

# **Time and Reciprocity in Improvisation**

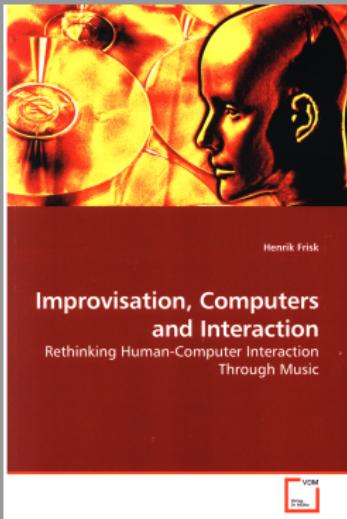
## **On the aspect of in-time systems in improvisation with and on machines.**

Henrik Frisk

Malmö Academy of Music, Lund University

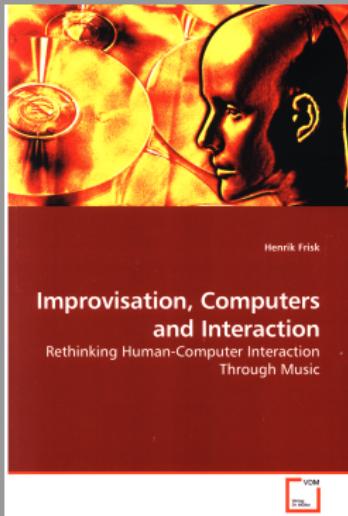
EarZoom 2010, Ljubljana

# PhD Thesis



*Improvisation, Computers, and Interaction: Rethinking  
Human-Computer Interaction Through Music*

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Human-Computer Interaction Through Music*

([www.performingarts.lu.se](http://www.performingarts.lu.se))

# etherSound CD



etherSound CD



[www.kopasetic.se](http://www.kopasetic.se)

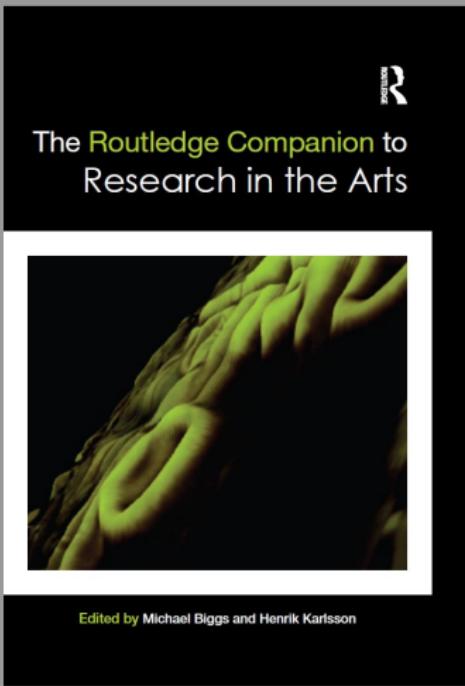
etherSound CD



[www.kopasetic.se](http://www.kopasetic.se)

[www.henrikfrisk.com](http://www.henrikfrisk.com)

New book



# Different temporalities

Improvisation vs. Composition

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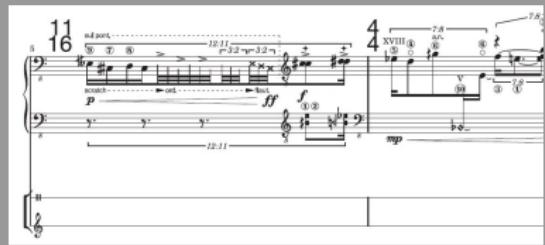
- Machine temporality is different...
- Computer instruments should be constructed taking the difference into consideration.

# Improvisation vs. Composition

Obvious differences?

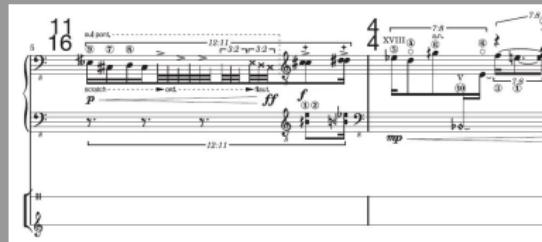
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**Is a prepared improvisation not improvised?**

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*An improvisation is always  
constructed in real-time.*

## **Non Real-Time or Real-Time?**

# Non Real-Time or Real-Time?



# Non Real-Time or Real-Time?



# Alternate distinction



*In-time*

## Alternate distinction

*In-time*



*Over-time*





V. Iyer (2008)

'On improvisation, temporality, and embodied experience.'

(Chapter 26 in *Sound Unbound : Sampling digital music and culture*, (Paul D. Miller, edito). The MIT Press, Cambridge, Mass., 2008.)



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T. Smithers (1996)

'On What Embodiment Might Have to do with Cognition.'

(Tech report published by AAAI, 1996)

## Constraints and allowances...

Typical in-time operations

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- Reading a book

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*Real-time (computation) is not necessarily in-time:*

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## Typical in-time operations

- Musical performance
- Improvisation

## Over-time operations

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*Real-time (computation) is not necessarily in-time:*

Resistance is an integral part of in-time operations.

# What is interaction?

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# What is interaction?

## Problematic...

- “Reciprocally active” (OED Online)
- In computer interface design: **control**
- In improvised music: **exchange, communication and reciprocity** (see *Saying Something* by Ingrid Monson (1996))

# Musical interaction

## Sensitivity

A successful interplay between musicians rests on a mutual sensitivity for taking, and responding to, musical initiatives.

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## Difference

Musicians induce differences that “*make a difference*” and according to Gregory Bateson, such a difference that makes a difference is the definition of a bit of information (Bateson 1979, *Mind and Nature*)

# Bateson and beyond

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Interaction-as-control

Interaction-as-difference

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Influences much of our  
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click and response



musical interaction

# The interactive continuum

click and  
response



musical  
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musical  
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control



influence  
over  
content

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  - ... and of time to space transformations.

*Time to space transformation is a recurring thread in several art forms.*

# Vertigo (Hitchcock 1959)



*“It was only a moment to you...”*

# Parsifal (Wagner)



*"Du siehst, mein Sohn, zum Raum wird hier Zeit."*

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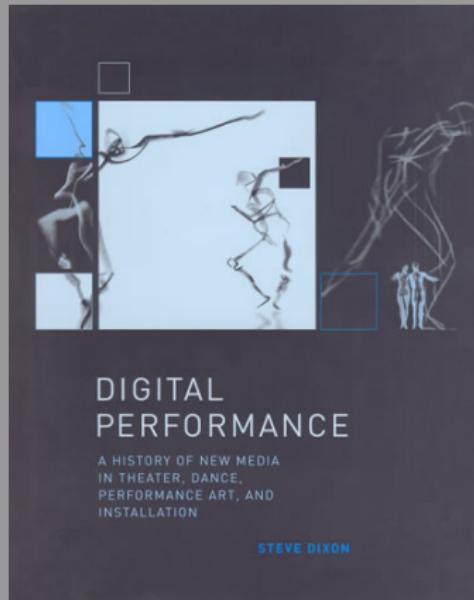
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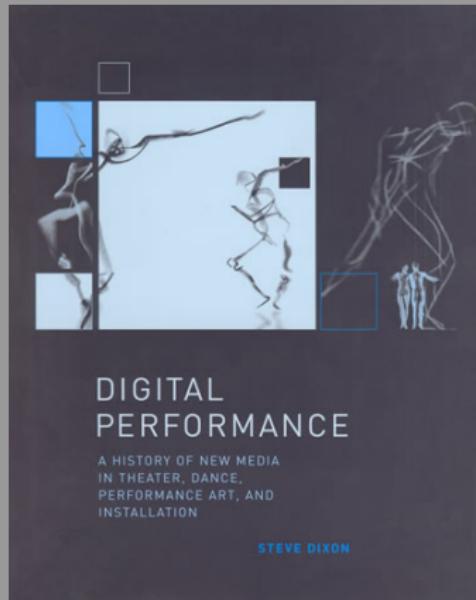
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*To even begin to think about using interactive computer technology in performance involves a transformation of the in-time embedded sound to an over-time representation.*

# Lack of 'liveness' in digital performance

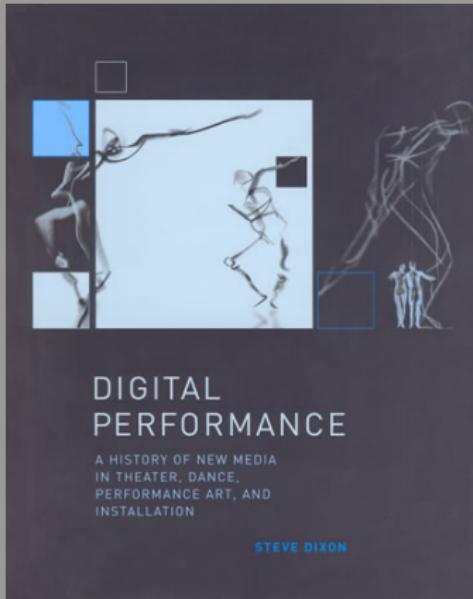


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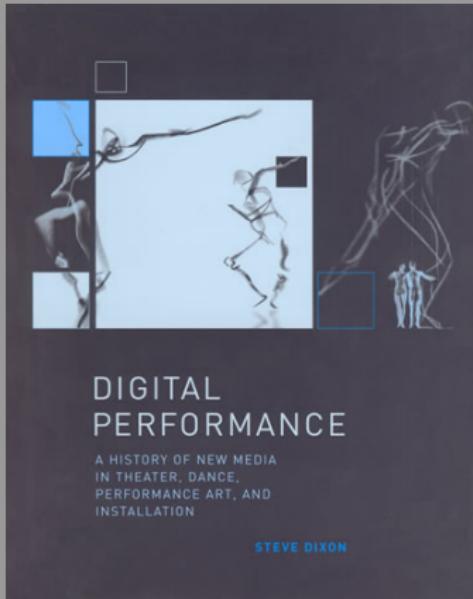
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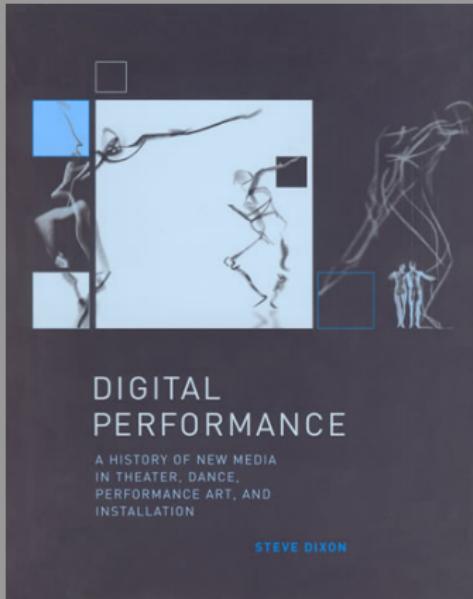
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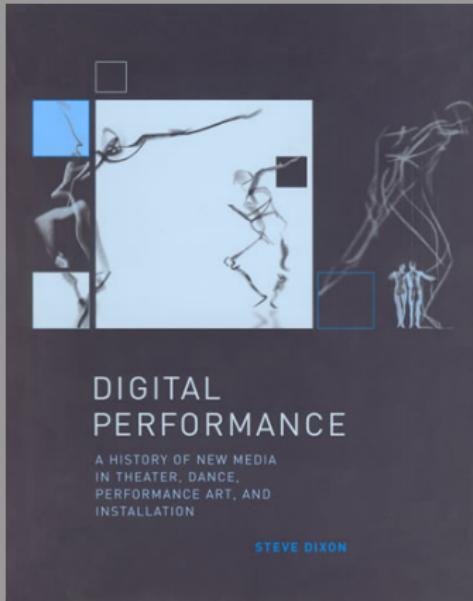
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- Computers disrupt the in-time processes of performance?
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  - Limited understanding for the in-time prerequisites?



## Summary

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- 
- To more fully understand the notion of liveness and temporal embeddedness in the real-time arts involving computers.
  - May be used inform the design of new human-computer interfaces.

**Thank you.**

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