Sodaconductor

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ABSTRACT
Sodaconductor is a musical interface for generating OSC control data based on the dynamic physical simulation tool Sodaconstructor as it can be seen and heard on http://www.sodaplay.com.

Keywords
Sodaconstrucor, Soda, Open Sound Control, Networked Performance, Physical Simulation, Generative Composition, Java Application, Non-Linear Sequencing.

1. INTRODUCTION
Sodaconductor consists of a dynamic physical simulation generating control data that is fed into a local network, and which can be interpreted by custom built audio patches authored in packages such as MAX/MSP or Supercollider.

This simulation is a modified version of the Sodaconstructor online construction kit as it can be seen and heard on http://www.sodaplay.com. the software adds certain functionality which turns a Sodaconsturctor model into a 'musical instrument' - or being more precise into an interface to a musical instrument - by transmitting dynamic properties using the OSC (Open Sound Control) protocol that can be utilized by several instances of sound generating software.

2. MODEL SIMULATION
Sodaconstructor allows the user to create models ranging from life-like creatures to abstract animations using digital masses, springs and muscles.

Sodaconductor uses information of simulated Sodaconstructor models such as node positions, spring/muscle tensions or node - edge collisions, brings it into an for music software understandable format using the OSC protocol and transmits it to other computers. It hereby gives the user complete control on which data is being used.

In contrast to the physical modeling approach to synthesis as described by Castagne and Cadoz (Physical Modeling Synthesis: Balance Between Realism and Computing Speed), the flexibility of the framework *Sodaconductor / OSC / interpreting audio software* (figure 2) allows Sodaconductor also to be used for purposes such as non-linear sequencing.

As with Sodaconstructor, simulated models (and as a result the generated control data) can be interacted with either by grabbing the model itself or by changing parameters of the model's environment such as gravity or friction.

3. THE USER INTERFACE
An additional interface (figure 1) allows the choice of how many springs, nodes or collisions to transmit per frame of running simulation and certain parameters can be randomized on the fly.

Limiting the amount of information to be sent each frame will result in a generally more stable system.

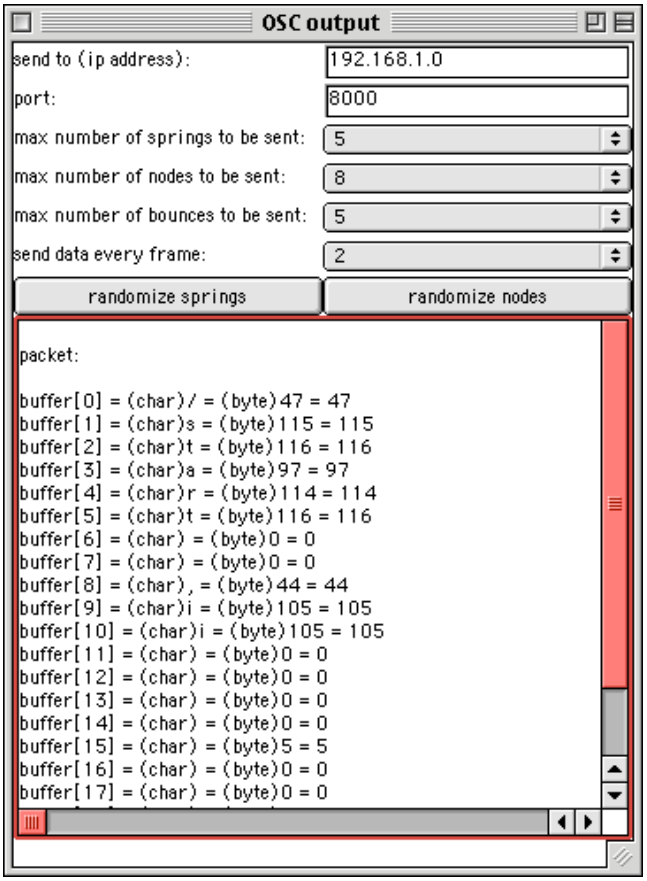

Figure 1

Which springs and/or nodes are being sent via OSC is being visualized in the main model simulator window (figure 4). These Springs and Nodes are being displayed in an orange color instead of a white one. If a specific node or spring is desired to be transmitted, it can be added as a 'performer' by clicking on it.

4. A SHORT INTRODUCTION TO OPEN SOUND CONTROL
OSC is a protocol for communication among computers, sound synthesizers, and other devices developed by Matt Wright.

In a view instances OSC has been described as a protocol that will at some point take the place of the nowadays aging MIDI.

At present the OSC protocol implementations are available for software packages such as MAX/MSP, PD, SuperCollider and Reaktor.[1]

5. SODACONDUCTOR AS A NON-LINEAR TOOL FOR PROVIDING CONTROL DATA

In addition to the possibilities of using Sodaconductor for providing real time physical simulation control data for influencing sound synthesis, as stated above, Sodaconductor also can be viewed as a tool for non-linear sequencing purposes.

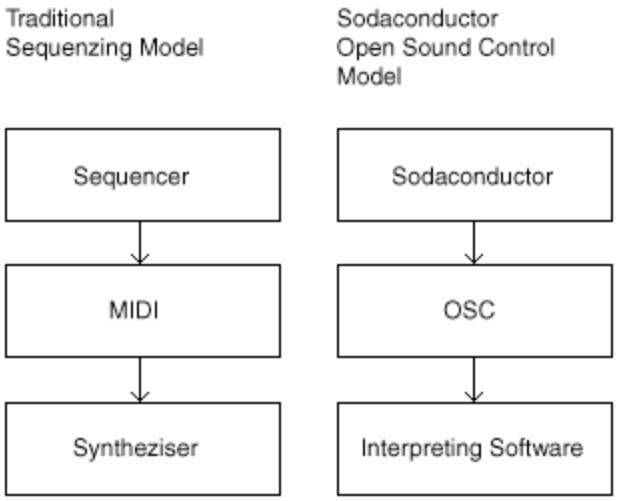

Figure 2

6. IN PERFORMANCE CONTEXT

Using this application within a networked performance context (as OSC is transmitted via a Local Area Network) enables several performers to improvise with each other whilst referring to a common thread: the control data that is being transmitted (Please see figure 3).

How this control data dynamically influences the sound generated results from the implementation of each interpreting audio patch and by choices made during the performance by the individual performers.

For example, in recent performances the movement of Sodaconductor models have been used for the spatialization of various sounds within a souround sound set-up.

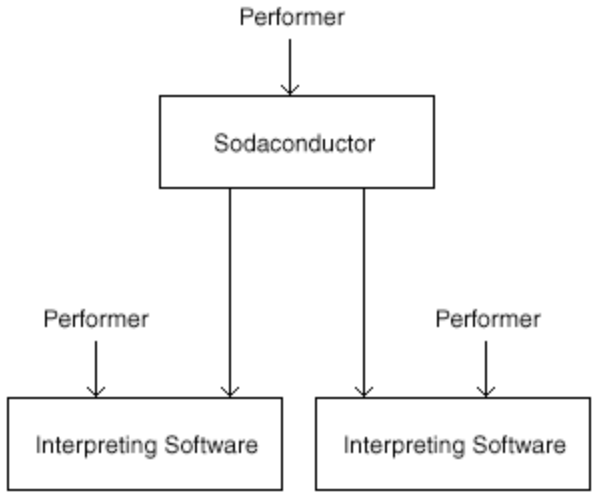

Figure 3

7. ABOUT THE SOFTWARE

In contrast to Sodaconstructor, a tool which is accessible online, Sodaconductor is an application which has to be installed locally due to certain Java (the programming language the software has been authored in) security restrictions.

At the moment Sodaconductor is still in beta – state, with a release for the public planned in the near future.

8. ADDITIONAL INFORMATION

Sodaconstructor is software originally developed by Ed Burton, Research and Development Director of Soda Creative Ltd, and recently won the Interactive Arts award in the 2001 BAFTA (British Academy for Film and Television Arts) Interactive Entertainment ceremony in London.[2]

The Open Sound Contol add on which turns this software into a tool that can be used within a networked audio visual environment has been implemented by David Muth.[3]

The first public performance based on this networked framework using Sodacoductor took place at the Montreal based FCMM festival 2001 under the title 'Sollbruchstelle' / Gcttcatt + Soda, in collaboration with Austrian artist Mathias Gmachl.[4]

Technical requirements for the demo:

Large Monitor or Projector, 2 Macintosh Computers running Mac Os 9 (one provided by Soda), Speakers (preferably a HIFI System)

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[1] For more information please visit the Open Sound Control website:
http://cnmat.cnmat.berkeley.edu/OpenSoundControl/

[2] http://www.sodaplay.com/
http://www.soda.co.uk/play/
http://www.soda.co.uk/works/sodaconstructor.htm
http://www.soda.co.uk/members/ed.htm

[3] http://www.soda.co.uk/explore/osc.htm
http://www.soda.co.uk/members/david.htm

[4] http://www.fcmm.com/2001/html/prog_e_perf.php
http://web.fm/

9. ACKNOWLEDGMENTS

Thanks to Mathias Gmachl for Inspiration and Julian Saunderson and Thomas Willomitzer for help and advice on the Sodaconstructor OSC add on.

10. REFERENCES

[1] Wright, M., Open Sound Control http://cnmat.cnmat.berkeley.edu/OpenSoundControl/

[2] Castagne, N., and Cadoz, C.,Physical Modeling Synthesis: Balance between Realism AND Computing Speed, Proceedings of the COST G-6 Conference on Digital Audio Effects (DAFX-00), Verona, Italy, December 7-9, 2000 http://profs.sci.univr.it/~dafx/Final-Papers/pdf/Castagne_DAFx2000.pdf

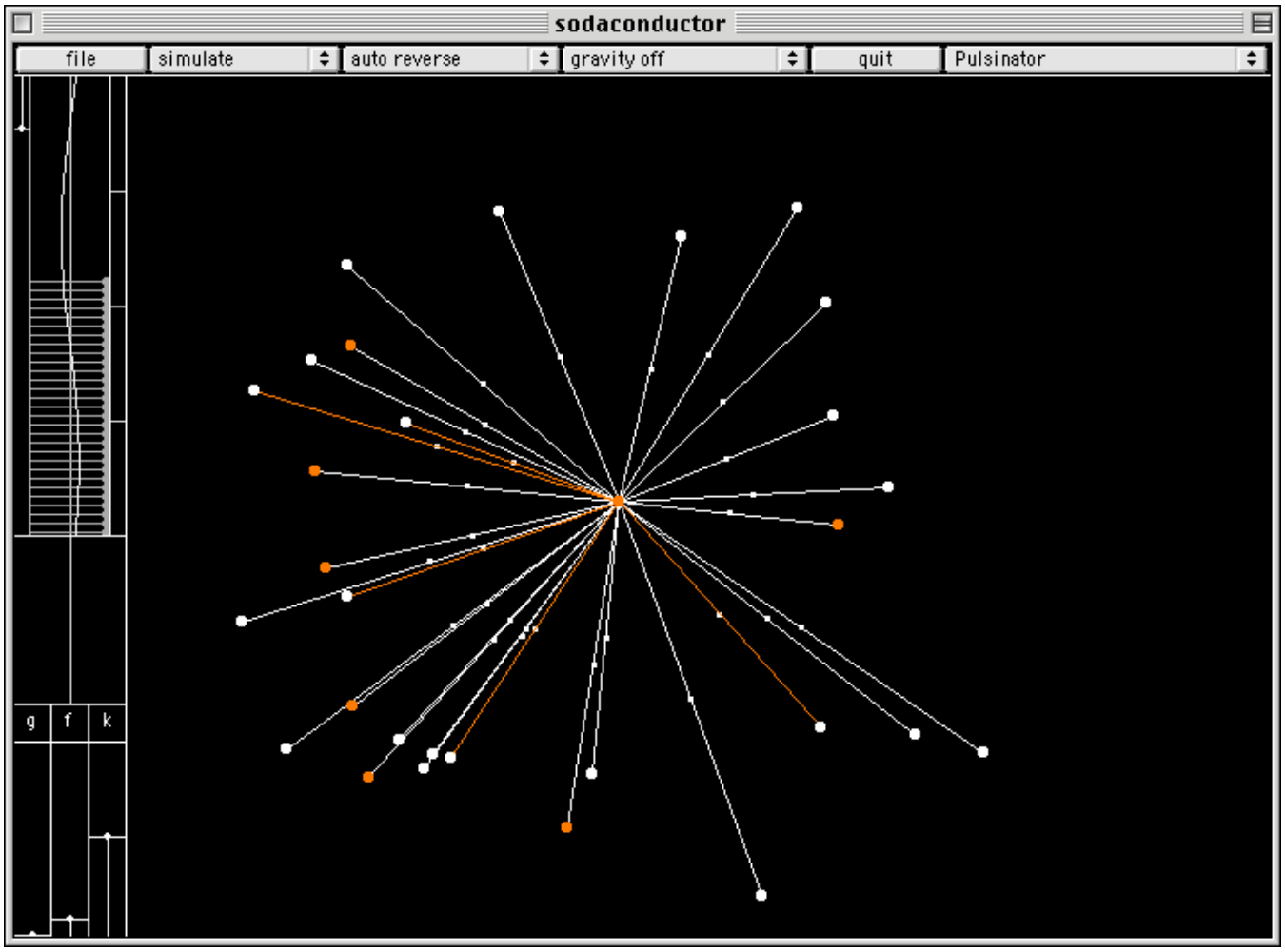

Figure 4