical actors; in this regard it is a welcome addition to already existing scholarship in the field. Although it is far from an easy introduction to the history of a very popular theme, reading it is very rewarding: new texts are disclosed, and new, unexpected and important connections are made, not only between medieval and early modern interpretations, but also between conceptions of confession, cosmology, science, music and the science of music.

To conclude: the book convincingly argues that from the thirteenth century to the time of the Scientific Revolution, music theory did not cease to be a central discipline but remained an important tool of investigation into the cosmos and human nature. Ramon Llull, Jean Charlier de Gerson, Nicholas of Cusa, Jacques Lefèvre d’Etapes, Francesco Giorgi, Johann Heinrich Alsted and Athanasius Kircher all in their different times and places defended the view that music demanded this kind of encyclopedic exploration. Behind their desire to know the musical order of the cosmos was the conviction that such investigation would be an initiation into the deepest secrets of the universe. In a sense, modern cosmology and musical science could still be seen as a continuation of this project.


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Yves Gingras’s new book is an invitation to critically analyse the dialogue thesis of science and religion. He details the impossibility of a dialogue between science and religion, and the necessity of a conflict between science and religion. The first four chapters are historical in nature, where he shows from the lives of various men of science how the conflict between science and the Church prevented independent scientific thinking. We encounter various historical figures who engaged with the authorities of Church, promoting free thinking, and argued for a separation of philosophy from theology, and later science from theology/religion. One figure who dominates in the historical narrative is Galileo. It is mainly through Galileo’s life that Gingras tells us the story of the necessity of conflict between science and religion. He shows how Galileo struggled with the authority of the Church to get permission to write his important works. What is interesting in the first half of the book is Gingras’s discussion of the life and afterlife of Galileo’s ideas. We see how the Church engages with his ideas differently in different time periods, and we also see how different figures gradually came to embrace his ideas for their own struggle with the Church. In order to talk about the complex nature of the Church’s relation with Galilean and Copernican ideas, Gingras writes,

It took 200 years to expunge the works of these two great scientists from the Index of Prohibited Books and 350 years for Pope John Paul II to formulate an adequate response to the repeated requests of scholars from around the world seeking to rehabilitate Galileo and to bring the Catholic Church to admit that his conviction was an error. (p. 50)

The first four chapters deal with the question of the power and authority that the Church possessed and how that authority was used against sciences when scientists challenged biblical knowledge of the workings of the world. These four chapters narrate how science was censored and the manner in which various scientists engaged, questioned and challenged the authority of the Church. Through the lives and ideas of various important figures, including Copernicus, Galileo, Kepler, Newton, Kant, Descartes, Comte and Darwin – actors from different time periods – Gingras demonstrates that the Church always tried to stop the secularization of the sciences. These instances are used by Gingras to demonstrate the perennial conflict between theology and scientific thought.