

Dialogues and Ludics

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Why using Ludics for Dialogues ?

Ludics:

- is a theory of interaction
- is a dynamical point of view about interaction
- distinguishes between play and strategy, i.e. design and behavior
- distinguishes between winner and loser, i.e. has a daemon

(Human) Dialogues:

- A dialogue is an interaction between two speakers
- The strategy at stake results from the previous utterances, a goal, contextual elements
- Either one of the speakers quits or (s)he agrees with the other speaker

(a little more) on (Human) Dialogues

A dialogue is a sequence of utterances.

- A first intervention initiates the dialogue
- Interventions alternate until ...
 - either one explicitly closes the dialogue (an answer, an acknowledgment)
 - or the dialogue stops because of a disagreement, a misunderstanding

Note that each intervention is anchored on previous interventions (except the first one):

- Either it is a question
- or it adds information that may be questioned

Example (A. Dumas, Le Comte de Montecristo)

Dialogue between Edmond and Faria:

- | | |
|----------|---|
| F | l_1 : What was your life at this time? |
| E | l_2 : I was ready to become captain of the Pharaon;
I was about to marry a beautiful young girl. |
| F | l_3 : Was anyone interested in you not becoming
the captain of the <i>Pharaon</i> ? |
| E | l_4 : [...] Only one man [...], |
| F | l_5 : Who was he? |
| E | l_6 : Danglars. |
| F | l_7 : Well, tell me about that young girl ... |

Note the fact that intervention l_2 opens two foci.

Example (A. Dumas, Le Comte de Montecristo (ctd))

We associate to each intervention an action: $\kappa_1, \dots, \kappa_7$.

- Each intervention refers to a previous one.
- Action κ_1 is initial: F initiates the dialogue.
- Action κ_7 is justified by action κ_2 .



l_1 : What was your life at this time?
 l_2 : I was ready to become captain of the Pharaon;
I was about to marry a beautiful young girl.
 l_3 : Was anyone interested in you not becoming the captain of the *Pharaon*?
 l_4 : [. . .] Only one man [. . .],
 l_5 : Who was he?
 l_6 : Danglars.
 l_7 : Well, tell me about that young girl . . .

The dialogue may be modelled as an interaction between two designs:

Each design represents the point of view of one of the speakers

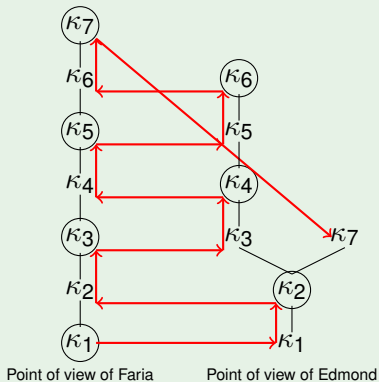
The **trace** of the interaction is the sequence of actions modelling the utterances.

Interpretation of interventions is done as follows:

- An *intervention* of a speaker is a positive action.
- An intervention, *understood* / *accepted* by a hearer, is modelled as the dual negative action.
- A positive action may be followed by a set of negative actions: the continuations offered by the intervention.
- A negative action has to be followed by one positive action: after accepting an intervention, one continues the dialogue with one intervention.

Example (A. Dumas, Le Comte de Montecristo (ctd))

The dialogue as an interaction between two designs:



- In the previous example, we considered that two themes of dialogue are introduced by the two distinct propositions in the same intervention:

I was ready to become captain of the Pharaon;

and

I was about to marry a beautiful young girl.

- New themes of dialogue are also introduced by words, expressions, gestures, . . . of an intervention.

Example (C. Dickens, David Copperfield)

Dialogue between a coachman and David:

- C** I_1 : You are going through, sir?
D I_2 : Yes, William. I am going to London.
I shall go down into Suffolk afterwards.
C I_3 : Shooting, sir?
D I_4 : I don't know.
C I_5 : Birds is got wery shy, I'm told
D I_6 : So I understand
C I_7 : Is Suffolk your county, sir?
D I_8 : Yes, Suffolk's my county.
C I_9 : The dumplings is uncommon fine down there ...

Suffolk introduces topics concerning hunting, native soil, gastronomy ...

Towards a Formalization of Dialogues

To be able to formalize dialogues in terms of Ludics, we have:

- to define what is a **dialogue act**, counterpart of a Ludics action,
- to precise what is the dialogical meaning of rules of Ludics,
- to clarify the relation between an intervention and designs/chronicles.

What is a *Dialogue Act*

As defined by Searle, a ***speech act*** incorporates:

- an utterance,
- its conditions,
- its effects.

It may also have extra-linguistic elements.

→ it is a complex object that carries a lot of information.

We need an elementary object.

Following Landragin, we define a ***dialogue act*** as
“**the minimal unit of communication in a dialogic context**”.

What is a *Dialogue Act*

- A dialog act is an elementary language fact, a communicational fact.
- It has a role in the dialogue.
- It may be implicit or explicit, verbal or not (e.g. an acknowledgment given as a gesture).
- It may appear as one or more propositions, but also as part of a proposition (word, adverb, . . .)
- It expresses an entitlement or a decision of the speaker.

What is a *Dialogue Act*

Hence a dialog act may not correspond to a unique intervention, even if this is frequently the case.

A speech act may correspond to several dialog acts.

What is a *Dialogue Act*

A dialog act is a Ludics action (ϵ, ξ, I) together with an expression e :

Definition (Dialog Act)

A **dialog act** κ is:

- either a proper dialog act, i.e. a tuple (ϵ, ξ, I, e) (see next slide)
- or a particular positive dialog act, called **daimon** and noted (\dagger, e) , that shows the end of an interaction that went well. In that case, the expression e may often be empty.

What is a *Dialogue Act*

When the dialog act is a proper one (ϵ, ξ, l, e) :

- the finite sequence of integers ξ is the **focus** of κ : the locus on which the act is localized with respect to the dialogic interaction one considers,
- l is the **ramification** of κ : the openings created by the dialog act on which new dialog acts may be produced,

(ctd)

What is a *Dialogue Act*

- e is the **expression** of the dialog act, i.e. the language (or communication) fact by which the dialog act is reflected,
- the **polarity** ϵ may be positive (+) or negative (−).
 - The act is positive for the speaker (except when this act is a constraint coming from the other speaker interventions).
 - The polarity is dual when the act is received by the addressee.

What is a *Dialogue Act*

The expression that appears in a dialog act may be

- a proposition,
- a word,
- a prosodic element,
- a non verbal sign (a nod, a shake, a slap, . . .)

In trivial cases, an intervention is a unique dialog act. Otherwise a turn of speech has to be decomposed into sequences of dialog acts, hence may correspond to a complex design.

Example (A very simple case)

- *V: What time does the next train to Paris leave?*
- *E: 7:45 p.m.*
- *V: Thanks.*

- $\kappa_1/\overline{\kappa_1} = (+/-, \xi, \{0\}, e_1)$ where e_1 is the proposition *What time does the next train to Paris leave?*
- $\kappa_2/\overline{\kappa_2} = (+/-, \xi, 0, \emptyset, e_2)$ where e_2 is the proposition *Next train to Paris leaves at 7:45 p.m.*
- $\kappa_3 = (\dagger, e_3)$ where e_3 is the noun *thanks*

Acts κ_1 and κ_2 are positive wrt speakers: *V* for the first, *E* for the second, and negative for the addressee.

Example (A more complex case (with a presupposition))

With the question (a) *Have you stopped beating your father?*, one forces the following exchange:

- *Did you beat your father ?*
- *Yes*
- *Have you stopped beating him ?*

Answering the initial question (a) by yes or no supposes that the answer of the implicit question is yes.

The interpretation of *Have you stopped beating your father?* consists in a sequence of three dialog acts.

From the point of view of the speaker:

- $\kappa_1 = (+, \xi, \{0\}, e_1)$,
where e_1 is the question: *Did you beat your father ?*
- $\kappa_2 = (-, \xi.0, \{1\}, e_2)$,
where e_2 is the answer: *Yes*
- $\kappa_3 = (+, \xi.0.1, \{0\}, e_3)$,
where e_3 is the question : *Have you stopped beating him ?*

In terms of designs, it supposes that the addressee has also duals of $\kappa_1, \kappa_2, \kappa_3$ in her design.

Interpreting Rules of Ludics / Designs

Rules of Ludics (daimon, positive and negative) used in the proof-like presentation of designs may be interpreted in dialogical terms.

$$\overline{\vdash \Delta} \quad \star$$

$$\frac{\dots \quad \xi.i \vdash \Delta_i \quad \dots}{\vdash \Delta, \xi} \quad (+, \xi, I)$$

$$\frac{\dots \quad \vdash \xi.l, \Delta_l \quad \dots}{\xi \vdash \Delta} \quad (-, \xi, \mathfrak{A})$$

Interpreting Rules of Ludics / Designs

Ludics Designs	Dialog Designs
Positive rule	To do an intervention
Negative rule	To acknowledge or to anticipate an intervention
Daimon	To stop an exchange

Interpreting Rules of Ludics / Designs

More precisely,

- The **daimon** characterizes the action of stopping the exchange.
- The **positive rule** may be interpreted as the action of doing an intervention.
 - the speaker selects a locus among those available from the current history of the dialogue,
 - s/he decides in what way the content of his/her intervention offers new loci for the addressee.
- The **negative rule** may be interpreted as the action of expecting reactions from the addressee.
 - In a receptive attitude, the speaker who just made an intervention, has to be ready to receive an intervention of her/his addressee based on one of the loci that her/his intervention opened.

Interpreting a Dialogue / Dialogue in progress

A dialogue is represented as an interaction between two **dialog designs**, i.e. designs with dialog acts.

- Dialog designs are built incrementally from the interventions, i.e. the turns of speech of the two persons.
- The *base* of a dialog design contains
 - all the loci on positive positions on which the speaker may anchor an intervention,
 - the negative position is either empty (if the speaker initiates the dialogue) or contains the locus where the addressee anchors her first intervention.
- The dialogue itself is the trace of the interaction between two dialogue designs.

Interpreting a Dialogue / Dialogue in progress

- To each intervention corresponds a set of dialog acts that completes the current design of the speaker.
- Such a set may be a unique dialog act, an alternate sequence of dialog acts or a partial design.
- The design completed by such a set should still be a design.
- Finally, an intervention must begin and end with a positive dialog act: hence, if not ending with a daimon, the intervention of a speaker allows the addressee to speak.

Interpreting a Dialogue / Dialogue in progress

The previous approach is an over-simplification of real processes.

By the way,

- Dialog designs may include branches that may not be explored during the dialogue.
- Language is ambiguous, non normalized, words may be misunderstood.

Hence a dialogue is not an interaction between two designs,

but *two* interactions: for each side, her own design and what she understands from the other utterances.

(see next talk)