



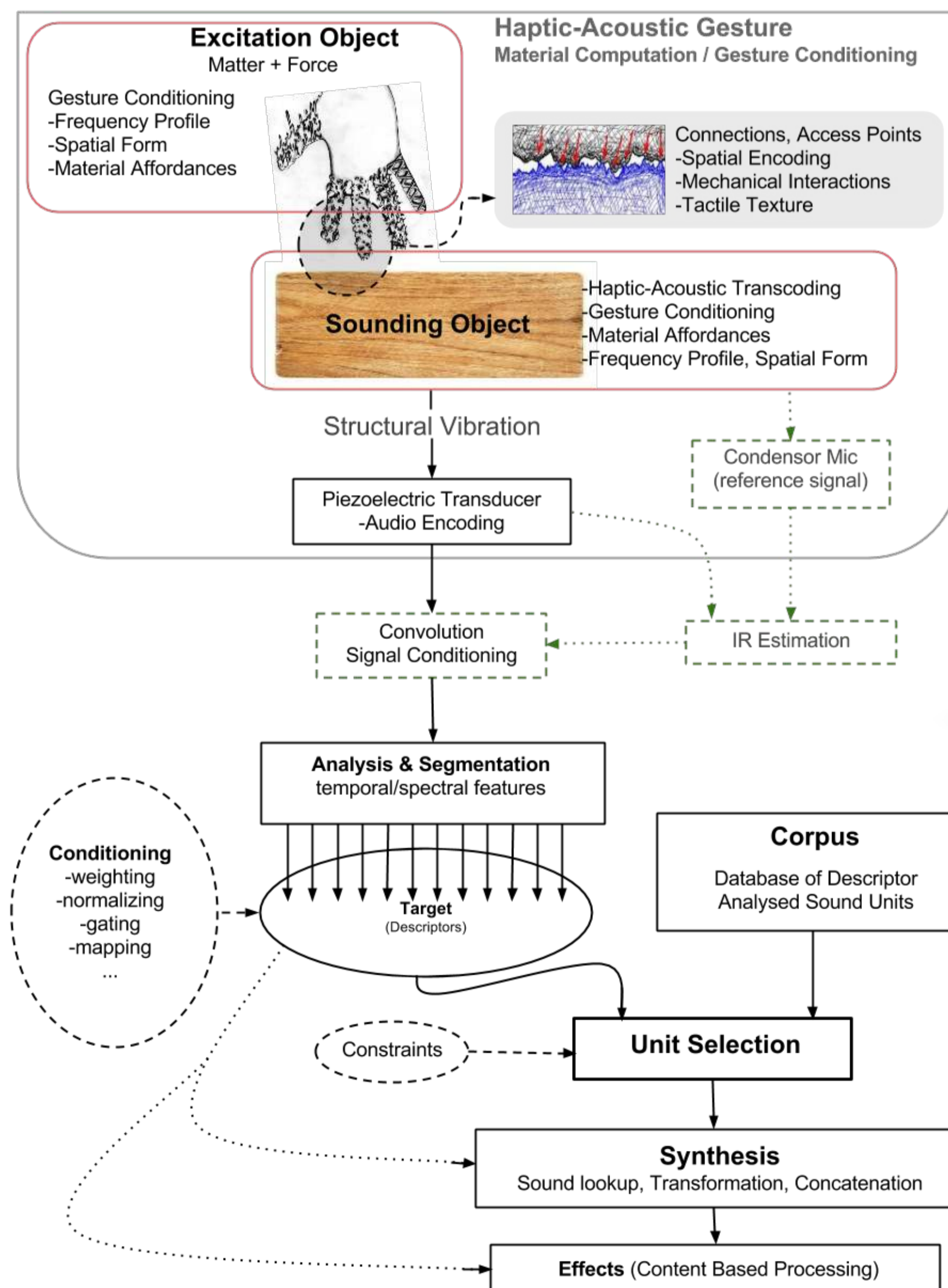
A material computational perspective on audio mosaicing and gestural conditioning

Navid Navab, Doug Van Nort, Sha Xin Wei

Designing for Materials to Compute

An approach to instrument conception that is based on a careful consideration of the coupling of tactile and sonic gestural action across the layers of physical and computational material in coordinated dynamical variation. We propose a design approach that not only considers the materiality of the instrument, but that leverages it as a *computational substrate*. Such computational matter then becomes a central part of the instrument's conception of the sonic quality, the control structuring and what generally falls under the umbrella of "mapping" design. In the case of instruments based on contact microphones and manual engagement with physical objects, the textural and resonant nature of the physical material becomes a central component for consideration, along with the kinesthetic gestural interactions that are conditioned through the spatial and material structure of the object.

Audio-mosaicing haptic acoustic gestures



Practices of Everyday Life | Cooking

Practices of Everyday Life | Cooking is the first part in a series of performances and installations exploring how everyday gestures could become charged with symbolic intensity and used for improvised play. A performance choreographed around a chef and sonified objects: fruit, vegetables, meat, knives, pots and pans, cutting board and table.

Within our responsive scenography system, every cooking process is transformed into an environment thick with aroma, light, video, sound, movement, and objects. A knife sleeking against another knife, carrots vocalizing their unfolding mutation into a cacophonous a cappella, the sizzle of hot oil mosaiced into a downpour of Bartok pizzicati along with the aroma of onion and garlic immerses the audience in an ecology of remembrance and anticipation.



Performing Materiality / Materials Performing

We maintain the position that matter can be a computational substrate. Such a perspective on new interfaces for musical expression can help us avoid some problematic divides in our design metaphors between performer/performed, instrument/score, intention/noise, software/hardware, digital/analog, speculation/action, and etc. Matter does not distinguish between performer intentions and material physics; we claim the same holds for computational matter. As designers of interfaces we can employ this inherent symmetry to design for arbitrary associations of agents doing arbitrary actions.

Gesture Bending

Gesture Bending, generic term coined by Navab, refers to the poetic transformation, prolongation and enrichment of gestures through staged and unstaged technical mediation of movement – in this case through the incorporation of real-time sound instruments and computational matter. The goal of Gesture Bending is to continuously enact persuasive conditions for the transformation of the discursive networks of meaning production in the embodiment of movement. It can for example lead to the signification of an empty gesture or the abstraction of an inherent signifier (ie. within a beat gesture). Pervasive Gesture Bending can lead to the emergence of social experiments, multidimensional compositions and the creation of conditions that invite inhabitants to synergetically improvise with a hybrid expressive force.

The participants' gestures not only lead to unexpected musicality but to narratives about shaping relationships with the immediate world and recognizing daily life and the material world as a platform for play and for refined practice.

Concerto for sticks and ensemble



Through interactively varied augmentation of the object's natural acoustical response, an a priori distinction "synthetic" and the "natural" and the "performer" and "performed" are removed. Performing a score or improvising music could turn into a hybrid mode of engagement and perception borrowing elements from gaming, playing, building, day to day living practices, puppetry, and performance art.

Summery Works such as *Practices of Everyday Life | Cooking* and other Gesture Bending experiments leverage material thinking and acoustic sensing techniques to symbolically charge everyday actions and objects in ways that combine the composer's design with the performer's contingent nuance. Our material computational design allows for any potential movement at all by the performer or the objects to turn into potentially musical gestures. This removes the burden of modeling the human experience and instead allows for such notions as gestural meaning, intentionality, expressivity, noise, musicality, and even performer, performed and speculator to freely arise from the context established in the moment of performance together with the theatrical apparatus of expectation.