Tibetan Anatomical Terms in "Knitted Body Materiality"

Report from a Project at University of Fine Arts Vienna, Austria

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Introduction

"Knitted Body Materiality" is an art-based research project started in April 2022, supported by the Austrian Science Fund and undertaken at the University of Applied Arts Vienna, through the "PEEK" grant which is one component of the FWF's portfolio (Programm zur Entwicklung und Erschließung der Künste, PEEK) and allows for the development and evaluation of an artwork for four years in manifold ways. This report sheds light on the initial thoughts and ideas which led to the creation of the first knitted anatomical objects rather than any current artistic outputs such as the development of anatomical theatre performances, animated videos or the exhibition of photographs and objects. Aspects of my artistic approach regarding ethical questions and the materiality of three-dimensional anatomical representations can be found in Sabernig (2022, 2023, 2024) and will not be discussed here, instead the circumstances of the initial thinking of the project will be described. The idea of "knitted anatomy" is closely related to my early research projects on Tibetan medicine and terminology, as well as the visualisation of medical content. In particular, the project on the anatomical achievements of the physician and surgeon Lobsang Chödrak (*Blo bzang chos grags* (1638–1710?); FWF 26129-G21, September 2013–August 2017) in the context of the global history of anatomy (Sabernig forthcoming) was nascent for my thoughts on the materiality of anatomical presentation. During that time, I delved deeply into the published world of Tibetan anatomical terminology and created a database on "Tibetan medical terms" described in more detail below. I started to analyse the development of Tibetan anatomical terminology in historical and contemporary medical works and anatomy atlases. With regard to modern medical terms, Tibetan scholars and scientists have done extensive work to find and introduce adequate biomedical anatomical expressions in the first decade of the new millennium. This enormous intellectual achievement has not yet been reflected in any Western dictionary. Unfortunately, the Tibetan and Chinese-Tibetan atlases use neither Latin nor English wording. Most Tibetan scholars know biomedical knowledge only via Chinese-Tibetan translations. A bilingual Tibetan-Latin or Tibetan-Englisch medical atlas, showing a clear connection between depicted anatomical structures and internationally binding medical nomenclature, does not yet exist. The only publication that comprises the international nomenclature is the trilingual *Chinese-Tibetan-English modern medicine dictionary* (CTE 2011), but the publication does not contain any images or graphic representations and does not provide an English or Tibetan index of terms. This led me to the intention to create a Tibetan-Latin (English) anatomical atlas that aims to close this gap by communicating anatomical terminology visualised in the playful and colourful styles we know from anatomical thangka paintings.

An examination of classical tibetan medical terms and the coining of new anatomical terms

Discussions on the standardisation of anatomical language have a firm tradition, both in modern biomedicine and in Tibetan medicine. A historical process of standardisation took place in Tibet in the seventeenth century which resulted in a set of thangka (scroll) paintings accompanying the *Blue Beryl*, Tibet's most authoritative commentary to the Four Tantras medical treatise (see also Barbara Gerke in this issue). The classical paintings

present and localise many anatomical terms given in various classical Tibetan texts. In the eighteenth and nineteenth centuries there were no significant developments in anatomical knowledge, only in the early twentieth century and with the revitalisation of Tibetan medicine from the mid-1980s onwards when a vibrant period of publishing activity began, which culminated around 2012 (cf. Balk 2016).

With the integration of biomedical language in the training of Tibetan medics, several elaborate bilingual anatomy atlases in Chinese and Tibetan language were produced in China. A question arose regarding the extent to which these publications would integrate classical terminology or coin new terms adapted to biomedicine, as well as how anatomical structures and educational content would be visualised. Some anatomical illustrations are based on the colourful, sometimes humorous or playful traditional style of depiction, others use conventional biomedical depictions or choose photos obtained through dissection or computer tomography. What is currently still missing, is a reliable reference of modern Tibetan anatomical language to the Terminologia Anatomica, the internationally authoritative directory of terminology (Whitmore 1998).

In the early years of the twenty-first century Tibetan scholars of traditional and biomedicine made considerable efforts to translate biomedical anatomical terminology by coining new words in the Tibetan language or translating Tibetan medical terms into Chinese or English. At least four anatomy atlases were published using different terms for specific anatomical structures and a Tibetan medical dictionary including several anatomical charts were edited, these publications will be described in more detail below. The diversity of terminology and visualisation prompts several questions: 1) How far and in which way do these publications integrate classical Tibetan medical terminology? 2) Which kinds of terms and names have been used to coin new terms adapted to biomedicine? 3) How were the anatomical structures and educational content visualised, and finally, 4) since a reliable reference of the modern Tibetan anatomical language to the internationally authoritative directory *Terminologia Anatomica*, is still missing: how could Tibetan terminology be linked with the international standard and in which way could it be visualised? Preliminary considerations regarding question 1) and 2) have been published in Sabernig 2017b, 2019.

To answer these questions, I could rely on the results of my previous projects on allegoric medical tree paintings structuring the content of the *Explanatory Tantra* (the second of the *Four Tantras*). Herein I had already investigated classical medical terms (FWF-Project 22965-G21) because in most cases in the tree metaphor a single leaf of a tree's branch symbolises a certain medical term (cf. Sabernig 2017a). In the following project I analysed classical anatomical terms that occur in the commentaries to the *Explanatory Tantra* (FWF-Project 26129-G21), with the intention of building a sound basis for undertaking the task of building the database named *Tibetan Medical Terms*. I started to collect a variety of possible identifications of Tibetan Materia Medica. The database contains medical terms described and identified in no less than thirty relevant sources, including general and medical dictionaries, glossaries, historical and modern subject-specific literature such as pharmacopoeias, anatomical atlases, and other publications on Tibetan medicine. The aim was not to find a standardised definition of these terms in a normative sense, but to document the plurality of the suggested translations. The database is not only a good starting point for my studies on the extent to which classical anatomical terms can be found in modern atlases, but is also publicly accessible to everyone. Hosted by the East Asia Department of the Staatsbibliothek zu Berlin it was first made accessible for users in 2014 via *CrossAsia*, an internet portal focused on Asian studies offered by the library (web address: https://crossasia.org/service/crossasia-lab/tibetische-medizin-termini). A software tool was developed in the East Asia Department and implemented to automatically convert Tibetan keywords into original Tibetan script. This has the desirable advantage that the database may also be used and appreciated by Tibetan scholars in the script they are familiar with.

With the further growth of the database, it became clear that it should not only generate terms that occur in classical works. Traditional Tibetan medicine continues to be practiced in modern society and is a pillar of regional health systems in various parts of Asia. I decided to not only docu-

ment historical medical terms, but also to present developments and to understand the formation of new terminology as Tibetan medicine encounters modern biomedicine. Therefore, the evaluation and documentation of modern anatomical terms which relate to biomedical structures as presented in recently published anatomical atlases in Tibetan or in bilingual Chinese-Tibetan editions became substantial. Largely unnoticed by the international field of research on Tibetan medicine, contemporary Tibetan scholars have made significant contributions to the development of names for modern biomedical anatomical structures in Tibetan language. Several books containing traditional as well as modern anatomical depictions and several dictionaries have been published (for more information on these and earlier anatomical sources see: Sabernig 2017b: 93-100). Compared to publications in other non-Chinese minority languages in China, this publication of anatomical literature is exceptional and draws on a long Tibetan tradition of empirical anatomy (e.g.: Gyatso 2015; Sabernig 2016, 2017b). Tibetan translation projects are promoted by the Chinese state and are a sign of the professionalisation and integration of Tibetan medicine into the health system. With the help of the newly published atlases and a number of modern reference books it became possible to trace the anatomical terms as they have changed over time and to check whether they are integrated into modern medical vocabulary. The starting point was historical thangka paintings, then I selected four elaborately edited anatomical atlases and two dictionaries for my broader comparative survey from the sources in the database. The atlases are: Ting-vdzin 2007; Pad-ma-rab-brtan & Sangs-rgyas-vbum 2011; Nyi-ma-tshe-ring & Mig-dmar 2012; and Mkhas-grub 2012 — the dictionaries are trilingual *Chinese-Tibetan-English modern medicine dictionary* (CTE 2011) and a *Dictionary of Tibetan Medicine* (BST 2006).

When looking at such recent atlases and similar publications, they have in common that the depicted structures refer to modern anatomy, but the related Tibetan terms are not linked to the international standard of human anatomical terminology. Only a person who can read anatomical maps as well as Tibetan script (or Chinese) is able to identify the terms. The only publication that comprises the international nomenclature is the trilingual *Chinese-Tibetan-English modern medicine dictionary* (CTE 2011). The dictionary is intended to establish a Tibetan standard for modern biomedical terms based on Chinese keywords. It was compiled by a large working team involving various Tibetan institutions. I call the anatomical terms contained in this comprehensive medical dictionary *Terminologia Anatomica Tibetana* as it is intended to be a new standard of Tibetan anatomical language. During my staying in Xining I was told that the anatomy atlas published by Pad-ma rab-brtan and Sangs-rgyas-vbum (2011) is largely identical in its terminology to the standard *Terminologia Anatomica Tibetana*.

Preparation of a colourful bilingual tibetan-latin anatomical atlas

After examining the state of publications, I felt a Tibetan-Latin or Tibetan-Englisch anatomy atlas visualising modern anatomical terminology in Tibetan language would be a desideratum. In my opinion the study and translation of modern anatomical terms into Tibetan and their identification according to internationally binding nomenclature (*Terminologia Anatomica*) is an important contribution to the professionalisation and globalisation of Tibetan medical practice. My aim was to create a helpful point of reference for physicians who want to deal with Tibetan medicine, but do not have direct access to Tibetan original texts due to a lack of sufficient language skills but are willing to learn the language. In addition to this, such a bilingual atlas offers Tibetan scientists unbiased access to English anatomical terminology. Tibetan scientists have done much work to introduce biomedical and anatomical vocabulary to the Tibetan language, but unfortunately no Tibetan-Latin or Tibetan English anatomy atlas has been produced. For English-speaking practitioners of Tibetan medicine, such a publication would be very helpful. So far, there are only Tibetan or bilingual Chinese-Tibetan publications that present medical knowledge along with anatomical illustrations, which are so important for understanding the topography of the body. My findings showed that the basis for the planned anatomy atlas should be the *Terminologia Anatomica Tibetana* found in the atlas of modern anatomy edited by Pad-ma-rab-brtan and Sangs-rgyas-vbum (2011), which

I started to include in the database. The next question was how to visually represent the anatomical structures? One possibility was to simply add Latin or English terms to one of the modern atlases introduced so far. Not only because of copyright issues I decided to go in a different direction. As a result of observing publications over many years, I had the strong sense that the visualisation should be colourful and playful, in a style similar to the thangka illustrations. The images should be pleasing to the viewer, the visualised internal structures should evoke interest in the body and capture the imagination – not evoke disgust. Due to the Tibetan tradition of tantric meditation by visualising internal channels this point is especially important, but also in a general European context of medical and health humanities it is important to develop a comforting idea of oneself.

The knitted anatomical models are not only didactic tools suitable for the presentation of Tibetan-Latin anatomical terms, but also have great potential to demonstrate the anatomy of tabooed body regions to a non-scholarly audience. In presenting prototypes of my work, responses were surprisingly positive on several occasions at conferences and university lectures, but also during lectures in front of Tibetan-speaking audiences in Qinghai Tibetan Medicine Hospital, Lhasa and Beijing. The knitted structures tend to have the opposite effect to the reflex of revulsion: as far as I can tell from my preliminary presentations, the audience as a rule find these anatomical depictions both pleasant to look at and thoroughly informative. While trying to understand the showcased structures, the viewers' attention increases and their faces express comforting familiarity instead of visceral disgust (cf. Sabernig 2024). In Lhasa, in 2016 I held a lecture on the history of anatomical depictions during which I presented images of knitted organs labelled in Tibetan script. Afterwards, local physicians told me that Tibetans feel the same visceral disgust when viewing 'realistic' anatomical images, therefore they prefer colourful images involving a sense of humour as presented in the illustrations to the *Blue Beryl* (e.g. Parfionovitch 1992 or the book by Ting-vdzin's 2007). I became convinced that a bilingual Tibetan-Latin atlas would close a gap in medical didactics if the structures of the human body were presented in both ways, on the one hand colourful, pleasing, and involving a sense of humour, and empirically accurate on the other. However, the project was never started because the reviewers' report did not result in funding. I continued to work on "knitted anatomy" without any funding and developed it in a more artistic direction rather than as a didactic aid for Tibetan medical terminology. Sensory perception in the context of medicine and arts, including the history of European medicine, came to the fore of considerations.

Against the background of the history of anatomical representation, which is connected to controversial ethical discussions with regards to gaining and representing human material the knitted texture has didactic, ethical and aesthetic advantages. Although anatomical description without any visual aid is a widespread genre of pre-modern medical texts, in contrast to other medical fields, topographic anatomy is highly reliant on visual representation. Neither historical visual representation nor modern techniques represent human bodily structures as they can be observed by the human eye during dissection or surgical intervention. The use of the colour red for arteries, blue for veins or yellow for nerves is an international convention which is only partially based on "real" impressions. Although scientifically correct and empirically verifiable, anatomical images usually remain symbolic. Depending on their purpose, they are sometimes designed as metaphors such as the illustrations presented by Fritz Kahn (cf: Günther 1923; Sappol 2017).

One reason for depicting the human body in an idealised manner is that spontaneous visceral disgust can arise. The unvarnished sight of a dead body disgusts or distracts many viewers; a natural reflex of revulsion can be regularly observed, particularly on the part of a non-medically educated audience. To divert disgust anatomical images or three-dimensional models such as the famous anatomical wax models displayed at the Viennese Josephinum are often presented in an aestheticized, idealized manner, using striking and vivid postures (e.g.: Winkelmann 2003: 45f.; Hendriksen 2015, Sappol 2017: XI). To avoid disgust and emphasise the pictorial structure many modern atlases or other illustrative material present structures in a minimal way by omitting all structures of less importance or by using transparent and glassy silhouettes with a clean or even

sterile appearance. The type of information and representation depends on cultural, ethical, philosophical, budgetary, gender-specific aspects as well as the question of to whom the anatomical illustrative material is addressed. In the context of *dealing with the disgust evoked by practicing anatomy,* Marieke Hendriksen (2015: 12) writes about aesthesis: *This combination of sensory perception and a sense of beauty necessarily also includes the development of strategies to deal with the visceral disgust encountered in the process of gaining anatomical knowledge* (Hendriksen 2015: 205).

Anatomical and even more pathological presentations have yet to consider another significant psychological aspect: in perceiving anatomical representations, the viewer not only reflects on the scientific knowledge or skilled craftsmanship behind an image, but also identifies with the seen structure and links it to their own material and mortal body. This might be exciting for a healthy individual but is demanding in the case of pathology (cf.: Schnalke 1999: 18; Schnalke and Atzl 2012: 25f.). During the corona pandemic, I had the impression that a lot of the resistance against measures, vaccination and the threat posed by the virus was a defence against the imagined corresponding processes in one's own body. I decided to visualise different aspects of the pandemic in knitted form, using a material associated with warmth, care and protection, rather than purely scientific language that is difficult to understand and evokes fear and disgust. The images were published in several magazines and on my website under the heading 'corona extra'. The picture 'Hope' is one of them and was the subject of the AGEM conference.

In my revised research application in affiliation with the University of applied arts all these considerations played a decisive role and in March 2022 the project was granted. The funding approval gave me the opportunity to examine the use of the knitted objects in various artistic formats such as film, photography, theatre or exhibitions. An anatomy atlas is also included. Once the atlas is created, the last step is to connect the entries of the database with the labelled anatomical terms in order to publish a special edition of Tibetan-Latin terms. This makes it possible to accomplish my long-held wish to visually link Tibetan anatomical terminology with its international equivalents.

Notes

1 This research was funded in part by the Austrian Science Fund (FWF) [grant DOI 10.55776/AR705]. For open access purposes, the author has applied a CC BY public copyright license to any author accepted manuscript version arising from this submission.

2 https://crossasia.org/en/service/crossasia-lab/tibetische-medizin-termini/.

3 https://www.knitted-anatomy.at/corona-extra/.

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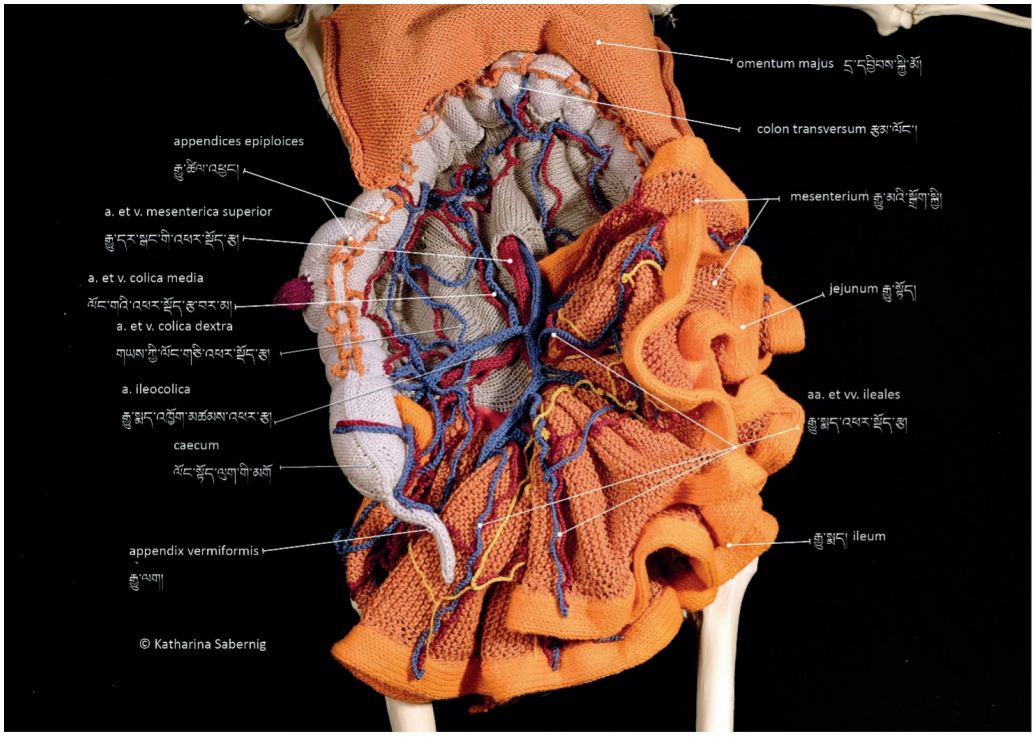

Fig. 1 Small and large intestine with Tibetan and international terminology

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