

**Un-drum 3.1:  
semantic Scanning Electron  
Microscope**

a sound performance by Tarek Atoui

Un-drum is a complex interaction between music composition, body movement, performance and computer and electronic engineering. It is a series of intense physical sound performances that Tarek Atoui started in 2009.

Tarek Atoui's electro-acoustic work has always incorporated sampled sounds from acoustic instruments, field recordings, cinema and audio archives coexisting with digital synthetic sounds generated in a personal way through Atoui's computer programming techniques.

The 3rd part of the Un-drum series takes Tarek Atoui's approach and use of samples and sampling techniques to a far extreme inspired by semantics and the scanning electron microscope machine.

Semantics is the study of meaning, usually in language. The word "semantics" is often used in ordinary language to denote a problem of understanding that comes down to word selection or connotation.

In linguistics, it is the study of interpretation of signs or symbols as used by agents or communities within particular circumstances and contexts. Within this view, sounds, facial expressions and body language have semantic (meaningful) content.

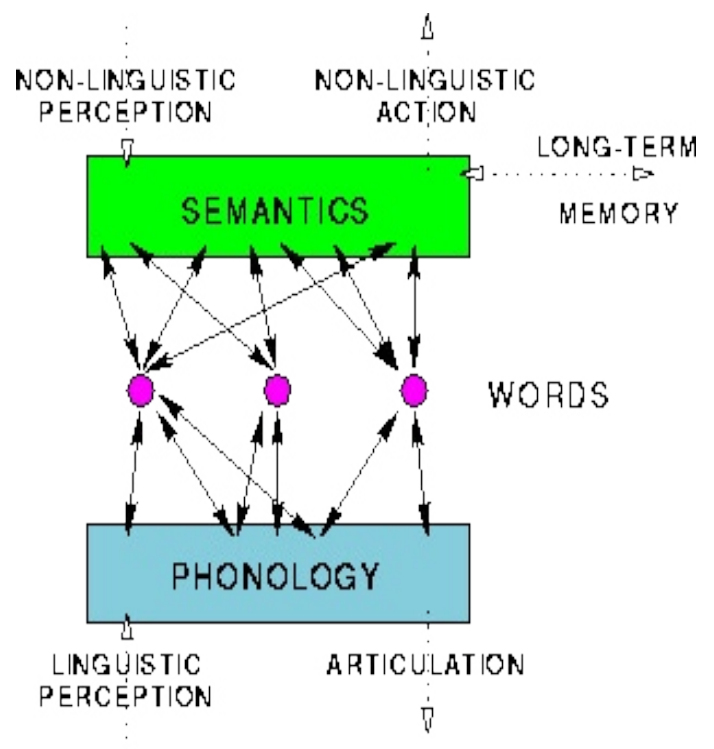
Semantics is also the study of meaning, as inherent at the levels of words, phrases, sentences, and larger units of discourse (referred to as texts) where a key concern is how meaning attaches to larger chunks of text, possibly as a result of the composition from smaller units of meaning.

In computer science, where it is considered as an application of mathematical logic, semantics reflects the meaning of programs or functions. In this regard, semantics permits programs to be separated into their syntactical part (grammatical structure) and their semantic part (meaning).

In psychology, semantic memory is memory for meaning - in other words, the aspect of memory that preserves only the gist, the general significance, of remembered experience - while episodic memory is memory for the ephemeral details - the individual features, or the unique particulars of experience.



Tarek Atoui by Tania Traboulsi - Beirut Sept 2009



These definitions lead Tarek Atoui to determine, question and work on the notion of microsamples.

A microsample is the smallest sound fragment where the original sound source is still audibly and psychologically recognizable.

It is the shortest perceptible sound duration (20 to 500 milliseconds) where an instrument, a human voice or an ambient sound can still address the collective memory in a conscious or unconscious way.

Therefore, it is the smallest unit of meaning from which many derivations can occur, and that holds the greatest potential for a composer to re-appropriate popular sound sources and to articulate them in a larger more personal musical discourse .

In this frame, Un-drum 3.1 will be moments of quartets, quintets and other collaborations between Tarek Atoui and 100 legendary occidental and oriental dead musicians and personalities.

It's actually the re-appropriation by Tarek Atoui of famous repertoires, genres and historical moments that are eroded to an extreme and articulated through Atoui's musical approach and esthetic.

A main composition principal is the use of hundreds of microsamples to create live abstract sound collages where the audience constantly feels familiar with the elements, but rarely gets to discern them consciously.

There would be no digital effects or any digital sound treatment beside microsampling techniques where a specific software and machine will be built inspired by the Scanning Electron Microscope.

The scanning electron microscope (SEM) is a type of microscope that is used to magnify things on a fine scale. Electron microscopes have much greater resolving power than light microscopes up to 1 million times, while the best light microscopes are limited to magnifications of 1000 times.

The scanning electron microscope images the sample surface by scanning it with a high-energy beam of electrons in a rectangular pattern of image capture and reconstruction.

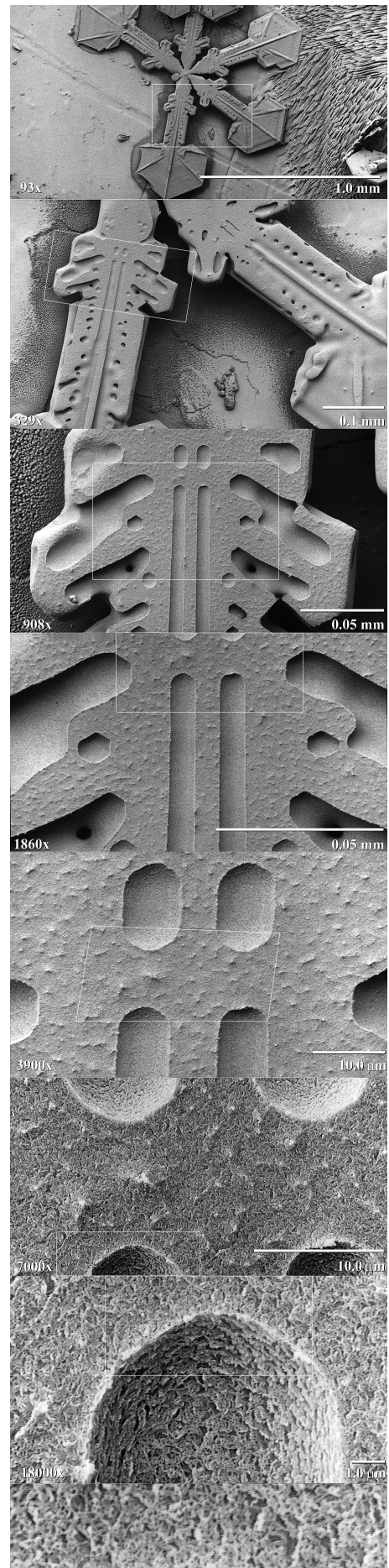
The electrons interact with the atoms that make up the sample producing signals revealing information about the sample's surface topography, composition and other properties.



An obsolete SEM Cambridge S150 strangely resembling the RFS sound synthesiser from the 60s



A modern SEM opened sample chamber



Low-temperature SEM magnification series for a snow crystal.

Like the SEM, the tools of Un-drum 3 will allow live exploration of long audio tracks at a very small scale.

Through systems of pressure sensors requiring physical strength and body engagement, the performer will be able to scan tracks at a high speed and instantly select and edit microsamples based on the Fast Fourier Transform analysis technique.

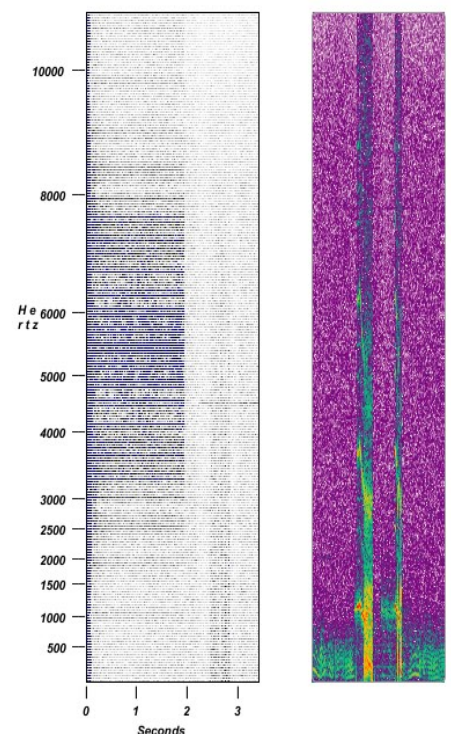
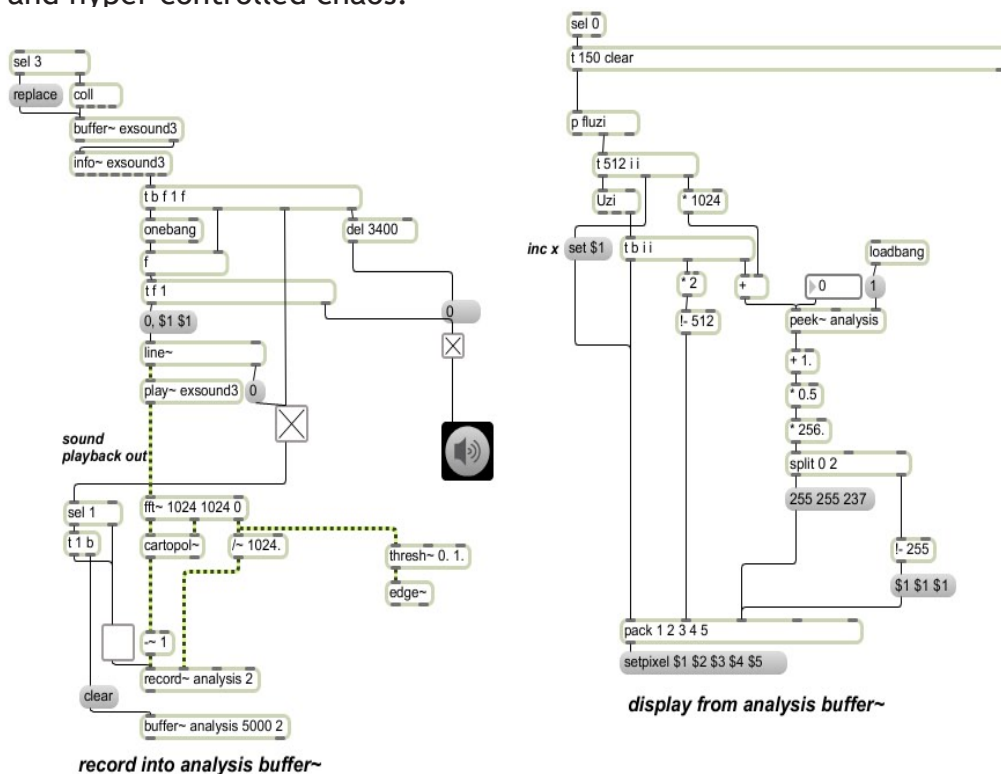
FFT is a complex sound analysis protocol that determines the spectrum of a sound, it's constituting frequencies and their density according to the law of Fourier. Microsamples are the most dense sound areas and they will be selected and stored in audio libraries.

Through systems of infra red modules, responding to the performer's movements, the selected microsamples will be played according to mathematical serial algorithms that create elaborate rhythmical structures of hundreds of microsmaples played at the same time.

In electronic music, samples are often used in forms of loops where musical meaning is generated through repetition and the creation of regular patterns. The programmed infra-red modules allow to generate ever changing patterns and to break the loop logic. A given sound can never have the same place inside the composition therefore constantly changing the meaning of the whole and generating different impressions. The end result are edgy sharp sound collages of varying densities constantly oscillating between strict forms and hyper controlled chaos.



Tarek Atoui's self built infra-red modules for movement capture and detection



Inside look at Tarek Atoui's self made FFT analysis software

## Tarek Atoui

Tarek Atoui was born in Lebanon in 1980 and moved to Paris in 1998 where he studied contemporary and electronic music at the French National Conservatory of Reims.

He worked in the Netherlands as co-artistic director of the STEIM Studios in Amsterdam in 2008 and has released his first solo album on the esteemed Mort Aux Vaches series of the Staalplaat label (Amsterdam/Berlin).

Atoui is an electro-acoustic musician who initiates and curates multidisciplinary interventions, events, concerts and workshops in Europe and the Middle East.

He builds new software for each project he works on and specializes in creating computer tools for interdisciplinary art forms and youth education.

He has played and performed at many contemporary art events and festivals in the Middle East and Europe such as the Today's Art Festival (the Hague), Club Transmediale (Berlin), The Sharjah Biennial (UAE) the New Museum (new-York), and is currently the artist in residency at the Sharjah Art Foundation that has been closely following his work since 2008.

Much of Atoui's work references the social and political and presents electronic music and new technologies as powerful tools of expression and identity. A major and pioneering project of this nature was the youth dedicated Empty Cans workshop that took place in France, Holland, Lebanon Egypt and recently at the New Museum in New York.