

Developing a Typology of Dialogue Acts: Tagging Estonian Dialogue Corpus

Tiit Hennoste

Department of Estonian and
Finno-Ugric Linguistics
University of Tartu
hennoste@ut.ee

Mare Koit

Institute of Computer
Science
University of Tartu
koit@ut.ee

Andriela Rääbis

Department of Estonian and
Finno-Ugric Linguistics
University of Tartu
andriela@ut.ee

Krista Strandson

Department of Estonian and
Finno-Ugric Linguistics
University of Tartu
ks@ut.ee

Maret Valdisoo

Institute of Computer
Science
University of Tartu
maret@ut.ee

Evely Vutt

Institute of Computer
Science
University of Tartu
nurm@ut.ee

1 Introduction

Estonian dialogue corpus includes recordings of spoken conversations, among them 114 calls for information and/or to travel bureaus.¹ All the recordings were transliterated using conversational analysis (CA) transcription. We have worked out a typology of dialogue acts and are using it for tagging the corpus (Hennoste et al. 2003). All the dialogues were tagged by two people and then unified. Our tagged corpus (114 dialogues) includes 5815 dialogue act tags, among them 633 questions and 1081 answers, 308 first and 258 second parts of directive adjacency pairs (AP). The kappa value is between 0.59 (for some travel bureau dialogues) and 0.79 (calls for information).

2 Typology of Dialogue Acts

There are several well-known typologies (Sinclair, Coulthard 1975, Stenström 1994, Mengel et al. 2001). Nevertheless, we have decided to develop our own dialogue act system because the categories used by most of the typologies are too general in our opinion. The principles underlying our typology are the same as for other coding

schemes (Edwards 1995). Our typology departs from the point of view of CA that focuses on the techniques used by people themselves when they are actually engaged in social interaction. This is an empirical, inductive analysis of conversation data (see e.g. Hutchby, Fooffitt 1998).

The departing point of the CA is that a dialogue participant always must react to previous turn regardless of his/her own plans and strategies. This is the reason why we do not start our typology with determination of forward- and backward-looking functions but distinguish AP relations from non-AP ones. The computer as a dialogue participant must follow the norms and recognize signals of violations of the norms by the partner.

Secondly, acts used in dialogue are typically divided into two groups: information acts and dialogue managing acts. The last acts must be divided into 1) fluent conversation managing acts and 2) acts for solving communication problems. The computer must be able to differentiate a problem solving act from an information act or fluent interaction. It is essential because some information acts and repair acts have similar form (e.g. almost all initiations of repairs are questions in Estonian).

We differentiate 8 groups of dialogue acts in our typology, the first 7 groups include acts that

¹ <http://sys130.psych.ut.ee/~linds/english/index.html>

form APs: 1) Conventional (greeting, thanking etc), 2) Topic change, 3) Contact control, 4) Repair, 5) Questions and answers, 6) Directives and reactions (request, etc), 7) Opinions and reactions (assertion, argument etc), 8) Non-AP acts. The overall number of dialogue acts is almost 130. Every type in our typology contains a subtype 'other' which is used for annotating the things we are not interested in at the moment, or are not able to determine exactly. This gives us a possibility to extend our typology in future.

3 Questions and Directives in Estonian Information Dialogues

Sometimes questions and directives are differentiated on the basis whether the user needs some information (question) or (s)he wants to influence the hearer's future non-communicative actions (directive). Our departing point is another: it is not important for dialogue continuation whether the hearer must to do something outside of current dialogue or not. (S)he must react to both a question and a directive because both are the first parts of APs. The second part of AP can be verbal or non-verbal (some action). It can come immediately after the first part of AP or later. The main difference between directives and questions is formal – questions have special explicit form in Estonian (interrogatives, intonation, specific word order) but directives do not have it.

There are three types of questions: 1) questions expecting giving information: open (wh)question, open yes/no question, 2) questions expecting agreement/refusal: closed yes/no question, question that offers answer, 3) questions expecting the choice of an alternative. The suitable answers are: giving information / missing information, closed answers: yes / no / agreeing no / other yes/no-answer, alternative answers: one / both / third choice / negative / other alternative answer. Open and closed yes/no questions have similar form but they expect different reactions from the answerer (e.g. *Are you open in winter?* expects the answer *yes* or *no*, but by asking *Is there a bus that arrives in Tallinn after 8 p.m.?* the questioner wants to know the bus times).

The first parts of directive APs are 1) request, 2) proposal and 3) offer. The second parts are fulfilling directive: giving information / missing information / action, agreement with directive,

refusal of directive, postponing the answer of directive, restricted fulfilling of directive, restricted agreement with directive.

Fulfilling of request is obligatory, fulfilling of proposal or offer is optional. Requests are similar to wh-questions – they expect giving information and not yes/no answer or choice of an alternative. Proposals and offers differ from requests because they expect the different second part. They are similar to closed yes/no questions. The suitable reactions are agreement or refusal. Offer must be distinguished from proposal. In the first case, the action originates from the speaker (offer: *I'll send you the programme*), in the second case from the partner (proposal: *please come tomorrow, call me later*).

Our next aim is to develop a programme which will implement statistical learning methods for recognising dialogue acts.

Acknowledgement

The work was supported by Estonian Science Foundation (grant No 4555) and Estonian Ministry of Education (state program Estonian language and national culture).

References

- Edwards, J. 1995. Principles and alternative systems in the transcription, coding and mark-up of spoken discourse. Geoffrey Leech, Greg Myers, Jenny Thomas (eds.), *Spoken English on Computer. Transcription, Mark-up and Application*. London: Longman, 19-34.
- Hennoste, T., Koit, M., Rääbis, A., Strandson, K., Valdisoo, M., Vutt, E. 2003. Developing a Typology of Dialogue Acts: Some Boundary Problems. *Proc. of 4th SIGdial workshop*, Sapporo, 226-235.
- Hutchby, I., Wooffitt, R. 1998. *Conversation Analysis. Principles, Practices and Applications*. Cambridge, Polity Press.
- Mengel, A.; Dybkjær, L.; Garrido, J. M.; Heid, U.; Klein, M.; Pirrelli, V.; Poesio, M.; Quazza, S.; Schiffrin, A.; Soria, C. 2000. *MATE Dialogue Annotation Guidelines. Dialogue acts*. http://www.ims.uni-stuttgart.de/projekte/mate/mdag/da/da_1.html (28/07/2003).
- Sinclair, J.M.; Coulthard, R.M. 1975. *Towards of Analysis of Discourse: The English used by Teachers and Pupils*. London: Oxford UP.
- Stenström, A.-B. 1994. *An Introduction to Spoken Interaction*. London and New York: Longman.