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CHRISTOPHER WALLBAUM

CODING OF CLASSROOM 'DIDACTICAL ENCOUNTERS'

DEMONSTRATED BY CODES OF EIGHT MUSIC LESSONS FROM WALLBAUM (2018): COMPARING INTERNATIONAL MUSIC LESSONS ON VIDEO

Cora Lindner & Magdalena Preißler & Christopher Wallbaum

Coding of classroom ‘Didactical Encounters‘

Demonstrated by codes of eight music lessons
from Wallbaum (2018):
Comparing International Music Lessons on Video

Schriften online: Musikpädagogik

Christopher Wallbaum

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Preface

This book is doubly worthwhile. It may be read as an exemplary display of a methodology for comparative educational studies developed by Olle Zandén (2018), which transforms verbal and musical-non-verbal "didactical encounters" into quantifiable codes. These may then be triangulated or stimulate qualitative interpretations (pp. 46-49). Furthermore, the book presents codes of multiple lessons. The source material, eight multi-angle-videos from seven countries, has previously been published in the work "Comparing International Music Lessons on Video" (edited by me in 2018). Both expert or self-developed lesson interpretations may be put in relation to the codes utilised as a concrete handout.

The entire material is based on individual students' works; first critically reviewed and developed within Max Giebel's thesis. In an unremitting, self-critical approach, the authors of this book have devised the present, exemplary form of all the materials in cohesion. Additionally, Cora Lindner has prepared the material for digital access as well as open source development and Magdalena Preißler has translated the book, written in German, into English.

Christopher Wallbaum, June 2021

1 Introduction

"Education must begin with the solution of the teacher-student contradiction, by reconciling the poles of the contradiction so that both are simultaneously teachers and students."

- Paulo Freire *(Pedagogy of the Oppressed)*

The impact of teacher-student-interaction in the classroom on studying and learning outcomes[1] is undisputed. Olle Zandén's contribution to the study *„On comparing international music lessons on video"* (c.f. Wallbaum 2018a) also concerns itself with the subject. In *„Topic-based Analysis of Attempts at Shared Understanding"* Zandén (2018) develops a methodology for coding and analysing so called didactical encounters, i.e., every interaction taking place within a lesson in the classroom.

During a class taught by Christopher Wallbaum in the winter term of 2018/19, Zandén's methodology was applied to eight music lessons by students of the Hochschule für Musik und Theater "Felix Mendelssohn Bartholdy". The music lessons had previously been published and made accessible for science in the aforementioned study (Wallbaum 2018a) as multi-angle-videos.

[1] Definitions of 'learning outcomes' vary. f.e. Stratmann et al. define it as a combination of learning objectives, securing of results and learning process (c.f. 2009: 92); Müller und Duitt (c.f.. 2004: 156f.) posit learning progress at the center of their definition; and even narrower ideas, such as securing learning goals within a lesson (c.f. Niessen und Lehmann-Wermser 2006: 247), have been argued to be learning outcomes.

The material provided with the book next to its theoretical background contains eight **codes** applying Zandén's method (2018) as well as a **search engine** to simplify further research. Both may be considered for comparative studies in the field of music pedagogy. An overview of the material alongside relevant chapter is given in figure 1:

Data	**Available at**	**Relevant chapters**
Student-codes applying Zandén's model (2018)	GitHub-Repository „such-maschine" folder: *Excel Files* DOI: 10.5281/zenodo.4783307	Chapter 2
Search engine	GitHub-Repository „such-maschine" folder: *dist* DOI: 10.5281/zenodo.4783307	Chapter 3

Figure 1 Data provided with this book for further research

The **individual students' codes** are *„internal* or *within* comparisons" (Wallbaum & Stich 2018: 50) as multiple elements belonging to a singular object are compared to find similarities between them in an idiographic approach.

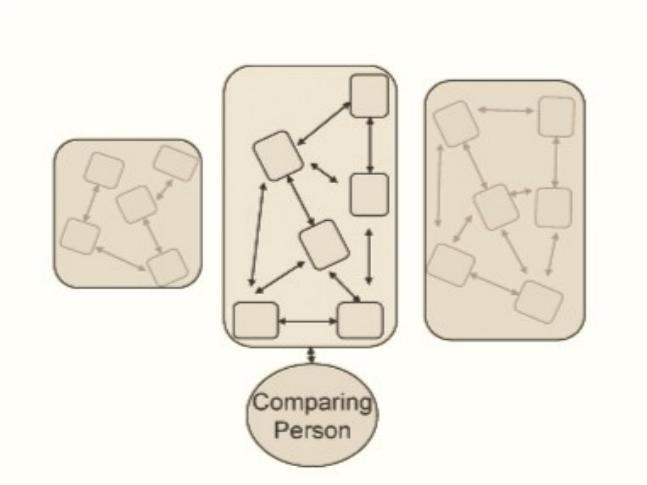

Figure 2 Internal (within) Comparison (from: Wallbaum & Stich 2018: 49)

Further research may apply nomothetic methods for comparative music pedagogy studies to the students' codes. For example, Wallbaum and Stich (2018) recommend a three-step-process to develop nomothetic comparison categories (figure 3).

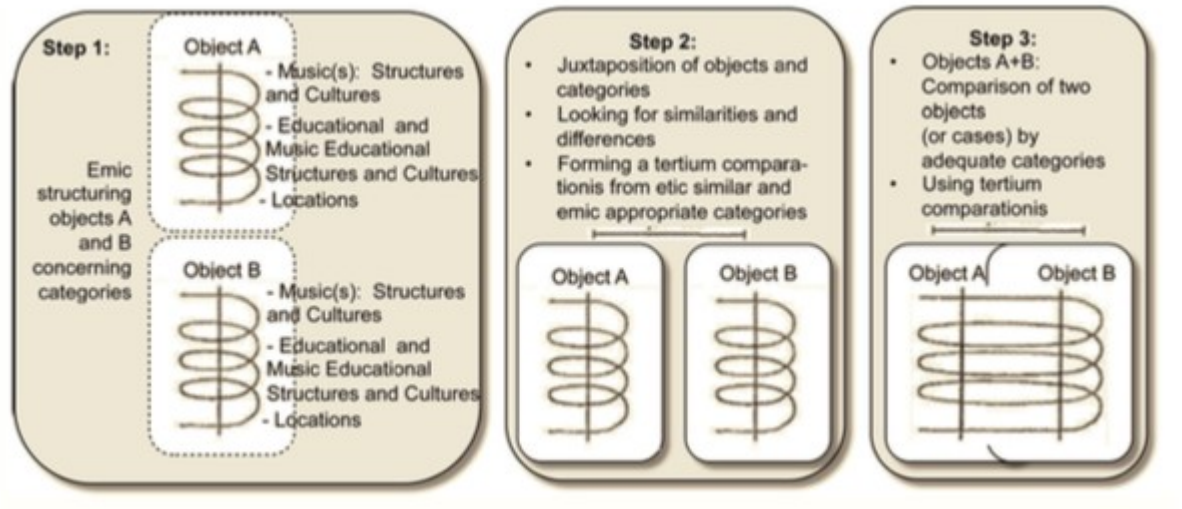

Figure 3 From emic perspectives to nomothetic categories (from: Wallbaum & Stich 2018: 54)

The **first step** (figure 3) concerns itself with single case studies (in this case: the students' codes) and builds the foundation for nomothetic research. All objects for comparison are considered from an emic perspective (i.e., internally).

In the following **second step**, the selected objects are juxtaposed and compared in terms of similarities and differences. This allows the development of *tertia comparationis,* which are etic (i.e., externally) similar and emic appropriate categories.

Finally, the objects can be compared utilising the previously compiled *tertia comparationis* within the **third step**.

Accordingly, when coding according to Zandén's method (2018) more than one moment of comparison is of importance. The book has thus been divided into two comparative moments:

Comparative moment 1 is the coding of the individual lessons by individual students (internal comparison). This moment further entails an *implicit comparison*, as it is influenced by individual experiences and enculturation of the coder. Since this process happens subconsciously it often leads to fuzziness, which may only be explored by comparing different codes of the same lesson. The detection of fuzziness helps to advance the methodology and therefore the quality of the internal comparison.

Comparative moment 1 is discussed within the first part of the book (chapter 2). Based on the background of Zandén's model (2018) described in chapter 2.1, chapters 2.2 - 2.5 concern themselves with the coding methodology. Detected fuzziness is examined in chapter 2.6.

The second part of the book (chapter 3) focuses on the application of the codes in subsequent comparisons. In chapter 3.2, the students' codes discussed within chapter 2 are juxtaposed and the derived statistics provide impulses for future investigation. Furthermore, the search engine developed by Cora Lindner increases the accessibility to a specific set of objects, thus simplifying further research. Chapter 3.3 provides some starting points for future research. The comparative methodology of Wallbaum and Stich (2018) is introduced and an example is given. Finally, chapter 4 gives a short insight into transdisciplinary analysis approaches.

Comparative moment 2 allows the interested reader to become active themselves post-scriptum!

2 Methodology

2.1 Olle Zandén: Topic-based Analysis of Attempts at Shared Understanding

In his article *„Topic-based Analysis of Attempts at Shared Understanding"* (2018) Olle Zandén introduces a novel method for analysing interactive situations within the (music) classroom. Speech and other acts are encoded according to different criteria, as developed by Zandén. The method aims to add insight to the processes involved in learning and teaching (c.f. Zandén 2018: 367).

In the following, basic concepts of Zandén's model are explained and the coding system is described.

In order to analyse a lesson (more specifically: a lesson transcript) it first needs to be divided into so-called "didactical encounters". *Encounters* are defined as situations within which "a teacher or a student addresses the other on some matter" (Zandén 2018: 368). Further, d*idactical* encounters are all instances of interaction that concern themselves with learning or teaching respectively (c.f. Zandén 2018: 368).

Although less researched, encounter is preferred over the well-researched *dialogue* of linguistics and social sciences, as a school environment does not

necessarily require an explicitly dialogical form (c.f. Zandén 2018: 368), especially in the practically oriented music classroom[2].

After dividing the lesson accordingly, correlations between the structure of individual *didactical encounters* and the *evidenced degree of shared Understanding* can be identified (c.f. Zandén 2018: 368). Defined as the proof of learning taking place, the *evidenced degree* is exhibited in the *shared Understanding* achieved between participants of and listeners to the didactical encounters (c.f. ibid). Both the students not actively participating in the discourse and the analysts coding their perceived evidenced degree of shared Understanding are listeners.

Due to the abstraction inherent to coding, the focus lies on the structural dimension of the interaction. Other factors involved, such as context, are mostly excluded from analysis[3]. According to Lefstein & Snell (2014: 15) a possible disadvantage of this methodology might be the possibility of deriving conclusions concerning content, function and nature of a dialogue simply by looking at its form. Resulting implications should be considered when applying the method as a tool of comparative analysis and case studies (c.f. Zandén 2018: 373, 400).

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[2] For more detailed information consult 2.6.4.

[3] This then concerns dialogues in their *interactional form*. Other layers are initially excluded from analysis (Lefstein & Snell 2014: 14 ff., chapter 1).

2.2 Codes

Following Linell's theory of dialogue (2014) Zandén codes the spoken content of an encounter as a *topic* (c.f. 2018: 369). Any topic may be taken up by an interactional partner, which allows for development of this topic into a *communicative project* (c.f table 1); another term borrowed from Linell's theory (2009).

Speaker	**Topic**	**According to Zandén (2018: 368f.)**
A	I like tomatoes.	Communicative initiative introducing a topic candidate
B	Tomatoes are red, right?	B's Understanding of the topic
A	Yes. OR No. OR Not all of them.	acceptance OR rejection OR modification of B's Understanding

Figure 4 Zandén's Communicative Project (2018)

Further, it is possible that the topic introduced by A is never taken up for development by B. To resolve this issue, Marková et al. (2007) introduce the term *topic candidate*, which defines every topic as a possible rather than compulsive start to a communicative project (c.f. Zandén 2018: 369).

Building on the theories developed by Linell (1998, 175ff.) and Bachtin (1981; 1984) every expression counts as both *initiative* and *response* at the same

time (c.f. Zandén 2018: 369). An *initiative* usually entails reference to either future (f.e. Are we going to the cinema *tomorrow*?) or past (f.e. Have you been there *yet*?) and thus is also a *response* to an (un-)expected outcome. Zandén adopts the definition for his model by limiting the label "initiative" to expressions introducing new topic candidates (c.f. ibid). An initiative *retroactively* responding to past or future events is signified by (r). Acts with an (r) attached were not initially intended as an initiative by the topic-introducer, but nevertheless trigger a reaction in the respondent. Capital (R) is reserved for responses, which according to Zandén are turns happening as a reaction to a topic candidate (c.f. 2018: 369).

Speaker	**Topic**	**Coding in Zandén (2018: 368 - 372)**
teacher	I like tomatoes.	tvI.
student	Tomatoes are red, right?	svR?
teacher	Ja. OR No. OR Not all of them.	tvR+ ODER tvR- ODER tvR+-

Figure 5 Communicative Project coded with Zandén's model (2018)

As demonstrated in figure 5, a coding following Zandén's model encodes *function*, (I) or (R), *agent*, (t) or (s), and *modality* (f.e. (v) for verbal) of a turn. Additional tendencies (.), (?), (!), (+), (-) and (=) may further be applied

(c.f. Zandén 2018: 372). All possible codes are described by Zandén in the following table (figure 6):

Agent	t	teacher
	s/ss	student/students
Modality	b	bodily except for movements that produce sound, mimic sound production or can be seen as equivalent of playing
	m	musical: singing, playing, mimicking playing or conducting (which can be seen as equivalent of playing)
	v	verbal: spoken or written
Function	I	initiative that introduces a topic candidate ...
	I.	... by a statement or an action
	I!	... by requesting a statement or an action
	I?	... by asking a question that has not the function of a request
	Ir	... that is topicalised retroactively, through a following turn of talk or action
	R	response that shows understanding by bringing new information to an introduced topic in the form of ...
	R.	... a statement or action
	R!	... a request
	R?	... a question that has not the function of a request
	R+	... a validation of a previous statement or action as correct or the fulfilment of a previous request
	R-	... a validation of a previous statement or action as incorrect or the denial of a previous request
	R=	... mimicking
	E	empty response: a turn of talk or action that lacks information about how the topic is understood

Figure 6 Possible codes according to Zandén (2018: 371)

Both written and spoken language are coded as (v). Movement with no musical motivation is coded as (b), musically motivated movement further as (m) (c.f. Zandén 2018: 372). This distinction was introduced by Zandén to avoid misleading coding of musically motivated movements such as conducting as (b).

2.3 Data

The existing data is based on the video-taped music lessons collected within the study *Comparing International Music Lessons* (Wallbaum 2018a), within which lessons from seven different countries were recorded from three separate camera angles. Subsequently, those lessons were subtitled in English for increased accessibility. The transcripts were first provided by researchers on-site and/or the teacher of the lesson, then proofread by amateurs (Wallbaum 2018b)[4]. Non- and paraverbal acts were largely excluded from transcription due to the accessibility of the video-lessons online[5].

In 2018/19, the students coding lessons according to Zandén's model in a seminar taught by Christopher Wallbaum added those missing non- and

4 The Catalonia-Lesson is the only one to be translated by students of the class.

5 The guideline "*General Information on the Additional Material*" provided in Wallbaum 2018b was not always applied thoroughly.

paraverbal acts. Friedrich (2019: 4), for example, chose to encode non- and paraverbal acts in square brackets:

01	00:00:21:20	So, let's begin. [t gesture for standing up]	[tvbI!]
		[ss standing up]	[ssbR.]

Figure 7 Code by Friedrich (2019: 4)

Merging the dialogue from the original transcriptions with these non- and paraverbal acts, the students then coded the transcription applying Zandén's model (c.f. Zandén 2018; chapter 3.2.). Finally, the students interpreted their results in individual term papers.

Figure 8 provides a brief overview concerning the data:

Bavaria Length: 00:51:58h // Coded by: Max Giebel
Beijing Length: 00:41:30h // First coded by by: Meta-Elisabeth Kuritz: „*Untersuchung der Dialogstruktur in einer Musikstunde in Peking nach dem Kodierungssystem von Olle Zandén*“
Catalonia Length: 00:54:11h // Coded by: Max Giebel
California Length: 01:24:00h // First coded by by: Maria Glootz: „*Didaktische Begegnungen mit einer kalifornischen Musikstunde: Eine Analyse gelungener verbaler und non- verbaler Kommunikation*“
Estonia Length: 00:51:12h // First coded by by: Eva-Maria Friedrich: „*Didaktische Begegnungen in einer estnischen Musikstunde: Eine Analyse gelungener verbaler und non-verbaler Kommunikation*“
Lower Saxony Length: 00:45:09h // Coded by: Max Giebel

Sweden Length: 00:36:28h // Coded by: Max Giebel
Scotland Length: 00:58:09h // First coded by by: Tabitha Guist: „*Didactical encounters in a Scottish Music lesson*“

Figure 8 Data

The students' transcripts (Friedrich 2019, Giebel 2019, Glootz 2019, Guist 2019, Kuritz 2019) are at the core of the analytical part of this book and are available for consultation in the additional material.

2.4 Consistent formatting of the data

Due to the individual work of the students, certain parts of the transcription vary between the transcripts. A selection of differences is provided within the following figure (9):

	Friedrich	**Glootz**	**Guist**	**Kuritz**
nonverbal acts	[] square brackets e.g.: [ss Standing up] (2019: 4)	[] square brackets e.g: [student raising her hand] (2019: 6)	[] square brackets e.g. [that are already in the room, are taking their jackets off.] (2019: 2) sometimes *cursive* is used for audible, nonverbal acts (applied inconsistently) e.g. *clapping* (2019: 7), *giggle* (2019: 9)	() round brackets e.g.: (stand up) (2019: 5)
Assumed verbal expressions	() round brackets e.g.: (students discuss with each other and suggest the answers, you can hear Schuhmann and Schimann…) (20189: 6)	[] square brackets e.g. [students mumbling an unclear answer] (2019: 10)	*cursive* e.g. *protests* (sVR-) (2019: 9)	
Verbal expressions	[] square brackets	[] square brackets e.g. [student answers not	[[] square brackets, *cursive* e.g. [*incomprehensible*] (2019:	() round brackets

with uncertain content	e.g. [ss some kind of reaction] (2019: 12)	underAccessedable] (2019: 14)	9)	e.g.: (SS mumble something within the class) (2019: 7) () round brackets, *cursive* e.g. (*T talks to Student A*) (2019: 8)
Coding of proper names	No coding of names applied e.g. Rahe (2019: 5); Liina (2019: 8)	() round brackets e.g. (name of a outStanding arts high school) (2019: 7) 'o' formatting e.g. muted name (2019: 6)	'o'-formatting e.g. S1; Mr. X; S7 (2019: 2) instead of proper names	() round brackets e.g. T picks one student (A) (2019: 7) 'o'-formatting e.g. (A B go to the drum) (2019: 8)
Marking of coding	[] square brackets e.g.: [ssbR] (2019: 4)	[] square brackets e.g.: [tvI!] (2019: 6)	() round brackets e.g.: (tvI!) (2019: 2)	Tabular
Disclosing speaker at the beginning of a turn	No	No	Yes	Yes

Correction of subtitles	No	No	Yes	No

Figure 9 Differences in coding between the term papers

The comparable differences between the transcripts selected for table 4 provide insight into fuzziness within the individual reception of Zandén's model. For his usage in a larger scale research project, Giebel (2019) standardised the transcripts in the following formatting:

	No.	**time**	**agent**	**Action**	**code**
=	Consecutive number of acts	Timestamp at the beginning of an act	Interacting person	Acts	code
e.g. (Giebel 2019: 22)	47	00:03:41	T	Would you like to read out the second one?	tvI?

Figure 10 Transcription according to Giebel (2019)

This standardised version of the transcripts was used for the programme (c.f. chapter 3.2) to ensure reliable data handling. Timestamps were taken from the term papers. Non- and paraverbal acts are coded in round brackets.

2.5 Coding process

Giebel divides the coding process into two steps:

Step 1: Sectioning the transcripts into topics

The transcripts were first sectioned into *topics* (c.f. chapter 2.1, further literature: Zandén 2018). Each topic starts with an *initiative*, providing new ideas within an established context. Occasionally, initiatives remained initially unanswered.

A topic was considered finished whenever observable semantic search ceased and/or a new *topic candidate* was introduced as a novel *initiative*.

Step 2: Comparing Giebel's codes with other students' codes

Giebel then compared his own codings with those of Friedrich (2019), Glootz (2019), Guist (2019) and Kuritz (2019).

This step was not applied to Bavaria-, Catalonia-, Lower Saxony- and Sweden-Lesson as those were coded solely by Giebel.

2.6 Fuzziness

In the following, common fuzziness within the application of the code is provided and explained.

2.6.1 *Fuzziness in mutual Understanding*

Sociocultural acts within the lesson can be interpreted – and thus coded – differently according to context. For example, Kuritz (2019: 5) codes the sociocultural act of applauding in reaction to a musical contribution as a *response* (ssbR+). The (+) in particular exhibits the perceived comprehension of the students concerning the cultural ruleset involved in performance practice. Giebel (2019: 47), on the other hand, codes the same act as an empty response (ssbE+) as applause contains no information on the Understanding of the students. Other sociocultural acts were coded accordingly.

Empty response (E) is the coding applied to any and all such expressions that offer no information concerning the Understanding of a previously established communicative project. 'Empty' signifies participation within the dialogue without increased mutual Understanding.

Giebel (c.f. 2019: 27), Friedrich (c.f. 2019: 7), Guist (c.f. 2019: 4) and Kuritz (c.f. 2019: 5) sometimes apply further modifiers (?/=/+/-) to empty responses. Whenever (E) is used with modifiers, tendencies decodable by considering the cultural context are implied. However, (E) remains preliminary in coding (c.f. Giebel 2019: 49). Zandén also applied modifiers to some (E)s in his coding (c.f. Zandén 2018: 388ff. & 391ff.), without clearly discernible reasoning (c.f. ebd. 368 - 372).

These codes exhibit the fuzziness in Zandén's methodology, which needs to be taken into consideration when applying the model in future research.

2.6.2 *Fuzziness due to limitations in the source material*

As the transcripts were provided by amateur volunteers, they may already include a certain fuzziness. This is most likely tied to prior experience of the transcriptors as well as audible issues in the videos. *Untranslated or untranscribed parts* have to be analysed in relation to their surrounding context. A familiar classroom situation in which multiple students reply to teacher's questions simultaneously was the most common reason for lack of translation/transcription. Both answers and speakers were obscured by the multiplicity of voices. Given a clear context, coders concluded the form of student-answers. If, however, the context was obscure, coders reserved conclusions on form and merely noted the happenstance of a student-answer.

2.6.3 *Classroom-related fuzziness*

Announcing willingness to either participate in dialogue or start a new topic warrants a teacher's permission within the classroom context. *Requests to obtain permission to speak* are usually visually signified by a student's raised hand. If a student's request goes ungranted the potential of contributing to the communicative project is obscured as it remains unclear whether the student's unknown answer would have added to the project. To illustrate this, coders applied (sbI?) to students' requests for speaking permission, (t[v/b]R!) for the optional teacher's response.

Repetition of a student's answer by the teacher without any modifications is coded as (E) as proposed in Zandén (2018: 370).

7	00:02:33	T	How are we feeling this morning?	(tvI?)
		Ss	Tired… Cold.	(ssvR.)
		T	Tired? Cold?	(tvE)

Figure 11 Code by Guist (2019:2)

What might seem like a plausible coding at first glance soon reaches its limits:

140	00:11:45:03	So. Now number 4. The most common Instrument used in a German folk music band?	[tvI?]
141	00:11:47:29	-Harmonica	[ssvR.]
142	00:11:50:29	-Harmonica, exactly.	[tvR=+]

Figure 12 Code by Guist (2019: 8)

164	00:13:09:29	Let's continue. Number seven. A German dance?	[tvI?]
165	00:13:14:29	-Allemande.	[ssvR.]
166	00:13:15:29	-Allemande.	[tvE=.]
		And now a German composer who has been buried in London?	[tvI?]

Figure 13 Code by Guist (2019: 9)

Figures (12) and (13) demonstrate a sweeping (E) coding for the oral comparison of a task-sheet. The repetition of the student's answer by the teacher is present in both examples, seemingly serving the purpose of confirming mutual Understanding before moving on with the lesson. However, figure 12 is coded as [tvR=+] because the confirmation was verbalised by the teacher ("Exactly."). Subsequently, sweeping coding of teacher's repetition as (E) is not advised. Context should be considered for coding of such instances.

Eliciting is used by teachers to ensure that *all* students are participating in the learning process while interacting with a *single* student. The responsibility of answering/ratifying a statement is delegated from the teacher to another student (c.f. Usman et al. 2018: 52). Positive learning effects of the technique have been proven by multiple studies (c.f. ibid). *Eliciting* was coded in two ways:

79	00:31:20	T	Right, S4. What did you get for the next one?	(tvI!)
		S	Reel.	(svR.)
		T	Reel.	(tvE=)
			Was she correct?	(tvR?)
		Ss	Yeah.	(ssvR+)
		T	Yes, she was.	(tvE=+)

Figure 14 Code by Guist (2019: 15)

Guist codes the forwarding of the answer as a question within a topic (tvR?), where Giebel takes a more thorough approach. By coding "Was she correct?"

as (tvI?) Giebel emphasises the quality of this question as a new topic (c.f. Giebel 2019: 23). Both Guist and Giebel agree that *eliciting* contributes positively to mutual Understanding (ssvR+) (c.f. Guist 2019: 15; Giebel 2019: 23). The repetition by another student confirms a broader Understanding within the classroom and thus renders the communicative project complete.

The criteria for a good lesson posited by Meyer (2004)[6] include clear content (German: "Inhaltliche Klarheit") and transparent structure of the lesson (German: "Klare Strukturierung des Unterrichts", c.f.: 17). To achieve this aim, precise instructions are crucial (c.f. ibid).

243	00:20:47:29	That's because the piece we are going to learn on the recorder, is by Bach.	
244	00:20:54:29	As you know, Bach has composed several cantatas.	[tvI.]
		[ss taking out their recorders]	[ssbR.]

Figure 15 Code by Guist (2019: 11)

In figure 15, Friedrich codes the teacher's topic initiative as (tvI.). This implies a purely informative content. The students proceed to take out their recorders while the teacher holds a monologue, which finishes with the announcement of the next task; a listening task for which the recorders are not

6 A commonly read author in German education science.

required. This context explains Friedrich's coding as (vI.). However, the students' reaction may also be involved in coding the teacher's turn. Giebel (c.f. 2019: 27) offers two alternatives: (tvI!) and (tvIr!) of which the second is to be preferred due to the context as the students react to an initiative not intended by the teacher. Thus, example 6 demonstrates the uncertainty exhibited both in students and coders when faced with a vague instruction.

Another criterion proposed by Meyer (2004: 17) is a high share of actual learning time (German: "Hoher Anteil echter Lernzeit", ibid), which sometimes needs to be secured by applied mechanisms of *discipline*. Admonitions are coded as (tR-!), which identifies the disturbance as a topic initiative. This coding then suggests that all disruptions, which the teacher takes note of and reacts to, are purposefully executed by the students (in contrast to a retroactive initiative). Yet Winkel (c.f. 2006: 58) claims that reasons for disturbance may lay within as without the lesson. Further, they arise on different student-specific layers and may be object- rather than people-related (c.f. ibid). An attribution ("Attribuierung") of student-acts by the teacher (c.f. Seitz 1991) may lead to the student's act being identified as a retroactive initiative (c.f. Zandén 2018: 369)[7]. Considering the theory described above,

[7] e.g. a student has finished their assigned work and occupies themselves quietly with drawing. The teacher observes this and comments on it.

both Giebel's, who codes a student dropping a pencil as (Ir) (c.f. 2019: 27), and Friedrich's coding, (I), may be considered reasonable.

Scotland-Lesson and Lower-Saxony-Lesson include plenty of sequential overlap and interlinking. Topic initiatives within class discussions are commonly interrupted by other topics, which causes either a delay or complete lack in ensuring mutual Understanding has been achieved. Other topic initiatives simultaneously function as responses.

7	00:04:11	T	Well, I'll stop it here. Does anybody want to say something to the piece?	tvI?
8		Ss	[some raise hands]	ssbI?
9		T	S!	tvR!
10		S	It's very lightweight and it appears a bit as if the strings support the piano a little, uh underline it (laughs) and as if the piano is the main character in the whole piece in a way.	svI. svR.
11		T	mhm	tvE
12		T	G	tvR!
13	00:04:34	G	This was a very calm piece and a very quiet one. It was in a way accompanied by the strings, as X already mentioned. I would rathersay that it is a very calm piece. I thought of a lullaby or so.	svI. svR.
14		Ss	(Learners laugh)	ssbE
15		T	mhm.	tvE

Figure 16 Code by Giebel (2019: 30)

This phenomenon has led coders to apply two codes to the same turn. “svI. svR.” shows the potential an (R) offers as an (I) for reactions by other students or the teacher. Such ambiguous expressions can best be described by dissection into minimal sequences according to Linell (c.f. 1998: 85ff.). Those can be analysed more thoroughly in terms of mutual Understanding (c.f. Imo 2016: 338 - 340).

A classroom always includes formal as well as *informal learning*[8]. The latter occurs in student-student-dialogues, which the teacher is not a part of. Zandén includes a student-student-dialogue in Encounter 16 (c.f. 2018: 384). Two issues arise:

1) A coding without agents (svI, svR etc. …) is indiscernible without context. Accordingly, agents need to be included in the coding.
2) Zandén's example emerges within a group work. As an open classroom concept with the teacher as an observer of a mostly autonomous learning process (c.f. Metz-Göckel 2013: 11), groupwork poses a problem for the statistical evaluations of the lesson: the considered informal dialogues add to the quantity of student's participation, especially when compared to teacher-centered teaching.

252	00:37:13:16	
	Ss	"From that moment on."

[8] According to Green (c.f. 2004: 211) informal learning contexts are those “which, in direct contrast to formal education, include no teaching institutions”.

		"Breath, wait, get up slowly,"	ssmI./smIr.
253	00:37:22:22		
	T	Come on, forward!	tvR!
254	00:37:24:01		
	Ss	"Breath in, recover yourself. Life and the world wait for you."	ssmIr./R.
255	00:37:27:11		
	T	Project your voice.	tvR!
256	00:37:29:09		
	Ss	"Breath, wait,"	ssmIr./R.
257	00:37:30:20		
	T	Very good!	tvE+

Figure 17 Code by Giebel (2019: 37)

Outside of the classic teacher-centred-learning, Zandén's model actually reaches its limit more often, as exhibited by this example from the Catalonia-lesson. In this practically oriented music lesson the teacher calls out instructions to which the students react immediately without stopping their musical practice. The ambiguity becomes clear in the code: the teacher gives an instruction (tvR!), then the students respond (R). At the same time the quality of the student's response is the initiative for the next instruction given by the students and as such is also coded as (ssmIr). Again, one label is no longer sufficient for coding a turn.

Those considerations illustrate a need for further work on Zandén's model in order to use code without context for interpretation.

2.6.4 *Fuzziness due to musical-didactical context*

In contrast to other school subjects music class usually requires a consideration of musical acts within the dialogical context. According to Zandén affirmations of prior expressions need to be distinguished from imitation of musical practice (c.f. 2018: 389). A musical act may be a request (mI!) (c.f. ibid), e.g., conducting of a musical ensemble, or take on other functions (questions, disagreement etc.). Furthermore, musical acts may arise in different modi (bm/vm) (c.f. ibid). Especially in practically oriented music lessons this method can no longer grasp all intricacies: implicit requests for interactional partners, such as keeping the tempo at the drums, are left out in coding. A complex coding of musical acts was not applied by the coders. The question, whether an analysis of musical acts beyond technical processes is possible using Zandén's system, remains unanswered.

307	00:30:10:29	listen and pay attention to the sheet music.	[tvR!]
		[presentation on recorder by t]	[tmR!]
308	00:30:17:06	Let's all go together from that E. Ready?	
		And!	[tvR!]
		[making music]	[tssmR-]

309	00:30:28:29	Thank you.	[tvE]

Figure 18 Code by Friedrich (2019: 13)

In Friedrich's code a musical act was attributed with (-). This indicates the discrepancy between the teacher's presentation and the students' imitation. An attribution of musical acts with (-) is not intended in Zandén's methodology (2018).

117	0:09:51	These three notes are the Accessedard tuning.	tvI+.
(T sings the three notes during the S is playing them)			tsmI.
First S did it wrong			smR-
T helped to play it right			tmR+

Figure 19 Code by Kuritz (2019: 10)

However, the coders lean towards attribution of musical acts, as exemplified in this coding by Kuritz (2019) within which musical acts are attributed with (+) and (-) alike.

Ratifying musical acts with tendencies as well as implicit request in musical group processes complicate a coding musical-didactical encounters following Zandén's methodology. For future research agreements on cohesive development of Zandén's model are advisable[9].

[9] Taking the example of "wrongfully played" coded by both Kuritz (2019) and Friedrich (2019) as (m-), an (r) coding appears to be more sensible. The students did not intend to play the music wrong, but still their action leads to the teacher's response. Further, if the goal of a musical practice is creating a musical product

2.6.5 *Fuzziness due to cultural and language differences*

Linguistics constructs human language as a semiotic system, i.e., sign system. Ferdinand de Saussure (1959: 67ff.; 73ff.) describes the relationship between language sign (signifiant) and correlated concept (signifié) as arbitrary[10], but socially agreed upon (c.f. ibid: 69). This is further empathised in Ludwig Wittgenstein's construct of the "language games" (1953). Dialogue then is understood as a game, which interactional partners may succeed at if there is common Understanding of the rules (ibid: 3ff.). Every added degree of abstraction, such as the translation into English as the lingua franca in the transcripts of this work, complicates precision of communication (ibid: 1953: 4).

Requests and expressions can be slightly variant in different languages, which is clearly exhibited in the codes. English-speaking countries tend to use questions as requests, while expressions arising in the context of asian classrooms were sometimes coded as requests (c.f. figure 20). This is due to the teacher-centred-learning style preferred in this particular region.

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all participants are content with, an (r) turn seems to be appropriate in exhibiting its importance in contributing to the rehearsal process.

[10] Onomatopoetic words imitating the sound of a concept, such as „hum", may be considered as exceptions at first glance. Further analysis, however, still renders them arbitrary according to de Saussure (c.f. 1959: 69).

81	00:06:03	T You can look at the PPT while beating.	tvI.
82		S1 [turns to the PPT]	sbR+

Figure 20 Code by Giebel (2019: 29)

By working in a heavily teacher-centred-learning setting, the teacher has the biggest share of classroom discussion[11]. Since all thinking is dialogical (c.f. Linell 2009: 166ff.) longer speech acts by the teacher were coded in turns, albeit without subsequent (R) turns. Rather, the teacher is interacting with a virtual address and the dialogue is intrapersonal dialogical. Therefore, the Bejing-lesson features sole topic initiatives without responses. This again leads to discrepancies within the statistical analysis of the lesson when compared to other lessons with different teaching styles[12].

Music can also be understood as a semiotic system, which can only be interpreted by the means of other semiotic systems (c.f. Barthes 1977: 179). However, as a special type of semiotic systems music includes signs (signifiants), which cannot be tied to a single concept (signifiés). This phenomenon further complicates discussion in a musical context. Discussion is often limited

[11] With a count of 304 the teacher's turns are more than three times the size of the student's (88) (c.f. Giebel 2019: 62).

[12] Monological speech acts were most frequently used in the California-lesson. The teacher asked a lot of rhetorical questions, which were coded as (I) and (R) alternating by Glootz (c.f. Encounter 4: California 1). Giebel criticises this choice, because a monologue cannot exhibit mutual understanding, and coded everything as (I) (c.f. ibid).

to adjectives, applied to describe music (c.f. 1977: 179ff.). According to Roland Barthes (c.f. ibid), language abstracts and simplifies music, which then would lead to a triple abstraction if code is applied as another layer.

404	00:30:08:07	Now, what are the different things? You can be in tune or you can also be.	[tvI?]
		[teacher pauses to let students fill in the rest of the sentence]	
405		Sharp.	[ssvR+]
406	00:30:12:16	Sharp or.?	[tvR+?]
		Flat.	[ssvR+]
407	00:30:15:07	Right.	[tvR+]
		Sharp means too high, flat means too low.	[tvbR.]
		[teacher completes the definition of intonation on the board]	
408	00:30:18:20	What's the difference?	[tvI?]
409	00:30:22:03	- Well, I got to tell you. The only way I've ever figured out	
410	00:30:24:22	a difference is first of all they're both not really good.	
411	00:30:27:12	But sharp, sharp is annoying. [teacher adds annoying to definition]	
412	00:30:32:00	So, if it sounds annoying to you, it's probably sharp.	
413	00:30:35:04	Flat is painful. [teacher adds painful to definition] When people are flat, it's just extraordinarily painful.	[tvbR.]

Figure 21 Code by Glootz (2019: 15-16)

In figure 21, the teacher tries to transfer their subjective reception ("sharp (signifiant) is annoying (signifié)") to the students, so they may be able to

differentiate between the two. The teacher's concept must not necessarily concur with the subjective aesthetic feeling of any or all students.

Since communication without a degree of abstraction is impossible (Wittgenstein 1953: 4) the inherent fuzziness is accepted for successful application of the method. Especially the comparison between different codes of the same lessons bears great promise for further interpretation, which in turn may lead to a critical (continuing) education of the teacher.

2.6.6 *Faulty application of methodology in the codes*

Friedrich's (2019) coding includes faulty application of the markers (+/-). The usage of markers in example 13 implies binary evaluation as right or wrong.

24	00:02:46:29	So how is it?	[tvI?]
25	00:02:48:10	It's extremely difficult.	[svR-.]
		Extremely difficult!?	[tvE?!]

Figure 22 Code by Friedrich (2019: 5)

[svR-] evaluates the student's response as wrong. However, an answer to an open question such as "So how is it?" cannot possibly be wrong.

In another example, Friedrichs adds (+) for the right, (-) for the wrong answer.

56	00:05:53:29 -So. How about we start from the beginning all together?	
57	00:05:59:13 So, the first question was the number of the symphony by Beetho-ven	
58	00:06:05:29 from which the anthem of the European Union comes from?	[tvI?]
59	00:06:09:29 The seventh! The ninth!	[ssvR+][ssvR-]
60	00:06:12:03 That's exactly right. The ninth one. Exactly.	[tvR=+]

Figure 23 Code by Friedrich (2019: 6)

For the students participating their individual answer has a claim to truth when they utter it (c.f. Zandén 2018: 370). Only the reaction of the teacher evaluates the answers, which is why they should have been coded as (.).

3 Data and selected application possibilities

The material published alongside this book is provided in two forms:

3.1 Excel-Tables

The excel tables contain the codes in the version developed by Giebel (2019) and are the basis of the search engine. Due to its features, such as automatic generation of figures and calculations, excel is suitable for statistical evaluation[13]. The graphical format of excel further facilitates extraction of singular encounters for individual study.

3.2 Search Engine

The search engine was created towards the goal of making the codes more accessible to work with. Building on all excel-files, the programme can search for certain sequences (f.e. the sequence “tvI!, tvI., ssvE“). The programming code is published in an Open Source format and available for optimisation.

[13] Selected statistics demonstrating quantifiability of the data are provided in the appendix.

3.2.1 *Instruction*

3.2.1.1 Downloading the search engine

1. Open the link for the GitHub-repository suchmaschine: https://github.com/CoraLindner/suchmaschine(DOI: 10.5281/zenodo.4783307
2. Download the contents of the repository.

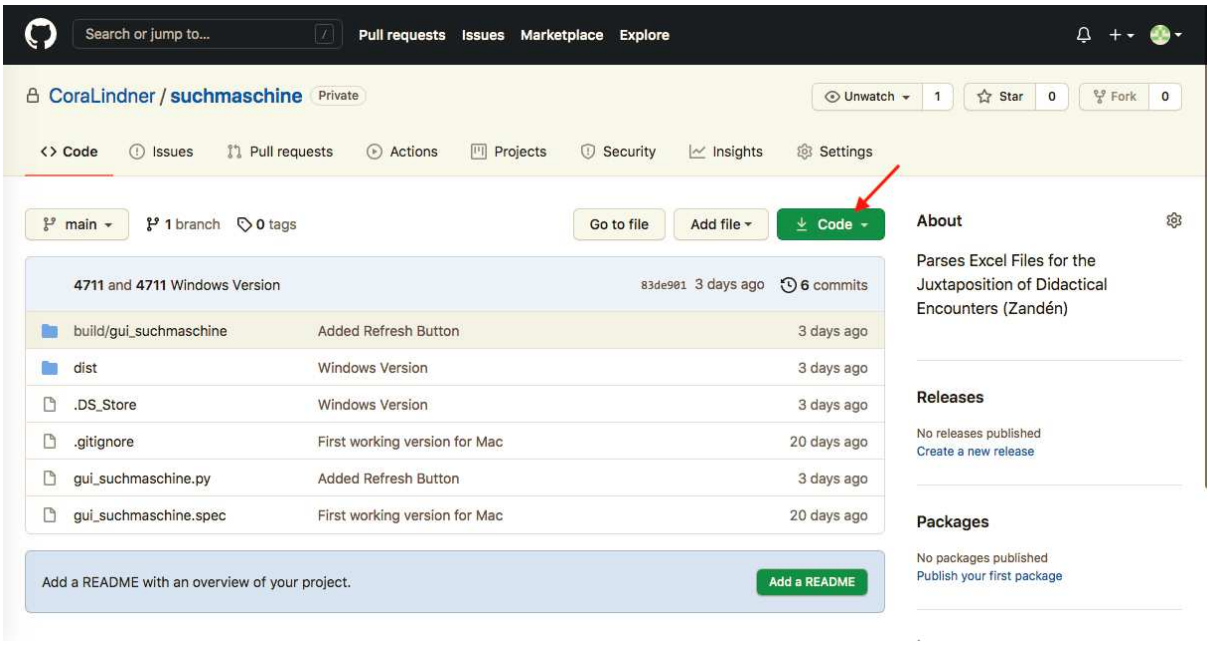

Figure 24 GitHub-Repository

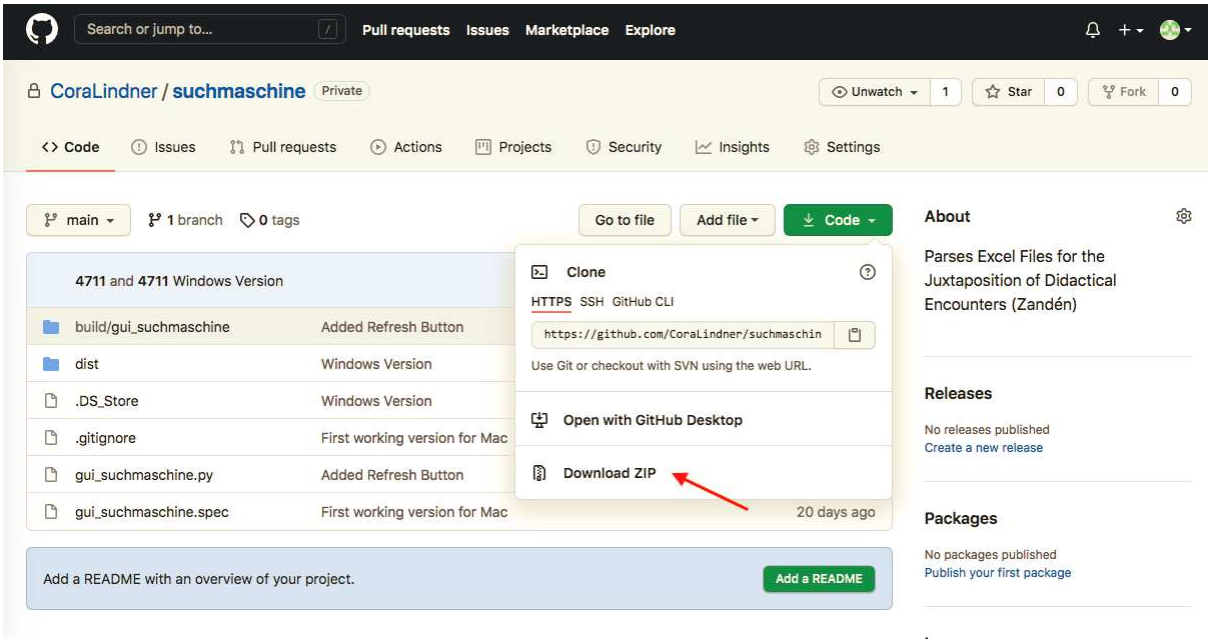

Figure 25 Downloading GitHub-Repository

3.2.1.2 Utilise the programme

1. The operating programme will look like figure 26 when opened in Mac software:[14] When accessing the folder do not remove material or change any file names.

Figure 26 User Interface

[14] Imagery may vary when used in different software such as Windows or Linux.

2. Choose the length of the sequence (= number of turns) you wish to examine. Enter the number of turns in the appropriate input field. Submit (c.f. figure 27):

Figure 27 Selecting the required number of codes

3. After submitting this information, you are given access to your chosen number of fields (figure 28).

Figure 28 Fields for entering the codes

4. Enter the codes in the order you are looking for. Then, hit the search

button. In the following example, all occurrences of the turn-sequence tvI!, tvI., ssvE are displayed by using the programme (c.f. figure 29).

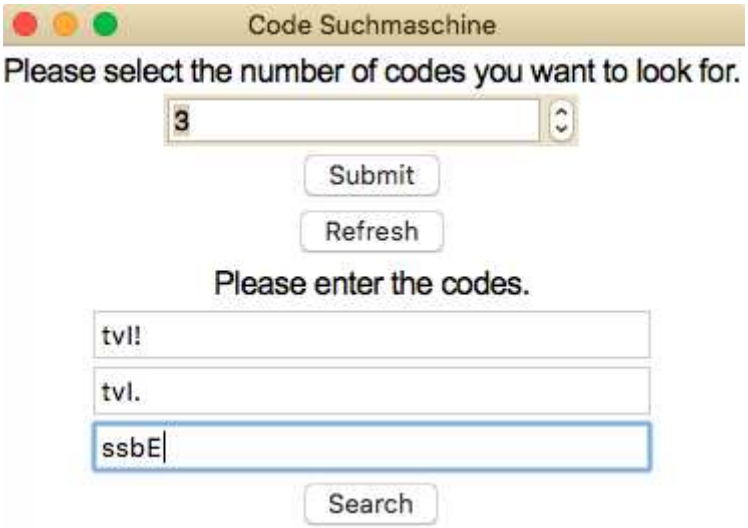

Figure 29 Entering the Code

5. After following steps 1 – 4 all occurrences of the searched for turn-sequence are displayed. The example displays a sequence unique to all transcripts (c.f. figure 30):

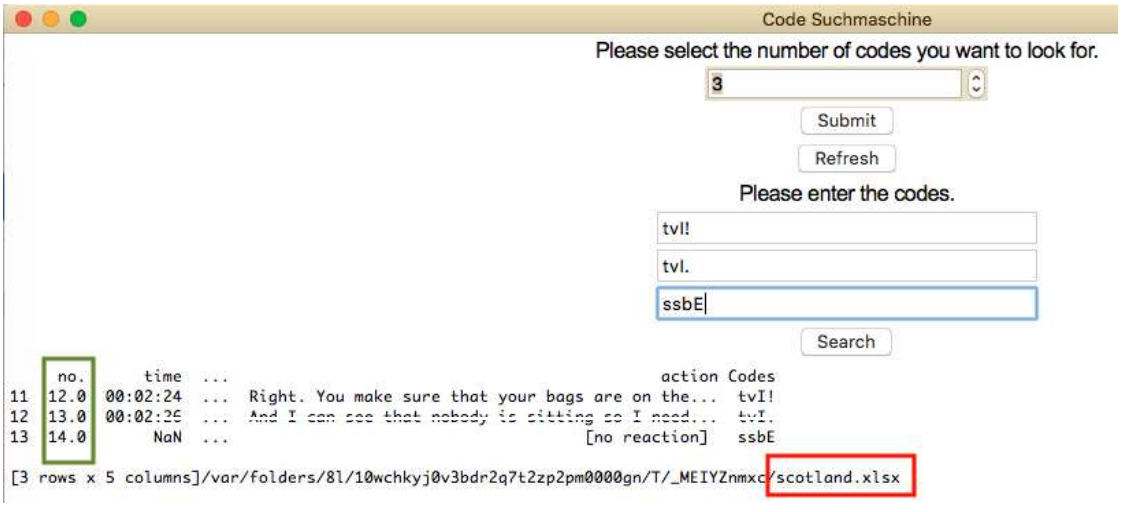

Figure 30 Programme output

The excel-file, in other words: the origin lesson, can be accessed on the right-hand side below the turn-sequence (circled in red). The second column exhibits the consecutive number of turns (circled in green).
If no sequence is displayed the searched-for sequence does not exist in the transcripts. Check for accidentally entered spaces either before or after the codes to avoid errors.

As exhibited in figure 30 the current version of the search engine only includes some data from the original excel-files[15]. Consultation of the original transcripts and/or excel-files is advised. If excel-files are used they must previously be copied into a separate folder, rather than being opened within the programme's folder as this would cause errors.

3.3 Possibilities for research

3.3.1 *Exampla gratis: Closed Questions*

In the following, a deliberately rudimentary example is given to exhibit the application of Wallbaum and Stich's (2018) methodology of comparing (as introduced in chapter 1) to the data as well as the usage of the search engine. Assuming the research interest focuses on the sequence tvI?/svR (teacher

[15] The source code is open for technical optimisation.

verbal Initiative Question/ student verbal Response). First off, the search engine offers up all related objects; two in total concerning this concrete example. These objects are now considered individually and structured emically (c.f. figure 3, step 1)[16]: within the Bavaria-Lesson the turn tvI? entails two striking features. On the one hand, the teacher interrupts their own speech ("And she wanted to em…"); possibly, to elicit the interpretation of the piece to the students. On the other hand, the second part of the turn ("does she love him?") is a closed question. The svR is a short, negative reply ("No, actually not."). In the Scotland-Lesson the tvI? is also a closed question ("What do you play the melody with?") to which the student replies with an ellipsis offering one of the expected options ("right."). In this case, the student's answer implies a shared Understanding of the contextual meaning between the communicative partner as the student is referring to the right hand, rather than the dichotomy right/wrong.

In step two, the two objects are juxtaposed. The realization might arise that both tvI? contain closed questions. This makes the category "closed questions" available as a tertium comperationis.

Finally, in step three the comparison between the previously developed tertia comperationis occurs. In this case, the following conclusions may be derived:

[16] The sequence tvI?/svR actually entails far more than two objects. However, limiting it to two objects serves both the purpose of providing a clear example, as well as forgoing the anticipation of future studies.

- Closed questions are followed by short answers.
- A successful completion of the communicative project warrants contextual knowledge of all communicating parties (Bavaria: song lyrics; Scotland: musical practice).
- If a closed question is answered as anticipated by the initiator, the communicative project may be completed in two turns.

3.3.2 *Starting from the juxtaposition*

	Bavaria		Scot-land		Califor-nia		Estonia		Sweden		Catalo-nia		Lower Saxony		Beijing	
Type	**T**	**S**	**T**	**S**	**T**	**S**	**T**	**S**	**T**	**S**	**T**	**S**	**T**	**S**	**T**	**S**
I	176	114	284	41	432	47	129	29	154	107	187	25	67	41	242	4
I.	34	35	77	26	45	10	50	9	72	68	23	7	11	14	120	3
I?	50	33	106	14	97	32	35	15	42	33	31	8	20	7	33	1
I!	54	2	90	0	179	1	43	5	34	5	84	1	24	0	87	0
Ir	4	27	2	17	2	11	5	3	2	15	4	6	0	4	1	2
R	148	196	199	215	224	211	123	111	121	181	50	79	45	49	52	76
R.	54	108	50	83	89	68	41	49	53	77	16	23	15	39	23	28
R+	55	60	55	93	55	116	58	24	32	79	19	41	15	6	20	39
R-	42	3	11	21	25	9	8	8	20	14	12	1	3	1	3	1
R=	10	5	26	2	28	1	18	3	5	6	0	2	1	2	8	10
R!	37	7	34	3	49	1	23	1	25	6	15	0	12	0	9	1
R?	22	9	64	18	37	13	11	13	15	22	1	1	9	1	2	0
E	28	39	58	48	34	38	24	2	17	30	4	9	27	2	9	6
E.	0	3	2	1	3	0	4	0	1	0	0	0	1	0	0	0
E=	1	5	18	8	5	0	1	0	1	0	0	0	0	0	3	0
E-	3	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0
E?	3	1	3	0	4	1	6	0	4	1	0	1	1	0	1	0
E+	17	21	29	22	3	18	8	0	7	17	3	3	1	1	3	2
v	335	248	524	184	633	145	237	88	264	212	183	34	134	79	268	30
b	8	36	16	96	50	93	15	26	4	25	25	37	7	7	8	29
m	8	41	8	6	70	55	27	24	34	68	48	35	0	0	34	24
all	**356**	**376**	**543**	**321**	**692**	**307**	**281**	**145**	**294**	**333**	**245**	**119**	**139**	**96**	**304**	**88**

Figure 31 Juxtaposition of the codes (from: Giebel 2019: 62)

As the number of sequences and encounter available for research is manifold, research interests may be generated by consulting figure 31. This figure represents the juxtaposition (step 2 in figure 3) of the codes available with this book as statistical analysis[17]. Due to the inherent degree of abstraction, this juxtaposition virtually demands an examination concerning selected

[17] For more statistical evaluations consult the appendix.

tertia comperationis (developed using Wallbaum & Stich's methodology, c.f. figure 3): Why do students from Bejing refrain from asking as many questions as their international counterparts (I?)? How is it possible that the Lower-Saxony-(music!)-Lesson features not a singular musical encounter (m)? Can links be found between code and content of an encounter (f.e. an emphasis on closed questions for the sequence tvI?/svR)? Etc.

4 Didactical encounters from a pedagogical perspective

Our personal reflections on and understanding of Zandén's theory were influenced by our additional studies in linguistics and educational sciences. The following chapter offers a short insight into possible transdisciplinary links that can be used in working with Zandén's model. For that purpose, the term *dialogue*, which Zandén developed into *dictactical encounter*, is explained and a brief literature review is given.

Lefstein and Snell (2014: 14ff.) introduce the following six relevant perspectives on dialogue when considered in a pedagogical context: dialogue as a form of interaction (generally accepted knowledge), as an interplay of voices (Bachtin), as collective thinking (Vygotsky), as critique (Sokrates), as capacity to act (Freire), and as a relationship (Buber). Out of those, educational sciences researching *Dialogic Learning and Teaching* primarily builds its theory on Michail Bachtin (1895-1975) und Lev Vygotsky (1896 – 1934)[18].

Bachtin proposes that by status quo all individuals are surrounded by existing voices, which are dominated by „ideological meaning" (c.f. Emerson 1983: 247). Individuals then draw from or relate to the grand total of these voices, in short: „[Language] is populated – overpopulated – with the intentions of others" (Bachtin 1981: 294). What is said, then, is never someone's

[18] Both Bachtin and Vygotsky's writings were forbidden under the Stalinist regime and only rediscovered in the 1960s, which has led to an intergenerational interpretation.

authentic opinion, and language, thus, not a neutral medium. Bachtin contests the development of an authentic voice as the most important educational objective, which is in constant peril of the inherent power-dynamics in schools. Zandén's code may be applied to research in how far the development of authentic voices is en- and discouraged within a classroom.

Building on Vygotsky's theories (1934, 1986, 1999) Mercer posits language as a *tool* for "co-construction"[19]. This tool may be researched by enquiring the degree of shared Understanding with Zandén's method. The abstraction of the code allows the perception of a bigger picture. Comparisons between lessons employing methods of quantitative research may be considered.

[19] Vygotsky constructs a co-constructivist idea of man according to which thinking is a socially stimulated process. Therefore, individuals and society influence each other in a continuous process of building thought.

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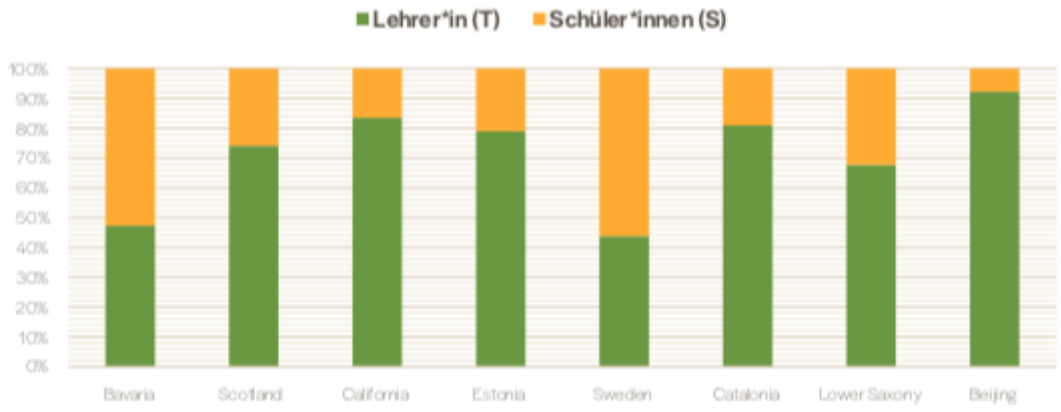
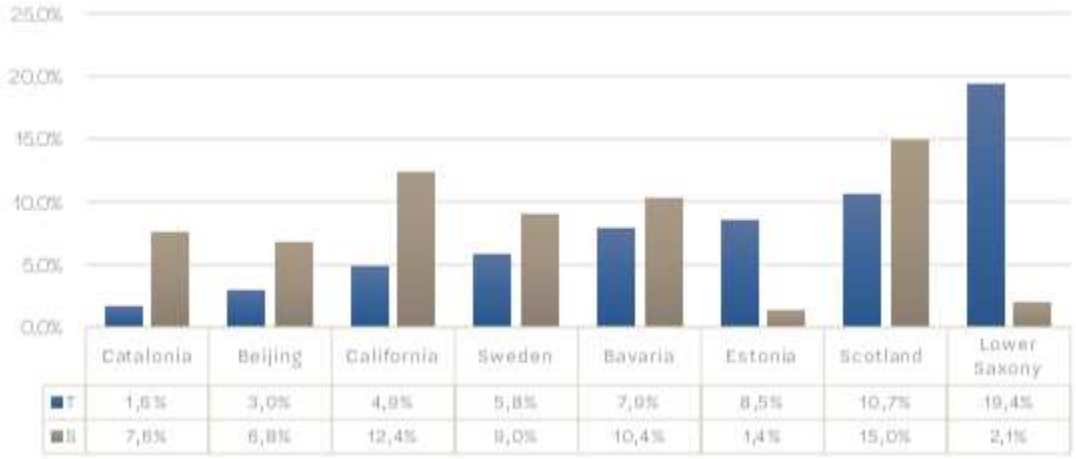
Appendix

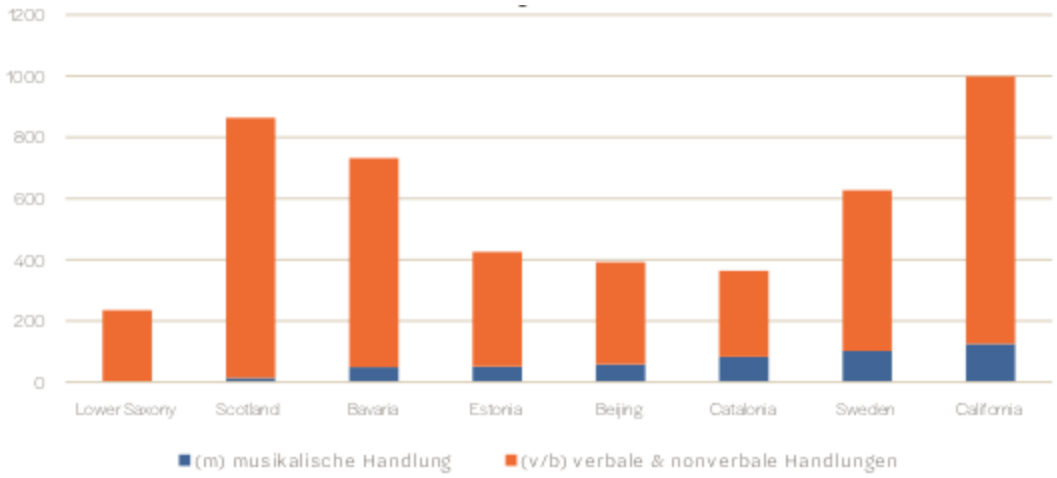
Appendix 1 - Share of coded interactions between teachers (t) and students (s) from Giebel (2019: 52)



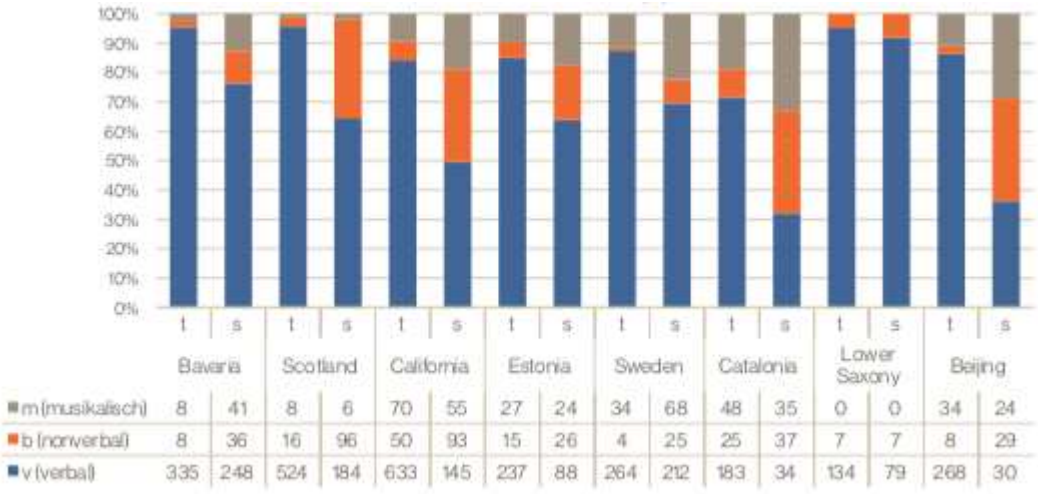
Appendix 2 – Percentage of empty responses given by teachers (T) and students (S) from Giebel (2019: 53)



Appendix 3 – Share of musical interaction (m) in relation to other acts (v/b) from Giebel (2019: 55)



Appendix 4 - Share of interactional modi between teachers /t) and students (s) Giebel (2019: 56)



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