Children play equally – conceptions of play.
Support persons' and researchers' interference in children's play with a robot.

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Background, earlier projects:

1. The LekBot-project:

Children with severe disabilities (communicative, cognitive, physical) have few opportunities to play independently of a support person, and on equal terms with other children. We developed a speaking robot, the **LekBot**, in order to enable easy, pleasurable, independent, and equal play (Ljunglöf, 2011). The system was developed in iterations. Final functionality included dialogue, movement, dancing, looking for food and talking about the food, refusal, sounds.

Evaluation:

2 groups at 2 different pre-schools, one child with cerebral palsy and one peer, one support person in each. Free to play with the robot as often as they wanted.

Recordings:

After each new update of the LekBot-system the play sessions were video recorded, in all 6x2, 20 – 60 min.

2. Children's play with LekBot:

In Ferm et al (2015) the focus was on enjoyment and play on equal terms. Neither participatory symmetry nor enjoyment were easily achieved and required sometimes considerable effort, including adult (both support person and researchers) involvement. But creative, spontaneous and highly enjoyable play was also observed.

Present study (work in progress):

Support persons' and researchers' interference in children's play with a robot. Conceptions of play.

Method: CA-inspired sequential analysis of video recordings.

Focus on: the adult's actions during the children's (recorded) play and the impact these actions have (adult facilitation, Ferm 2015).

The support person in many of the recorded situations in this group, act as she is aware of the goal of the LekBot-project, i.e. to help the child with disabilities to play more actively together with his/her peer. She targets the children's turn-taking, request that they should talk and listen to each other, and cooperate in playing together.

Example for IPrA: 5th recording with Axel and Anna. LekBot has got new, sounding features.

SP (support person for Axel) opens this play session by uttering: **you have to think** Axel an' Anna how you shall work today together.

This sets the agenda for this session. Both children are close to the screen, trying out the new features (eating sounds) of the LekBot. 7 min of play, then Anna leave, hiding herself in a little shelter behind the touch-screen. 5 more min pass, when Axel continues playing, then SP calls for Anna.

Anna leaves her shelter, turns to SP, pointing at the trail and tells. Fig.1. Support person replies:

SP: talk to Axel about it cos you had a **thought** with it hadn't you (1.0) with the track

Anna walks up to Axel, picks up a plate and put it close to Bee. Axel follows her with his gaze. Then SP repeats

SP: talk to Axel about it an **discuss** how you were **thinking** there

Axel invites Anna to the screen with gestures. Bee asks what it has found. Anna answers *garbage*. Then Anna suddenly picks up the pile with plates and carry them away. Axel bring them back on trail, with the help of SP. Anna stands still looking at SP helping Axel. SP invites Anna to participate again, by asking how she thought about their common "work" today.
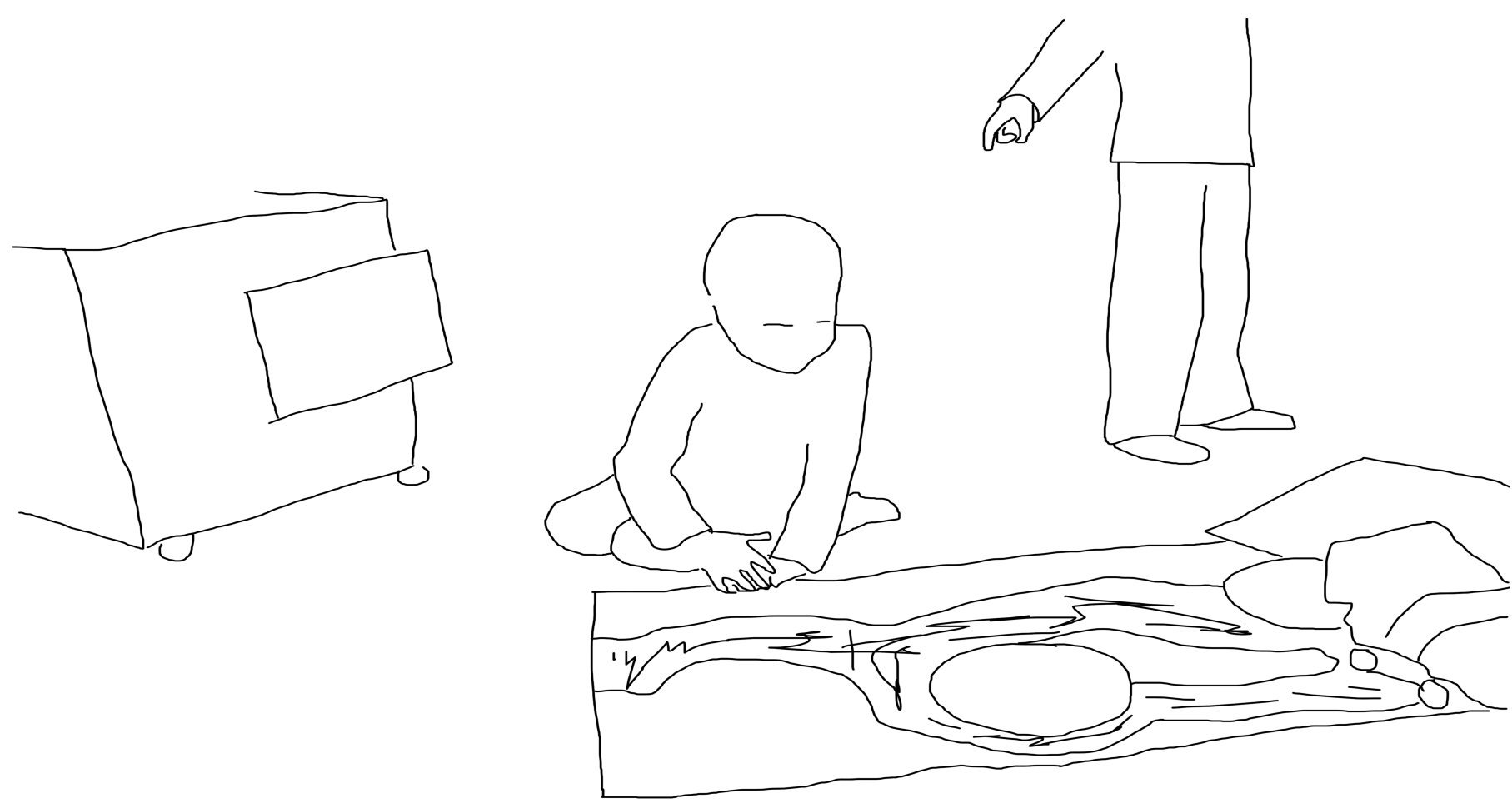
Then we arrive at the Example to the right!

Fig. 1. At 12:39 Anna has left her shelter to tell how they planned with bee walking the trail. AN: I want it to go:

Fig. 2 Anna moves one of the plates. Touch-screen to the left. Bee to the right.
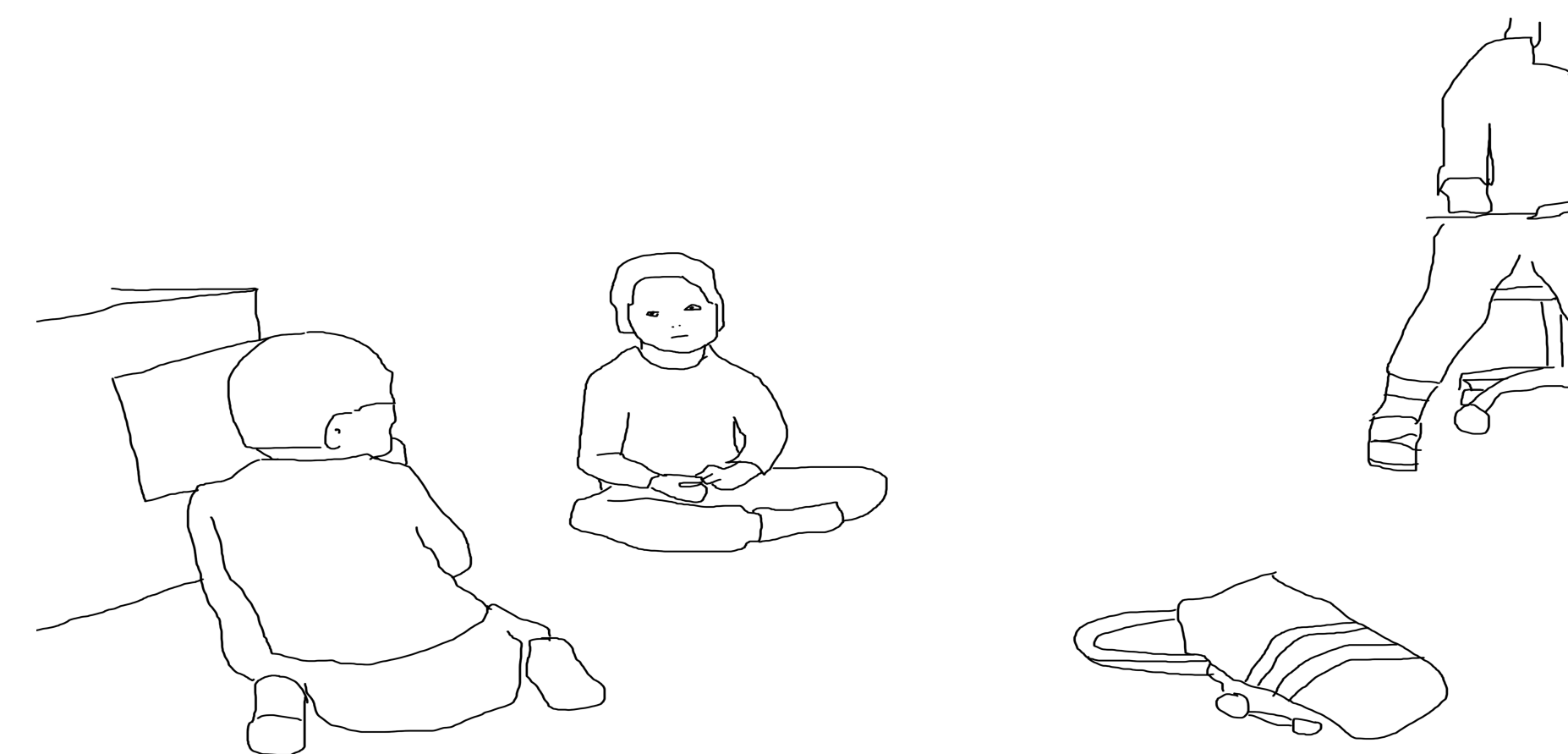

Fig. 3. Bee find a hot-dog to eat, around line 25–40.

Axel and Anna resist the adult's repeated requests to talk and listen to each other. Anna wants Bee to run the track (line 51) without any "search-for-food". SP asks Axel if he is ok with taking away the food (59). He immediately responds *no*. SP continues with a more elaborate explanation. Axel doesn't answer, but after 5 sek he press a command to Bee, continuing with no notice on SP:s expansion. That is his answer.

Findings so far:

SP mostly address her questions and directives to Anna, frequently using the verb *tänka* (think). To Axel SP twice asks *vad tro du om de Axel* [how about that (line 53) *or* what do you think]. In both cases he responds by a command to the Bee.

Frequently used are also *prata med* (talk to) addressed to Anna. Axel is the listner, *Anna ville prata me dej nu Axel* (line 42) and *få du lyssna på va Anna säjer, få ni resonera*.

Lots of analysis remains to be done!

I would appreciate to discuss this sequence with you, whenever you like or during the poster session on Thursday.
All comments are welcome, as well as references to relevant work.

References:
Ljunglöf, Claesson, Mattsson Müller, Ericsson, Ottesjö, Berman, & Kronlid, (2011). **LekBot: a talking and playing robot for children with disabilities.** SLPAT '11: Proceedings of the Second Workshop on Speech and Language Processing for Assistive Technologies, 110–119. Ass. for Computational Linguistics: USA.

Ferm, Claesson, Ottesjö & Ericsson (2015). **Participation and Enjoyment in Play with a Robot between Children with Cerebral Palsy who use AAC and their Peers.** In Augmentative and Alternative Communication vol. 31, no 2, 108–123.

Talk to Axel – listen to what Anna tells you

14 min into the play session.
Participants: AX Axel, child with CP, **AN** Anna peer, **SP** support person, **R1** researcher, **B** Bumblebee, the moving part of the system.

RED lines: SP:s turns directed to Anna
PURPLE lines: SP:s turns directed to Axel
GREEN lines: Anna's verbal turns
BLUE lines: Axels turns
GREY lines: Bumblebee's turns

((clicks)) = making a choice on the touch-screen
// we pretend this is hot-dog // = after a choice is made the system vocalise the command, as if the child was speaking

1	*SP:	how did you think Anna
2	*AN:	((looks away))
3	*SP:	you may tell Axel how you thought
4		(2.5)
5	*AN:	°(xxx) follow the track°
6	*SP:	talk to Axel (about that) cos it::
7	*AN:	((small steps towards the track))
8	*R1:	an so that the camera also will ☺hear☺
9	*SP:	ye:s (.) so talk a bit louder so:
10	*AN:	((moves forward with small steps))
11		(0.5)
12	*SP:	what did you thi- (.) Axel (.) Axel
13	*AX:	((gaze towards SP))
14	*SP:	Anna wants to tell you something
15		how she thought when she took the food away
16	*AX:	((turns gaze and body away from SP))
17	*AN:	((sits down))
18	*SP:	Anna is here behind you now
19	*AX:	((turns to the screen))
20	*AN:	((gaze towards Axel))
21	*AN:	ha↗
22	*AX:	((lifts his hand to screen))
23	*SP:	Axel
24	*AX:	((clicks, gaze towards the bumblebee))
25	*AX:	//look forward//
26		(3.3)
27	*B:	okey (.) I look forward
28	*B:	((stops in front of the pile with plates))
29		(1.2)
30	*AN:	nothing
31	*AX:	((turns to screen))
32	*B:	what is this
33	*SP:	if you finish this one Axel so: (.)
34		you can talk to Anna then
35	*AX:	((clicks)) // we pretend this is hot-dog //
36		((Axel might sign I/me))
37		(3.2)
38	*B:	okey
39	*B:	((sound of eating))
40	*AX:	(nothing)
41		(4.9)
42	*SP:	I think Anna wanted to talk to you now Axel
43	*SP:	((points at Anna))
44		(2.5)
45	*SP:	you walk (aw-) to Axel there talk to him
46	*SP:	((touches Anna's arm))
47	*AN:	((starts crawling towards Axel))
48	*SP:	have to listen to what Anna tells you
49		you you have to discuss
50	*B:	what shall I do
51	*AN:	°you shall just (.) run the track°
52		(2.9)
53	*SP:	how about that Axel
54	*AX:	((clicks))
55	*B:	what shall I do
56		(3.3)
57	*SP:	°you f-°
58	*AX:	//start again//
59	*SP:	is it okey to take away the food Axel
60	*AX:	no:
61	*B:	okey
62	*SP:	an' start again an' walk the track like we had:
63		as we did yesterday
64		(5.0)
65	*AX:	((clicks)) //search for food//
66	*SP:	((raises up, bends forward))
67	*SP:	try to explain for Axel Ann a
68	*B:	okey
69		(.)
70	*SP:	how you thought
71	*B:	how shall I move to find food