

# Concern-Alignment in Joint Inquiry for Consensus-Building

**Yasuhiro Katagiri**

Future University Hakodate, Japan  
katagiri@fun.ac.jp

**Katsuya Takanashi**

Kyoto University, Japan  
takanasi@sap.ist.i.kyoto-u.ac.jp

**Masato Ishizaki**

The University of Tokyo, Japan  
ishizaki@iii.u-tokyo.ac.jp

**Mika Enomoto**

Tokyo University of Technology, Japan  
menomoto@stf.teu.ac.jp

**Yasuharu Den**

Chiba University, Japan  
den@chiba-u.jp

## Abstract

‘Concern Alignment in Conversations’ project aims to establish a theoretical and descriptive framework to capture both discourse structures and underlying rational and affective processes in human-human joint consensus-building interactions through empirical examinations of real-life conversations. Concern alignment model has been developed to address the problem of elucidating high-level dialogue structures manifested in human-human negotiations for consensus-building. The central idea is to conceptualize a dialogue interaction as an exchange of concerns and proposals.

## 1 Concern alignment

Concern align model (Katagiri et al., 2013; Katagiri et al., 2015) conceptualizes a consensus decision-making process between a group of people and its accompanying dialogue as consisting of two interaction processes: concern alignment and proposal exchange (Figure 1).

A group of people, engaging in a conversation to pursue a joint course of actions among themselves, have certain objectives (*issues*) to attain through agreement. Before they try to settle on the kinds of actions to be pursued jointly, they would start by expressing what they deem relevant on the properties and criteria for the actions to be settled on (*concerns*). When they find that sufficient level of alignment of their concerns is attained, they proceed to propose and negotiate on concrete choice of actions (*proposals*) for a joint action plan.

A set of dialogue acts (Bunt, 2006) are stipulated at the levels of both concern alignment and proposal exchange, in terms of its functions a discourse segment performs within the progression of consensus-building (Table 1). Specification of dialogue acts have been undergoing refinement through the practices of annotating real conversational data and the development of annotation standards.

## 2 Data

We have collected real-life dialogues exchanged in joint decision making situations in medical and business domains. Data set 1 consist of dialogues between patients and nurses in obesity counseling sessions. People diagnosed as obese (metabolic syndrome) visit a hospital for counsel from expert nurses on their daily life management. A total of 9 sessions, about 5 hours of

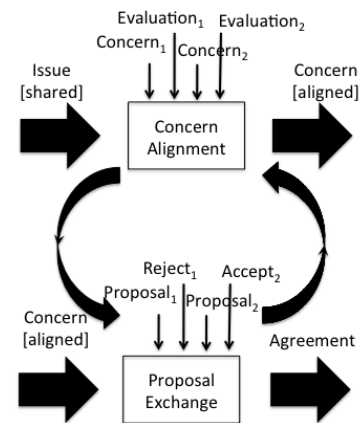


Figure 1: A concern alignment model for consensus-building.

Table 1: Discourse acts in concern alignment

Concern alignment	
C-solicit	solicit relevant concerns from partner
C-introduce	introduce your concern
C-eval/positive	positive evaluation to introduced concern
C-eval/negative	negative evaluation to introduced concern
C-elaborate	elaborate on the concern introduced
Proposal exchange	
P-solicit	provide relevant proposal from partner
P-introduce	introduce your proposal
P-accept	provide affirmation to introduced proposal
P-reject	indicate rejection to introduced proposal
P-elaborate	modify the proposal introduced

B-A:	P-introduce:	<i>propose a web-based community which bundles small services provided by community members and makes value assessment for each of them</i>	C-A:	P-introduce:	<i>propose a tentative business plan for setting up a computerized cognitive behavior therapy site for people with depression</i>
A-B:	C-introduce:	<i>method of assessment</i>	...		
B-A:	P-introduce:	<i>assessment based on evaluation feedbacks by small service recipients</i>	A-C:	C-introduce:	Maybe you should emphasize and stick to certain policies, like 'to restrict communication between patients to avoid proliferation of negativity.'
...			A-C:	C-introduce:	Or 'to provide patients with sense of accomplishment with success experiences, even if they are small.'
A-B:	C-introduce:	<i>aim for a market place to promote exchange of small services between members through matching their skills and needs</i>	...		
(or)			A-C:		It is better to decide on the positions on these points. They will become the guide when you go into thinkg about detailed levels of service. When faced with decisions, you can easily pick an alternative based on your formulated values.
A-B:	C-introduce:	<i>aim for a mutual support community for promote social interactions among members</i>	...		
B-A:	C-eval/positive:	<i>community for social interaction</i>			
...			...		
A-B:	C-introduce:	<i>assessment based on monetary value</i>			
A-B:	C-eval/negative:	<i>not suitable for promoting social interactions</i>	C-A:		Yes, yes, I agree. I think so, too.

(a) A proposal generates new concerns

(b) Generated concerns constrain proposals

Figure 2: Examples of dialogue organization in joint inquiry in concerns and proposals.

dialogues on video have been collected. Data set 2 consist of dialogues exchanged between prospective venture business entrepreneurs and business consultants. Business hopefuls, who sign up for a venture business competition, receive consultations for idea brush up. A total of 9 sessions about 9 hours of dialogues on video have been collected.

### 3 Joint inquiry in concern/proposal spaces

Real-world dialogues do not necessarily proceed so orderly that they are amenable to be captured by template patterns. Dialogues often go back and forth between concerns and proposals, indicating the exploratory nature of identifying a relevant set of concerns to put together a successful proposal that can be agreed upon to everyone's satisfaction. Proposals generate new concerns, and concerns generate new proposals (Figure 2).

A proposal provides people with a reference point, on which they reflect on their preferences through their appraisal of it, to come up with a new set of concerns. Concerns are not only employed to support or to criticize proposals, but they can also be employed to direct the course of further developing proposals. Newly introduced concerns provide enrichment to the structures of potential space of concerns, and invite participants to jointly advance toward successful and concrete proposals.

With the notion of Concern Alignment, we aim to capture the dynamics of this open-ended inquiry in concern/proposal space taking place in consensus-building dialogues

### Acknowledgments

The research reported in this paper is partially supported by Japan Society for the Promotion of Science Grants-in-aid for Scientific Research (B) 18H03292.

### References

- Harry Bunt. 2006. Dimensions in dialogue act annotation. In *the 5th International Conference on Language Resources and Evaluation (LREC 2006)*.
- Yasuhiro Katagiri, Katsuya Takanashi, Masato Ishizaki, Yasuharu Den, and Mika Enomoto. 2013. Concern alignment and trust in consensus-building dialogues. *Procedia - Social and Behavioral Sciences*, 97:422–428.
- Yasuhiro Katagiri, Masato Ishizaki, Yasuharu Den, Katsuya Takanashi, and Mika Enomoto and. 2015. A concern alignment model for consensus-building in conversations. *Cognitive Studies*, 22(1):97–109, March.