# Pursuing a sonigraphical ideal at the dawn of the NIME epoch. A commentary on "Sonigraphical Instruments: From FMOL to the reacTable"

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A common criticism levelled at the NIME community is that we jump onto the latest available technology, develop one interface, play one concert, send out a paper, and move on. To this criticism, Jordà's work on sonigraphical instruments sits as a compelling counter-example. Jordà's paper seems to have appeared at a turning point in his work developing computer-based instruments for collaborative musical interaction, and to be representative of the start of the NIME epoch.

In the first half of his article, Jordà describes Epizoo, a game-like multimedia interface that sits very much in the early-1990s, and FMOL, a collaborative synthesiser running in a late-90s era mouse-driven Windows interface. In the second half, Jordà outlines the in-progress design for Reactable, a table-top tangible interface that went on to be unveiled through YouTube videos [1] in 2006 to mainstream acclaim in the tech and music press, and was famously used in Björk's Volta [2] and Biophilia concert tours starting in 2007. The Reactable could be said to be emblematic of a surge of interest in NIME-research around this time - at least that's when I started to get interested!

So what lessons does this paper hold for the NIME researcher of today? First of all, this paper shows how perspective and experience acquired through long-term effort in developing musical interfaces is often required for the most interesting designs. The paper itself describes around 10 years of work where Jordà and his collaborators produced interfaces and invited beginners as well as experienced performers to use them. While Jordà is satisfied with the utility of FMOL, a successful design by all accounts, years of experience have suggested that there is potential to develop an instrument that is even more intuitive, collaborative, and with fewer compositional assumptions. More than 10 years later, we now know that Reactable achieved these goals, with success as an installation work, as an instrument on the professional concert stage, and with ongoing utility in HCI research [3]. It strikes me as unsurprising that this success should follow a

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long period of experimentation with different designs, and many different kinds of users.

A second important lesson is Jordà's pursuit of a "sonigraphical" instrument. In Epizoo, FMOL, and in Reactable, Jordà strives for a kind of unification, or at least colocation, of visual and sonic feedback with the user interface elements. In a sonigraphical instrument, the GUI is "both an input for sound control, and an output that intuitively displays all the sound and music activity"[4]. In FMOL's GUI window, audio signals are visualised in oscilloscope-like waveform traces which can be manipulated with the mouse. In Reactable, the unification is even deeper with a tangible interface projected on a round tabletop. Synth elements are denoted by physical markers which are activated as soon as they are placed on the table. When elements are patched together, oscilloscope traces flow between them to show the signal path. In fact, signal patching and visual connections are unified with physical connection in Reactable, as these are all made simply by moving the markers closer together. Mouse-dragging static patch cords around in Pd or Max feels clunky by comparison!

This level of sonigraphical unity was not achieved without effort on the part of Jordà's team. He writes that their first instinct was to develop a system to control a large visual display with body motions. Such an idea would have had similar technological challenges, but none of the intuitive impact and musical possibilities of their final design. The problem of achieving effective sonigraphical designs still challenges NIME-creators today. While mobile multitouch devices would seem to suggest more expressive, tactile manipulation of sound, conservative software continues to be modelled after physical studio setups and antique DAW designs where the primary visual feedback is a VU meter. In 2003, Jordà defined a benchmark for connections between the sonic, the visual, and the physical in an interface that will amplify the musical intentions of users and minimise frustrations. It is notable in Jordà's paper that the technical details of his systems are downplayed in favour of explaining the evolution of the sonigraphical design rationale over years of performances and workshops. This, and the success of the Reactable system since NIME 2003, shows us that in NIME research, sustained engagement with performance and users can outweigh short-term technical novelty.

**References:**

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[4] Jordà, S. (2003). Sonigraphical instruments: from FMOL to the reacTable. Proc. NIME '03. 70—76.

**Bio:**

Charles Martin is a specialist in percussion, computer music, and human computer interaction from Canberra, Australia. He links percussion with electroacoustic music and other media through new technologies. His works, described as "a thing of rare beauty" in The West Australian have been performed throughout Australia, Europe and the USA and presented at international conferences on computer music and percussion. Charles has released five iOS apps for making music and is active in creating performances, workshops and research that explore the musical potential of new computing devices. Charles' Works and research can be found at: charlesmartin.com.au