Opening Academic Year 2023-2024  
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Gemma Frisius lezing September 2023: On the relevance of a new Lingua Franca in inter- and transdisciplinary science

Highly esteemed dean of the Campus Fryslân, dear colleagues, students and friends of the Campus Fryslân. Traditionally, the start of a new academic year in Fryslân is highlighted by this formal gathering and the Gemma Frisius lecture.

Despite the tradition, the person of Gemma Frisius may not be familiar to all of you. Therefore, it seems fair to provide some background to this somewhat illusive person.
Gemma Frisius was born as Jemme Reinerszoon (son of Reiner) in Dokkum, a city in the northern part of this province. Frisius refers to his origin as being a Frisian, and is to date still present in the frequently used family name De Vries. The Romans referred to the people in the northern provinces as Frsisii, probably based on their phenotype with curly, frizzy hair. He was born in 1508, long before the invention of the internet, cell phone, snapchat and Instagram. Indeed, as shocking as it may seem, dear students, there have been times in which such essential building blocks of life, as we now know it, did not exist. Gemma must have been bored massively, don’t you think.

Surprisingly, this was not the case. On the contrary! Attracted by the international aura of scholars such as Erasmus, he studied in Leuven, a renowned university at that time. By the way, an appeal as big to attract a Frisian young man to a mundane university in Leuven, qualifies Erasmus as the name giver for a European student exchange program, don’t you think? Gemma Frisius studied medicine, mathematics, astronomy and philosophy, a combination not uncommon at that time.
Amongst his legacy are the foundation of triangulation

the first published picture of the camera obscura

which he used to study the solar eclipse of January 1544, and an astronomical instrument, referred to as Gemma’s rings that was helpful during navigation to approximate the latitude. He contributed greatly to the upraise of cartography, as illustrated by his renowned terrestrial globe, dated 1536.
Gerardus Mercator, a renowned cartographer and Vesalius, founder of modern medicine, were amongst his pupils.

Astonishing, isn’t it! Almost negligent, I mentioned the fact that Gemma Frisius was simultaneously active in at least four scientific disciplines. As such, it may be stated that he and his colleagues were involved in interdisciplinary science avant la lettre. Even more, he was able to translate scientific knowledge into practical instruments with societal impact.

If Gemma Frisius and colleagues were so successful at that time, how did they communicate? Even in those days life at the university was already rather globalized. Scholars came from all over Europe and their
common language, the Lingua Franca, was Latin. And for those who made it to the university, breeding in Latin, including its cultural context, started early. After the death of his parents the upbringing of the very young Gemma Frisius was shaped at the Latin school in Groningen. He could read, write and speak Latin. Both Latin and Greek have an almost mathematical structure in which one can express oneself very precisely, a characteristic helpful in the setting of science.

Let me give you an example from my own discipline, medicine, in which remnants of its Latin and Greek vocabulary are still present today.

This is a tracheostomy.

Trachea is Greek for windpipe, stoma is Greek for mouth. The term refers to a surgical procedure in which an opening in the windpipe is created and subsequently this opening is secured with a semi-permanent fixation of the windpipe to the skin, mimicking a little mouth. After that, a cannula is inserted.
This is a tracheotomy.

You now know that trachea stands for windpipe, but this time témnō refers to cutting. Again, a surgical procedure in which an opening of the windpipe is created, but now without the semi-permanent fixation to the skin. At first glance, not much of a big deal to the innocent bystander, impossible to tell the difference from the outside. But, if this procedure is performed as a temporarily solution in the course of an acute disease, and you were to be the patient, you would prefer a tracheotomy, since it heals without substantial scarring after removal of the cannula, very relevant for a piece of the body so prominently exposed in daily life. On the other hand, if such procedure is part of a permanent solution in a chronic disease, such as respiratory failure in a hereditary form of progressive muscle weakness, demanding ventilatory support in the home setting, one would prefer a tracheostomy. Accidental loss of the cannula will not lead to the collapse of the skin opening, creating a vital time window until professional support can be provided. A simple character represents a huge difference.

In the days of Gemma Frisius Latin as the common language for scholars helped to overcome communication barriers in an international community. It was instrumental in the precision that
science needs in order to be successful. But it was not inclusive, in the sense that the vast majority of people in Europe did not understand Latin. And even in those days exclusion of the upcoming non-aristocratic group of bourgeoisies, civilians, from important domains in society was considered problematic. Problematic, of course, for those who were left out. The start of the reformation by Luther in 1517 was fuelled by the abuse of power by the clergy, and the inaccessibility of all religious manuscripts, including the bible itself, played a major role in it. One aspect of the common language in science we face today was probably non-existent for Gemma Frisius. Since the interdisciplinary dialogue took place in the most common model of a neural network, that is: the brain of an individual, the chances of miscommunication between the different disciplines were probably limited. Could it be that the fact that scholars in themselves were interdisciplinary contributed to the success of Gemma Frisius and his colleagues?

Over the centuries further differentiation and segmentation between scientific disciplines took place. And with the vastly expanding knowledge each discipline created its own vocabulary, or even its specific discourse, a toolbox of thoughts in a formal and orderly expression on a variety of subjects.
This almost inevitable process appears to be both a blessing and a curse. The growing precision of scientific language has fuelled its progression, but it came at a price: the danger of losing oversight, concealing vital connections between disciplines.

Furthermore, it hampers a true transdisciplinary dialogue, the translation of societal relevant topics in concise scientific projects, and subsequent successful implementation of its results in the very same society. With exactly these challenges in mind interdisciplinary and transdisciplinary science was considered to be the DNA of this faculty at the start of Campus Fryslân. Hence the choice to name it a Campus, an open community, a gateway, connecting science with society. From the very start the goal of Campus Fryslân has been clear and specific: to contribute to a ‘brede welvaart’, a sustainable region, well-being for its citizens in the context of globalization: local solutions for global problems.
In practice, this means we are connected in a mutually dependent way with other faculties; amongst others the Aletta Jacobs School of Public Health, the business school of Faculty of Economics and Business, the faculty of Arts and the bachelors program Law in Leeuwarden. Together with other Frisian knowledge institutes, the province of Fryslân and the municipality of Leeuwarden we co-created the Kennisagenda Fryslân, a route map for meaningful education in the upcoming years. Participating with the University of Groningen, Hanze Hogeschool Groningen, Van Hall Larenstein and NHL Stenden, we seek to drive transition in a region beyond Friesland in the University of the North. In living labs our students are connected with social institutions in health, agriculture and many more, experiencing the challenges of true transdisciplinary research. A type of education, highly appreciated by our students. For the 2nd successive year our bachelor in Global Responsibility and Leadership received the highest score among all bachelor’s programmes in the Netherlands.

These, and many more initiatives illustrate the success of Campus Fryslân in a region dedicated to attract and retain highly educated people. Not as a purpose in itself, but as part of a thorough strategy to keep the region vital. A learning community, built on the foundation of inter- and transdisciplinary research and education. And as such, it seems worthwhile to reflect on the prerequisites for further continuation and expansion of this success. For this Gemma Frisius lecture I chose to focus on the characteristics of language, needed for successful communication between different disciplines within science and between science and society.

What has changed over the years between the era of Gemma Frisius and modern times? At first glance English seems to have replaced Latin as the Lingua Franca. But our proficiency in English may not be as good as Latin for scholars such as Gemma Frisius. At least, there is substantial heterogeneity in our ability to express ourselves in English. Even for me it took my greater effort to write this lecture in English in comparison to a lecture in my mother tongue. Under these circumstances proficiency in English may be mistaken for having better scientific arguments than someone not as skilful in this non-primary
language. Secondly, teaching and studying Latin in the 16th century was context specific, that is: not only the vocabulary and grammar were similar for all, but there were also clear rules on how to debate, based on an intricate knowledge structure and values, derived from the ideas of Greek and Roman philosophers. Nowadays, sharing the same English language is not similar to sharing the same idea’s and values. It takes effort and empathy to explore each other’s vocabulary beyond google translate, to establish a true connection and avoid social and cultural misunderstanding.

In addition to these changes in the characteristics of a common language, the introduction of the internet, cell phones and social media has changed the scenery extensively. New ways of communication have opened up almost infinite possibilities, neither limited in time nor geographical orientation. For those who have access to electricity unrestricted knowledge is available 24/7. These new forms of communication have empowered groups of people, otherwise isolated as individuals. But, at the risk of being framed as a white male of a certain age, I would also like to address some characteristics of new mass media that may complicate communication, specifically in inter- and transdisciplinary science, if not accounted for. First of all, a substantial part of social media is predominantly asynchronous: I send a message, you read it somewhere else in time and space.
Hi dad, I missed my last train. 23.48 pm

My response: how did that happen? 07.00 am

Do you think I have addressed the hidden question to my son's satisfaction? Even during real-time video conferencing a small delay in time causes confusion in our brain. During the pandemic videoconferencing created ways of communication, otherwise impossible. A true blessing. But, meetings like this seemed to be more tiresome, and for a good reason. Mirror neurons are brain cells that fire both when an organism acts and when the organism observes the same
action performed by another. In other words, we constantly scan our fellow-primates to see whether the person in front of us copies our own behaviour. Mirror-behaviour reinforces to the sender that the message was well-received. But even a tiny lag time between sending and receiving already causes our brain to struggle in the correct interpretation of the reception of our message. Complete absence of visual emotional feedback, such as on Twitter, is the perfect recipe for misunderstanding and even uncontrolled self-enforced emotions.

At the end of this lecture the remaining question may be: is there a new Lingua Franca, a common language feasible for inter- and transdisciplinary science? Usually, science provokes more questions than it provides answers. And scholars who deliver bold statements in strong soundbites should be treated with caution. But I won't leave you empty handed. After all, the honour to provide the Gemma Frisius lecture is a one-off. Let me try a metaphor to provide you with an image of what inter- and transdisciplinary communication could look like: the camera obscura, so well-described by Gemma Frisius.
In Cadiz, Andalusia, Spain, there is the famous Torre Tavira. Well situated in the middle of this old town, with a periscope-like structure on the roof.

In this picture, we see a group of individuals, staring at a real time representation of a part of reality that they chose to select.
Let’s imagine that they are the scholars, students and representatives of society at the start of a transdisciplinary project. The outer world is much bigger, but a set of mirrors has converted a selection of reality through a small opening, and this selection is depicted in a parabolic disc. Everyone involved, irrespective of background, stands around the disc and discusses the real time images as a group. They seek for words for what they see, and check this openly with their peers. The room, either real or virtual, is not obscure in the strict sense of the word, but rather secluded, secure, providing social safety for everyone. If the vocabulary of an individual is insufficient to express oneself adequately, all members of the group embark in a creative process to enrich the vocabulary to the extent that self-expression becomes possible for all members of the group. And with this setting-specific Lingua Franca they decide to start the analytic process. Every now and then the groups re-joins in their secluded room, discuss the findings and checks whether the language is still appropriate for the topic at hand. If not, the creative enrichment of the common vocabulary starts again. Until everyone is satisfied with the results.

Seeing so many talented people from all over the world, I am confident we can find ways to overcome the complexity of effective communication in inter- and transdisciplinary research and that we can be successful as a scientific community that is intrinsically embedded in society. I wish students, teachers, officials and friends of the Campus Fryslân an inspiring Academic Year.