Routledge
Taylor & Francis Group

Transnational Social Review
A Social Work Journal

ISSN: 2193-1674 (Print) 2196-145X (Online) Journal homepage: http://www.tandfonline.com/loi/rtsr20

Knowledge (im)mobility through mirco-level interactions: An analysis of the communication process in Chinese-Zambian medical co-operation

Peter Schumacher & Maggi Leung

To cite this article: Peter Schumacher & Maggi Leung (2018) Knowledge (im)mobility through mirco-level interactions: An analysis of the communication process in Chinese-Zambian medical co-operation, Transnational Social Review, 8:1, 64-78, DOI: 10.1080/21931674.2018.1427666

To link to this article: https://doi.org/10.1080/21931674.2018.1427666

Published online: 27 Apr 2018.

TRANSNATIONAL SOCIAL REVIEW, 2018
VOL. 8, NO. 1, 64–78
https://doi.org/10.1080/21931674.2018.1427666

Routledge
Taylor & Francis Group

FOCUS TOPIC ARTICLE

OPEN ACCESS Check for updates

Knowledge (im)mobility through mirco-level interactions: An analysis of the communication process in Chinese-Zambian medical co-operation

Peter Schumacher and Maggi Leung

Human Geography and Spatial Planning, Utrecht University, Utrecht, The Netherlands

ABSTRACT

Although Chinese medical aid to African countries is not a new phenomenon, the scale and scope of these engagements has changed significantly after the turn of the Millennium. Chinese government officials don't grow tired to represent their country as new alternative for African medical development, a narrative that is accompanied with a host of figures such as money donated, Chinese personnel deployed, African practitioners trained and patients treated. However, little is known about the actual events behind these numbers. Drawing on the academic debate around the relationality of mobility and knowledge this paper is looking at the embodied experiences of Chinese-Zambian medical co-operation. By proposing a communication model as conceptual framework, this paper addresses recent criticism that too much scholarly attention has been given to the successful transfer of knowledge, whereas factors that prevent exchanges were largely ignored. Through the application of this model to analyze data obtained during six weeks of fieldwork in Zambia, it was possible to identify several prisms which affect the exchange of knowledge between the Chinese and Zambian teams in our case study decisively.

KEYWORDS

Zambia; China; mobility; knowledge exchange; medical teams; South-South co-operation

Introduction

On August 8, 2011 the Chinese Ambassador to Zambia, Zhou Yuxiao summarized the Chinese-Zambian medical co-operation at the opening ceremony of the Chinese built Levy Mwanawasa General Hospital in Lusaka:

> "420 Chinese doctors in 15 groups have worked in rotation in Zambia since 1978. In the past two years, the 15th Chinese Medical Team with 28 doctors who just left Zambia two weeks ago, worked in UTH, Ndola Central Hospital, Livingstone General Hospital, Kitwe Central Hospital and Kabwe General Hospital. They carried out diagnoses and treatment for 79,565 patients (including hospitalization cases), conducted 12,005 operations, treated 3,430 severe cases, and trained 410 local health practitioners." (Zhou, 2012)

The Zambian case is a fitting example of Chinese medical aid to many African countries which has always been one of the main features of Chinese Overseas Development Assistance

CONTACT Peter Schumacher schumap@tcd.ie

(ODA) to Africa (Bräutigam, 2011). The frequently mentioned starting date for Sino-African medical co-operation was 1963, when the Chinese government sent a Chinese medical team (CMT) to Algeria to alleviate significant medical staff shortages which followed the abrupt withdrawal of French doctors in the wake of the Algerian war for independence (Huang, 2010; Li, 2011). Afterwards, the selection of African destination countries for CMTs have always been closely related to the foreign policy objectives of the Chinese government such as supporting communist African allies during the Cold War era and building political alliances in multilateral organizations (especially regarding the status of Taiwan) (Dreher & Fuchs, 2015). Early commentators such as Hutchison (1975) report not only that the Chinese "barefoot doctors" were often sent to remote rural areas in Africa, but also that their approach of focusing "less on emergency medical care and more instead on bringing basic preventative care to rural areas" proved to be highly successful (Youde, 2010). Since the creation of the Forum on China Africa Cooperation (FOCAC) in 2000, economic objectives enhanced political motives which led to the increased deployment of Chinese medical teams, training of African medical personnel, infrastructure development in form of 30 hospitals and 30 malaria centers as well as joint research projects for the development of new drugs and the fight against major diseases such as HIV/Aids and Malaria in most African states (see FOCAC, 2006). While exact aggregate numbers of CMT members and African patients treated are difficult to assess, the available literature suggests that between 1963 and 2006, more than 200 million African patients have been treated by at least 16.000 CMT members, in at least 47 African countries (Huang, 2010; Li, 2011; Lin et al., 2016; Looy, 2006). Despite the long history and increasing scale of Chinese medical assistance to African countries, the available information and narratives on the issue are almost entirely of numeral nature. Therefore, we aim with this paper at contributing to the debate by looking at the embodied experiences and daily interactions, which in turn shape the lived process of knowledge mobility.

Theoretically, this paper draws on scholarship about knowledge and mobility. As noted by Raghuram (2013), for a long time, mobility research has ignored that the exchange of knowledge is an important outcome of mobility processes. In this regard Chinese-Zambian medical co-operation is a particularly interesting case because the medical field involves all different kinds of knowledge (Williams & Baláž, 2008). Since it is after all part of the CMTs mandate to "transfer" knowledge, we put a particular focus on the communication process between the CMT-members and their Zambian hosts. In doing so, we acknowledge Meusburger's (2009) criticism that research on knowledge transfer processes is too often neglecting the complexities and pitfalls which occur during the communication process.

This account starts with a brief overview of academic literature dealing with the interplay of mobility and knowledge. The subsequent section introduces an adaptation of Meusburger's communication model which is used for data analysis. It is followed by a short assessment of the background of Chinese medical co-operation to Zambia. The fourth section contains the layout of fieldwork and methods applied to collect and analyze the empirical data used in this account. In the fifth section the findings of the research are presented and discussed. The concluding section will highlight and contextualize the main points of this paper.

The relationality of mobility and knowledge

There is a significant body of academic literature which acknowledges the fact that mobility and knowledge are closely intertwined (Salt, 1997). Yet, for a long time the research on the

relationality between mobility and knowledge was focused on the mobility aspect, assuming knowledge "as a given and equated to narrow forms of credentialism or technical competences" (Ackers, 2012, p. 3). Significant progress in the deconstruction of these somehow superficial and oversimplified views of knowledge was made by authors such as Argote and Ingram (2000) who assert that knowledge has a tacit component which rests inside the individual and cannot be easily transferred. This theorization is rooted in Michael Polanyi's (2009) notion of tacit knowledge and his observation that "we can know more than we can tell" (p. 4). The consequence of Polanyi's thought is a distinction between tacit knowledge – the knowledge which rests inside us, yet cannot be expressed – and codified knowledge – knowledge we can express in various forms of code (language, pictures, gestures, signs, etc.). As explanation why certain kinds of knowledge cannot be expressed, Gertler (2003) summarizes two lines of thought. First, there is the problem of the complexity of cognitive processes and that many of these processes take place subconsciously. Being unaware of these processes means that we are also not able to communicate them in form of code (see Nonaka & Takeuchi, 1995). Second, there is the inadequacy of available codes we can use to express our knowledge. We all know situations where it is impossible to put our thoughts into words, but the same issue applies also to other forms of codes, such as for example pictures or films. Maskell and Malmberg (1999) as well as Howells (2000) link the theorizations around tacit and codified knowledge directly to space, place and thus mobility by asserting that personal experience is an important factor for the acquisition of tacit knowledge. Others such as Collins (1993), Blackler (1995), Nonaka, Konno, and Toyama (2001) and Williams (2006) present conceptual distinctions of tacit and codified knowledge which allow to link the acquisition of (tacit) knowledge to mobility between specific spaces. When it comes to the definition of such spaces, particularly "culture" appears to be a useful concept within the context of knowledge and mobility research. This is because "culture refers to widely shared ideals, values, formation and uses of categories, assumptions about life, and goal-directed activities that become unconsciously or subconsciously accepted as "right" and "correct" by people who identify themselves as members of a society" (Brislin, 1990, p;.11). Brislin (1990) points out that cultural spaces may correlate with national borders, yet, they are more often limited to groups which may be defined by other contexts such as ethnicity, social class, religion, profession, membership in a certain organization and so on. Since our individual knowledge is always intrinsically interwoven with cultural attributes of the numerous cultural spaces we are part of, the encounter with other cultures may lead to an inability to understand, misunderstanding and even friction (see Nostrand, 1989). For example, research on language translation processes shows that translators with personal life experience in a different culture are usually more accurate in conveying the original meaning of their translations when compared to their counterparts who lack such cultural knowledge and rely solely on codified knowledge of language systems (Kramsch, 1995).

Finally, for both, the production and acquisition of knowledge, power plays a relevant role in at least three ways. First of all, the very question of what is or is not considered knowledge rests with those who shape this definition. Hobart (2002) problematizes that a growth of (paradigmatic) knowledge leads also to a growth of ignorance. As example he uses the dominance of the modernization paradigm in development thinking, a thought which is also echoed by Raghuram (2009) who notes that alternative approaches to development thinking which are critical of the modernization paradigm may be "presented as anti-developmental" (p. 111).

Closely related to the first point is the question of the valorization of knowledge. Different types of knowledge may not be seen as equal in terms of value. For instance, an expert's knowledge may be seen as more valuable than lay knowledge. Last but not least the accessibility of knowledge itself can be seen as a source of inequality (see for example Kofman & Raghuram, 2015).

An adaptation of Meusburger's communication model

In his work, Peter Meusburger rejects the idea of a universal transferability of knowledge since it ignores spatial differences which affect understanding and thus the exchange of knowledge. The underlying assumption of Meusburger's (2009, 2017) communication model is that in order to convey our knowledge to another person, we need to express our knowledge in form of coded information (for example language) upon which the other person has to decode this information into knowledge. Subsequently, he identifies several factors which affect the coding and decoding processes and "filter" the knowledge exchanged between two people (see Figure 1).

While this model is extremely useful on a theoretical level, we found it useful to devise a simplified version that fits the empirical case presented in this paper (see Figure 2). This adapted version considers also the three relevant stages of Meusburger's model. The first stage concerns the communicator of knowledge who has to codify knowledge in order to make it transferable. The second stage is the transmission stage in-between the communicator and the recipient. At this stage the knowledge codified by the communicator is available through a certain platform in form of coded information to be received by the recipient. While written code is among the most common forms of codified knowledge, it is not the

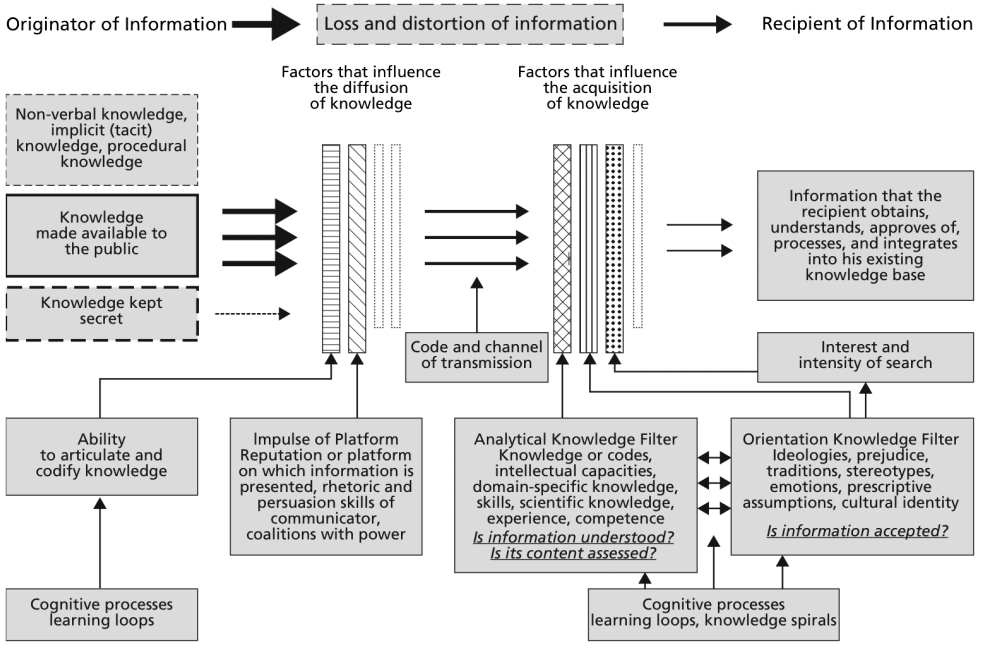

Figure 1. Meusburger's communication model (Meusburger, 2009, p. 35).

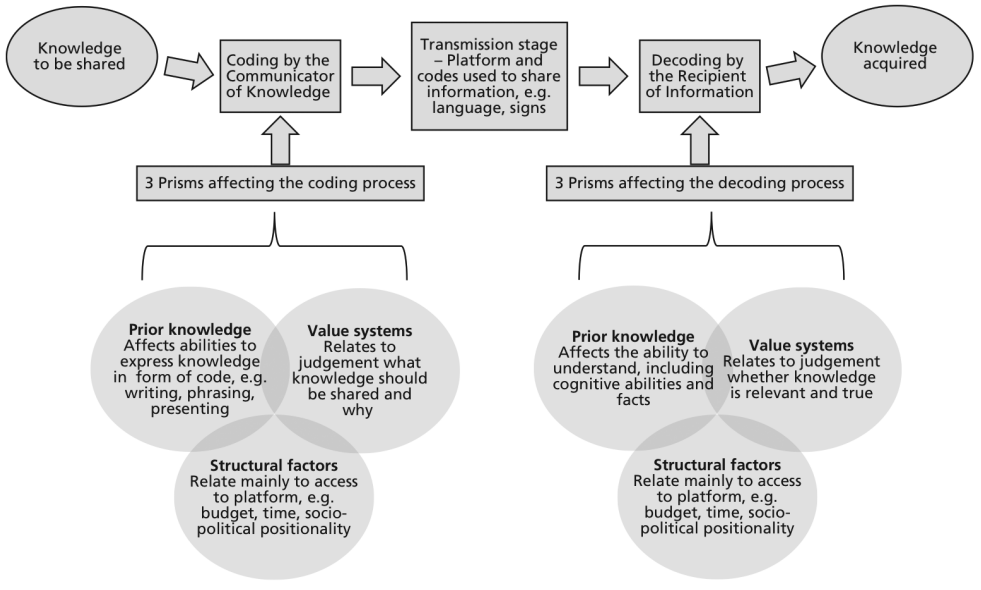

Figure 2. Adaptation of Meusburger's communication model (Design: P. Schumacher).

only form available. As knowledge bearer we can also codify knowledge in form of pictures, speech, body language or any other way useful to express our knowledge in form of information. One should note that it does not necessarily have to be a conscious decision what code we use and that the use of more than one code is possible and often useful to clarify the information we want to send. For example body language is often (mostly unconsciously) used in combination with speech). The third stage concerns the recipient information and the process of decoding the knowledge which is embedded in the information.

The first and third stage, each contain three prisms which affect the process of coding and decoding. The term *prism* instead of Meusburger's *filter* is used because we find it a more fitting metaphor for factors which do not only filter but also alter knowledge during the communication process. The three prisms are prior knowledge, value systems and structural factors. Prior knowledge and value systems refer to endogenous factors, related to the tacitness of knowledge and rest inside a person. They are ultimately a function of someone's life experience. Structural factors account for exogenous influences which shape this life experience. For the communicator, the prior knowledge prism influences the ability to codify knowledge. It effects how successful we are in expressing what we actually mean. For the receiver of information, the prior knowledge prism consists of cognitive abilities and case or field-specific factual knowledge. The value systems prism is composed of factors which affect our judgment, such as ideologies, social and cultural norms as well as trust. For the communicator, the value systems prism affects mainly the question whether knowledge should be shared or not. For the recipient of information the value systems prism affects whether and in what way the information can be accepted as relevant knowledge. Finally, the prism of structural factors affects both the communicator and the recipient. They can be understood as power constraints in form of funding, time or complex socio-political settings and have a direct impact on what platforms can be accessed as mode of transmission.

All three prisms are interconnected. For instance, our value systems depend for a large part on our prior knowledge and vice versa while structural factors affect from the outside how and which knowledge we are able or willing to acquire. Finally, Meusburger (2009) clarifies that the three stages of communication are in reality not a linear single process but consist rather on a multitude of feedback loops which are necessary to rephrase or clarify information sent in order to be understood as the knowledge which rested originally with the communicator. Knowledge exchange is possible if the three prisms on both sides do not distort the process to such a large extent that the communication process results in complete failure or misunderstanding.

Sino-African medical co-operation – The Zambian case

Chinese medical co-operation with Zambia commenced in 1978 within the context of the aforementioned Chinese support programs for communist partner states in Africa. Due to the Chinese strategy of putting Chinese provincial governments in charge of the medical co-operation with specific African recipient countries, until present day, all CMTs deployed to Zambia where sent from various hospitals in Henan province (Li, 2011).

Latest after the creation of the FOCAC in 2000, when medical infrastructure development and training of local staff were added as policy objectives, the mode of operation of the CMTs has changed as compared to Hutchison's (1975) account on Chinese "barefoot doctors" with their focus on basic preventative care to rural areas. In Zambia this has led to the fact that CMTs are mainly based in the urban centers of Lusaka, Livingstone, Kabwe and the Copper Belt where they operate alongside local staff of Chinese-built hospitals and clinics (see above). Unlike the "barefoot doctors," current CMT members are highly specialized staff from Chinese hospitals, including medical technicians to operate donated Chinese medical equipment. These CMTs are usually housed in a gated complex near the work place, which is also where they take their (Chinese) meals. Interaction with Zambian medical professionals is usually limited to joint work, whereas trainings, workshops or formal presentations are currently not conducted. The periods of co-working are usually eight hours on five working days per week, excluding Chinese holidays. While previous CMTs remained in Zambia for two years, the Chinese government has decided that from 2016 onwards stays of CMTs in Zambia will last only one year.

It is mainly due to large medical infrastructure projects such as the foundation of Levy Mwanawasa General Hospital in Lusaka (see introduction) that during the last decade, Zambia has assumed a very prominent role among the African recipient countries of medical support which is expressed by the second highest number of CMTs (7), the second highest number of Chinese medical infrastructure developments (3) and the third-highest number on overall health ODA budget (56,346,732$ US) (Guillon and Mathonnat, 2017).

Methodology

The research for this paper took place within the framework of a bigger research project which included more than a year of fieldwork in Zambia and China, divided into four periods between 2014 and 2016. The data collection in form of participant observation and questionnaires was conducted in Zambia's capital Lusaka during six weeks in May and June 2016.

Zambia was selected because of its prominent status among African recipient countries of Chinese medical support.

To reach a better understanding of the micro-level interactions between the CMT-members and their Zambian counterparts, the base of the data collection was conducted in form of participant observation (including frequent short conversations) and enhanced through a survey which included 30 questionnaires with Chinese (13) and Zambian (17) medical personnel. All but four Zambian participants had 5 years or more experience in their field before time of data collection and about half of all participants even in excess of 10 years. Both sets of questionnaires for Chinese and Zambian medical personnel were nearly identical in terms of questions asked. Main difference between the two sets of questionnaires was the acknowledgement of the different geographies. In addition, the CMT version contained a Chinese translation to avoid misunderstanding. The questions asked were grouped into three sections. The first section dealt with general information on the research participant, for example years of work experience and medical specialization. The second section dealt with the daily co-operation in provision of medical services, mostly focused on the knowledge needed and exchanged during this process. The third and final section contained questions regarding the individual evaluation of the program and asked the participants how specifically an exchange of knowledge could be improved.

To verify and expand the results obtained through participant observation and questionnaire, in-depth interviews were conducted with several participants of the survey, people in relevant management positions (Zambian and Chinese) and Zambian graduates from Chinese medical schools. These interviews lasted between 30 min and 2 h and dealt with specific questions arising from participant observation and questionnaire. Due to the sensitive environment (partly during clinics or other situations where patients were present) the data collection was not audio-recorded but merely written down in short hand and enhanced later.

In spite of the use of quantitative methods such as a questionnaire, this study is predominantly of qualitative nature and the corresponding limitations apply. To assure participant anonymity the exact places where data collection took place as well as position and gender of the participants are not disclosed. In the following results section, quotes of participants are ZX or CX where Z stands for Zambian, C for Chinese and X for the participant number.

The prisms affecting Chinese-Zambian knowledge exchange

This section presents the findings obtained through the analysis of the communication process between the CMT members and medical professionals in Zambia. It is subdivided into three parts, each of which is dedicated to one of the three prisms which affect the communication process between Chinese and Zambian medical staff.

The prior knowledge prism

The first and most important prior knowledge prism which appears in answers of surveys and interviews during research for this paper in an almost obtrusive way is language. In fact, the extent of this issue reveals a structural constraint to which we will turn below. However, since it represents a significant barrier to knowledge exchanges, it should already be noted

that all CMT members had extremely limited knowledge of the English language which resulted in severe communication issues between the two teams.

The answers of the research participants showed that limitations in knowledge exchange which arise from the code used depend also on other factors such as the area of work. Technicians operating machinery such as ECG, X-ray or anesthetic equipment reported that through the co-presence of their Chinese colleagues they were able to observe and eventually operate the machines together. Similarly, Zambian surgeons explained that they learned of new methods from their Chinese colleagues by jointly conducting surgery and observing new techniques used by the Chinese surgeons. Combined with the fact that 14 out of 17 Zambian staff stated "practical skills" as most important knowledge they acquired through the presence of the Chinese team, this shows that sign language and presentation can be useful codes to transfer certain types of knowledge which do not require a lot of theoretical information. Next to an improved understanding how to operate equipment and complex surgical techniques, there are other, sometimes very simple examples for such knowledge exchanges:

> "Just a few days ago, a Chinese doctor showed me a very simple method how to remove a cervix support belt. It can be very small and simple, but practical things like that." (Z4, Obstetrics and Gynecology)

However, it needs to be considered that even in these cases, prior knowledge of the recipient is important in order to decode the information provided by the communicator. For example, in the case of learning during a joint-surgical procedure, it is necessary that the recipient has a profound prior knowledge of human anatomy and surgical methods, without which information in form of demonstration could not be decoded. Two examples that a lack of such domain-specific prior knowledge prevented the exchange of knowledge were noticed in radiology as well as physiotherapy. Since there are only trained radiographers in Zambia, yet no radiologists, there was relatively little knowledge exchanged between the Chinese radiologist and the Zambian radiographer, simply because the radiographer lacked the knowledge related to the theoretical training and practical experience of a radiologist. Similarly, some Zambian physiotherapists appeared eager to learn from a Chinese acupuncturist but were prevented by their own lack of knowledge about traditional Chinese medicine:

> "Theoretical knowledge could be also important for us, but we don't really get much of this because of the language barrier. (…) Practically they help and enhance our service, you can actually see that these guys know a lot, but we cannot talk about it or ask questions." (Z12, Physiotherapy)

It was not possible to observe any lack of professional prior knowledge preventing the CMT members to learn from their hosts but none of them reported to have acquired professional knowledge from the Zambian colleagues. However, most participants reported a lack of prior knowledge about Zambian culture on the part of the CMT. This lack of cultural knowledge affected particularly the interaction between doctor and patient and will be discussed below.

The value system prism

As mentioned above, our value systems do not only affect what we value as knowledge and what not, they also affect the relationship between the communicator and the recipient and

define who takes which of the two positions. In other words, our value systems make the process of knowledge acquisition a process which takes place within a power relationship. For example, within the doctor–patient-relationship, doctors usually assume a position of power due to their medical expertise. This is notwithstanding the fact that a medical consultation is mostly an exchange of knowledge, where it is also necessary that the patients share their personal knowledge of their body and their ailments with the doctor to enable an accurate diagnosis and a selection of a suitable treatment method.

During our field research, the impression emerged quickly that within the relationship between the CMT members and the Zambian medical personnel, the Chinese assumed the role of the communicators while their Zambian colleagues saw themselves rather as recipients. This is somewhat remarkable since it is the CMT members which were operating in an unfamiliar environment without any prior knowledge about people and conditions in this environment. The research of Williams and Baláž (2008) shows that particularly in cases of inter-cultural knowledge exchanges, the value system prism can have a severe effect when it comes to the acknowledgement of the knowledge stemming from an unfamiliar culture. In their example it was the case that some Slovak doctors abroad were seen as learners rather than also as sources of relevant knowledge. This means due to the value systems of their peers abroad they were automatically subordinated, which prevented an equal exchange and co-acquisition of knowledge. Within the sample for this research, all of the Zambian participants believed the Chinese colleagues did have much to offer in terms of knowledge and most described the Chinese doctors as highly experienced and knowledgeable despite the language barrier:

> "When they just arrive, they lack of confidence, but after a while they start showing what they can do. When you are not used to them, you could have some doubts, but after a while you see, they are very qualified. Especially their work experience is very valuable for us." (Z6, Obstetrics and Gynecology)

While the quote above resembles the opinion of all Zambian participants, that their Chinese counterparts are highly qualified, it also shows that this opinion is rooted in experience. In this context it is important to note that most Zambian participants had extensive experience of working together with several CMTs as well as colleagues from other foreign cultures, while all Chinese interviewees stated to be outside China for the first time in their life. This experience gave the Zambian personnel the opportunity to adjust their opinion about the value of the CMT members' knowledge whilst the Chinese had only little experience allowing them to adjust their value systems established in China. As a consequence, the entire Chinese team displayed a very "Chinese" set of values which resulted occasionally in a certain ignorance toward Zambian knowledges of how to approach matters.

Particularly the general understanding of development had a big influence on individual value systems which affected the valorization of specific knowledges and subsequently the observed power relationship between the two teams. All research participants regardless of their nationality or position expressed a view of development which resembles the modernization paradigm:

> "The Chinese at our hospital are underutilized, they have so much know-how but no opportunity to share it. Another problem is that equipment they could use to teach us is lacking. Generally, their presence helps to broaden our scope and mindset. Generally, the mindset in Zambia has to change, because they [the Zambian decision makers] don't know how things are done abroad." (Z13, Obstetrics and Gynecology)

Since development is understood in accordance with modernization theory, all participants perceive China as more developed than Zambia. The conclusion of this perception is that the Chinese have a clear advantage of modernization knowledge which Zambians should seek to acquire in order to further their own development (see Etounga-Manguelle, 2000 for an elaboration of this perspective). As a result, we observed a very one dimensional power relationship between the Chinese and Zambian team members that resembled a teacher-student relationship which was also loaded with ignorance. On part of the CMT such ignorance was noticeable in a very strong conviction (expressed by all but one CMT member) that there is no important knowledge to acquire in Zambia (with the notable exception of the English language). Only one single Chinese participant stated that his stay in Zambia furthers his practical knowledge since it offers him the opportunity to enhance his theoretical knowledge on HIV treatments with important field observations which he could not make in China. However, it should be noted that only two Zambian participants mentioned noticeable ignorant behavior of CMT members that was experienced as arrogant and subsequently led them to minimize interaction to what was necessary to perform the tasks. Although all Zambian participants appeared eager to learn from the CMT members they, too, showed ignorance when it came to unfamiliar knowledge which may not fit directly into the modernization mainstream:

> "For example, when they talk about qi energy in relation to acupuncture, this sounds more like a belief and not really scientific." (Z12, Physiotherapy)

Interestingly, the quote above expresses suspicion towards traditional Chinese medicine, arguably one of the few areas where the CMTs are notably different from their western counterparts. The Chinese government tries to position traditional Chinese medicine as "unique selling point" of the CMTs, but the initial impulse of Z12 is to reject it as "unscientific". Nonetheless, due to the presence of the CMTs, acupuncture is used frequently for stroke recovery therapy and several Zambian therapists expressed the wish to learn more about it since they don't understand it, yet observe that it helps many patients. This finding underlines again the importance of personal experience for the alteration of value systems.

Next to the culture- and development-related value systems mentioned above, it could also be observed that profession-specific power relations affected the knowledge acquisition. An example is the hierarchy between doctor and nurse, where doctors may think nurses have nothing to teach them or a nurse might not find it appropriate to engage a doctor with questions. This was the case in some clinics where Zambian nurses reported they work alongside the Chinese consultant without gaining much knowledge:

> "Clinics are the same as always. What we do as nurses is not different through the presence of the Chinese doctors. We just assist in small things at the clinic and we do not really talk about it because they are all standard procedures. I believe the doctors who work directly together, like for example in the theatre, learn more from each other." (Z2, ENT)

As suggestion to overcome this barrier, several Zambian nurses expressed their wish that Chinese nurses should also be a part of future CMTs.

Finally, it was possible to observe that also the individual value of knowledge plays a role in the knowledge acquisition process. All Chinese participants stated that they gained knowledge about the Zambian culture. The most frequently noted example in this context was the doctor-patient relationship. The Chinese participants seemed astonished that Zambian patients respect the doctor and follow medical advice, apparently since this poses a stark contrast to the situation in China. One participant noted that he learned how effective

medical treatment can be with a "harmonious doctor-patient relationship" (C13, General Practitioner). Similarly a colleague noticed that "talking more to the patient improves the treatment effect" (C9, Orthopedics). However, when asked which knowledge they acquired in Zambia, cultural knowledge was only mentioned by two Chinese respondents. Kim (2010) assigns a crucial importance to the acquisition of foreign cultural knowledge since it allows migrants to reflect on the benefits and shortcomings of their own culture, yet most Chinese interviewees did not express much appreciation for the culture-related knowledge they acquired.

The structural factor prism

Since the creation of the FOCAC, the Chinese government pledges increasing numbers of CMTs, however, there are only few Chinese medical practitioners with international experience and Africa is not among the favorite destinations for most Chinese. This leads to the structural problem that most CMT members lack of work experience abroad and take a serious amount of time to get used to their host environment. We experienced the CMT members throughout as friendly, yet also at times shy, hesitating and suspicious. An interesting impression was provided by the "conversation" between a Zambian surgeon and the Chinese colleague. The Zambian doctor asked his colleague to conduct her first surgery in Zambia. He explained that this is necessary because he needed the time to attend to patients during ward rounds. Although the Chinese doctor kept smiling – which gave the situation a friendly atmosphere – she felt obviously uncomfortable with this request using gestures such as shaking her head and waving her hands in a refusing manner. The whole scene appeared like a medical supervisor telling a resident that it is time to conduct the first surgery, yet the Chinese doctor had the experience of ten years and hundreds of standard procedures like the one requested in this situation. While she was not able (or willing) to state any reasons for her behavior, her Zambian counterpart explained that this situation is exemplary for many CMT members during their first months in Zambia (an observation that was also voiced by other Zambian participants – see quote by Z6 above). Since we know that none of the CMT has ever been outside China, it appears very likely that an initial timidity (even of very seasoned personnel) is most likely caused by a very high degree of uncertainty regarding Zambian norms, value systems and expectations. In this regard it would be rather knowledge of being in unfamiliar cultural spaces than extensive medical knowledge which could prove helpful to overcome the situation. Since such knowledge needs to be acquired upon arrival, time becomes a relevant factor. This is also shown by the disappointment of every single Zambian participant about the policy decision made by the Chinese government to shorten the stay of the CMTs from two to one year:

> "More language training before they come to Zambia can reduce the time to get to know each other. At the moment we waste the first six months to get to know each other." (Z11, Physiotherapy)

The quote above resembles the opinion of most Zambian research participants that it takes a significant amount of time for the Chinese team to be ready to really co-operate with the local staff. Furthermore it points to the major barrier for knowledge exchanges in this project.

All participants regardless of nationality stated that communication issues pose the main challenge to a more successful exchange of knowledge. The reason for this is that nearly the

entire Chinese team had surprisingly little command of the English language while only one of the Zambian staff did speak Mandarin Chinese. The main issue here is that during co-work as platform for knowledge exchange, language is very useful for the coding and decoding process from knowledge to information and back to knowledge. It is useful, because it is usually quick, and flexible since it allows for quick feedback loops between communicator and recipient, which help to clarify uncertainties and misunderstanding. However, since the language codes known by each party were not compatible (English and Mandarin), they had to resort to other codes – mainly sign language and presentation – which were more time consuming and less flexible with regard to feedback loops. This proved to be problematic since it resulted in a more limited and sometimes distorted exchange of information.

Although the importance of language for the exchange of knowledge is certainly a truism, the gravity of this problem was certainly unexpected at the beginning of our field research. For instance, we were witnessing a situation where a Zambian doctor caused confusion because he greeted his Chinese colleague with "how are you doing?" instead of "hello" or "good morning." The result was that a mere polite comment turned into a lengthy discussion about what was being said and why. Although the Zambian participants shared their experience that language problems usually become less frequent during the long stay of the CMTs, we acknowledge that they have a very time consuming impact on both sides, especially since they do not only affect the exchange of domain-specific knowledge but also the Chinese doctor's ability to reach a better understanding of their host environment.

Furthermore, the donation of Chinese machines, medical equipment and medicine appears to be a double edged sword, since inscriptions and manuals of all donations are written in Chinese, they require Chinese speaking personnel to be put to use.

Finally, considered that knowledge exchanges have been added to the agenda of the CMTs only recently, the degree of co-operation between the two teams appears quite advanced in the Zambian case when compared to other African countries (see Jiang Kwete, 2017 for a brief overview of CMTs in the DRC). If the Chinese government is serious with its claims to train African medical staff, there is still much space for adjustment in order to improve knowledge exchanges between CMTs and Zambian personnel. Among the most important recent developments which may help to alleviate several structural barriers is the fact that a large part of about 2000 current Zambian students in China study medicine (interview with the Association of Zambian Students in China). Upon graduation, these students will have lived and studied for at least six years in China, which means that next to their medical training, they will have acquired a considerable amount of cultural knowledge about China and fluent Mandarin skills. Additionally, these students had the opportunity to make the experience of being placed in a unfamiliar culture, which allows them to compare and mediate between the two countries and contribute to the successful exchange and (re-) production of knowledge (Schumacher, n.d.).

Conclusion

This paper connected the academic debate around knowledge and mobility with the empirical developments of Chinese ODA to Africa. Instead of focusing on the knowledge which was exchanged within a Chinese-Zambian medical co-operation project, we took a step back and investigated the communication process between the two teams. This was done on the conceptual basis of Meusberger's (2009, 2017) communication model which was

adjusted to fit the empirical case. The findings presented above show that Meusburger's focus on the communication process is well suited to identify not only knowledges which are exchanged, but also the problems which prevent intercultural knowledge exchanges. In the case observed, a lack of prior language knowledge was the main factor preventing a more extensive exchange of knowledge. However, the significance of this finding goes beyond a simple reaffirmation of the truism that language is of extreme importance for the exchange of knowledge. Both teams acquired knowledge *despite* the language issue, which shows that non-linguistic codes such as demonstration and body language are also important codes for the transmission of information. Whether or not the research participants were able to decode such information into knowledge depended for a large part on their own prior knowledge in form of experience and domain-specific knowledge, but also on their value systems which defined positionalities, motivations and appreciation of knowledges acquired. Structural factors formed the macro-level counterpart which influenced the micro-level findings on prior knowledge and value systems.

These findings allow at least three conclusions with regard to the relation between mobility and knowledge.

First, mobility across cultural spaces increases the difficulty of knowledge exchanges. This is even the case in internationally standardized fields like the medical sector because spatial differences decrease the ability to communicate effectively. In the case above, due to a lack of other communication means, knowledge exchange was mainly limited to what could be observed. Since shared understandings vary from one cultural space to another the absence of shared understandings increases the difficulty of exchanging knowledge. Additionally, value systems vary between socio-cultural spaces and affect the relation between communicator of knowledge and recipient of information as well as the judgment of what is considered useful knowledge to acquire.

Second, due to the existence of spatial differences, mobility also provides the enhanced opportunity to acquire new knowledge. In the case presented, this is particularly the case for culture-related knowledge and language skills (acquired by the CMT), but also different practical skills and professional knowledge which arise through different trainings and other structural factors.

Third, time is a crucial factor which determines whether knowledge is exchanged in a communication process. In medical exchanges, time is a rare resource and knowledge exchanges are desired to take as little time as possible. But the familiarization with a new cultural space itself is a knowledge acquisition process which took the CMT members a significant amount of time, and this time has to be taken into account in medical cooperation, too.

Empirically, it needs to be said that at the current stage, knowledge exchanges in the medical co-operation between China and Zambia are only a by-product and overshadowed by the mandate to treat patients and operate Chinese machinery rather than teach local personnel. However, the Chinese-Zambian co-operation in its recent form is only in its starting phase and will be most likely much more effective once communication issues decrease. In this context, particularly Zambian returnees from Chinese medical schools represent a reason to be optimistic. The pre-condition is that Zambian decision makers understand their value as brokers and post them alongside the CMTs.

Finally, although Chinese officials hail Chinese development co-operation as new alternative for African development, the underlying problems such as varying value systems and

an unconditional embrace of the modernization paradigm are not solved by the Chinese co-operation mode. In this regard, Chinese development co-operation resembles largely the traditional western aid, including its dependencies on donor equipment, staff and expertise.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by The Netherlands Organisation for Scientific Research (NWO) (Aspasia Prize for Maggi Leung, awarded in 2012).

References

Ackers, H. L. (2012). Mobilities and knowledge transfer: Understanding the contribution of volunteer stays to north-south healthcare partnerships. *International Migration, 53*(1), 131–147.

Argote, L., & Ingram, P. (2000). Knowledge transfer: A basis for competitive advantage in firms. *Organizational Behavior and Human Decision Processes, 82*(1), 150–169.

Blackler, F. (1995). Knowledge, knowledge work and organizations: An overview and interpretation. *Organization Studies, 16*(6), 1021–1046.

Bräutigam, D. (2011). Chinese development aid in Africa: What, where, why, and how much? In J. Golley & L. Song (Eds.), *Rising China: Global challenges and opportunities* (pp. 202–223). Canberra: ANU E Press.

Brislin, R. W. (Ed.). (1990). *Applied cross-cultural psychology* (Vol. 14). Newbury Park, CA: Sage Publications.

Collins, H. M. (1993). The structure of knowledge. *Social research,* 95–116.

Dreher, A., & Fuchs, A. (2015). Rogue aid? An empirical analysis of China's aid allocation. *Canadian Journal of Economics/Revue canadienne d'économique, 48*(3), 988–1023.

Etounga-Manguelle, D. (2000). *Does Africa need a cultural adjustment program?* (Vol. 71). New York, NY: Basic Books.

FOCAC. (2006). Forum on China-Africa cooperation Beijing action plan (2007-2009), [Online] 16 November. Retrieved from http://www.focac.org/eng/ltda/dscbzjhy/DOC32009/t280369.htm

Gertler, M. S. (2003). Tacit knowledge and the economic geography of context, or The undefinable tacitness of being (there). *Journal of Economic Geography, 3*(1), 75–99.

Guillon, M., & Mathonnat, J. (2017). *Is there a strategy in China's health official development assistance to African countries?*, Études et Documents, n° 10, CERDI.

Hobart, M. (Ed.). (2002). *An anthropological critique of development: The growth of ignorance*. London: Routledge.

Howells, J. (2000). Knowledge, innovation and location. In J. R. Bryson, P. W. Daniels, N. Henry, & J. Pollard (Eds.), *Knowledge, space, economy* (pp. 50–62). London: Routledge.

Huang, Y. (2010). Pursuing health as foreign policy: The case of China. *Indiana Journal of Global Legal Studies, 17*(1), 105–146.

Hutchison, A. (1975). China and Africa. *Africa Spectrum, 10*(1), 5–12.

Jiang Kwete, X. (2017). Chinese medical teams in the DRC: A comparative case study. *China Africa Research Initiative policy brief, 21*, 1–4.

Kim, T. (2010). Transnational academic mobility, knowledge, and identity capital. *Discourse: Studies in the Cultural Politics of Education, 31*(5), 577–591.

Kofman, E., & Raghuram, P. (2015). Skills and social reproductive work. In *Gendered migrations and global social reproduction. Migration, diasporas and citizenship series*. London: Palgrave Macmillan.

Kramsch, C. (1995). The cultural component of language teaching. *Language, Culture and Curriculum, 8*(2), 83–92.

Li, A. (2011). *Chinese medical cooperation in Africa: With special emphasis on the medical teams and anti-malaria campaign*. Uppsala: Nordiska Afrikainstitutet.
Lin, S., Gao, L., Reyes, M., Cheng, F., Kaufman, J., & El-Sadr, W. M. (2016). China's health assistance to Africa: Opportunism or altruism? *Globalization and Health, 12*(83). doi:10.1186/s12992-016-0217-1
Looy, J. V. D. (2006). *Africa and China: A strategic partnership?* Leiden: African Studies Centre.
Maskell, P., & Malmberg, A. (1999). Localised learning and industrial competitiveness. *Cambridge Journal of Economics, 23*(2), 167–185.
Meusburger, P. (2009). Spatial mobility of knowledge: A proposal for a more realistic communication model. *disP-The. disP - The Planning Review, 45*(177), 29–39.
Meusburger, P. (2017). Spatial mobility of knowledge: Communicating different categories of knowledge. *Mobilities of Knowledge* (pp. 23–50). London: Springer International Publishing.
Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. New York: Oxford University Press.
Nonaka, I., Konno, N., & Toyama, R. (2001). Emergence of "ba". *Knowledge emergence: Social, technical, and evolutionary dimensions of knowledge creation, 1*, 13–29.
Nostrand, H. L. (1989). Authentic texts and cultural authenticity: An editorial. *The Modern Language Journal, 73*(1), 49–52.
Polanyi, M. (2009). *The tacit dimension*. Chicago: University of Chicago press.
Raghuram, P. (2009). Which migration, what development? Unsettling the edifice of migration and development. *Population, Space and Place, 15*(2), 103–117.
Raghuram, P. (2013). Theorising the spaces of student migration. *Population, Space and Place, 19*(2), 138–154.
Salt, J. (1997). International movements of the highly skilled OECD Occasional Paper No. 30. Paris.
Schumacher, P. (n.d.). *The relationality of knowledge acquisition and international mobility – the case of Zambian circular student migration to China*. Unpublished manuscript.
Williams, A. M. (2006). Lost in translation? International migration, learning and knowledge. *Progress in Human Geography, 30*(5), 588–607.
Williams, A. M., & Baláž, V. (2008). International return mobility, learning and knowledge transfer: A case study of Slovak doctors. *Social Science & Medicine, 67*(11), 1924–1933.
Zhou, Y. (2012). *Remarks at the official opening of the Lusaka General Hospital by Chinese ambassador Zhou Yuxiao*. [Online] 5 April. Retrieved from http://zm.chineseembassy.org/eng/sgxxx/dsjh/t920631.htm
Youde, J. (2010). China's health diplomacy in Africa. *China: An International Journal, 8*(1), 151–163.