

From Swingouts to Structure: A 3D Motion Capture Website Presenting a Structural Analysis of Lindy Hop

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Introduction

- Music and dancing intertwined with many different cognitive faculties [1]
- Music is reflected through the dancing and the dancing influences the perception of music: beat, melody, harmony and rhythm [1][3]
- Couple dances are a complex coordinated rhythmic movement [8]
- Each dance form seems to have an intrinsic grammar [6]
- Most previous research focused on Western music [5]: Lindy Hop therefore particularly interesting
- Lindy Hop marked by high kinetic energy & high level of improvisation [7]: great for study of interpersonal communication

Aims

In our study, we aimed to

- **extract the intrinsic grammar for Lindy Hop**, so that we can
- **investigate the influence of different parts of the jazz ensemble on the dance style of dancers**, as it is expressed by
- **the move distribution within the grammar**

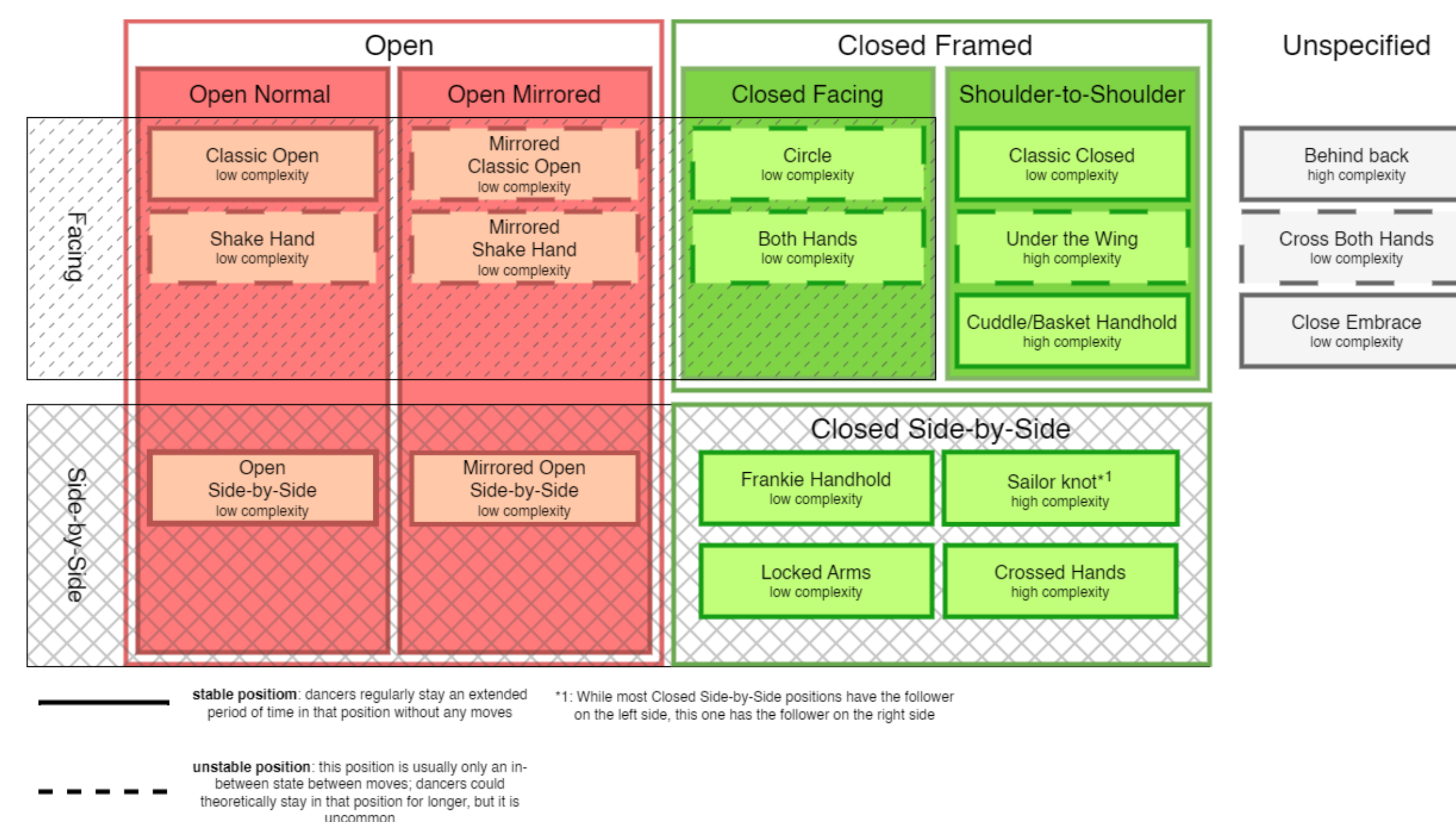
What is Lindy Hop?

- African-American Swing dance developed during 1930s [2]
- Initially primarily danced by African-American working class
- In 1980s revived by primarily White middle class
- Social dance marked by frequent partner changes and high improvisation
- High kinetic energy



Toni Holmes - [4]

An overview of Lindy Hop positions



Next steps

Based on the grammar we want to analyze the changes in danced moves between stimuli. For that we

- label each move performed in each MotionCapture clip: start frame position, start frame move, amount of cues, type of moves, type of start position, ...
- summarize data for each clip per dyad
- analyze quantitative changes within-subject

Based on the quantitative analysis of move and cue quantity and diversity, we can investigate how different parts of the jazz ensemble influence cognitive processing in dance—specifically in terms of creativity and the processing available for more complex movements.

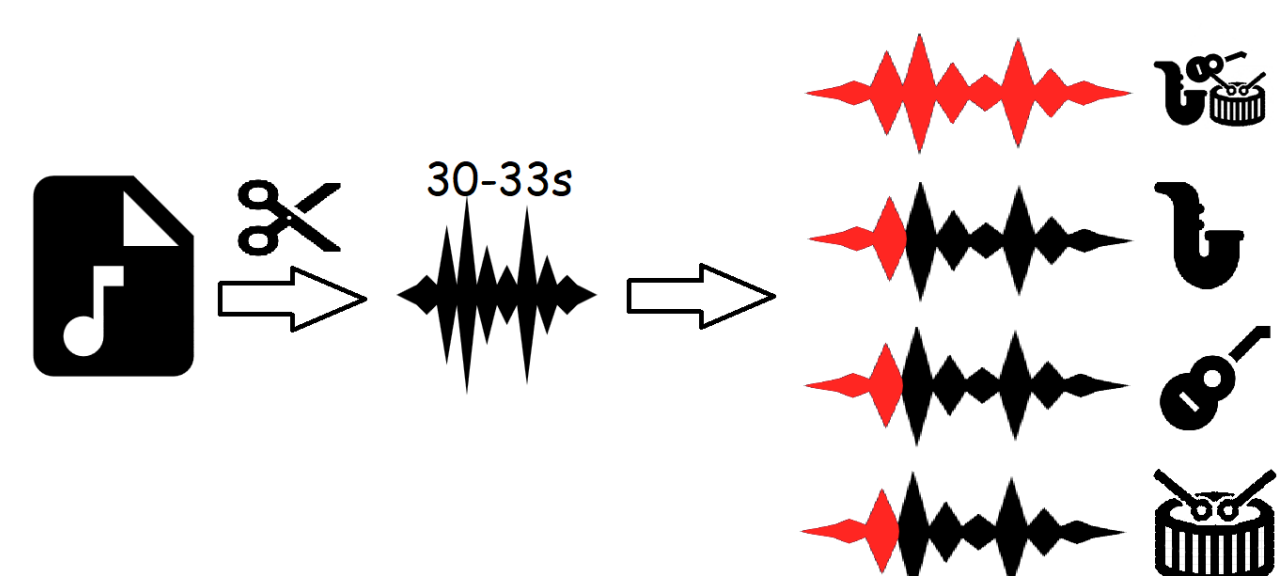
Results

- Extraction based on dyads with primary leader and follower (trained in that role)
- 15 positions & 11 families of moves
- schemata were created and transitions of most popular moves mapped
- a website was created with 3D motion capture clips for each move



Methods

- 2 sessions with 4 participants each
- within each session everyone danced Leader and Follower with everyone else: 12 dyads per session
- participants danced freely in each dyad to 12 30s clips of music
- participants wore MotionCapture suits and were recorded during the dancing



3 songs were selected, cropped to 30s and then extracted into individual parts of the jazz band

Check out the website



<https://muwserver.synology.me:444/Wingert/>

Literature

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