

The “*Unwritten Law*” of Language Choice in STEM Doctoral Dissertations: A Case Study in the German-speaking Context

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Introduction

In Germany, the number of doctoral dissertations written in English has been growing continually since the beginning of the 21st century (Rabe 2016: 17). In fact, the development towards English as the language of choice in academic writing has been observed especially in the “sciences proper” (Ammon 2016: 36), i. e., the STEM fields. These findings are evidenced by the developments at the university under investigation in the present study, where in the time period between winter term 2012 and summer term 2016 already more than 55% of the finished doctoral dissertations in the faculty of natural sciences were written in English as opposed to German (results from a pre-study conducted by the author of this article).

Reasons why non-native writers choose English as the language for publishing articles have been widely investigated, for example the possibility to share knowledge with a wider, international audience, to gain more international visibility and to consequently establish one’s academic career (see, for example, Tardy 2004, Tang 2013 or Rabe 2016). However, only scant attention has been paid to the text type ‘doctoral dissertation’, especially regarding German-speaking doctoral candidates at German universities. One reason might lie in the assumption that nowadays the majority of doctoral dissertations are ‘article-based’ dissertations, i. e., they contain a collection of previously published research articles which were already written in English, and therefore investigating article publishing offers sufficient results. At least two counterarguments can be advanced in this respect: First, in the two departments that serve as cases for the study presented in this article, the mentioned dissertation types are not the common practice, and second, and more generally speaking, doctoral dissertations mostly do not serve the same communicative purpose as research articles (Thompson 2016: 380), which I will discuss in more detail below.

Due to the research gap stated above, this article attempts to answer the question *What role does writing the doctoral dissertation in English play in STEM fields in a German-speaking context?* It proceeds as follows: First, the theoretical concept of ‘legitimate peripheral participation’ in a ‘community of practice’ will be briefly introduced because it serves as a framework for the following analysis. Therefore, at the same time, it will be related to doctoral dissertation writing and the role that the English language plays in it. Here, I will also explain why it is worth investigating supervisors’ perspectives and, in a

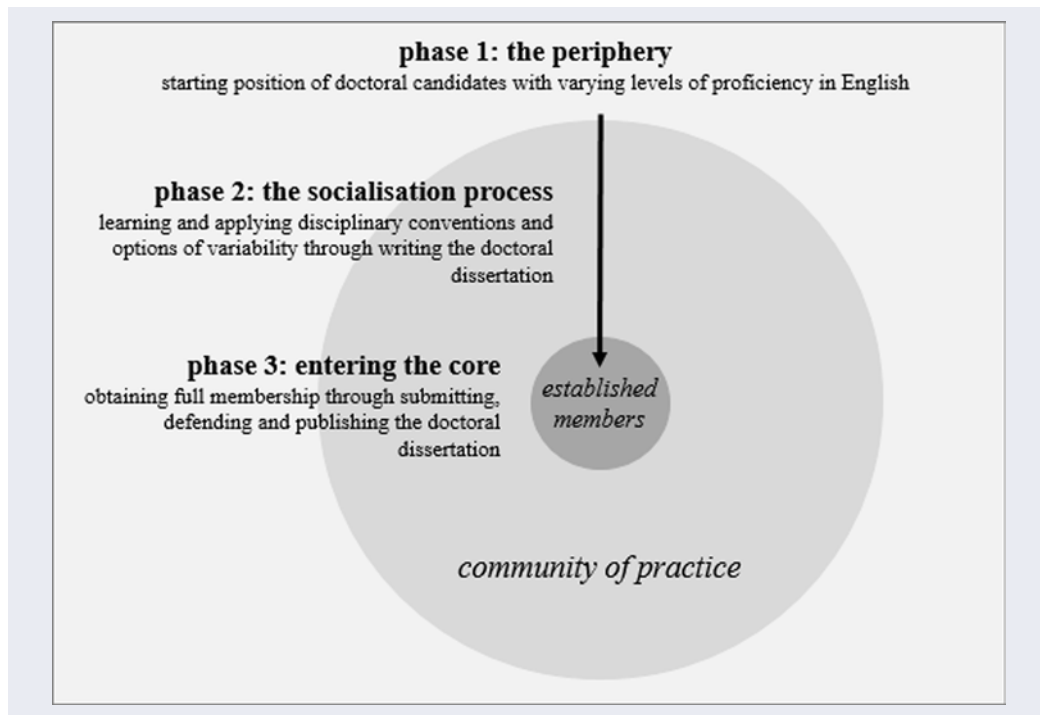
next step, present the procedure of conducting guideline-based interviews (for data collection) and qualitative content analysis (for data analysis) of two exemplary cases from the fields of electronics and information sciences. The results will be presented and discussed in light of the question stated above, and finally, attention will be drawn to reasons why this knowledge is helpful for the support of those involved in doctoral writing – both candidates and supervisors – in this particular context.

Becoming a member of a community of practice through writing a doctoral dissertation

In order to answer the above-stated question properly, I will take on a socio-cultural perspective and consider the concrete writing situation and the function of the text type ‘doctoral dissertation’ therein with the help of the concept of ‘legitimate peripheral participation’ (LPP) in a ‘community of practice’ (Lave/Wenger 1991 and Wenger 1998; c. f. Habibie 2016 or Rabe 2016). According to, for example, Paltridge/Woodrow (2013: 100) and Tang (2013: 11), academic writing is a “social practice” that serves concrete communicative purposes within a specific community. These practices underlie certain norms and conventions that themselves were developed through communication between members of the community. LPP is defined as the “process through which newcomers join [such a] [...] community of practices” (Habibie 2016: 53) and, consequently, how they learn to communicate with other members by adopting the aforementioned norms and conventions. Figure 1 below is an adaptation of a representation of LPP given in Rabe (2016: 73, figure 4). It serves to illustrate the process of becoming a member of one’s academic community with a particular focus on the role of writing the doctoral dissertation, which is described further below.

Figure 1

The concept of legitimate peripheral participation (partially adapted from Rabe 2016: 73, figure 4) applied to writing a doctoral dissertation in English.



At the beginning of their careers, doctoral candidates are new to their discipline’s scientific community: They are situated at the periphery and differ greatly in terms of previously gained knowledge and skills (phase 1, see figure 1 above). During the process of obtaining their doctoral degree, they learn common communicative practices of their respective community. This includes set language norms and conventions they are supposed to follow in order to communicate successfully with the other members, as well as options of variability within these norms in order to develop their own individual style and therefore their personal researcher identity (Hyland 2012: 35; Flowerdew/Wang 2015: 83). This socialisation process indicates a movement from the periphery towards the core of the community by applying the newly gained knowledge about conventions and variability through writing the doctoral dissertation (phase 2, see figure 1 above). This finally leads to full membership (phase 3, see figure 1 above): The finished doctoral dissertation, which is the key product and visible outcome emerging from the process, serves as a ticket to this full membership, a proof of having passed the acid test.

The role of language choice applied to the concept of LPP

Rabe (2016: 330) points out that the acquisition of English skills has to be understood as an integral part of the socialisation of novice researchers. Therefore, I applied the three phases of becoming a full member of the community to the aspect of language choice by developing concrete underlying questions for each of them:

Phase 1: The periphery

- a. Do the doctoral candidates have to attest a certain level of proficiency in English?
- b. Do the doctoral candidates have prior experience in writing academic English?

Phase 2: Socialisation process

- a. Who decides whether the doctoral dissertation is written in English or German?
- b. What are the reasons for writing the doctoral dissertation in English?
- c. At what point in time is the language choice made?

Phase 3: Entering the core

How important is the English language quality in the finished and submitted doctoral dissertation?

The role of the supervisor

The most important reasons that socialisation within a community of practice is not possible without concrete established members who guide novice researchers on their way to full membership in an “apprenticeship-like relationship” (Habibie 2016: 53) are that we find “considerable variation in expectations across disciplines, fields of study, (and indeed supervisors), in terms of what a thesis or dissertation should look like” (Paltridge 2002: 26). For doctoral candidates, the most important contact persons that have the largest influence on them are their supervisors since they have the position to pass on their own experience and knowledge about disciplinary conventions they have gained for years. However, oftentimes the common practices of a community are found to be of a rather implicit nature (Steinhoff 2013: 100). Hence, I decided to conduct interviews with supervisors in order to make the aspect of language choice in the above mentioned socialisation process, meaning the role of writing the doctoral thesis in English, more explicit. The perspective of supervisors is especially interesting in the particular context of Germany because here they serve both as those who provide advice during the writing process and, at the same time, as those who evaluate the dissertation in the end.

The case study: Interviews and analysis procedure

The results presented in this article are one part of a more complex exploratory case study. The latter consists of four guideline-based interviews with German supervisors regarding their perspectives on the writing contexts of their German doctoral candidates who write their dissertations in English. Two interviewees come from the field of economics and two interviewees from electronics and information sciences¹. This rather small number of cases is due to the fact that, as was already mentioned above, little is known about this context so far. An exploratory approach to the topic has the advantage that one can focus on very concrete aspects in the individual contexts that otherwise could have been easily overlooked, and, subsequently, decisions can be made about which aspects are worth investigating in future, more expanded, analyses. In the following, I will focus only on the perspectives of two of the four supervisors mentioned above, namely those who come from the STEM field department ‘electronics and information sciences’. In a pre-study, it turned out that this department covers the highest number of English doctoral dissertations written by German candidates at the investigated university and these two interviewees belong to the group of professors supervising most of them.

The interview language was German, which is the mother tongue of the interviewees. Both interviews were conducted in February 2019 and had a duration of 1:17 hours (case 1, see below) and 1:09 hours (case 2, see below) respectively. Subsequent to the recording, the interviews were transcribed and then analysed with the help of qualitative content analysis in MAXQDA (MAXQDA 2018). In the analysis, I performed a content structuring content-analysis (“inhaltlich strukturierende Inhaltsanalyse”), which focuses on the topics dealt with in the interviews, their distribution, connections, etc. (Kuckartz 2018: 141). Here, I applied a mixed method to develop the codes: The main codes were generated deductively by referring back to the interview guideline and first impressions that resulted from the transcription process (Kuckartz 2018: 72). In a second step, I used a deductive-inductive approach, since some of the sub-codes resulted from the original interview guideline structure as well, whereas others resulted from the interview material itself (Kuckartz 2018: 95).

In this article, I will only present the results that reveal the interviewees’ perspectives on the use of English for writing a doctoral dissertation in their field. This includes the four main codes *language choice*, *language competence*, *English writing experiences* and *importance of language quality* (out of 19 in total), which were determined deductively with the help of the interview guideline.

All parts of the interviews that included statements about whether the writers need to certify a specific level of competence in English were coded with the label *language competence*. The parts that include information about prior experiences the doctoral candidates might generally have with writing academic texts in English received the main

¹ At the university under investigation, electronics and information sciences are treated as one department.

code *English writing experiences*. These two codes will reveal helpful insights into phase 1 of the socialisation process in the doctoral candidates' community of practice described above. For the second phase, the parts of the interviews coded with the label *language choice* were of major importance, since they contain the supervisors' statements about who chooses whether the doctoral candidates write their thesis in German or English, as well as the reasons for this and at what point in time this decision is usually made. Finally, statements about the extent to which the quality of academic English plays a role in the final grading of the doctoral thesis are collected under the main code *importance of language quality*. These are the parts that serve to gain a better understanding of the role of the English language in phase 3 of the process introduced above, namely entering the core of the community and becoming a full member by submitting the final product.

Results for phase 1: The doctoral candidates' levels of proficiency at the starting point of their careers

In case 1, officially certified language competence mainly plays a role for the selection of appropriate international students coming to Germany in order to complete their doctoral degree. German-speaking doctoral candidates are required to prove that they successfully passed the TOEFL or IELTS test only when they apply for one of the faculty's doctoral programs; all others do not have to certify any language competence in their application. In terms of prior experience in writing in English, this supervisor has experienced both: Doctoral candidates who already did so (these are usually the international doctoral students or the Germans who have at least one English-speaking parent), as well as others who did not, which includes the majority of the German-speaking candidates. Still, usually all of them have already read English articles before (*Also in der Regel haben die alle Papers gelesen, aber keine geschrieben.*²).

The supervisor in case 2 decides her/himself³ whether a candidate's English language competence is sufficient during the regular job interview, which takes place in English (*Da ist natürlich die Beherrschung der englischen Sprache eines der wesentlichen Kriterien bei dem Interview.*). A formal certification is not needed. Those candidates who wrote their master's thesis at this chair usually did so in English. At that level, they are free to choose, but they are highly encouraged to use English when the supervisor regards the master's project as highly valuable for the scientific community and worth being published afterwards. In these cases, and as for international doctoral candidates who do not speak German, the writers already have experience concerning writing in English. In the case of candidates who have not written anything in academic English before, it is likely that they have come from a different German university.

2 To offer a deeper insight into the data, original quotes from the German interviews are added to the descriptions.

3 For the sake of anonymity, I will use both grammatical forms in the presentation of the results.

Results for phase 2: The socialisation process through language choices in the doctoral dissertation

Both supervisors stated that English is the language in which their current doctoral students write their dissertations. According to the supervisor in case 1, her/his candidates are generally free to choose whether they want to write their dissertation in English or German (*Es gibt beide Optionen, das zu machen.*); the final decision is thus up to the candidates themselves. Nevertheless, the supervisor recommends using English in dissertations, even for German-speaking doctoral candidates, mainly for reasons of visibility and impact. A German dissertation is only read by German-speaking scientists, whereas an English work is read by Germans as well as by all other nationalities as well and thus can contribute to worldwide scholarly exchange (*Wenn man Wert darauf legt, dass die Arbeit gelesen wird und dass sie eigentlich auch zur wissenschaftlichen Substanzbildung beiträgt, muss man eigentlich bei uns auf Englisch veröffentlichen.*). In addition, s/he argues for English in doctoral dissertations for the sake of citability. Since the majority of publications in this subject field are written in English, none of them will insert German quotes (*Ich kann die Arbeit nicht zitieren, wenn ich selbst veröffentliche, weil es liest dann ja wieder niemand.*). The language choice is usually made at the beginning of the doctoral career. However, in the case that candidates are not able to write appropriate English when publishing research articles, they still have the opportunity to write the final dissertation in German.

At the chair of supervisor 2, the rules are clear: Everybody writes their dissertation in English because it is an “unwritten law” that is not questioned and it would not make any sense to consider writing the dissertation in German (*Es ist eigentlich so ein ungeschriebenes Gesetz.*). Consequently, it is not a choice that is made at a specific point in time but an explicit requirement right from the beginning (*Es ist keine Frage.*). To give reasons, s/he refers to her/his personal career: More than twenty years ago, s/he wrote her/his dissertation in German and regrets this choice today, because the work has not been recognized in the scientific world (*Also hinterher tut mir das eigentlich auch leid.*). Even though it would be possible for the worldwide scientific community to find a German text in an online literature search because the common English keywords are most often used in them as well, the source would not be perceived as a valid contribution to the international field. Another important argument for writing the dissertation in English is that the doctoral candidates are allowed to copy longer stretches of their previously published articles in their final thesis (even though the dissertations at this chair are not article-based by definition, as I mentioned above). Since those articles are all produced in English, it is much easier to insert parts of them into an English dissertation than into a German one (which would include a translation, meaning extra work).

Results for phase 3: Relevance of language quality in the final product

In principle, supervisor 1 regards the English language as a vehicle for the content to be conveyed. Therefore, if the language quality in the dissertation prevents a clear under-

standing, the complete work could be evaluated worse (*Es darf sprachlich nicht dazu führen, dass Dinge nicht klar werden.*). This also comprises the use of German grammar structures in the English text: Even though the aim is not to reach an English native-like style, the text should be intelligible for English native readers and not only for German-speaking ones. However, the interviewee admits that, as a German speaker her/himself, even s/he can never be completely sure whether s/he detected every German-sounding part in a dissertation and evaluated it in terms of correctness (*Wobei, selbst wenn ich es lese und es richtig finde, bin ich ja nicht hundertprozentig sicher, ob es für einen native speaker dann wirklich richtig ist.*). Nevertheless, the interviewee also states that formality should not be the main criterion for evaluation. In fact, s/he tries to focus completely on the content, for example central claims, good representations and a sound methodology, while reading the text for the first time. Moreover, s/he does not see her/himself or other German colleagues in the position of language experts, who would probably focus on very specific language nuances as well (*Aber diese Feinheiten – Also das können wir uns nicht anmaßen.*).

In case 2, the supervisor strongly differentiates between the version that is handed in for evaluation and the version that is published later on. In the former case, s/he regards the quality of the English language as rather unimportant compared to the content. As long as mistakes do not alter the content, the maximum downgrading would be 0.3⁴, if at all. However, when it comes to the final publication of the work, language aspects play a larger role since the text is to be read by other people of the community as well. Therefore, there is always a scheduled downstream correction phase after the dissertation is handed in, evaluated and defended.

Concluding considerations and implications

The aim of this article was to present answers to the question *What role does writing the doctoral dissertation in English play in STEM fields in a German-speaking context?* This was approached by the analysis of two concrete cases in which the perspectives of two supervisors were investigated. The supervisors were selected due to their function as experienced members of the community their doctoral candidates want to join and because they have the role to teach them the rules and conventions of the community. The results of this case study show that writing the doctoral dissertation in English (as opposed to German) plays a major role for the socialisation process of German STEM field doctoral candidates in their disciplinary communities in all three phases introduced above.

For the peripheral phase, two crucial observations can be made: First, already at this stage, a sound English language competence is expected. This could lead to the conclusion that in the case that junior researchers did not manage to acquire a basic level of

⁴ He refers to the common 0.3 grading steps in Germany: 1.0 is best, followed by 1.3, 1.7, 2.0, 2.3, etc.

English language competence **before** they become doctoral candidates, they are either not able to enter the community at all (case 2) or they are allowed to try to catch up during phase 2 (case 1). If they fail, though, it is likely that they are denied the rank of a full member but are at least granted the chance to finish in their mother tongue – which is, consequently, regarded as an emergency solution. Second, language competence does not necessarily need to be officially certified, but rather approved by the supervisor her/himself (at least in case 2), which shows that, right from the start, the supervisors have a specialised language competence in mind that functions as a tool to deliver knowledge to a large audience of experts rather than a general language competence.

The decision to write one’s final dissertation in English can be observed as the crucial factor for success that is highly recommended (case 1), if not mandatory (case 2). Thus, the influence of the most important contact person of the community of practice already becomes clear at the beginning of phase 2. Regarding the reasons for this choice, it becomes visible that the supervisors attribute a strong community-focused function to the final dissertation. They want to impart this understanding to the novice scholars during the whole writing and therefore socialisation process: The final product should provide a valuable contribution that is usable for the whole community, which means all other researchers – not only the German ones – should be able to use the text to contribute to their own works.

Finally, the conclusion we can draw from the answers to the questions assigned to phase 3 is deeply connected to the aim of reader orientation that is present at all times: The language quality of the final product, the ‘ticket’ to full membership, is mostly defined as making the research findings intelligible to readers around the world (that means not sounding *too German*), rather than eloquent native-like language choices.

All in all, the insights gained from this exploratory small-scale study reveal how omnipresent the use of English as a foreign language can be in the whole process of becoming a member of a research community through writing a doctoral dissertation in electronics and information sciences in Germany. As concerns writing consultations for (future) German doctoral candidates from the STEM fields, two important implications can already be drawn from these two exemplary cases:

First, discussing the use of English as a foreign language should definitely be part of writing consultations for (future) German doctoral candidates in the STEM fields, at least in two areas. As concerns the preparation for the peripheral phase (step 1), student writers, especially at the Bachelor’s and Master’s level, need to be made aware of the fact that the “unwritten law” of language choice in their disciplines is deeply connected with the principle of a community of practice. As the supervisor in case 1 states at the end of the interview, most students choose a technical course of studies because they do not relate to languages (*die meisten Leute, die irgendwas Technisches machen, die machen das ja, weil sie eigentlich keine Sprachen können und auch gar keinen Sinn dafür haben.*). Writing consultations could help those students who have a general aversion against using a foreign language by approaching the issue at the meta level. Some advantageous questions to re-

alize this could include the following: *What is the purpose of writing in your discipline? Who are the addressees? Why are most of the texts written in English? Why would it make sense for you to write in English as well?* etc. In fact, knowledge about the communicative purpose of the use of English for their future lives as scientists could be a key to removing or even avoiding writers' blocks.

Considering the phase of entering the core of the community (step 3), the role of language quality in the final product should be addressed in consultations for this context as well. Novice researchers who are not used to writing in a foreign language might feel the need for corrections at the grammatical and/or orthographical level when making use of writing consultations. However, the two supervisors in this case study tend to focus on higher order concerns (see Girgensohn/Sennewald 2012: 91), which means, in particular, an understandable argumentative text structure. Therefore, these findings legitimise the principle of focusing on higher before later order concerns, which is already common practice in most writing consultations at German universities, for the particular context under investigation.

The second important implication for writing consultations in the given context concerns the text type 'doctoral dissertation': The results have shown that, as opposed to single research articles, the doctoral dissertation documents the whole process of becoming a full member of a research community in the form of a longer and coherent text product. Nevertheless, in the two cases under investigation, we conclude that the dissertation is not regarded as a mere formality to obtain a degree, but rather as a valued contribution that should be accessible to as many scholars in the world as possible. Addressing the communicative purpose of this particular text type as opposed to shorter research articles appears extremely promising for writing consultations with doctoral candidates who seek help in terms of language choice in a doctoral dissertation.

As one might have noted during the discussion of the results, the interview data presented in this article show much potential for answering questions that go beyond the scope investigated. For example, a focus could be placed on the impact of the twofold role of the supervisors being advisors for their doctoral candidates' writing processes on the one hand and evaluators of the final products on the other hand.

In addition, the research presented in this article gives rise to various possibilities for further research in the field of writing consultations, to answer questions such as *Are German undergraduate students from the STEM fields aware of their (future) communities of practice and the role of writing a doctoral dissertation in English? Is this issue addressed by writing coaches in the consultations? How is it addressed and to what extent is it helpful for the novice writers? To what extent can the awareness of the concept of LPP help supervisors to communicate their expectations concerning the use of English, and what roles can writing centers play in this?* These exemplary questions should be regarded first as valuable impetus in order to gain more knowledge on the topic and, finally, as a step towards implementing a useful handling of the role of English in doctoral STEM dissertations in German writing consultations.

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