

Javier Alejandro Garavaglia
Spatial grains – Soundscape No 1
acousmatic music for 134 speakers and 4 subwoofers plus ambisonics

Duration: ca. 31 min

This acousmatic piece was composed and presented live in concert at the end of the Spatial Audio Workshop residency at Virginia Tech (Virginia, USA, August 10-14, 2015). The composition is based on only field recordings of birds, insects, water, rain, bells from San Marco in Venice and city sounds close to the Manhattan bridge in NY, etc. Main goal during the residency was to test in a proper environment a new type of spatialisation (via MAX programming) I have been working on since the fall of 2014 – Granular Spatialisation – which diffuses sound in High-Density Loudspeaker Arrays (HDLAs). The residency offered the opportunity to spend time inside the CUBE concert hall, Moss Arts Center, at Virginia Tech, which offers an HDLA of overall 147 speakers.

Granular Spatialisation translates those basic principles of granular synthesis to sound diffusion. The concept was already presented for the first time in its first stages during the BEASTFeast 2015 in Birmingham (UK) in May 2015, using the mini BEAST system.

The structure of basically 5 different levels of Virginia Tech's CUBE (with speakers located on the ground, in the 1, 2 and 3 floors plus the grid on the roof) allowed for the granulated diffused sound to freely wander over the entire space creating multiple space settings. At some moments, to the constant spatial granulation, ambisonics (in the form programmed by Eric Lyon for the CUBE in MAX: cubisonics) was added, which constitutes a different perception of those grain-based diffused arrays and therefore, further in the space in contrast to those sounds locally diffused by grains by each of the CUBE's loudspeakers. Inside the CUBE space, the piece was run via two main MAX patches simultaneously in two computers (one for diffusion with Granular Spatialisation, the second for the ambisonics/cubisonics systems, in order to avoid CPU peaks), with sound distributed mainly on arrays of 8 speakers each, in order to generate not only grain-based diffusion of sound (normally, one grain per loudspeaker) for each array, but also that each array would form in the end a full constellation of different sounds moving in the space, using at times all 134 speakers, resulting in spatial clouds of grains.

As usual with this type of concert halls, the piece was specially programmed to be diffused inside the CUBE, and therefore, although the composition can be replicated, it must be changed for different venues using different set ups and number/types of speakers (and of ambisonics). Thus, programming via software environments such as MAX offers the desirable flexibility, rather than, for example, producing a fixed media version for each venue.

Dissemination since 2015

- ✓ 2015: Residency at the Moss Arts Centre, CUBE concert hall, Virginia Tech, US (August) for the composition of the piece for 134 Speakers and 4x LFEs
- ✓ 2016: Performance for a 16.2 array system presented @ New York City Electroacoustic Music Festival (NYCEMF) 2016, Abrons Center (NYC, US)
- ✓ 2016: Performance for a 16.2 array system presented in Utrecht during the ICMC 2016 @ Tivoli - Vredenburg
- ✓ 2016: Paper conference at the ICMC 2016 Proceedings: *'Granular Spatialisation, a new method for sound diffusion in high-density arrays of speakers and its application at the Spatial Audio Workshops residency at Virginia Tech (August 2015) for the composition of the acousmatic piece Spatial Grains - Soundscape No 1, for 138 speakers'*
Proceedings of the 42nd International Computer Music Conference (ICMC) 2016, Utrecht, Holland. Online ISSN: 2223-3881
<http://hdl.handle.net/2027/spo.bbp2372.2016.006>
- ✓ Presentations of the research at the BEASTFeast 2015, 2016 and 2017, University of Birmingham (UK)
- ✓ 2017: Long article: *'Creating Multiple Spatial Settings with Granular Spatialisation in the High-Density Loudspeaker Array of the Cube Concert Hall'*, COMPUTER MUSIC JOURNAL - Winter 2016, Vol. 40, No. 4, "High-

Density Loudspeaker Arrays, Part 1: Institutions", pp. 79-90, 2017, Massachusetts Institute of Technology (MIT Press), ISSN: 0148-9267, E-ISSN: 1531-5169, doi: 10.1162/COMJ_a_00384

http://www.mitpressjournals.org/doi/abs/10.1162/COMJ_a_00384

- ✓ December 2017: Presentation of the composition and research during the INSONIC 2017 - Immersive Future, organised by ZKM (Center for Art and Media) Karlsruhe, Germany with the partnership of the Parisian Institute de Recherche et Coordination Acoustique/Musique (IRCAM) and of the Karlsruhe University of Arts and Design (HfG). A version of the composition was this time adapted for the entire KuBus HDLA of 47 speakers + 4 LFEs.
<http://zkm.de/en/event/2017/12/insonic-2017>
- ✓ 2018: Performance @ the MUSA 2018 conference (June), in the Wolfgang Rihm Forum (WRF) Hall (Institut für Musikwissenschaft und Musikinformatik [IMWI], Hochschule für Musik Karlsruhe), with a set-up of 70 speakers.
- ✓ 2019: Paper conference at the ICMC 2019: '*Spatialising the Same Acousmatic Composition in Different Venues Featuring High-Density Loudspeaker Arrays*'.
Proceedings of the 45th International Computer Music Conference (ICMC) 2019 in NYC (USA), pp. 27-32 (2019-2021) published by the International Computer Music Association (1819 Polk Street, San Francisco, California 94019, USA) - ISBN: 0-9845274-8-6
https://icem.folkwang-uni.de/~gara/DOWNLOADS/icmc2019_proceedings.final.pdf