

# Networked Performances Performed Networks

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# NMPG

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- High-speed networks as a medium for high quality, real time bidirectional performances
- Exploration of various musical, sociological and philosophical aspects are important to understand the real purpose and usefulness of the technology
- The network: a timeless and borderless collaborative medium to promote new types of musical exchanges
- Virtual extension of physical space

# How far are we?

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- Streaming application review
- Development of a prototype framework based on practice led research
- Framework applied to:
  - Acoustic network performance
  - BLISS and the Frequencyliator

# Acoustic NMP

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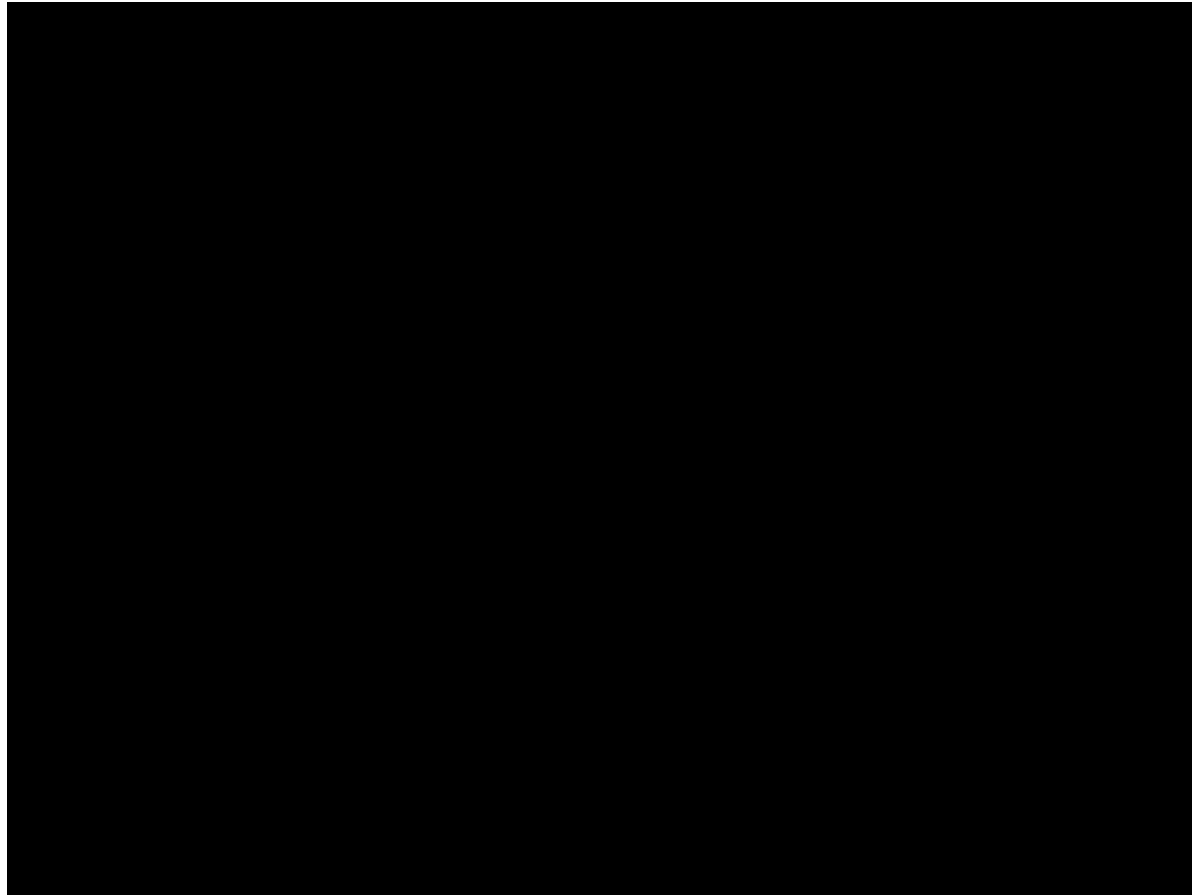
- Partnerships with CCRMA, IRCAM and ISMN
- Several teleconcerts involving a Jazz Trio and Irish Traditional musicians
- Low level of interactivity
- Latency can be a problem for fast paced pieces once a certain distance between two peers is reached

# Acoustic NMP

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- However: Noted that musicians can easily adapt to latency issues if the network is stable.
- Even though technology works, major steps can be taken to make the network better and to increase the level of interactivity in distributed ensembles
- Music should be composed for the network

# Acoustic NMP (II) Examples



# The Frequencyliator

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- A tool for networked laptop improvisation
- Relies on a central server that broadcasts a structure to the clients
- Identification of players via attribution of frequency bandwidth
- Players have an influence on the overall structure of the piece

# The Frequencyliator

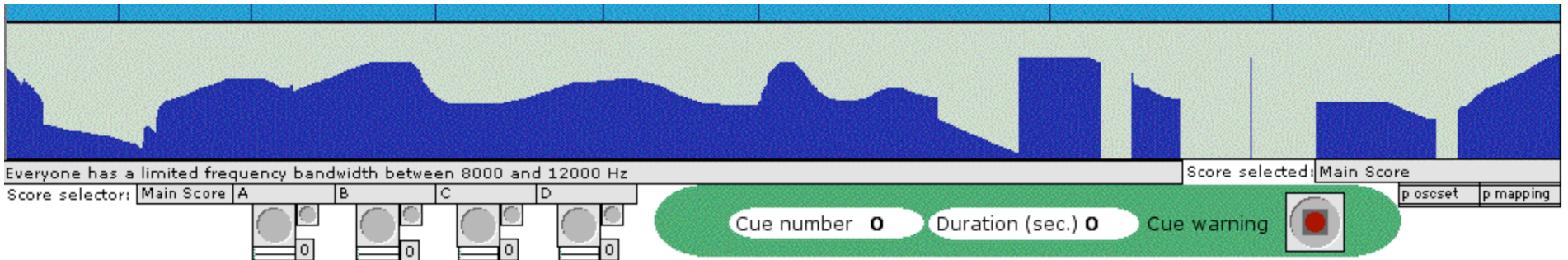
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- Interface and processing: MAX/MSP
- Messaging: OSC
- Audio: low latency RAW audio streaming  
(in WAN situation)



# The Frequencyliator Client

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- Performer can view the structure of the piece and change it on the fly
- Submit changes to ensemble and vote/non vote

# The Frequencyliator

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- Ultimate goal of the system: recreate some of the interactions and cues that disappear in a networked setting
- Create a high level of interactions and a better identification of performative roles

# The Frequencyliator

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- Seek to recreate basic musical interactions:
  - Potential for common pulse
  - Synchronization of events that require negotiation amongst performers
  - Balanced spectral structure
  - Up beats or the ability to anticipate and precede events across the ensemble

# The Frequencyliator

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- All the latter work well in a networked laptop environment. However this concept needs to be taken back into the acoustic world

# NMP Study

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- A study which aims to understand the geographically displaced performance of professional musicians
- Aim is to
  - a) evaluate the complexity of interactions that musicians display when playing as a group in the same space, and
  - b) immerse the same musicians in a simulated networked environment and observe musical exchanges

# NMP Study

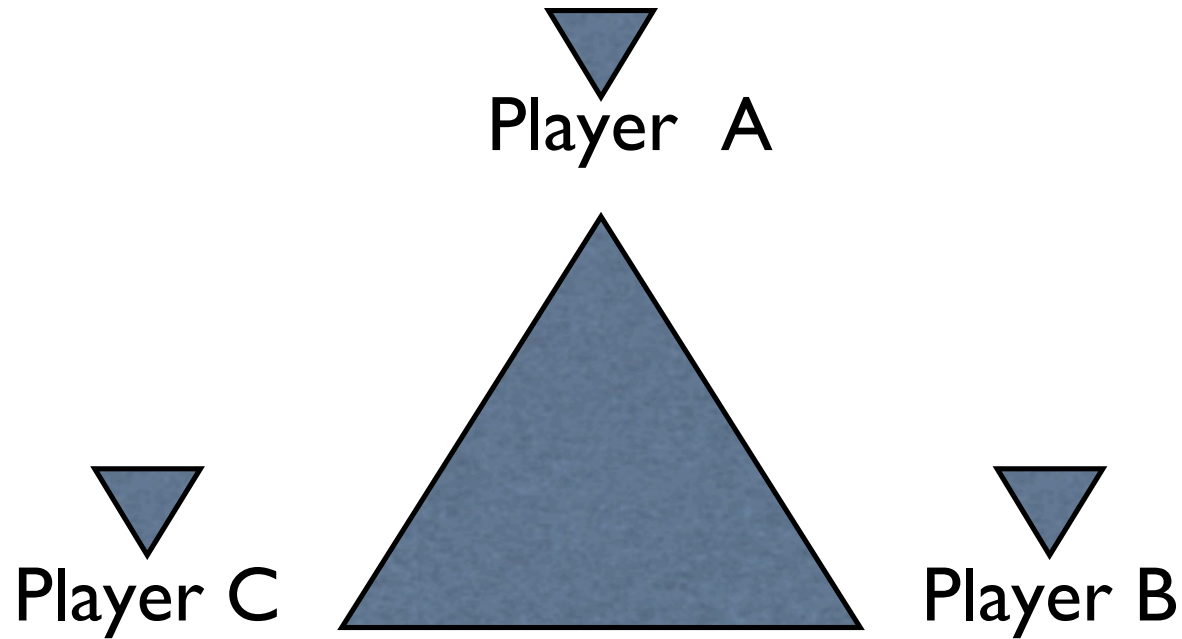
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- Study will cover a wide range of repertoire and performance traditions so that a general convention for networked performance interactions can be codified
- Inclusion of non-visual cues for identification of performers and cross-player interactions within the network

# NMP Study

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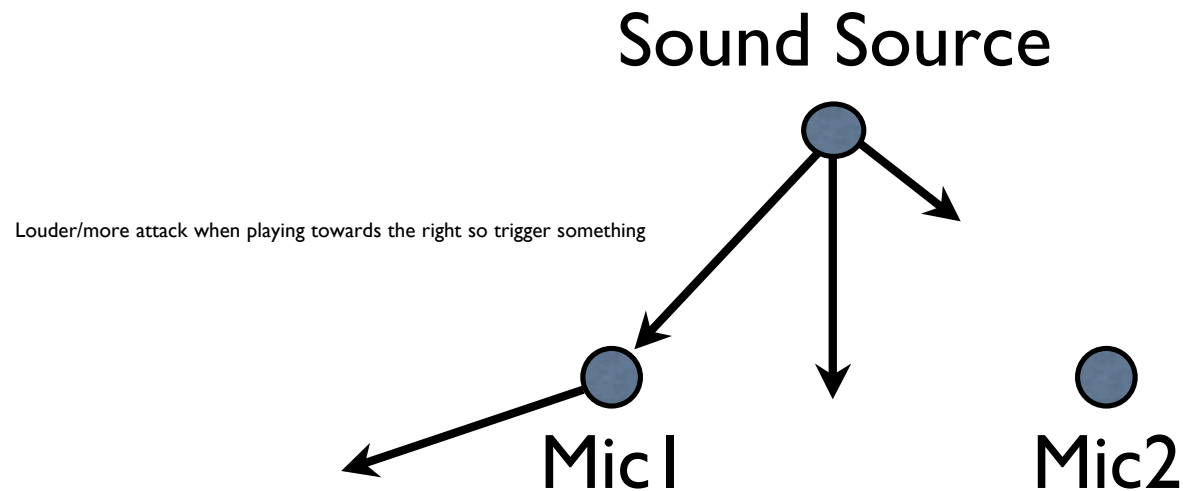
- Emulate positioning of sound sources



# NMP Study

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- Position of instrument in individual space as triggers

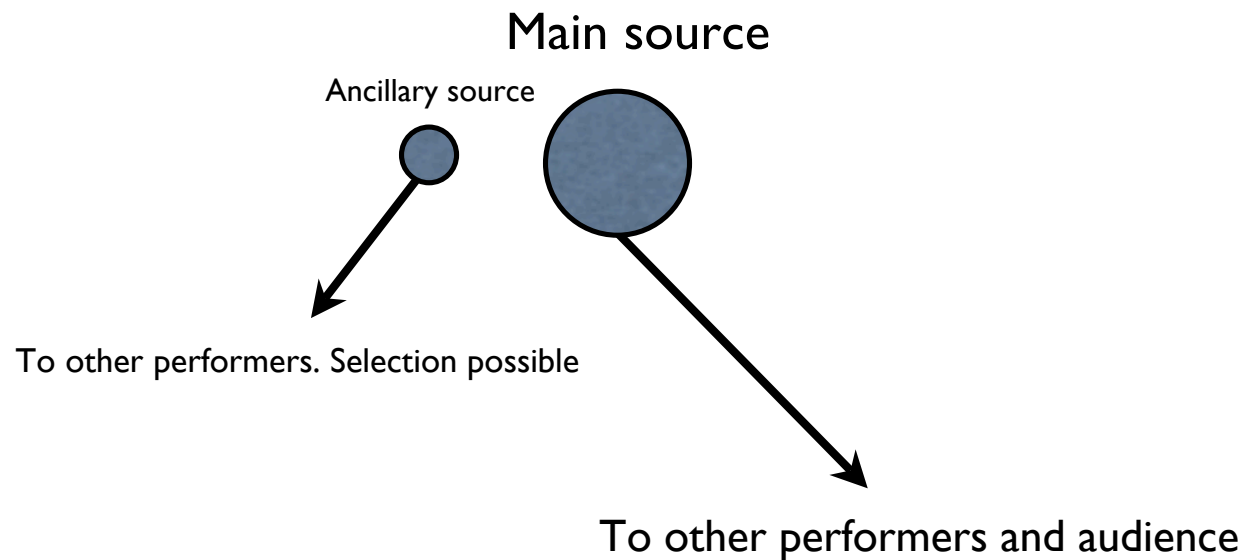




# NMP Study

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- Exploiting ancillary sounds such as breathing and tapping



# NMP Study

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- Bringing it to the audience
- Other major area of research in networked performance: how to get the audience interested and involved?
- Capture of gestures by individual performers and creation of “Avatars” displaying gesture, intensity and identity

# Asynchronous NMP

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- Ever evolving perpetual piece
- Based on the Frequencyliator idea but fully online
- Drag and drop approach of elements that become part of a completely online user composed piece

# Other projects ....

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- Locus Sonus: point of presence in Belfast streaming live environmental sounds.
- There are plans to use the Locus Sonus streams as raw materials for live Soundscape-based concerts

# Other projects ....

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- Remote acoustics: usage of high quality real time streamers to send instrumental signals to various environments and use the acoustic particularities of remote locations as sonic material in a feedback mode.

# Other projects

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- [www.networkedperformance.com](http://www.networkedperformance.com) outreach site.
- This web portal, currently in development will present the work undertaken at SARC and with partners and will offer downloadable material and software for others to participate in synchronous and asynchronous types of networked performances.
- [p.rebelo@qub.ac.uk](mailto:p.rebelo@qub.ac.uk) or [alain.renaud@qub.ac.uk](mailto:alain.renaud@qub.ac.uk)

# Compositional Space

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- Interactive Performance Environment
- Based on the metaphor of the composer-as-explorer
- Navigating compositional space
- 2 types of spaces:
  - Event space (material)
  - Transformative space (change)