

Digital methods for research on complex ways of transmission between regionality and universality in music of the Middle Ages.

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As is well known Jesus in the Scriptures speaks of himself: “I am the truth” (John 14:6); for the question of Pilate in the Gospel of John (John 18:38) to Jesus, “What is truth?” there is however no answer transmitted.

Don’t worry, this is not the wrong paper and I do not intend to give a theological lecture. But at the beginning of our European-Western culture of knowledge the search for truth and unambiguousness fuelled by theological considerations continually was in the focus. The central terms of the so called “Carolingian Reform” of the 8th and 9th centuries are: *rectitudo*, *norma*, *veritas* (accuracy, norm, truth). The goal is the refinement of methods of communication in language, terminology and writing. The underlying concept explains itself as follows: Only the unambiguousness of the “artefacts” guarantees their effectiveness in a theological sense.¹ This results f.ex. in the Carolingian Minuscule (the way we are writing more or less still today) and the efforts for an unambiguous text of the Bible.² The historian Stefan Weinfurter therefore sees in unambiguousness the “motor” of cultural innovation for the European Middle Ages and beyond for European culture in general.³

What do we know about music in this context? Direct statements concerning the “truth” of musical transmission are not found in texts of the Carolingian period. But the well-documented efforts to achieve uniformity in the field of singing in liturgy too obviously should be understood as a consequence of this basic impetus of Carolingian cultural policy. According to the majority of current research the existing individual traditions of liturgical singing in the Carolingian empire were suppressed and substituted by the imported Roman singing tradition, the *cantilena romana*, which was venerated as a sacred model.⁴ On the one hand the reason for this was the politically motivated connection to the Roman papacy (*unio*) on the other hand the concern to sing the praise of God in a uniform way (*unitas*). Here in singing Charlemagne’s basic concern “Ut pax sit et concordia et unanimitas” expressed in his *Adominitio generalis* issued in 789 obviously was effective too: Peace, harmony and unanimity.⁵

From all we know this took place at least in the beginning without the medium of a musical notation. During this process the Frankish cantors transformed the orally transmitted chants of their Roman teachers and adapted them to what we call today the Frankish-Roman or Gregorian chant. Strategies of legitimation accompanying this process served to reassure the ideally imagined conformity of their own singing with the *cantilena romana*. In this context the concept of “norma canendi” found in texts of the time completely coincides with the general principles of the Carolingian reform: so to say a European norm of liturgical singing, not from Brussels, but from Aachen.⁶

¹ Stefan Weinfurter: Wissenstransfer und kulturelle Innovation in karolingischer Zeit – Einleitung, in: Julia Becker, Tino Licht und Stefan Weinfurter (Hgg.): Karolingische Klöster. Wissenstransfer und kulturelle Innovation, Berlin u.a. 2015 (Materiale Textkulturen. Schriftenreihe des Sonderforschungsbereiches 933, 4), 3–6.

² Laura Light: Versions et révisions du texte biblique, in: Pierre Riché, Guy Lobrichon (Hgg.): Le Moyen Age et la Bible, Paris 1984, 91–93.

³ Stefan Weinfurter: Eindeutigkeit – Motor von Innovation im Mittelalter?, in: Jahrbuch der Heidelberger Akademie der Wissenschaften 2011, Heidelberg 2012, 73–74.

⁴ Andreas Haug: Die einstimmige Musik des lateinischen Mittelalters. Historische Notizen anlässlich einer neuen Edition, in: Kirchenmusikalisches Jahrbuch 97 (2013), 7–29.

⁵ *Admonitio generalis*, cp. 78. Edition: Hubert Mordek et al. (Hgg.): Die *Admonitio generalis* Karls des Großen, Hannover 2012 (MGH Leges, Fontes iuris Germanici antiqui in usum scholarum separatim editi 16), 230.

⁶ Bruno Stäblein: «Gregorius Praesul», der Prolog zum römischen Antiphonale. Buchwerbung im Mittelalter, in: Richard Baum und Wolfgang Rehm (Hgg.): Musik und Verlag. Karl Vötterle zum 65. Geburtstag, Kassel etc. 1968, 537–561.

This said, starting in the 9th century and then spreading surprisingly sudden all over Europe, liturgical manuscripts emerge, which present chant not only as text but in addition its musical dimension by neumatic notation. The origins of neumatic notation couldn't be clarified satisfyingly till to the present day. But there is much evidence that it too at least to a considerable extent should be understood in the course of this Carolingian process of unification and clarification, where the encoded sound in form of the written sign gains authority. This corresponds to the "care for the sound" (*cura sonorum*) which should be equal to the care for the words, of which the prologue of the Hartker Codex from St. Gall ca. 1000 speaks.⁷

On the one hand, the neumatic writings across Europe document a great, astonishing and not completely explainable uniformity even in the details of performance, f.ex. in the so called liquescent neumes. And this suggests that we are dealing indeed with a largely identical musical repertory. On the other hand, the neumes at a closer look equally reveal numerous and significant differences and deviations.⁸

The question as to whether neumatic notation did allow or initiate this process of variant readings, thus, whether the encoding within neumatic signs allowed against a very stable process of oral transmission to realize diversity in encoding from what was previously heard, or if to the contrary the variants encoded in the neumatic notation reveal graphically a diversity already existing in the oral tradition, but for us no longer tangible prior to the process of writing, this question can hardly be decided. Also, the extent to which such variants document either a substantial change of the common tradition or just a variant of performance often rest unclear. Probably both is true. The chant scholar Franz Karl Prassl coined the concept of the "SCRIPTOR INTERPRES": the scribe or encoder, who while listening wrote down his finally individual version within a firm tradition, which can well reveal differences in the theological interpretation of chant.⁹

Concerning the question of uniformity of transmission, of performance, of encoding signs as well as of the admission of variants the particular fact with chant is that it is considered to be a revelation by the Holy Spirit. Even though the famous myth of Pope Gregory the Great who receives the chant by the Holy Spirit as a dove singing in his ear is to be understood as one of the 9th century strategies of legitimation already mentioned in order to secure the Frankish adaption of the *cantilena romana* by an authority – this nevertheless reflects the concern that non-uniform singing could endanger communication with the divine. It is not by chance that the Hartker Codex opens with a miniature depicting this process of encoding.¹⁰

This divinely revealed music thus at latest since its written appearance in form of neumes is idealized as sacrosanct and unchangeable, which is why the actual composing of the 9th and 10th centuries takes place in additions to this fixed chant repertory by tropes, prosulae and sequences.

This raises the question of how variants within the sacred text and the sacred music associated with it were treated. Concerning Holy Scripture and theological texts which build the basis of chant variants were regarded as being dangerous. As Charlemagne in the first of his general letters to all bishops and abbots recalls, erroneous words are already dangerous (*quia quamvis periculosi sint errores verborum*). But still much more dangerous are erroneous religious-theological views (*multo periculosiores sunt errores sensuum*).¹¹

Concerning chant, the unity and unanimity of singing and the danger of violating these principles are tangible on two different levels: On the one hand Benedict of Nursia in his rule

⁷ CH-SGs 390, p. 12.

⁸ Franz Karl Prassl: Sankt Galler Handschriften als Ausdruck konkreter Aufführungstraditionen, in: Beiträge zur Gregorianik 52 (2011), 89–110.

⁹ Franz Karl Prassl: Scriptor interpres. Von Neumenschreibern und ihren Eigenheiten, in: Beiträge zur Gregorianik 37 (2004), 55–72.

¹⁰ CH-SGs 390, p. 13.

¹¹ Alfred Boretius (Hg.): Epistula de litteris colendis, MHG Capitularia regum Francorum 1, Hannover 1883, 78–79.

requests: *Psallite sapienter* (cp. 19): “Sing the psalms” (and, in a more comprehensive sense, all liturgical chant) “with insight” (into the words and their meaning, with attentiveness to pronunciation and musical performance). As a guiding principle for the monks he demands, that they should always sing as if they were in front of the Almighty and the angels. This seems in the first place pointing to errors in the performance of chant. And indeed, according to Benedict’s rule the one who has been guilty of not singing correctly the psalms should come in front of the congregation and receive his repentance. In a deeper sense this is only made comprehensible if we understand that faulty singing not only disturbs the liturgy aesthetically but above all destroys the unity which alone secures the communication with God.

Another form of uniformity directly affects actual musical variants: Notker of St. Gall speaks of the “*unitas et consonantia in regno et provincia*” as the aim of Charlemagne.¹² He requests that the sound (*soni*) should be identical if the same texts are performed in different places and regions.

Given the fact of variants as documented in the chant manuscripts musicology has to be interested into which types of variants exist in the repertory of chant and how they could be explained. Variants of performance have already been mentioned in the context of adiaستمatic neumes. Also, melodic variants can already be detected to a certain extent here. New categories of variants appear when neumes are written on lines since the 11th century. Now it is mainly about pitches. Again, new categories of variants are found in the context of liturgical reforms and reform orders, particularly among the Cistercians and strikingly within the Editio Medicea of the 16th century.

Summing up we can say that the entire transmission of chant up to the recent efforts to produce a so-called restituted version by the methods of semiology, which aims to reconstruct the most authentic, original version, reveals this typical ambivalence between ideal continuity and actual variance.¹³ For a full understanding of this phenomenon there are obviously still lacking large-scale representations on the development of chant melodies over time and space. This is of course due to the difficulty or impossibility to oversee the immense repertoire. For this reason, as to now statements concerning these questions of chant transmission can be nothing more than uncertain estimations based on relatively few sources.

How could these challenging questions be solved by digital methods? The project eChant at Tübingen University plans to investigate regionalism and the claim for universality, the possibilities of variance as well as the relationship between normative prescription and individuality in performing sacred texts by applying digital methods. It thus forms an equivalent – though with a far more modest scope – to the study of the history of transmission of the sacred text of the bible, but with the sacred music as its object.

As a method the project will document by selecting the Proper chants of the mass and a representative geographical section (the former diocese of Constance) the different stages of the transmission of chant through the centuries. The aim is not to reconstruct an “original” form of melodies or to provide a “critical edition” but to represent the diverse shaping of melodies within the selected parameters. There will also be no printed edition, but a multimedia presentation freed from the limitations of the traditional medium of paper and print in a web interface in which all information is made accessible without regard to the rigid format of a printed work.

The decisive added value will be that the actual importance of chant as always present and at the same time always variable basis of European music history will become visible in a new way. This is because the digital medium allows for a transparent and comprehensive

¹² Hans F. Haefele (Hg.): Notker der Stammer. Taten Kaisers Karls des Großen (Notkeri Balbuli Gesta Karoli Magni Imperatoris), MGH Scriptores Rerum Germanicarum Nova Series XII, Berlin 1959, 14.

¹³ Andreas Pfisterer: Ziele und Methoden in der Geschichte der Choralrestitution, in: Beiträge zur Gregorianik 49 (2010), 61–74.

representation of the various lines of development, transformation and interdependencies of chant which as to now weren't possible in printed editions due to their limitations.

This also includes a better understanding of the already mentioned relationship between general, substantial and individual interpretative variants in the transmission of chant. No other genre of European music history comprises such a large stock of records for over 1000 years in countless manuscripts and prints as chant: Complex visualizations and queries of large data volumes covering space and time as required by this corpus can only be realized efficiently and precisely by digital methods. This will also allow completely new questions f.ex. by applying techniques of Big Data analysis and data mining, which so far weren't possible due to the manually uncontrollable amount of information.

As a basis eChant will encode chant melodies and their variants in MEI (Music Encoding Initiative)¹⁴ and visualize them in the browser. This process can be simplified and accelerated in the future by tools as developed f.ex. in the SIMSSA project.¹⁵ Further new developments in the course of eChant will be innovative methods for the representation and visualization of melodic variants and their regional and temporal development, as well as tools for measuring degrees of melodic similarity. Finally, selected sound examples will illustrate the variance between the written evidence – which may only represent a pure convention of writing – and the acoustic realization.

The impetus for the eChant project therefore is the conviction that essential solution strategies for the urgent questions of transmission of chant as outlined in this paper can be achieved by means of digital methods. This implies an adequate implementation in data modelling. There is a firm hope to be able to explain thus in a better way how these processes evolved – even if of course “the truth” in an empathic sense won't be found either and the entire research area of digital musicology is still characterized by strong dynamics.

But as to this and returning at the end of my paper to its beginning: a certain comfort might be found in the fact that to the above mentioned non-answer of Jesus to the question of truth there exists at least in the canonical tradition of the Gospel of John no transmission of variants.

¹⁴ <https://music-encoding.org>

¹⁵ <https://simssa.ca/>