THE FOOD SIDE OF SOUND AESTHETICS

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This paper describes some art examples related to sound/food topic starting from a scientific perspective and investigating the field bounded by performance art, sound art and research. Through comparing molecular gastronomy to digital music and analyzing the connection among sound and food as a way to re-design a rural territory, this paper outlines how the knowledge of food and sound can add important information in the 'tasting' process.

Our evaluation of food is related to a variety of contextual information perceived through the senses: the pleasure we get from eating is obviously influenced by the taste and the smell of food itself. Also, visual presentation and colour are important, as well as the feel of the food in the mouth, with its temperature and texture. The senses of taste and smell are so tightly combined in the evaluation of flavour that it is sometimes considered a form of synesthesia which is common to us all. Recently, researchers have been focused their attention to various cases of synesthesia. They are also analyzing if the perceptual experiences of syntesthetes are so very different from those of non-synesthetes.

Our senses undoubtedly are not isolated from each other. Indeed, living in a multi-sensory world, our brain constantly works combining data from different sensory modalities in order to make sense of our environment. Through reporting a number of cross-modal associations such as pitch and visual size, colours and tastes or brightness and the frequency of vibrotactile stimuli, some researchers have shown that these associations "are different from those present in syntesthetes in that they are bidirectional, and a stimulus presented in one sensory modality does not elicit a conscious experience in another modality. However, the existence of these cross-modal associations supports the hypothesis that synesthesia might originate in feedback connections from a point of convergence of the two sensory pathways." [1]

According to the latest research on the matter conducted by Sagiv & Ward (2006); Ward, Huckstep, & Tsakanikos (2006), cross-modal associations and synesthesia can be usefully compared in order to better understand both phenomena. Also, it has been shown that there are implicit associations between tastes and particular pitches: in particular, on the one hand sweet and sour tastes are associated with high-pitched notes, on the other hand umami and bitter tastes are preferentially matched to low-pitched notes.

As Charles Spence of Oxford University has stated, the perception of the crispness and staleness of potato chips can be affected by modifying the sounds produced during the biting action. Participants of the experiment were asked to bite into 180 crisps that had different freshness. The sound produced by the bite of each crisp was processed through electronic devices (microphone, computer, headphones) and edited in real time to evaluate the participants reaction. The results showed that crisps were rated 15% fresher and crisper if the crisp sound was played louder, or if just the high frequency components of the biting sound (above 2 KHz) were boosted.

Another experiment conducted by Spence was investigating the role of auditory cues in the perception of carbonation in beverages. The results showed that it's possible to modify the carbonation of a fizzy drink by changing its sound. As Lorimer Moseley writes, "In the future, we may be able to reduce the

amount of ‘tooth-rotting’ carbonic acid in fizzy drinks simply by changing the sound that the drink makes in the can. Prof Spence’s research may also suggest novel interventions to bring back the enjoyment of food for the growing elderly population who have started to loose their sense of taste and smell since there is currently nothing we can do to bring bask those senses once they have started to decline." [2]

Recently, an aesthetics experience called "Foodfrequency" and based on synesthetic and cross-modal research of Charles Spence, was presented by the chef Giulia Massimiliani, the dj Michael Byrne and the sound designers Marco Galardi and Sara Lenzi. During the "Foodfrequency" experience, participants were required to immerse themselves into the taste of Italian foodscape while listening via headphones to binaural immersive sounds of the origin of the ingredients alternating a multichannel soundscape without headphones. Through the sound experience, a connection was created with the tastes and flavours: the stories of the ingredient were narrated employing specific frequencies able to increase the food experience.

Charles Spence has also collaborated with Heston Blumenthal, English chef and owner of The Fat Duck, a world renowned restaurant in Bray, Berkshire, which researches the molecular compounds of dishes aiming at enabling a greater understanding of taste and flavour. Together, Spence and Blumenthal have experimented that it's possible to flip the flavour of bacon and egg ice cream by changing the background sound. The ice cream tastes more 'bacony' if who is tasting can hear the sound of bacon sizzling in a pan, while it tastes far more ‘eggy’ if some farmyard chickens acoustic samples are played as a background sound instead. Even seafood taste nicer when eaten while listening to the sounds of the seaside: The Fat Duck tasting menu has as one of the signature dishes a course named "The sound of the sea", a plate of seafood presented to diners together with a seaside soundtrack played through an iPod put into a seashell on the table.

Blumenthal is well known for being one of the chefs that in the past decade have inspired his work to methodology, philosophy and experimental approach belonging to the Molecular Gastronomy movement, in terms of experimenting the advances in biochemistry and soft-matter physics to analyse and comprehend culinary processes in an innovative way.

Although the term "molecular cuisine" cannot indicate a specific style of cooking, "as the chef labelled as 'molecular' have very different styles and the role of science in cooking is usually limited to the development of a new technique or a new recipe and there is very little ‘science’ in the final preparation of a dish," [3] it's interesting to notice that in the poster for the first “International Workshop on Molecular and Physical Gastronomy”, held in Erice, Italy in 1992, specified that this meeting aimed to explore four points: “to what extent is the science underlying these [cooking] processes understood; whether the existing cooking methods could be improved by a better understanding of their scientific bases; whether new methods or ingredients could improve the quality of the end-products or lead to innovations; whether processes developed for food processing and large scale catering could be adapted to domestic or restaurant kitchens." [4] Two things need to be emphasised in this brief excerpt: on the one hand, the interactions between science and cooking, which at the beginning of the past decade led to the first collaborations between chefs and scientists: in France, chef Pierre Gagnaire teamed up with Hervé This; Heston Blumenthal with Peter Barham in England; in Spain, Andoni Luis Aduriz and later Dani Garcia with Raimundo Garcia del Moral, and Ferran Adrià with Pere Castells; on the other hand, an innovative research oriented to deconstruction (or reconstruction) of cooking in terms of the 'simple' chemistry and physics of the food.

In a way, these approaches can be compared with sonic technique of Granular Synthesis, in which sound samples are used often as grain contents. Through distributing grains in time and selecting parameters from the synthesis of each grain, the sonic quality of a granular texture can be obtained. Usually, the duration of grains is short and they are often distributed densely in time, so that the resultant sound can be perceived as a blend texture. "Granular Synthesis or Granulation is a flexible method for creating animated sonic textures. Sounds produced by granular synthesis have an organic quality sometimes reminiscent of sounds heard in nature: the sound of a babbling brook, or leaves rustling in a tree. Forms of granular processing involving sampled sound may be used to create time stretching, time freezing, time smearing, pitch shifting and pitch smearing effects. Perceptual continua for granular sounds include gritty/smooth and dense/sparse. The metaphor of sonic clouds has been used to describe sounds generated using Granular Synthesis. By varying synthesis parameters over time, gestures evocative of accumulation/dispersal, and condensation/evaporation may be created." [5] Granular Synthesis technique is the result of long-standing ideas about the nature of sound. In the second half of the last century, quantum physics have demonstrated that sound can be atomically reduced to physical particles. As Isac Beeckman has later explained, sound travels through the air as globule of sonic data.

Starting from 1950s until the last decade of XX century, some theorists or composers including Dennis Gabor, Iannis Xenakis, Curtis Roads and Barry Truax have contributed to evolve the particle theory of sound into a synthesis method whereby the natural sound particle is reproduced, being layered with other imitation particles, and the particle itself can be cloned or extracted through being processed with a similar method as the original, in order to create different sounds.

Definitely, Molecular Gastronomy and Granular Synthesis are featured by a common approach, not only through deconstructing and reconstructing molecular structures in order to act on the chemistry and physics of food/sound, but also creating through texturization process (in molecular cuisine with gelling agents, emulsifiers and thickeners; in granular synthesis with granular synthesisers/granulators) an evocative narration between micro and macro, liquid and solid, accumulation and dispersal, condensation and evaporation.

In the last years, linking sound and food is becoming an interesting research topic not only in the psychology of perception but also in new media art studies. The latest research is focusing not only, as we have seen before, on the key factors of hearing related to multi-sensory perception of food, but also on some vernacular expressions that are rising from a performance-oriented aesthetics research, analyzed through a multidisciplinary perspective.

Every recipe, as a list of operations to be executed in a time interval, could be considered as a contemporary full score that is at the same time well-defined and unpredictable in its sonic development. The sound and the taste of food can allow us to journey around the world by putting us in touch with different cultural traditions, localizing us in a precise context and by mixing cultural elements it can allow us to cover distances. If Heston Blumenthal once said that food is especially evocative in conjuring memories, we could extend the meaning of his words by saying: food and sound.

Among the most significant projects operating in the field bounded by performance art, sound art and aesthetics research, we can find The Vegetable Orchestra, a musical ensemble founded in Vienna in 1998 based on the concept of using fresh vegetables as source material for the creation of instruments (which are built for every rehearsal and concert from scratch), all sounds and all music. Dealing with expanding the borders of the notion of what is understood as music and by working with vegetables, the Vegetable Orchestra musicians also rethink the concept of sound as a permanent transformation from

food into an instrument and back to food again. During their performance, the instruments already fall apart. They change their consistence and loose water and shape. The sound elicited by the vegetables turns into smell and later into taste when the musicians enjoy with the audience their instruments at the end of the concert in form of soup.

One of the founding members of The Vegetable Orchestra, Ulrich Troyer, was invited for a residency project together with the cook Philipp Furtenbach and the musician Kassian Troyer during the 2006 edition of Interferenze new arts festival - a new media art event immersed in the forest of Mt. Partenio in the rural region of Irpinia, South of Italy. During the three days of the festival (the theme was "Naturalis Electronica"), the artists have condensated culinarically and sonically local food and sounds, through recording on location the soundscape of the site and combining acoustically this material with the sounds that emerged during the process of the preparation and condensation of the food. The process of the condensation has evolved slowly over the period of three days and in certain time slots during the festival it was possible for the audience to listen to and to degustate the condensation of the tastes and the sounds collected. A way to let the naturalistic and gastronomic identity of the place play together and to link together technology and tradition. What emerged from the project was not so much the result, but the process during which people were made aware of some ancient and very slow processes: visitors could come, taste and listen to the sound of the performance that was presented as a social sculpture, something focused on the value of the time, the importance of slowness, the sense of the place. [6]

This project was part of the Interferenze festival section called "Click'n'Food", which offers a panoramic of performances based on the relation among food, music and new media arts. Food represents one of the main theme of the festival, through a strong involvement of the typical food and wine of Irpinia, a tradition of high quality standards presented in an international context. The aim is to propose a path that, through projects based on evidence, creative intelligence and sensory experience, is designed to promote/foster a virtuous cycle where the quality of production and the consumption of food is inextricably bonded to sustainability, environmental quality and social relations. Through choosing "Rurality 2.0" as the theme for the 2010 edition of Interferenze festival, the curatorial board decided to offer a different perspective on rurality starting from the territory itself. Moreover, the location of the event, the Ducal Castle of the little village of Bisaccia, has become for some days a laboratory where a rural territory and its characteristics (identity, traditions, natural environment, landscapes, gourmet) lead to a more open expression where languages of aesthetics of new media become new forms of sharing. In this perspective, food was analyzed both from an economic and a cultural point of view. In the first taking into consideration detailed tracking of the supply chains, whereas on the latter it considers it as a trigger for sustainable local development and tourism, and as an important part of the 'Slow Life' philosophy.

This year, the Click'n'Food section was based on three residency projects that started some days before the festival: the first one, entitled "Noble Milk" has involved the sound designer Yasuhiro Morinaga and the video artist Antonello Carbone, that were asked to make a sound and visual reinterpretation of a field trip at high altitude on the Podolian pastures which the two artists had on the mountains of Irpinia in the days before the three days event. Podolian cattle originates directly from a big structure and long horny cow, called "Bos Primigenius", who is supposed to have been domesticated in the Middle East during the IV millennium BC and later coming from Ukraine to Italy during the barbarian invasions. Being a cattle who always walk along, Podolian needs big extension pastures: this requires to shepherds to practice the transhumance, that takes place in the Apennines mountains along the so-called 'tratturi', the wide grassy, stony or hard soil paths that have been originated from the passage or trampling of

herds. Nowadays, only 50.000 head of Podolian survive in Italy, due to its less adaptability to intensive stock-breeding. Although the milk produced by Podolian cattle is really not much and it is obtained only during limited periods in the year, but the quality is extraordinary: Podolian lives exclusively on pasture and never goes in the stall, also eating grass in areas of high mountains that are very clean and not contaminated and thus they can produce milk of high value both from a nutritional standpoint and as well from the point of view of transformation. Caciocavallo Podolico is a type of cheese made out of Podolian cattles' milk and is one of the finest food products of South of Italy, with its smell of milk, butter, fresh grass, smoked hay, stall, wet straw and with its taste sweet and sharp together in the most mature shapes. Yasuhiro Morinaga and Antonello Carbone performance at Interferenze festival took place in conjunction with a tasting of "Noble Milk", produced by cows fed by only forage and pasture withough GMOs or silage.

The second Click'n'Food project was "Viand", asking Tana Sprague to analyze processes of production of Irpinia artisan cheese (mainly Caciocavallo). Reading through the filter media of aesthetic craftsmanship, sound, images of a secular tradition were merged together. "Viand" was presented at Interferenze 2010 in the form of a live performance articulated on the concept of multiple simultaneous perception. While the cheese maker Giovanni Di Roma was working to produce a Caciocavallo shape, Tana Sprague played background sound captured during her visit in the historical center of Calitri village at the Di Cecca & Di Roma's Caciocavallo cheese cave ("Grotte dei Formaggi"), which is a tuff cave where Caciocavallo shapes are aged. In such an ancient place, where formerly farmers lived together with pack animals, different devices have been recently installed in order to monitor the microclimate according different parameters (temperature, dampness, oxygen, carbon dioxide, ammonia, breeze speed) that let us know about maturing process.

In the last project "Foodjob: frequencies to dissolve under the tongue", the sound designer Enrico Ascoli and the local cook Pompeo Limongiello introduced the festival audience to the delicious tasting of sounds extrapolated and mixed live from the sizzle of codfish, a typical plate that has an important tradition in Irpinia, because it's one among the few types of fish which can be preserved for a quite long time. The performance was divided on different synaesthetic levels (taste, smell, tough, sight, hearing) based on a real time recording with panoramic and piezoelectric microphones of resonances captured during food preparation.

Finally, the artists involved in the Click'n'Food project are asked to live together for few days, in order to experience the preparation of a foreign experience that underline social and aesthetic aspect of it. They will eventually re-interpret processes acquired during this experience either in live and studios performances. The idea behind the Click'n'Food is to transform the elements that characterise the rural and peripheral region of Irpinia - where ancient roots of food culture are tightly intertwined with the territory and its local culture - in a fascinating mixture of imaginative narrative of tradition and pure aesthetic fun.

As Alessandro Ludovico writes, "How many other festival crews are able to organise such events overstimulating your senses, with free local fresh and delicious food (the caciocavalli cooking and tasting live session was a hit) coupled with new audio/visual interpretations? The intertwining of local specific culture and natural roots with the infinite narrative possibilities of electronic has been once again been exploited in this beautiful and peripheral land." [7]

References and Notes:

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