

Appendix

A Coding Schemes

In this part of the appendix, the coding schemes are provided, as they were used to annotate the video data in this dissertation. The semantics of the coding schemes is compatible for usage in the Anvil tool [Kip01]. Therefore, the head of each coding schema defines the attributes for each track that can be selected by the annotator, while in the body of the coding schemes, the annotation tracks themselves are defined. In that manner, e.g. the track “action-subject” is defined in the body, while the concrete attributes such as “info-request” or “answer” are defined in the head. In addition, tracks can be grouped into categories. Thus, e.g. a gesture’s type and expressivity are grouped to “gesture”.

A.1 Annotation Schema for Verbal Behavior

This part of the appendix holds our verbal coding schema.

The first group of tracks (speech), holds the participant’s and actor’s transliteration and translation. For these tracks no attributes are defined. Instead, a text field is provided to the annotators where the verbal behavior is written down.

The second group (communication style) holds the participant’s and actor’s dialog utterances as well as discussed topics. Possible dialog utterances constitute a subset of the DAMSL annotation schema [CA97] and are defined in the valueset “action-type”, while possible topics are provided in the valueset “greetingphaseType”. Please see Subsection 4.3.1 for further information on our annotation of verbal behavior.

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<annotation-spec>
```

```

<!-- ***** HEAD ***** -->

<head>
  <valuetype-def>

<valueset name="actionType">
  <value-el>statement<doc>The utterance is an argument
  or another statement about the world.</doc> </value-el>
  <value-el>info request<doc>The utterance is a question
  or other form of information request.</doc> </value-el>
  <value-el>influence on future<doc>The speaker wants to
  influence to listeners future actions or his/her own
  future actions or both.</doc> </value-el>
  <value-el>agreement/ disagreement<doc>The current
  utterance indicates the speakers point of view of a
  previous action (either positive or negative).</doc>
  </value-el>
  <value-el>hold<doc>The speaker performs an act that
  leaves the decision open pending further discussion.
  </doc> </value-el>
  <value-el>understanding/ misunderstanding<doc>This
  aspect concerns the actions that speakers take in order
  to make sure that they are understanding each other,
  without stating a point of view.</doc> </value-el>
  <value-el>answer<doc>The current utterance is an answer
  to a previous information request.</doc> </value-el>
  <value-el>joke<doc>The speaker tries to be funny.</doc>
  </value-el>
  <value-el>laugh<doc>The person laughs.</doc> </value-el>
  <value-el>other<doc>The current utterance is none of the
  actions described here in its main type.</doc> </value-el>
</valueset>

<valueset name="greetingphaseType">
  <value-el>introduction<doc>People introduce their selves
  to each other.</doc> </value-el>
  <value-el>studies subject<doc>They are talking about
  the subjects studies or job.</doc> </value-el>
  <value-el>studies actor<doc>They are talking about the
  actors studies of job.</doc> </value-el>
  <value-el>age<doc>They are talking about their age.
  </doc> </value-el>

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```

<value-el>future plans<doc>They are talking about their
future plans.</doc> </value-el>
<value-el>going out<doc>They are talking about going
out at night.</doc> </value-el>
<value-el>task<doc>They are talking about the task that
they should solve.</doc> </value-el>
<value-el>reason<doc>They are talking about the reasons,
why they are here.</doc> </value-el>
<value-el>origin subject<doc>They are talking about
where the subject is coming from and living currently.
</doc> </value-el>
<value-el>origin actor<doc>They are talking about where
the actor is coming from and living currently.</doc>
</value-el>
<value-el>living situation<doc></doc> </value-el>
<value-el>personal habitudes subject<doc>They are talking
about the subjects personal habitudes.</doc> </value-el>
<value-el>personal habitudes actor<doc>They are talking
about the actors personal habitudes.</doc> </value-el>
<value-el>friends<doc>They are talking about their friends
/ people they know.</doc> </value-el>
<value-el>hobbies<doc>They are talking about their hobbies.
</doc> </value-el>
<value-el>side job<doc>They are talking about a job they
are doing/did along the way with their studies.</doc>
</value-el>
<value-el>traveling / places<doc>They are talking about
traveling or places they go.</doc> </value-el>
<value-el>location of places<doc>They are talking about
the location of places, e.g. how to get there.</doc>
</value-el>
<value-el>health<doc>They are talking about their/someones
health.</doc> </value-el>
<value-el>music / instruments<doc>They are talking about
music.</doc> </value-el>
<value-el>topic 1<doc>They are talking about another
topic. Please note that topic into the comments field.
</doc> </value-el>
<value-el>topic 2<doc>They are talking about another
topic. Please note that topic into the comments field.
</doc> </value-el>
<value-el>topic 3<doc>They are talking about another

```

```

    topic. Please note that topic into the comments field.
    </doc> </value-el>
    <value-el>topic 4<doc>They are talking about another
    topic. Please note that topic into the comments field.
    </doc> </value-el>
    <value-el>topic 5<doc>They are talking about another
    topic. Please note that topic into the comments field.
    </doc> </value-el>
  </valueset>

</valuetype-def>
</head>

<!-- ***** BODY ***** -->

<body>

<group name="speech">
  <track-spec name="S1: tr1" type="primary">
    <doc>
      This track codes the current utterance.
    </doc>
    <attribute name="transliteration">
    </attribute>
  </track-spec>

  <track-spec name="S1: sub" type="span" ref="speech.S1: tr1">
    <doc>
      This track gives an English subtitle to the current
      utterance.</doc>
    <attribute name="subtitle">
    </attribute>
  </track-spec>

  <track-spec name="S2: tr1" type="primary">
    <doc>
      This track codes the current utterance.
    </doc>
    <attribute name="transliteration">
    </attribute>
  </track-spec>

```

```

<track-spec name="S2: sub" type="span" ref="speech.S2: tr1">
  <doc>
    This track gives an English subtitle to the current
    utterance. </doc>
  <attribute name="subtitle">
    </attribute>
</track-spec>
</group>

<group name="communication style">
<track-spec name="action subject" type="primary">
  <attribute name="type" emptyvalue="true"
    valuetype="actionType">
    <doc>Here, the action is categorised in its main type.
    </doc>
  </attribute>
</track-spec>

<track-spec name="action actor" type="primary">
  <attribute name="type" emptyvalue="true"
    valuetype="actionType">
    <doc> Here, the action is categorised in its main type.
    </doc>
  </attribute>
</track-spec>

<track-spec name="greeting-phase" type="primary">
  <attribute name="phase" emptyvalue="true"
    valuetype="greetingphaseType">
    <doc>The phase indicates the pupose of the utterances.</doc>
  </attribute>
</track-spec>
</group>

</body>

</annotation-spec>

```

A.2 Annotation Schema for Nonverbal Behavior

In this part of the appendix, the nonverbal coding schema is provided.

As in the verbal coding schema, the first group of tracks (speech), holds the participant's and actor's transliteration and translation.

The second group (gesture) holds the participant's gestures, including a gesture's phase, type and expressivity. A gesture's phase contains preparation, stroke and retraction phases. Possible gesture types are defined in the valueset "gestureType", according to McNeill's classification [McN92]. The dynamic variation of a gesture is annotated along the expressivity parameters [Pel05] on a seven-point scale.

The third group contains the participant's arm posture. Possible values, as defined in Bull's coding schema [Bul87], are provided in the valueset "postType_arm".

Please see Subsection 4.3.2 for further information on the annotation of nonverbal behaviors.

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<annotation-spec>

<!-- ***** HEAD ***** -->

<head>
  <valuetype-def>

    <valueset name="phaseType">
      <value-el color="#eeee00">
        preparation
        <doc>
          Preparation phase, bringing arm and hand into stroke
          position. Note that changing hand shape before/after
          moving the arm belongs to the preparation, too. Also
          code position info.
        </doc>
      </value-el>
      <value-el color="#dd0000">
        stroke
        <doc>
          The most energetic part of the gesture movement.
          <b>Encode all other attributes for this gesture phrase
          in the stroke element!</b>
        </doc>
      </value-el>
```

```

<value-el color="#ee8800">
  hold
  <doc>
    A phase of stillness just before or just after the
    stroke, usually used to defer the stroke so that it
    coincides with a certain word.
    <b>When annotating an element as "hold" do not annotate
    any other attributes!</b>
  </doc>
</value-el>
<value-el color="#00bb33">
  retraction
  <doc>
    Retraction. Movement back to rest position. In sitting
    position this is usually the arm rest, the lap or
    folded arms. <b>Encode no other attributes in a
    "retract" element.</b>
  </doc>
</value-el>
</valueset>

<valueset name="gestureType">
  <value-el color="#8cda8e">beat</value-el>
  <value-el>deictic</value-el>
  <value-el>emblem</value-el>
  <value-el>iconic</value-el>
  <value-el>metaphoric</value-el>
  <value-el>adaptor</value-el>
</valueset>

<valueset name="postType_arm">
  <value-el>none</value-el>
  <value-el>PHHd</value-el>
  <value-el>PHNk</value-el>
  <value-el>PHFe</value-el>
  <value-el>SHdH</value-el>
  <value-el>PHSr</value-el>
  <value-el>PHUAm</value-el>
  <value-el>PHEw</value-el>
  <value-el>PHLAm</value-el>
  <value-el>PHWr</value-el>
  <value-el>FAs</value-el>

```



```

<value-el>JHs</value-el>
<value-el>PHCt</value-el>
<value-el>PHRs</value-el>
<value-el>PHAn</value-el>
<value-el>PHB</value-el>
<value-el>PHUBs</value-el>
<value-el>PHTh</value-el>
<value-el>PHK</value-el>
<value-el>PHCf</value-el>
<value-el>PHAe</value-el>
<value-el>PHBLs</value-el>
<value-el>PHF</value-el>
<value-el>PHCrAM</value-el>
<value-el>PHCrBk</value-el>
<value-el>PHCrSt</value-el>
<value-el>PHTe</value-el>
<value-el>HP</value-el>
<value-el>PHIPt</value-el>
<value-el>PHTr</value-el>
<value-el>PoH</value-el>
<value-el>HUH</value-el>
</valueset>

</valuetype-def>
</head>

<!-- ***** BODY ***** -->

<body>

<group name="speech">
  <track-spec name="S1: trl" type="primary">
    <doc>
      This track codes the current utterance.
    </doc>
    <attribute name="transliteration">
    </attribute>
  </track-spec>

  <track-spec name="S1: sub" type="span" ref="speech.S1: trl">
    <doc>
      This track gives an English subtitle to the current

```

```

    utterance.
  </doc>
  <attribute name="subtitle">
</attribute>
</track-spec>

<track-spec name="S2: trl" type="primary">
  <doc>
    This track codes the current utterance.
  </doc>
  <attribute name="transliteration">
</attribute>
</track-spec>

<track-spec name="S2: sub" type="span" ref="speech.S2: trl">
  <doc>
    This track gives an English subtitle to the current
    utterance.
  </doc>
  <attribute name="subtitle">
</attribute>
</track-spec>
</group>

<group name="gesture">
  <track-spec name="phase" type="primary" >
    <attribute name="type" emptyvalue="false"
      defaultvalue="stroke" valuetype="phaseType">
</doc>
    Phase description is based on the phases postulated
    by Kendon and McNeill (1992), later on extended by
    Kita et al. (1999).
  </doc>
  </attribute>
  <attribute name="handedness" emptyvalue="false"
    defaultvalue="right" valuetype="handednessType" />
</track-spec>

  <track-spec name="phrase" type="primary">
    <attribute name="category" emptyvalue="false"
      defaultvalue="iconic" valuetype="gestureType"
      display="true" />

```

```

</track-spec>

<track-spec name="expressivity" type="singleton"
ref="gesture.phrase">
  <doc>
    This track specifies the expressivity dimensions.
  </doc>
  <attribute name="repetition" emptyvalue="false"
defaultvalue="1" display="true" valuetype="Number(1,7)"/>
  <attribute name="fluidity" emptyvalue="false"
defaultvalue="4" valuetype="Number(1,7)"
display="true"/>
  <attribute name="power" emptyvalue="false"
defaultvalue="4" valuetype="Number(1,7)"
display="true"/>
  <attribute name="speed" emptyvalue="false"
defaultvalue="4" valuetype="Number(1,7)"
display="true"/>
  <attribute name="spat.exp." emptyvalue="false"
defaultvalue="4" valuetype="Number(1,7)"
display="true"/>
</track-spec>
</group>

<group name="posture">
  <track-spec name="arm" type="primary">
<attribute name="arm" emptyvalue="false"
defaultvalue="none" valuetype="postType_arm"
display="true">
  </attribute>
</track-spec>
</group>

</body>

</annotation-spec>

```

A.3 Bull’s Posture Coding Schema

In [Bul87], Bull’s posture scoring system is introduced. According to the system, a posture can be classified into four main types: head, trunk, arms and legs. For the work carried out in this dissertation, the arm postures are of particular interest. Thus, in Table A.1 the categories of arm positions are summarized:

Postures	Description
Hand to hand	
PHHd	Puts hand to head. The hand is placed on any part of the head excluding the face and neck.
PHNk	Puts hand to neck.
PHFe	Puts hand to face.
SHdH	Supports head on hand.
Hand to arm	
One handed	
PHSr	Puts hand to shoulder.
PHUAm	Puts hand to upper arm (between shoulder and elbow).
PHEw	Puts hand to elbow.
PHLAm	Puts hand to lower arm (between elbow and wrist).
PHWr	Puts hand to wrist.
Two handed	
FAs	Fold arms.
JHs	Join hands.
Hand to trunk	
PHCt	Puts hand to chest.
PHRs	Puts hand to ribs.
PHAn	Puts hand to abdomen.
PHB	Puts hands to back.
Hand to leg	
PHUBs	Puts hand under backside.
PHTh	Puts hand to thigh.
PHK	Puts hand to knee.
PHCf	Puts hand to calf.
PHAe	Puts hand to ankle.
PHBLs	Puts hand between legs.
PHF	Puts hand to foot.
Hand to furniture	
PHCrAM	Puts hand to chair arm.

PHCrBk	Puts hand to chair back.
PHCrSt	Puts hand to chair seat.
PHTe	Puts hands to table.
Hand to clothes	
HP	Holds pullover.
PHIPt	Puts hands into pocket.
PHTr	Puts hands to trousers.
Hand not touching	
PoH	Points hand. To score a "points hand" posture, the fingers must be in a pointing position, i.e. with at least one finger out-stretched.
HUH	Holds up hand. The "holds up hand" posture refers to hand not touching positions which do not involve pointing.

Table A.1: Arm postures as described in Bull's posture scoring system.

B Frequency Data from Corpus Analysis

B.1 Topic Categories

Participant ID	Topics	Immediate	External	Communication
Japan				
2	8	3	4	1
4	17	5	8	4
5	11	2	3	6
8	9	1	5	3
9	2	0	1	1
15	6	1	4	1
19	12	4	8	0
21	13	4	7	2
23	11	4	5	2
31	14	5	9	0
32	10	4	5	1
sum	113	33	59	21
mean	10.27	3.00	5.36	1.91
SD	4.05	1.73	2.42	1.81

Table B.1: List of frequency data showing the number of topics and topic categories in the Japanese data set.

Participant ID	Topics	Immediate	External	Communication
Germany				
1	11	2	2	7
2	6	0	4	2
3	3	1	2	0
4	7	1	4	2
5	11	4	3	4
6	10	3	5	2
7	8	3	5	0
8	11	1	4	6
9	5	0	3	2
10	8	1	5	2
11	18	1	5	12
12	11	2	2	7
13	8	2	3	3
14	13	2	5	6
15	10	4	2	4
16	10	2	4	4
17	10	2	5	3
18	11	1	4	6
19	8	1	5	2
20	9	0	5	4
21	13	2	6	5
sum	201	35	83	83
mean	9.57	1.67	3.95	3.95
SD	3.16	1.15	1.24	2.77

Table B.2: List of frequency data showing the number of topics and topic categories in the German data set.

B.2 Topic Shifts

Participant ID	Different Topics	Topic Shifts
Japan		
2	5	8
4	11	17
5	8	11
8	6	9
9	2	2
15	4	6
19	5	12
21	6	13
23	6	11
31	4	14
32	7	10
sum	64	113
mean	5.82	10.27
SD	2.36	4.05

Table B.3: List of frequency data showing the number of topics and topic shifts in the Japanese data set.

Participant ID	Different Topics	Topic Shifts
Germany		
1	8	11
2	3	5
3	3	3
4	5	7
5	7	11
6	6	11
7	4	8
8	10	11
9	4	5
10	4	8
11	9	18
12	10	11
13	5	8
14	6	12
15	7	10
16	7	11
17	8	11
18	8	11
19	5	8
20	6	9
21	9	13
sum	134	199
mean	6.38	9.48
SD	2.18	3.17

Table B.4: List of frequency data showing the number of topics and topic shifts in the German data set.

B.3 Dialog Utterances

Participant ID	question	answer	statement	agreement	understanding	hold
Japan						
2	5	8	19	1	1	3
4	18	7	17	5	24	8
5	10	16	38	3	14	13
8	6	18	24	3	6	1
9	6	12	15	1	3	4
15	14	17	30	6	13	7
19	4	6	23	4	14	5
21	9	9	20	1	14	5
23	4	7	13	3	13	1
31	11	3	39	4	13	4
32	10	10	30	1	12	16
sum	97	113	268	32	127	67
mean	8.82	10.27	24.36	2.91	11.55	6.09
SD	4.42	4.90	8.86	1.76	6.28	4.72

Table B.5: List of frequency data showing the number of dialog utterances in the Japanese data set.

Participant ID	question	answer	statement	agreement	understanding	hold
Germany						
1	8	19	34	8	10	6
2	4	15	25	12	3	1
3	2	18	32	6	3	6
4	3	17	12	2	7	3
5	8	14	31	4	10	4
6	9	9	27	0	4	4
7	4	9	21	2	6	2
8	8	18	9	1	10	6
9	3	21	32	4	3	4
10	3	11	26	3	8	1
11	7	22	19	2	11	7
12	4	21	13	4	4	1
13	5	9	39	2	1	0
14	5	18	18	7	18	4
15	4	18	26	5	8	2
16	4	7	17	4	20	0
17	3	13	38	8	4	2
18	13	2	23	4	14	9
19	2	18	18	4	6	2
20	6	12	30	7	12	6
21	11	19	31	2	10	5
sum	116	310	521	91	172	75
mean	5.52	14.76	24.81	4.33	8.19	3.57
SD	3.01	5.35	8.47	2.85	5.01	2.48

Table B.6: List of frequency data showing the number of dialog utterances in the German data set.

B.4 Pauses and Overlaps

Participant ID	<i>pauses > 1sec</i>	<i>pauses > 2sec</i>
Japan		
2	29	19
4	27	12
5	42	11 9
8	31	9
9	31	9
15	26	9
19	26	6
21	31	13
23	19	5
31	20	4
32	26	4
sum	308	101
mean	28	9.18
SD	6.18	4.51

Table B.7: List of frequency data showing the number of pauses in the Japanese data set.

Participant ID	overlaps	<i>overlaps</i> > 0.5	<i>overlaps</i> < 0.5
Japan			
2	11	3	8
4	82	25	57
5	51	12	39
8	43	11	32
9	19	8	11
15	45	14	31
19	38	10	28
21	55	34	21
23	48	28	20
31	33	10	23
32	54	27	27
sum	479	182	297
mean	43.55	16.55	27
SD	18.98	10.08	13.43

Table B.8: List of frequency data showing the number of overlaps in the Japanese data set.

Participant ID	<i>pauses > 1sec</i>	<i>pauses > 2sec</i>
Germany		
1	7	1
2	5	0
3	12	1
4	8	0
5	3	0
6	10	1
7	6	1
8	4	0
9	6	1
10	4	0
11	11	0
12	13	3
13	12	0
14	3	0
15	2	0
16	4	0
17	7	2
18	8	1
19	3	0
20	2	0
21	1	0
sum	131	11
mean	6.24	0.52
SD	3.66	0.81

Table B.9: List of frequency data showing the number of pauses in the German data set.

Participant ID	overlaps	<i>overlaps</i> > 0.5	<i>overlaps</i> < 0.5
Germany			
1	64	22	42
2	49	32	17
3	49	16	33
4	34	18	16
5	49	25	24
6	31	14	17
7	23	5	18
8	56	21	35
9	47	15	32
10	40	16	24
11	58	22	36
12	31	10	21
13	26	6	20
14	59	22	37
15	62	16	46
16	36	9	27
17	46	11	35
18	50	18	32
19	45	15	30
20	56	16	40
21	69	25	44
sum	980	354	626
mean	46.67	16.86	29.81
SD	12.88	6.64	9.45

Table B.10: List of frequency data showing the number of overlaps in the German data set.

C Knowledge Bases

C.1 Character's Knowledge Base

For verbal behavior planning, each character is provided with an initial knowledge base, holding its personal background and motivations, categorized topics and culture-specific thresholds exemplified for Germany and Japan.

The personal motivation for a topic represents the agent's internal drive to talk about the particular topic. Each topic in the knowledge base is categorized into the following groups: immediate situation, external situation or communication situation. For simplicity reasons, the categories are referred to as immediate, social or private in the knowledge bases.

Culture-related thresholds for each topic category influence whether a topic is introduced by a character, while the culture-related thresholds for the sequence have an impact on the flow of the conversation.

Culture-specific thresholds are designed to resemble the findings from our corpus study. Personal motivations and culture-related thresholds are designed to lie in an interval between 0 and 10.

The following example shows an extraction from a character's initial knowledge base:

```
(defproblem problem mike  
  
  (name mike)  
  (gender male)  
  (culture germany)  
  
  (motivation weather 5)  
  (motivation movies 7)  
  (motivation job 6)
```



```

(topic weather immediate)
(topic movies social)
(topic job private)

(threshold germany immediate 8)
(threshold germany social 4)
(threshold germany private 4)

(threshold japan immediate 4)
(threshold japan social 3)
(threshold japan private 8)

(threshold germany sequence 3)
(threshold japan sequence 5)

```

)

For the process of topic selection, the following axiom determines whether a topic is appropriate to be addressed, based on the cultural background of the character. Only if a topic is considered appropriate, it is going to be introduced by the target agent.

```

(:- (appropriate ?topic)
((culture ?culture)
(topic ?topic ?category)
(motivation ?topic ?valtopic)
(threshold ?culture ?category ?valcat)

(call < ?valcat ?valtopic))
)

```

To determine the flow of a conversation, the following axiom determines whether a topic is processed sequentially or not. Only if a character's personal motivation for a topic is higher than the culture-related threshold, it will follow the prototypical sequence.

```

(:- (sequential ?topic)
((culture ?culture)
(motivation ?topic ?valtopic)
(threshold ?culture sequence ?valseq)

(call < ?valseq ?valtopic))
)

```

C.2 Verbal Knowledge Base

The verbal knowledge base contains abstract representations of the dialog acts along with templates that can be selected for the virtual characters.

For the simulation of culture-related small talk behavior, 9 topics have been investigated, three for each category: immediate situation, external situation and communication situation.

For each topic, the dialog acts ask, askback, answer and answerback are provided, each containing three possible templates. In addition, dialog acts to frame the small talk conversation were added, such as greeting or farewell, as well as speech acts that can be performed by a human user to trigger certain behaviors for testing reasons.

Topics and speech acts	Templates
small talk topics	
immediate situation	
location ask	So how do you like this beergarden? Do you enjoy this exceptional place? What do you think about this location?
askback	And you 'name'? Do you like it? And yourself? Do you like the location? Dont you think the same?
answer	I think it is great to go to a beergarden 'name'! This location is very special! A Bavarian beergarden! Great place 'name'. Going to a beergarden was a good choice.
answerback	It is very nice. With all the trees it is nice and shady. It is indeed a great place. And very well designed. You know 'name'. I really enjoy myself being here.
weather ask	We were very lucky with the weather. It rains quite often this summer doesnt it? Look at the weather isnt it great? It is a great day isnt it?
askback	It was also nice and warm last week wasnt it? Last summer has been very hot. Do you remember? Has it been sunny all week?

answer	Yes the weather is fantastic today. You are right. It is lovely today.
answerback	Yes we have little rain and many sunny days this year. Yes. It was indeed very warm. Yes its been very nice weather. Yes sunshine was very pleasant.
food ask	Did you try the food in here 'name'?
askback	Have you seen the menu in this beergarden? Did you see the many dishes that are lined up here? Do you like sushi 'name'?
answer	What do you prefer? Typical German or Japanese? Are you having the Japanese food today?
answerback	Yes. They are having a variety of German and Japanese food. I did 'name'. They offer typical Bavarian food and some Japanese delicacies too. Its great they have sausages and sauerkraut as well as sushi! I love sushi 'name'. But today I will go for something German. I like Japanese food a lot. I will order some sushi later. Japanese food is good. However in a beergarden I will go for something typical for that area.
external situation	
movies ask	Have you heard about that new alien movie on cinema? Are you familiar with that new alien movie?
askback	Did you see the alien movie that is in cinemas lately? And you 'name'? Have you seen it? And yourself? Did you see it already?
answer	How about you? Seen it? Yes! I heard about it but havent seen it. I heard it is good. But I did not go yet.
answerback	Great movie 'name'. I saw it yesterday! It was really great. I did see it. But I thought it was a little boring. I went there yesterday 'name'. I think it was decent.
places ask	There is also this small beergarden close by. Have you been there 'name'?
	Do you know the new Sushi restaurant that opened a few days ago?

<p>askback</p> <p>answer</p> <p>answerback</p>	<p>There is another place like this one. Have you heard of it 'name'?</p> <p>So where is this place 'name'?</p> <p>Do you know where that place is 'name'?</p> <p>Can you tell me where it is?</p> <p>No I dont know that one.</p> <p>I never heard of it.</p> <p>That sounds very interesting.</p> <p>Oh it is just down the road on the left hand side.</p> <p>I dont know exactly. But I think it is in this area.</p> <p>It is very close. If you exit this beergarden you can see it already.</p>
<p>friends</p> <p>ask</p> <p>askback</p> <p>answer</p> <p>answerback</p>	<p>Did you know that Heidi is working in this beergarden?</p> <p>Heidi has a new side job as a waitress in here. Have you met her yet?</p> <p>Did you know that Heidi is working in this place as a waitress?</p> <p>Does she like her job as a waitress?</p> <p>I think Heidi is a good waitress. Is she enjoying that job?</p> <p>Heidi seems to be doing very well in her job doesnt she?</p> <p>Yes I heard that she has a side job in this place.</p> <p>I did. She has been working here for a month now.</p> <p>Yes. She is serving the area next to the bar.</p> <p>She likes working here very much although she is always very busy.</p> <p>I think she likes working outside with people a lot.</p> <p>Yes. She said that she enjoys working in this beergarden.</p>
<p>communication situation</p>	
<p>job</p> <p>ask</p> <p>askback</p> <p>answer</p> <p>answerback</p>	<p>Do you have a side job as well?</p> <p>Are you working in a side job 'name'?</p> <p>Are you doing a part time job during your studies too?</p> <p>How about you 'name'? Do you have a side job too?</p> <p>And yourself? Are you working part time during your studies?</p> <p>Do you have a part time job as well 'name'?</p> <p>Oh yes. I am working in an Italian restaurant.</p> <p>Sure 'name'. I have a side job in a Cocktail bar.</p> <p>I do. I am working in a restaurant since two years.</p> <p>No. I am currently not working part time.</p> <p>For my last semester I decided to not work in a side job.</p> <p>I used to work part time as well but currently do not have a side job.</p>

<p>origin ask</p> <p>askback</p> <p>answer</p> <p>answerback</p>	<p>Are you from this region originally 'name'?</p> <p>Do you come from this area 'name'?</p> <p>Are you from around here?</p> <p>Have you been to the US 'name'?</p> <p>Did you ever go to America 'name'?</p> <p>Have you been there?</p> <p>No I am from the US originally.</p> <p>I am not from here 'name'. I was born and raised in America.</p> <p>No not originally. I moved here from the United States.</p> <p>Yes I have been to New York last year.</p> <p>No I did not have the chance to go there. But I want to visit it soon.</p> <p>I did. I traveled the west coast and visited a lot of places.</p>
<p>hobbies ask</p> <p>askback</p> <p>answer</p> <p>answerback</p>	<p>Do you enjoy traveling?</p> <p>Do you travel a lot 'name'?</p> <p>You seem to like traveling 'name' dont you?</p> <p>How about you 'name'? Do you like to travel?</p> <p>Do you like traveling too?</p> <p>Are you keen on traveling as well 'name'?</p> <p>Traveling is my major hobby. I like it a lot.</p> <p>I do 'name'. I think traveling is always a good experience.</p> <p>I do travel as much as I can.</p> <p>Oh yes. I totally like traveling too.</p> <p>Absolutely. Traveling is a hobby of mine as well.</p> <p>Indeed I like to travel. I plan on going to Australia by the end of the year.</p>
<p>well-being ask</p> <p>askback</p> <p>answer pos</p> <p>answer neg</p>	<p>How are things 'name'?</p> <p>Hey 'name' is everything all right with you?</p> <p>How are you 'name'?</p> <p>How about you 'name'? How are you?</p> <p>And yourself? How are things?</p> <p>Thanks for asking! And you?</p> <p>Oh everything is just wonderful 'name'!</p> <p>Everything is great! Could not be better!</p> <p>I am good. Thanks for asking.</p> <p>Dont even ask 'name'! Life is not how it should be right now.</p> <p>I have seen better days.</p>

answer med	I dont enjoy myself at all at the moment. I am ok 'name'! I am all right. Thanks for asking 'name'. Well everything is ok at the moment.
frame speech acts	
greeting	Hello 'name'! I have not seen you in a while. Hi 'name'. It is nice to see you again. Good evening. Nice to see you here 'name'.
farewell	You know what 'name'. I just saw a friend of mine over there! See you later!
farewell back	I just go over to the bar and grab a drink! It was nice talking to you 'name'. All right 'name'. See you later! See you 'name'.
speech acts for tests with interface	
same again	Uhm... I think you mentioned this earlier 'name'! Sure... but you are repeating yourself 'name'.
compliment	Uhm... I guess I heard that from you earlier 'name'! You look great today 'name'! What a nice outfit! Did you loose weight 'name'? You are in great shape! Did you find the fountain of youth 'name'? You look great!
thank compliment	Thanks 'name'! Thats very kind of you! You think so 'name'? Its a pleasure to hear that. You make me blush! Thanks for saying that 'name'!
block compliment	Thanks 'name'! But I know that I look awful today! Are you kidding me 'name'? I feel like the ugly duckling.
statement location	Are you nuts? Look at me 'name'! I dont look good at all today. I think this beergarden is a great place for a party. Look at this location 'name'! It is indeed a typical bavarian beer-garden. We were lucky with this location. Usually it is booked out at week-ends.
statement weather	We were lucky with the weather. It was supposed to rain today. It is such a warm and nice summer day today. Summer finally started. I was afraid june gloom will last forever.
location back	You are right. This is a wonderful location. Right 'name'! I like this beergarden too. This beergarden was indeed a good choice.

weather back	You are right. The weather is lovely. Summer at last. I love the sunshine. We were really lucky. Imagine it would have rained.
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Table C.1: List of speech acts and corresponding templates used in our demonstrator to exemplify small talk dialogs.

C.3 Nonverbal Knowledge Base

The nonverbal knowledge base contains all animations that can be performed by our virtual characters. Table C.2 shows how the knowledge base is structured as well as the amount of animations provided for each type.

Start ID	group	number of animations
100	gestures based on German video corpus	10
200	gestures based on Japanese video corpus	13
300	non-corpus-based gestures	33
700	movement animations	8
800	body postures	7

Table C.2: Structure of the nonverbal knowledge base of our demonstrator.

In the following, the animations contained in each group are further described. To view selected animations please go to our animation website [Aug11].

For corpus-based gestures (see Table C.3), the animation lexicon provides the participant’s speech, DAMSL dialog utterance [CA97] and McNeill’ gesture classification [McN92], as annotated in the video corpus. Please note that corpus-based gestures are considered culture-specific and are therefore restricted to cultural background.

ID	speech	DAMSL	McNeill
Germany			
100	I uhm work here, you know.	answer	beat
101	Brings you further sure. Experience and so on. But...	statement	beat
102	it is not the case that they are only employing economists	n.a.	beat
103	in america, for pupil exchange and then meet somebody there, go there again, and meet somebody new and so on.	answer	beat
104	And what else? What do we do here? What did they say? Negotiation?	info-request	deictic
105	at the erhm university	statement	deictic

106	exactly. since my boy friend studied chemistry.	answer	deictic
107	Well I just got there and uhm, I just went straight in there.	statement	iconic
108	one club is there, but erhm...	n.a.	iconic
109	more in the direction of m m medial computing	n.a.	metaphoric
Japan			
200	In the department of education, generally, the fields are divided into three parts: pedagogy, politics of the education and psychology.	statement	beat
201	n.a.	n.a.	beat
202	n.a.	n.a.	beat
203	That German guy was telling about more and more prize money.	statement	deictic
204	Are you an undergraduate student?	info-request	deictic
205	Well, aren't you ??? at Wednesday..." (interrupted)	info-request	deictic
206	There isn't anybody who could be asked, because there's few people around here.	statement	deictic
207	For us, well in the cafeteria there is; cash you know is not valid there	statement	iconic
208	It's not far, erh it stands in this main campus, but	statement	iconic
209	Well, I take a class around the new educational psychology.	answer	metaphoric
210	Though it's okay for the exam for the cognitive Psychology,	statement	metaphoric
211	(..) for the clinical Psychology there's a great competition to enter to the faculty.	statement	metaphoric
212	n.a.	n.a.	adaptor

Table C.3: Corpus-based gestures.

Non-corpus-based gestures (see Table C.4) are of a general nature and customizable. In that manner, aspects such as speed or spatial extent can be adjusted.

However, this does not hold true for emblems, since they might lose their meaning by, e.g. changing their spatial extent.

ID	McNeill	description
300	beat	general beat gesture
301	beat	general beat gesture
302	beat	general beat gesture
303	deictic	pointing at an imaginary thing
304	metaphoric	general metaphoric gesture
305	metaphoric	general metaphoric gesture
306	metaphoric	general metaphoric gesture
307	adaptor	the character strokes its hair
308	adaptor	Scratch head
309	emblem	Becking 1
310	emblem	Becking 2
311	emblem	Becking 3
312	emblem	Big Bow
313	emblem	Small Bow
314	emblem	HeadNod
315	emblem	Stand up (move hands upwards)
316	emblem	Eat 1
317	emblem	Eat 2
318	emblem	Go away (wave hands to show s.o. to move away)
319	emblem	pointing towards oneself (German)
320	emblem	Come over here (German)
321	emblem	Tasty (character strokes its belly)
322	emblem	No (waving with index finger)
323	emblem	Stupid (waving in front of head)
324	emblem	Drink
325	emblem	No time (pointing towards imaginary wrist watch)
326	emblem	Ranicki 1 (gesture typically for a famous German TV host)
327	emblem	Ranicki 2 (gesture typically for a famous German TV host)
328	emblem	Wipe Bar
329	emblem	Pour glas
330	emblem	Drink Japanese
331	emblem	pointing towards oneself (Japanese)
332	emblem	Come over here (Japanese)

Table C.4: Non-corpus-based gestures.

Movement animations (see Table C.5) are needed on the one hand to get characters to another position within the scenario, and on the other hand to naturally orientate themselves towards each other during a conversation.

ID	description
700	Sidestep left
701	Sidestep right
702	Walk
703	Medium Step Backward
704	Small Step Backward
705	Large Step Backward
706	Skew Left
707	Skew Right

Table C.5: Movement animations.

Postures are based on Bull's coding scheme [Bul87], while prototypical postures that were frequently observed in our corpus for the German and Japanese cultures were modeled (see Section 4.4.3). Posture animations (see Table C.6) are loopable. In contrast to the performance of gestures, characters remain in a certain posture until another animation is selected.

ID	description	culture
800	Idle	
801	Fold Arms: Character folds both arms in front of its body.	Germany
802	Put Hands Into Pocket: Character puts hands on its pocket/hips.	Germany
803	Put Hand to Elbow: Character puts one hand on the other arm's elbow.	Germany
804	Put Hand to Wrist: Character brings one hand to the other hand's wrist.	Japan
805	Join Hands: Character brings together both hands.	Japan
806	Put Hands Back: Character puts both hands behind the back.	Japan

Table C.6: Posture animations.

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