

MODELING INTERACTION IN REHEARSALS

Kristoffer Jensen and Søren R. Frimodt-Møller
Aalborg University Esbjerg

OVERVIEW

1. Learning through a rehearsal
2. Visible interaction in the rehearsal
3. Where the visible stops: How do musicians decide?
4. Expectation-based interaction
5. Personal goals and compromises
6. Outlook

Ad 3: Throw in the idea of common knowledge under this paragraph

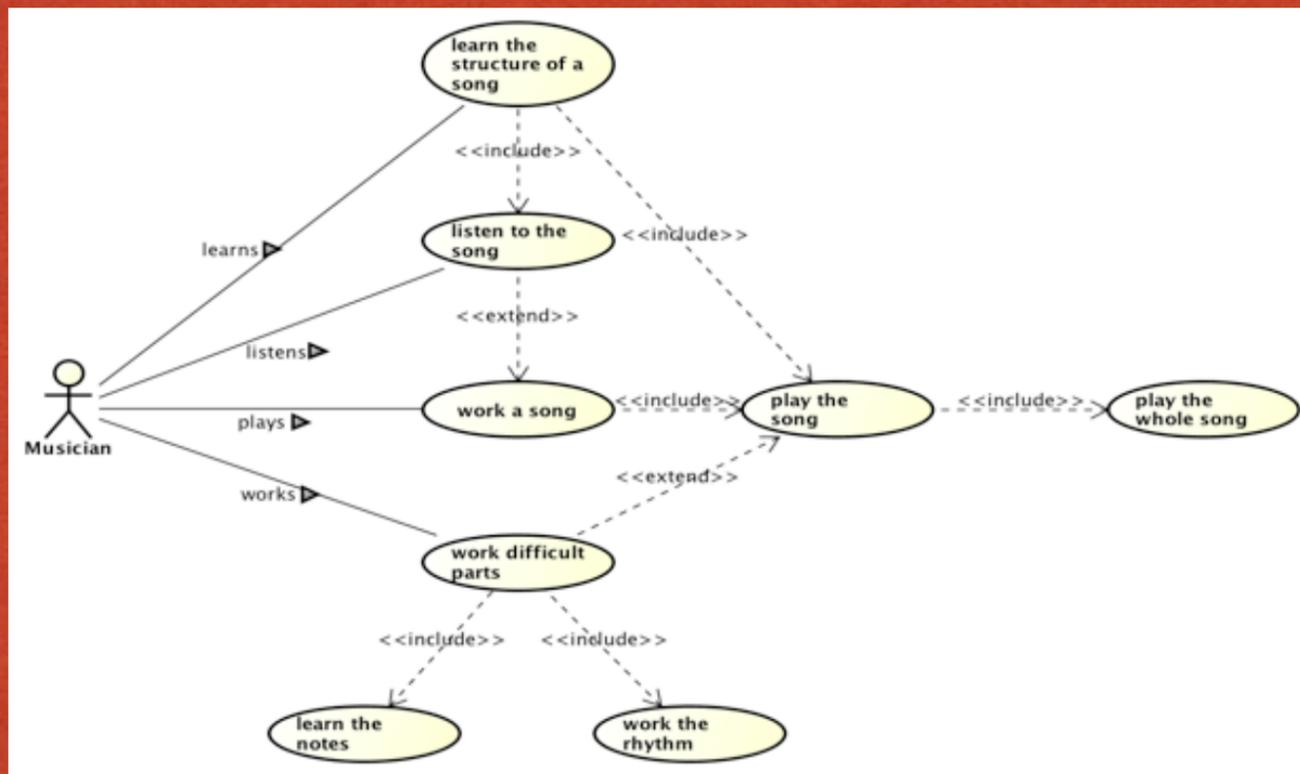
LEARNING THROUGH REHEARSALS

- Study of musicians rehearsing the jazz piece “Caravan” by Duke Ellington ‘from scratch’
- “Caravan” has a typical jazz standard structure with exchanges between theme and solos
- Video observations + self-reports based on 5 group rehearsals, and 12+10+5 individual rehearsals (by keyboard player, bass player and guitarist, respectively)
- Description of progress from one play-through to another
- Modeling in UML (Unified Modeling Language)

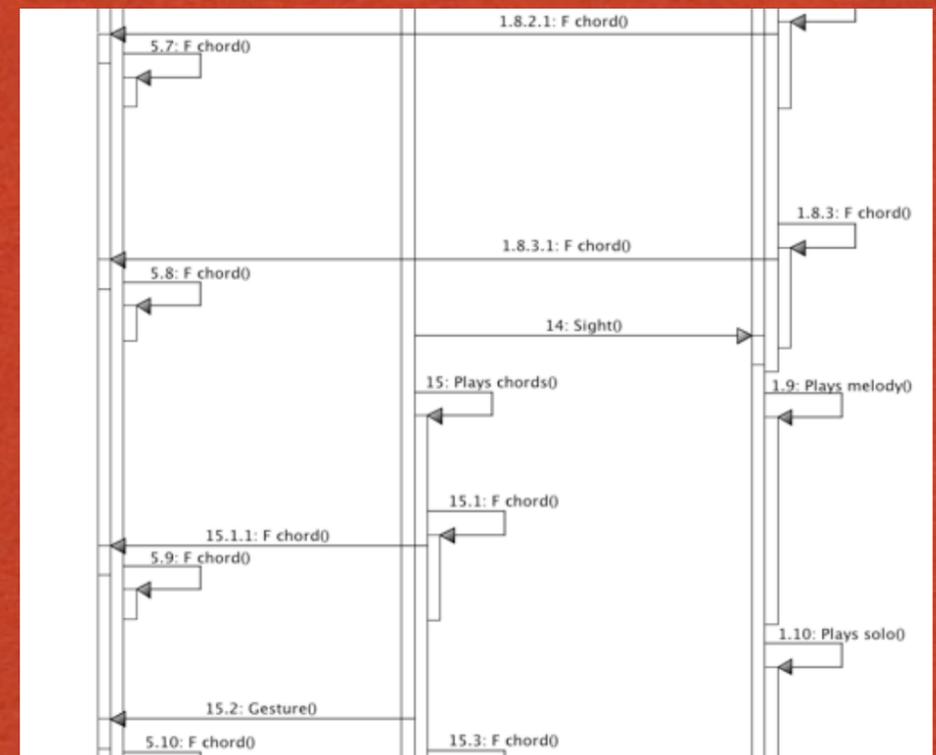
Ad 3rd bullet: The individual rehearsals were mainly documented in self-reports...

UML MODELS

Use case diagram



Sequence Diagram



UML: Universal Modeling Language

The diagram on the left shows a simple overview of the process of a musician's rehearsal, and how different parts of the rehearsal are interconnected. This is derived especially from the individual musician's analysis of their own rehearsal process (individual and collective)

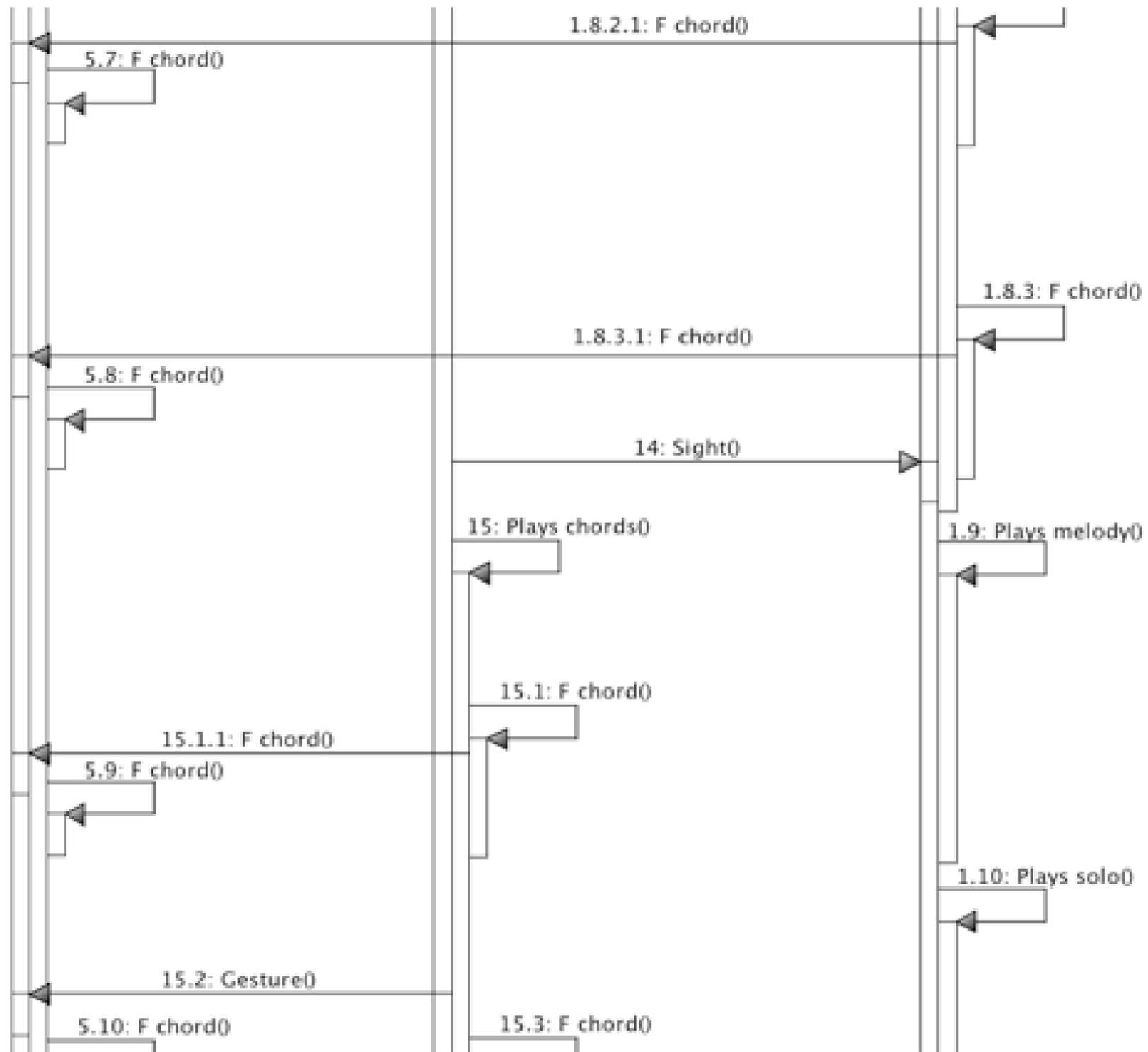
The diagram on the right (a sequence diagram) details the specific run of a performance situation (during a rehearsal, though), and at which points in the process musicians look at each other, make gestures etc.

Bass

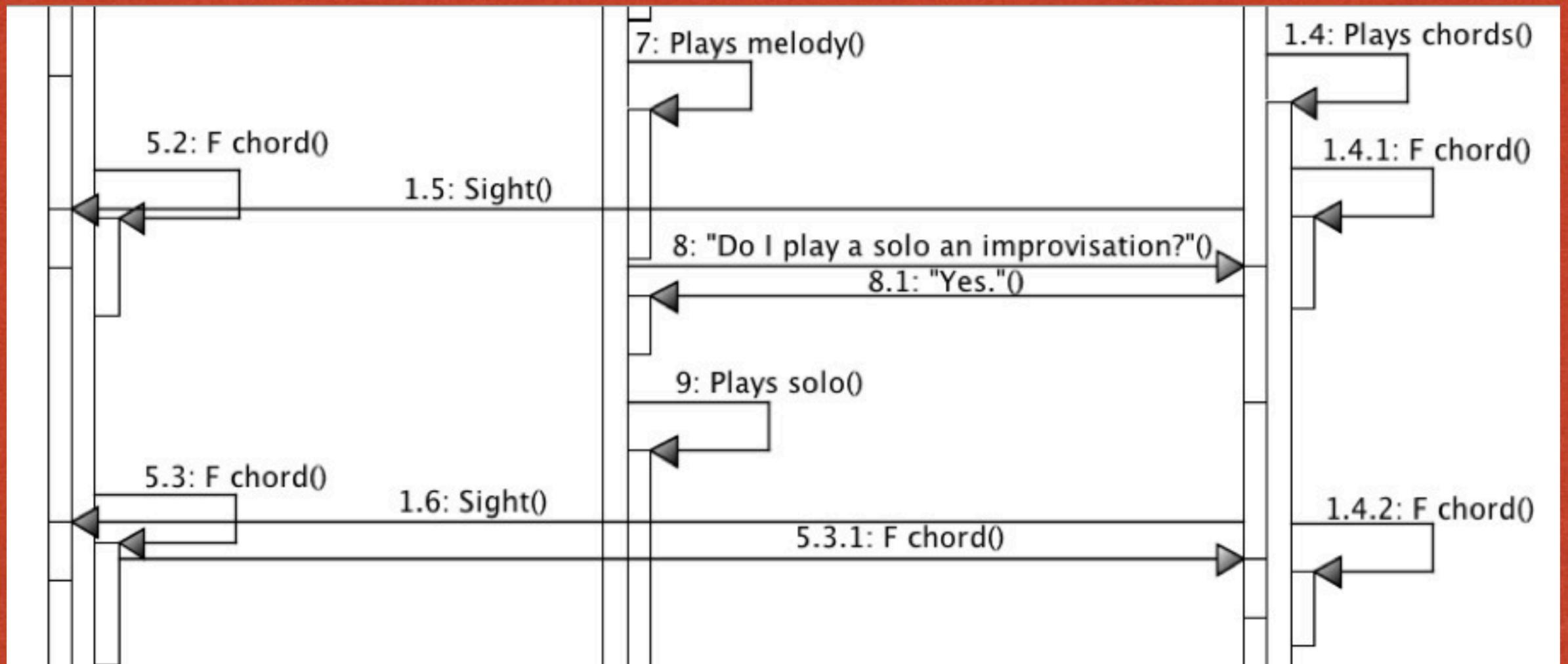
Keyboard

Guitar

Time

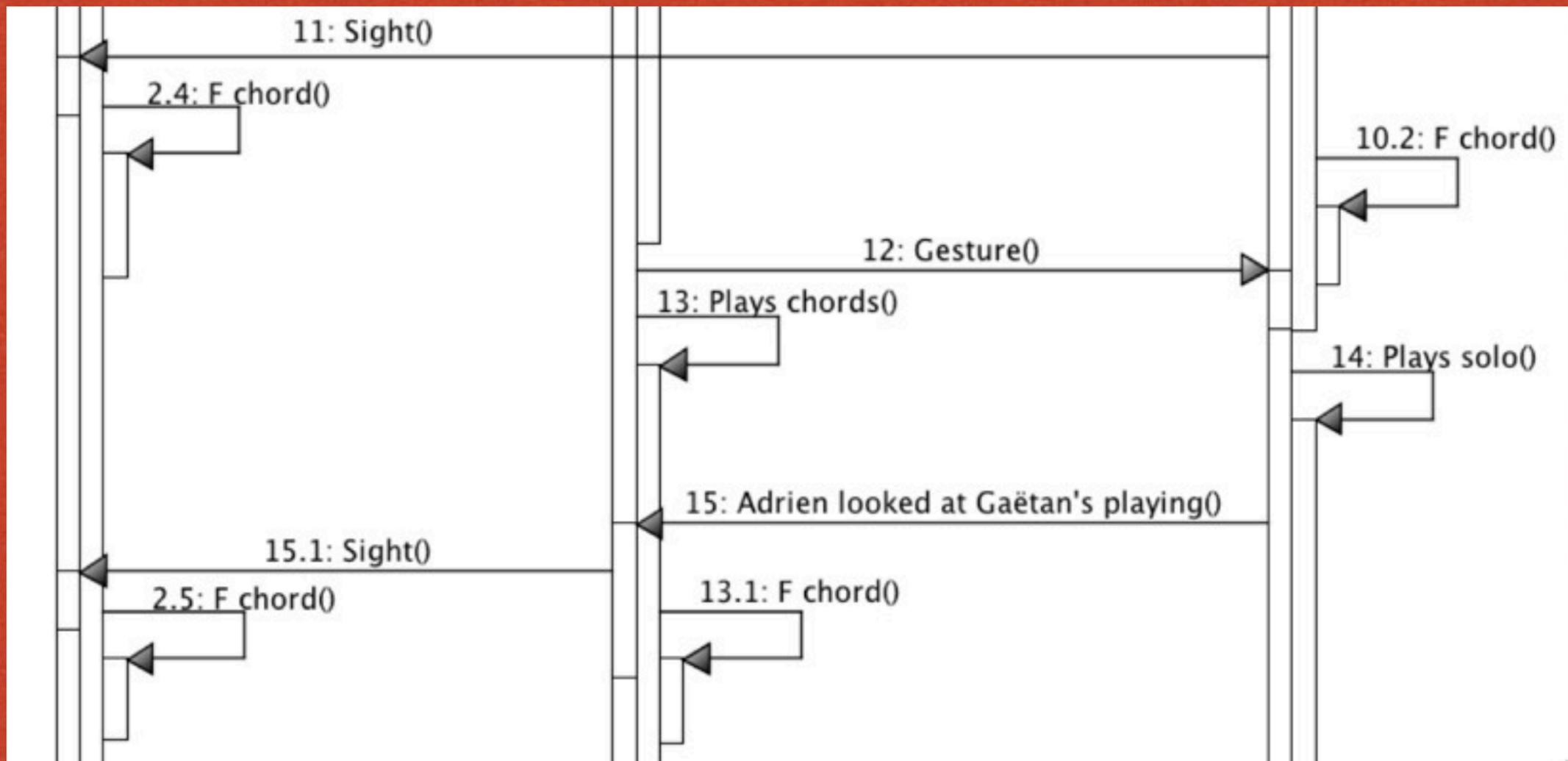


VISIBLE INTERACTION



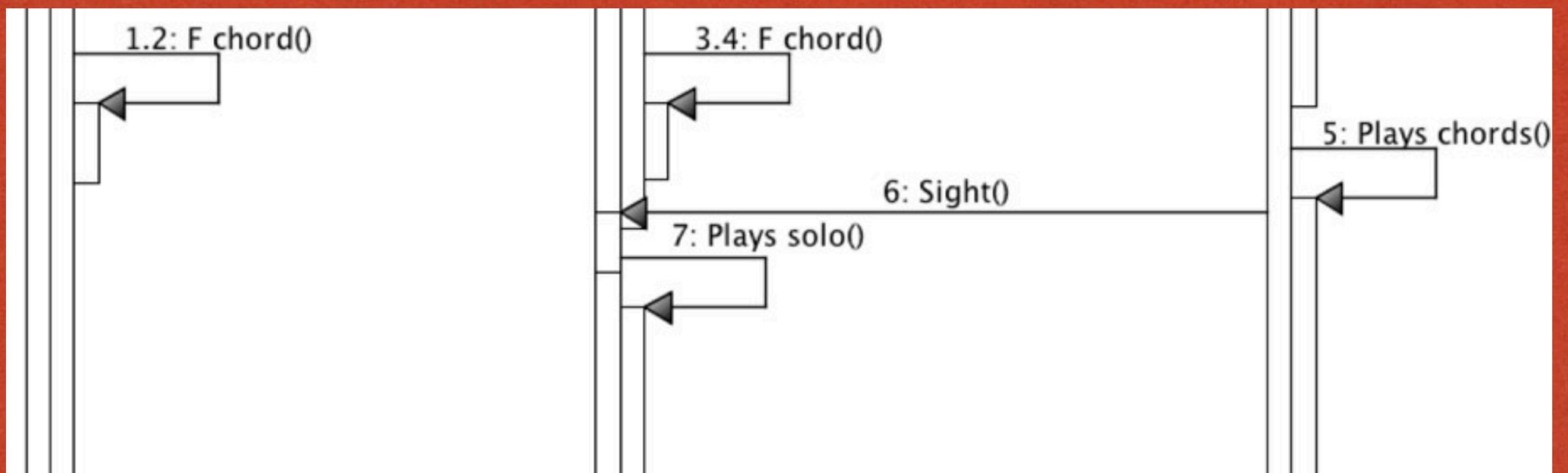
Here we see an exchange between keyboard player and guitar player at point 8

VISIBLE INTERACTION



At point 12 in the sequence diagram, we see that the keyboard player gestures (with the hand) at the guitar player

VISIBLE INTERACTION



Here the communication is reduced to just looking (intently) at each other

VISIBLE INTERACTION

- The players move from communicating verbally over communicating non-verbally via gestures to interacting without any visible communication
- In other types of music performance and rehearsal, communication may occur in the form of stressing particular phrases, i.e. via the music played
- The interaction, however, goes beyond mere communication

WHERE THE VISIBLE STOPS: HOW DO MUSICIANS DECIDE?

- Working with the default assumption that everyone acts according to prior agreement
- Ideally, the prior agreement should be *common knowledge* in the ensemble (a concept taken from epistemic logic)
- Common knowledge of p in a group G entails that everyone in G (potentially) knows that p and knows that everyone in G knows p , and that everyone in G knows that everyone knows that p etc.
- In a performance situation or any situation where the musicians do not allow themselves to stop and talk, common knowledge is unattainable - but acting according to prior agreement is still a useful heuristic

EXPECTATION-BASED INTERACTION

- The musician might consider how other players categorize different aspects of the situation
- In the case of the question “who takes the next solo?”, a player might consider how likely other players are to monopolize the solo spot, or how likely they are to conceive of a certain order of the solos in advance (e.g. guitar-keyboard-bass)
- Similar to game theory with “variable frames”, see Bacharach et al (2006)

PERSONAL GOALS AND COMPROMISES

- The musician may interpret the actions of other musicians as exemplary of a strategy (changes in action -> changes in strategy)
- The individual musician has certain goals or intentions for the performance that s/he wants to achieve
- If these intentions clash with the apparent strategies of other players (e.g. two of the three musicians try to take the same solo spot), the musician has to search for a new strategy that encompasses the actual actions of the others

PERSONAL GOALS AND COMPROMISES

- Such a process only works if the musicians only perform intended actions (i.e. do not make mistakes)
- The search for compromises might be more apparent in pieces of music that allow more room for different interpretations, especially of individual parts

(“Caravan” is a fairly ‘closed’ piece compared to other more improvisation-based arrangements)

OUTLOOK

- More studies of rehearsals, preferably also with other pieces of music or genres
- Studies of individual rehearsals - e.g. how often does a person consult the score/part while learning a piece? (Might also differ between different types of musicians)
- UML modeling used to compare results with other interaction processes outside music

Contact us!

krist@create.aau.dk

sfm@create.aau.dk