

New Topoi Through Electroacoustic Sound: The Alienated Condition in Italian Auteur Cinema of the 1960s

Maurizio Corbella, PhD, University of Milan, IT

ABSTRACT

*We define “electroacoustic” a sound or set of sounds resulting from processes of electronic synthesis and/or manipulation. At the turn of 20th century such technological processes matched with certain “tropes” of western culture such as vibration, inscription and transmission that were subsequently developed in sonic arts. These tropes find a privileged field of application in the domain of audiovisual media, to the extent that some scholars place them at the origin of the theoretical and technical debate concerning the birth of American talkies. It is indeed the fictional cinema that since its beginnings contributed, through the means of electroacoustic sound, to the development of those tropes towards narrative configurations such as automation and perceptual alteration and eventually to the profound characterization of genres like science fiction and horror-thriller. In an ideal itinerary leading from Rouben Mamoulian’s *Dr. Jekyll and Mr. Hyde* (1931) to Alfred Hitchcock’s *Spellbound* and Fred Wilcox’s *Forbidden Planet* (1956), the topical connotation of electroacoustic sound become well established in the American cinema. I argue that Italian auteur cinema of the 1960s rearticulated such topoi under new perspectives and through an approach to electroacoustic sound strongly mediated by the reception of contemporary avant-garde music. Drawing on two case studies—*The Red Desert* (Michelangelo Antonioni, 1964) and *The Seed of Man* (Marco Ferreri, 1969)—this paper analyzes how Italian auteur films used electroacoustic sound and music (in these cases pre-existent compositions) to give expression to the alienated condition of a generation facing dramatic disillusion after the post-war “economic miracle”. In such contexts, electronics are used not merely to produce uncanny effects but as processes of musical construction that challenge artistic creativity and expression, eventually representing tools of hermeneutical interpretations of the films themselves.*

NEW CONFIGURATION OF OLD TOPOI: ELECTROACOUSTIC SOUND AND ALIENATION

During an interview in 1963, Italian film director Gillo Pontecorvo gave a striking description of the profound cultural mutation that invested his generation in the period of the so-called Italian “economic miracle” (ca. 1958-1963).

We launch men into the cosmos, we discover the structure of DNA [. . .] and thus we come close to the possibility of transforming the human species, as well as animals and plants; cybernetics are about to develop machines which will be able to think as human beings. Hence science [. . .] starts to find itself in zones that until today have

been subjects of study and passion for magicians, mystics, alchemists and, of course, philosophers [1].¹

Italian auteur cinema of the 1960s mirrors the urgency of giving an account of those hybrid “zones” of intellectual reflection that polarize diverse fields of knowledge, namely the arts, science and technology. But cinema does not merely attempt to narrate this profound cultural change; rather it aims to redefine its own fundamentals through the new forces implied by this transformation. In this respect, Italian auteur cinema enjoyed a privileged relationship to contemporary artistic avant-gardes, for filmmakers could draw on them as tools to challenge established notions of narration, representation, montage, and so forth. In the arts, experimental music took on a crucial role for filmmakers in linking cinema to contemporary scientific speculation, as I will clarify later. For these reasons auteur cinema engages with music a problematic, yet fascinating, process of mediation and cross-fertilization.

If we had to choose a class of elements that constitutes the common ground on which cinema and musical avant-garde communicate, not necessarily pacifically, this would certainly be electroacoustic sound. By defining “electroacoustic” a sound or set of sounds resulting from processes of electronic synthesis, manipulation and/or montage, we can easily see that on one hand this milieu represents the main field of experimentation for musical avant-gardes worldwide in the period we are considering; and on the other hand, sound synthesis, manipulation and montage constitute the basic processes through which, since the 1920s, cinema has been questioning and creatively challenging ideas of realistic representation conveyed by recording. As James Lastra has shown, these notions are at the origin of the theoretical and technical debate concerning the birth of American talkies [2]; similarly, it is through new applications of these ideas, many coming from tape music and *music concrète*, that the notion of sound design was introduced into Hollywood practice during the 1970s [3].

At the same time, the discovery of electroacoustic sonorities matched “cultural units” (in Raymond Monelle’s terms [4]) that are profoundly characteristic of modernity and started to be rooted in the Western world in the late 18th century, and received a decisive enhancement in the late 19th century thanks to the introduction of recording technologies. Some would call them ‘archetypes’ of modernity, but since there is no room here to discuss such a complex issue, we can agree with the use of the more neutral tropes, among which Douglas Kahn identifies “vibration”, “inscription” and “transmission” [5].² Fictional (especially Hollywood) cinema crucially contributed to articulating these tropes within narrative structures, thus configuring a well-established set of audiovisual *topoi* that accumulated through long use. In an ideal itinerary stretching from Rouben Mamoulian’s *Dr. Jekyll and Mr. Hyde* (1931) to Alfred Hitchcock’s *Spellbound* (1945) and Fred Wilcox’s *Forbidden Planet* (1956), electroacoustic sound shaped the *topoi* of automation, psychological instability, perceptual alteration and catastrophe, and characterised genres such as science-fiction, horror, and thrillers.

My paper aims to describe the rearticulation of these *topoi* in Italian auteur cinema as a means of interpreting the transitional socio-cultural scenario of the 1960s—which involved a dramatic switch from initial euphoria at the technological and industrial discoveries introduced in the still rural economy of post-war Italy, to an increasingly

¹ All translations from Italian are provided by the author, except when specified.

² Kahn refers to them also as “figures of sound” [6]; Lastra adds “simulation” to these tropes [7].

radical disillusion. The category of alienation, inherited from Marxian studies, was re-introduced into the European intellectual debate in the 1960s, acquiring new nuances from its application to consumerism theories. Among theoreticians we can cite Jean Baudrillard, whose *The System of Objects* (1966) [8] constitutes a major reference for my work. In Italy, beside important contributions by philosophers and semiotic scholars—notably Umberto Eco, whose mass culture studies were ground-breaking [9], and Theodor W. Adorno, who had a profound influence on the musical avant-garde—the topic of alienation was thoroughly discussed in film journals, which can be viewed in Rick Altman’s terms as a crucial “pragmatic function” [10] in the cultural production of the 1960s. Different degrees of militancy and philosophical articulation notwithstanding, film critics were important filters between films and society, influencing both filmmakers and spectators; we get a glimpse of this in the character of the French critic in Fellini’s *8 ½* (1963).

The reconfiguration of *topoi* conveyed by electroacoustic sound can partially be recognised in Italian cinema as a reaction to audiovisual clichés coming from abroad, especially from Hollywood. Such clichés were well acknowledged in Italy by the 1960s, as several critics and composers testified. “By now”, wrote musicologist Luigi Pestalozza in reviewing *On the Threshold of Space* by Robert D. Webb (1956), “we are aware of a musical sci-fi vocabulary: we would recognise with our eyes closed the presence on screen of a martian spaceship entering planet earth’s orbit . . .” [11]. At the same time the homologation with clichés was interpreted as compliance with the American capitalist ideology:

When I hear that [experimentation with new sounds] is the new artistic and musical dimension of mankind, I wonder whether the alienation that can be so easily tracked within sci-fi movies and their music [. . .] does not consist in feeding the need of evasion, the anti-humanism, the mistrust in reality, the ‘titanic’ and irrational aspiration to cosmic dominion, or, worst, the amateurish enthusiasm for the discoveries of science [. . .] according to a cultural position that suffers from the dull aestheticisms of decadence [12].

The reaction can take on the form of irony, as is the case of filmmakers who work within the grids of film-genres. Mirroring the transition from American western to Italian spaghetti-western, horror filmmaker Mario Bava clearly had in mind Hollywood science-fiction productions of the 1950s when he directed his postmodern low-budgeted *Planet of the Vampires* (1965), which would eventually become a cult b-movie in the American VHS market during the 1980s. In terms of music, much like Louis and Bebe Barron’s involvement in *Forbidden Planet*, Bava secured the collaboration of electronic music pioneer Gino Marinuzzi Jr., who had invented the first modular synthesiser in Rome [13]. Again, Marinuzzi collaborated with Alberto Lattuada for *The Mandrake* (1965), a film adaptation of Machiavelli’s comedy, in which irony is deployed through the displacement of electronic music in a Renaissance setting— and Fellini’s conception of “upside down science fiction” [14] for *Fellini-Satyricon* (1969) led in a similar direction. Furthermore, irony can be used in such a way as to question the borders of genres and approach topics that are more closely connected to sensitive issues of the economic miracle.³ In *Omicron*

³ At the same time, the proximity through which audiovisual *topoi* of technology are configured in science-fiction and industrial films—not necessarily involving irony—is another promising subject of research that is addressed in this panel by Alessandro Cecchi.

(1963), Ugo Gregoretti used the audiovisual clichés of science-fiction, relying on electronic sound effects composed by Piero Umiliani, to amusingly depict the alienated condition of the working class—Omicron being an alien from planet Ultra who takes over (in a ‘man-in-black’ way) the body of worker Trabucco and tries to learn his habits in order to overcome the human race. Irony can become a structural element of newborn audiovisual genres, as in the TV musical opera *La fantarca* (1966, directed by Vittorio Cottafavi). The score by Roman Vlad is a sort of *opera buffa* stuffed with electronic and concrete sounds as well as visual effects, to depict the space-immigration of southern Italians on board a peculiar coffe-machine spaceship [15].

However, the reaction to American clichés could mean the creation of alternative models of narration. This is the case of the examples I will explore in the next pages. For the sake of consistency I choose to concentrate on a characteristic common to several auteur films of this period, that is, the use of pre-existent music. Yet, although there is a massive literature analysing the use of the classic and romantic musical traditions in auteur cinema, the same cannot be said of the use of avant-garde and experimental music. I argue that in this respect Italian filmmakers deployed one of the most interesting features of their own experimentation, wherein ‘unusual’ pieces of music were used as processes rather than objects, making it possible to destructure the textual organization of the scenes they are applied to. As a result, what appears to be for instance a ‘conventional’ use of electroacoustic sound, turns out to be a tool of hermeneutical interpretation of the whole film.

ANTONIONI’S ELECTRONIC DESERT, AN EXPERIMENTAL LABORATORY

Michelangelo Antonioni identified the spark that engendered the inspiration for *The Red Desert* (*Il deserto rosso*, 1964) in an encounter he had with Silvio Ceccato (1914-1997) [16]. Scientist, philosopher and linguist with a diploma in composition and a background as music critic, Ceccato was responsible for the introduction of cybernetics in Italy, after working on models of simultaneous translation in a task-force financed by the United States. With his huge written production in several scientific disciplines and his special fondness for arts, music and cinema, he is undoubtedly a fascinating personality for intellectuals and artists.⁴ Antonioni told of seeing one of the latest projects developed by Ceccato, consisting of a “mechanic newsman” (*cronista meccanico*), a never finished automaton that was supposed to be able to produce short descriptions of elementary physical phenomena [18].

What struck the filmmaker was the speed with which scientific research overtook the imagination of his generation, causing at the same time a dramatic gap with the younger generation, growing up within the economic miracle: “a child who has played with robots from his earliest years would understand perfectly; such a child would have no problem going into space on a rocket, if he wanted to” [19]. As Norbert Wiener, the founder of cybernetics, had foreshadowed, the nexus human-machine finally became central in the 1960s [20]. Yet Giuliana, the main character in *The Red Desert*, is unable to

⁴ Ceccato founded the ‘third cybernetics’, or logonics, which particularly investigated the dynamics of artistic creation and reception, with a privileged focus on music [17].

understand and control the complex messages conveyed by the automated reality surrounding her.

The neurosis I sought to describe in *Red Desert* is above all a matter of adjusting. There are people who do adapt, and others who can't manage, perhaps because they are too tied to ways of life that are by now out-of-date. This is Giuliana's problem. What brought on her personal crisis was the irreconcilable divide, the gap between sensibility, intelligence, and psychology, and the way life is imposed on her [21].

At the same time Giuliana cannot ignore those messages: "She is led to think that things surrounding her do not exist unless she notices them. She feels thus morally compelled to stare at things as much as she can, for she feels subtly guilty for their potential loss of reality" [22]. This neurotic condition is consubstantial to the consumerist society relying on automatism, as explained in those very years by Baudrillard.

The evolution of imagery is indicated by the passage from an animistic structure to an energetic structure: traditional objects used to be witnesses of our *presence*, static symbols of the body's organs. Technical objects have a different fascination, for they refer to a virtual *energy*, therefore they are no longer witnesses of our presence, but rather supporters of our dynamical image [23].

With respect to this framing, the contribution of the electronic music composed by Vittorio Gelmetti must be investigated under the profile of *poiesis*. Gelmetti and Antonioni worked together for about a month [24] manipulating pre-existent electronic pieces by the composer. These compositions belong to the first phase of his production, when he was interested in borrowing formal procedures from scientific research. For this reason they can be assimilated to the contemporary artistic current of *arte programmata* ("programmed art") [25]. The aseptic contour, literally experimental, of Gelmetti's electronic treatment of sound can lead us to the core of the film's inspiration. Therein, electronic sound does not hold merely dramaturgical functions, but becomes an object of observation per se, the sonorous manifestation of an automated existential condition. Antonioni is not looking for audiovisual situations where music works empathically (or non-empathically) with images, representing the main character's struggles; rather he seeks for acoustic profiles that sound 'objective', as if they were sonic extensions of Giuliana's psyche. Musical syntax is denied in this film, to the extent that sound events are transformed into acoustical phenomena to be observed. The main character is a sort of 'guineapig' of the experiment, whereas the spectator is the observer who can critically (not emotionally) identify with Giuliana and realize the sum of the factors involved in her neurotic condition (massive industrialization, pollution, limits of familiar relations, impossibility of physically abandoning herself to emotions, etc.).

It is only on a deeper level that the dramaturgical functions of electronic sound as well as the related audiovisual *topoi* can be recognised. They confirm previous assumptions and link, as many scholars have noted, the industrial to the psychological dimension.⁵ Let us consider two sequences:

⁵ Antonioni himself was the first supporting this idea [26]; for other critical analysis of Gelmetti's music for *The Red Desert*, see also [27] [28] [29]; for a general framing of Gelmetti's figure, see [30].

1. [0:14:22-0:18:51]⁶ The sequence when Giuliana shows a neurotic behavior for the first time starts with a sound abruptly awakening her in the middle of the night. Its synchronization with a toy robot, which was left on in her kid's room, soon spoils the sinister aura of the sound. Giuliana turns the toy off, but when the 'menace' seems placated, another sound, electronic this time, appears in the high register. It is clear that it is a signal, but the spectator does not know what it stands for. If we framed this episode in the topical grids of genre films, this sound could prelude some 'thrilling' development—and Giuliana seems indeed frightened by something she sees in the dark—; such a high-pitched tensional drone would then prelude some sort of musical resolution. Yet it is soon evident that this sound profile is destined to remain fixed, flashing, and obstinate throughout the whole sequence. In fact it is not a mere sound effect but a manipulation of Gelmetti's *Modulazione per Michelangelo*, a pre-existent composition (1963) [31].⁷

2. [1:05:26-1:08:16] Once again, the toy robot is framed in close up. The camera moves over Ugo's (Giuliana's husband) hand holding a test tube, then revealing him playing with his son Valerio on a toy microscope. Valerio's room is a proper 'toy laboratory', and the kid moves about amid the equipment quite confidently. Valerio does not struggle to integrate technology into his world, for it has been part of it since he was born. In his 'laboratory' he carries out simple operations of knowledge, which he shows to his mom through a *confutatio* process: "How much is one and one?" he asks Giuliana; "Are you kidding? It's two", answers the mother. But then Valerio pours two drops of liquid on a napkin and proudly asks "How many are there?" while his father smiles smugly (he is the mentor-accomplice of his son, thus configuring an imbalance in the family triangle and leaving Giuliana in the minority). Giuliana kisses the kid's front, but when she tries to hug him the same sound signal that we heard in the previous sequence cuts in, thus sanctioning the impossibility of emotionally joining with Valerio. The kid's play, as will be clear in the unfolding of the plot, will become more and more cynical and Giuliana will inexorably become a victim of it.

⁶ Time codes refer to the DVD edition: Medusa Video, Italy, 2004.

⁷ Despite the title, this composition has originally nothing to do with Antonioni. The title refers to Michelangelo Buonarroti and was conceived as ambient music for the exhibition of his project for the Florence fortifications at the Palazzo dell'Esposizione in Rome (1964).

THE SOUND OF MAN. FERRERI, TEITELBAUM AND THE BIOFEEDBACK

In a crucial sequence of *The Seed of Man* (*Il seme dell'uomo*, 1969) by Marco Ferreri, Cino and Dora, a young couple who have escaped from a nuclear apocalypse, watch one of the last TV broadcasts documenting the extinction of the human species [0:21:20-0:26:06].⁸ Desperate images (actually taken from Second World War footage) unfold accompanied by the *Va' pensiero* chorus from Giuseppe Verdi's *Nabucco*, while the TV speaker comments: "We ask everyone to be calm and have trust. Today, the decisions and the final word are up to the electronic brains that don't have the doubts and hesitations of a human being". The invocation of the Jewish people of the *Nabucco*, suffering and yet united in an extreme surge of pride against the invader, soon gives way to the wasted post-atomic landscape, a seashore in which Cino and Dora live as new Adam and Eve with no God nor Eden; their existence is shaken by the arrival of external events, such as the stranding of a whale corpse (naturally named Moby Dick by Cino) or the mysterious woman who threatens the balance of the couple until Dora murders her and cooks her meat for Cino, without him knowing. After surviving the pestilence caused by the huge carcass, Cino realizes that he wants a descendant, so he drugs Dora and inseminates her while she is unconscious. When Dora feels the first symptoms of pregnancy, Cino triumphantly shouts in delirium "I sowed! The seed of man has sprouted!". But, as he madly runs around Dora, the two suddenly explode. Perhaps he triggered a mine hidden in the sand.

Apart from some rare musical cues composed by Teo Usuelli and the already mentioned chorus by Verdi, the paramount sound presence in the film is a composition by Richard Teitelbaum: *In Tune* (1967). Member of the improvisation ensemble Musica Elettronica Viva (MEV) and resident in Rome throughout the second half of the 1960s, the American composer was working on musical applications of biofeedback techniques. Biofeedback is a method introduced in psychotherapy designed to gain awareness of and ultimately manipulate certain physiological functions by using remote technological equipments. In the words of pianist and composer David Rosenboom, it can become "a system . . . for production of music and visual phenomena by precise electrical information extracted from subjects who have learned conscious control of associated psychophysical states" [32]. Biofeedback compositions essentially operate a conversion of signals coming from a living organism (brainwaves, heart-pulse, breath, etc.) into audible or visible signals, which the composer/performer controls thanks to a voltage control synthesizer and (nowadays) digital devices. In biofeedback music the audience may have an important role in influencing the performer/source of the signals; that is why musical performance becomes a happening that matches individuals with the collectivity. Human sound, submerging the audience through loudspeakers and being influenced by audience's feedback, seems to become a material expression of those concepts of inner harmony, time and rhythm developed in musical speculation under the influence of oriental philosophies.⁹

⁸ The time codes refer to the DVD edition: Koch Lorber Films, US, 2008.

⁹ Teitelbaum spent a period of research at the Department of Psychology of the Queens College. There, he collaborated with Lloyd Gilden, an eclectic scientist who was also influenced by Zen.

The resonance created by time-locking one's consciousness with the cortically synchronized neuronal activity that the alpha rhythm apparently represents seems to significantly reinforce and increase that synchronous activity, and in turn produces positive effects on the consciousness; a feeling of "at oneness", of being in unison with Time, in harmony with Self [33].

The premiere of *In Tune* took place in Rome in the cathedral of San Paolo on 4 December 1968: the human source was the actress Barbara Mayfield with contact microphones (applied to heart and throat) and an EEG matched with a differential amplifier to catch her low frequency alpha brainwaves. Pre-amplified heart pulse and breath were stereophonically mixed, whereas brainwaves were plugged into the Moog's voltage control, which was itself used as a sound source. At the top of the chain there was the composer/performer. An expanded version of the composition was later presented at the American Academy in Rome, with a second actress and two tapes reproducing orgasm sounds and Tibetan vocal music [34].

Through its sound 'rendering' of the sub-conscious, *In Tune* seems to stand for a 'deterministic' response to cinema's fictional constructions of psyche. Ferreri, a friend of Teitelbaum's and responsible for his encounter with Antonioni (which would lead to the involvement of MEV in *Zabriskie Point*),¹⁰ probably followed up this intuition in using a recording of the composition (we do not know which one of the two mentioned) for his new film.

In Tune occurs five times in *The Seed of Man*, underpinning particularly long sequences [0:00:00-0:02:27 (opening titles); 0:08:49-0:21:12; 0:52:00-0:56:59; 1:33:53-1:35:16; 1:38:14-1:44:35]. Its sound features and the apparent lack of narrative consistency of its use (for instance, there are no evident synch points), make it difficult to distinguish it from environmental sounds, to the extent that it can be interpreted as a sort of acoustic 'pleating' of the soundscape. Most impressive is the film's ability to fully catch the semantic outcomes of the music while turning upside down its ecumenical nature (i.e. connecting human beings in an inner unison). In a post-atomic waste land, those sounds become disturbing echoes of an already extinct mankind as well as of a second apocalyptic big bang, surfacing from time to time as a lament, a plea or a menace: an acoustic pestilence that will blow over only with the last explosion, leaving room for the indistinct murmur of the sea. Verdi's invocation "*va' pensiero sull' ali dorate*" ("go, thought, on golden wings") is antithetically mirrored by *In Tune*, whose sound substance is indeed 'flying thought', but whose 'wings' are instead tainted and unveil human self-destructive vocation, with no possibility of redemption.

CONCLUSIONS

In attempting to write a history of sound in the arts, Douglas Kahn develops an interesting thesis, according to which 20th century musical avant-gardes generally adopted a common strategy to encompass non-musical sounds (i.e. noises) within the sphere of musical organization. In order to do this, they tended to abstract sound from its "worldly" associations in favor of a "musicalization", wherein sound could "conform materially to ideas of sonicity, that is, ideas of a sound stripped of its associative attributes, a minimally

¹⁰ This is what Teitelbaum stated to me in a conversation.

coded sound existing in close proximity to ‘pure’ perception and distant from the contaminating effects of the world” [35]. Conversely, “cinema was more amenable and less defensive” [36] and encouraged, due to its audiovisual nature, visual associations of sound. In terms of topic theory, it remains still an open issue to determine how far audiovisual *topoi* can be matched with musical *topoi*. In the field of electroacoustic music this is even more complicated, for no attempts have been made, as far as I know, to apply topic theory to 20th century avant-garde. Cinema, on the other hand, has often encouraged categorizing music usage in terms of typologies according to its narrative uses. Despite the contempt avant-garde composers and musicologists generally showed until the 1980s towards the simplistic categorizations of film music—e.g. atonal = noise = tension etc.—recent attempts to apply anthropological perspectives to cinema are quite promising: see, for example, Ilario Meandri’s use of Murray Schafer’s category of anti-music to interpret mainstream Hollywood [37].

My exploration of Italian auteur cinema is an invitation to investigate the poietic level of audiovisual artefacts in order to grasp the construction of *topoi*. The authors’ intentions (whether filmmaker, composer, sound technician, etc.) can either be documented or inferred and take on extraordinary value as privileged points of view for interpreting cultural units, whose understanding is the necessary premise to the continuous reconfiguration of *topoi* cinema has accustomed us.

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REFERENCES

- [1] Pontecorvo, G., 1963. “Il fantastico nel reale”. *Filmcritica*, vol. 14, no. 135-136, p. 367.
- [2] Lastra, J., 2000. *Sound Technology and the American Cinema. Perception, Representation, Modernity*. New York, Columbia University Press.
- [3] Corbella, M., 2010. “Sound Design. Ambiguity and Historical Necessity of a Fashionable Label”. *Worlds of AudioVision*, 1
<http://www-5.unipv.it/wav/pdf/WAV_Corbella_2010_eng.pdf>.
- [4] Monelle, R., 2006. *The Musical Topic: Hunt, Military and Pastoral*. Bloomington, Indiana University Press, pp. 23-26.
- [5] Kahn, D., 1992. “Introduction. Histories of Sound Once Removed”. In Kahn, D. - Whitehead, G. (eds.). *Wireless Imagination. Sound, Radio and the Avant-Garde*. Cambridge (MA), MIT Press, pp. 17-26.
- [6] Ibid.
- [7] Lastra, J., 2000, pp. 1-15.
- [8] Baudrillard, J., 1966. *Le système des objets*. Paris, Gallimard.

- [9] Eco, U., 1964. *Apocalittici e integrati*. Milano, Bompiani.
- [10] Altman, R., 1999. *Film/Genre*. London, British Film Institute, pp. 207-215.
- [11] Pestalozza, L., 1956. [review of *On the Threshold of Space*, Robert D. Webb]. *Cinema nuovo*, vol. 5, no. 86, p. 28.
- [12] Ibid.
- [13] Corbella, M., 2012. "Fonosynth". *The Grove Dictionary of Musical Instruments*, 2nd Ed., Oxford University Online (forthcoming).
- [14] Zanelli, D., 1969 (ed.). *Fellini-Satyricon* di Federico Fellini. Bologna, Cappelli, p. 43.
- [15] Corbella, M., 2010. "Musica ed effetti elettronici nella televisione di Cottafavi". In Aprà, A. - Bursi, G. - Starace, S. (ed.), *Ai poeti non si spara. Il cinema e la televisione di Vittorio Cottafavi*. Bologna, Cineteca, pp. 65-71.
- [16] Godard, J-L., 1964. "La nuit, l'éclipse, l'aurore. Entretien avec Michelangelo Antonioni". *Cahiers du cinéma*, no. 160; eng. transl. in *Michelangelo Antonioni. Ontological Architecture. The Poetics of Space*.
<<http://antonioni9.wordpress.com/2011/10/26/the-night-the-eclipse-the-dawn-november-1964/>>.
- [17] Zotto, G. (ed.), 1980. *Dalla cibernetica all'arte musicale*. Milano, Zanibon.
- [18] Nascimbeni, G., 1997. "Una macchina fantastica per Ceccato e Buzzati". *Corriere della sera*, 28 December <<http://www.methodologia.it/wp0.htm>>.
- [19] Godard, J-L., 1964.
- [20] Wiener, N., 1950. *The Human Use of Human Beings: Cybernetics and Society*. Boston, Houghton Mifflin.
- [21] Godard, J-L., 1964.
- [22] Antonioni, M., 1999. "1963. Ravenna. Durante le riprese de *Il deserto rosso*". *Comincio a capire*, Catania, Il girasole, p. 45.
- [23] Baudrillard, J., 1966, p. 151.
- [24] Comuzio, E., 1988. "Vittorio Gelmetti, avanguardia ma non dietro alle mode". *Cineforum*, vol. 28, no. 12, pp. 11-14.
- [25] De Mezzo, G., 2006. "L'edizione di *Treni d'onda a modulazione d'intensità* di Vittorio Gelmetti. Fonti scritte e documenti sonori". In Canazza, S. - Casadei Turronei Monti, M. (ed.), *Ri-mediazione dei documenti sonori*. Udine, Forum, p. 541.
- [26] Antonioni, M., *Fare un film è per me vivere: scritti sul cinema*. Ed. by Di Carlo, C. and Tinazzi, G., Venezia, Marsilio, p. 253.
- [27] Boschi, A., 1999. "La musica che meglio si adatta alle immagini"; suoni e rumori nel cinema di Antonioni", in Achilli, A. - Boschi, A. - Casadio, G., pp. 90-95.
- [28] Alunno, M. 2004. "Vittorio Gelmetti. Sperimentazione e cinema". *Civiltà musicale*, vol. 19, p. 193.
- [29] Calabretto, R., 2012. *Antonioni e la musica*. Venezia, Marsilio, pp. 137-162.
- [30] De Mezzo, G., 2003. *Scritti, colloqui e opere su nastro di Vittorio Gelmetti*. Ph.D. dissertation, University of Trento.
- [31] Di Carlo, C. 1964. *Michelangelo Antonioni. Il deserto rosso*. Bologna, Cappelli, p. 15.
- [32] Rosenboom, D., 1971. "Homuncular Homophony". In Rosenboom, D. (ed.), 1976. *Biofeedback and the Arts. Results of Early Experiments*. Vancouver, Aesthetic Research Center of Canada, p. 1.
- [33] Teitelbaum, R., 1974. "In Tune: Some Early Experiments in Biofeedback Music (1966-1974)". In Rosenboom, D. (ed.), 1976, p. 37.
- [34] Ibid., p. 43-45.

[35] Kahn, D., 1992, p. 3.

[36] Kahn, D., 1999. *Noise, Meat, Water. A History of Sound in the Arts*. Cambridge (MA), Mit Press, p. 11.

[37] Meandri, I., 2012. "From the Marvelous to the Anti-Music: Film Music Clichés and Formulas in an Ethnomusicology Perspective". *Music & Media 4th Study Group Conference*, University of Turin, June 2012.