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«When the mike came on stage, everything changes

The relations between musicians and technicians in live music»

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Me gustaria poder hablar en Español, pero lamento no poder hacerlo. Les ruego me disculpen. Muchas gracias por su comprensión, la próxima vez, espero conseguirlo.

As I am unable to speak Spanish, and as my English is very poor, as you will notice very soon, I must apologize to the English speaking colleagues, for the hard time they will have trying to follow me. I shall do my best to be understood... I hope I shall be clear enough for you manage to grasp my general meaning.

I am very honored to take part in this meeting, and I have to thank the organizers, especially Maria-Josepha Santos, who gave me the opportunity to present my work. I hope that my contribution will bring some new materials for the discussion. Let me say also how happy I am to be again in Mexico City. For an anthropologist of music, coming like me from the old world, Mexico is like paradise, because in this tropical town, music is everywhere. I saw in the subway old beggar-women singing strange laments, *a capella*, and asking travellers to give them money «in the name of God»; there are all these little stalls in the street which propose tapes; without speaking of the *mariachis*...

I propose to you to consider here for the topic «culture» the field of music, and for the topic «technology» the sound reinforcement.

Sound reinforcement is the application of amplification, one technique belonging to the electro-acoustic technical family, into music's production. The sound reinforcement is a technique specific of performing music. This technique is fundamental in the performing art industry: without it, we can no longer have these big shows where music megastars play for thousands of people. And these sort of shows are really an industrial field: it's the *audio-pro* industry, as we call in France this part of the *audio-visuel* products witch aren't for domestic using, as the materials specialized for broadcast, T.V., record studio or sound reinforcement. This market has its own big manufacturing companies, its small high tech companies, its services companies that fight in a world market.

I will propose a social anthropological approach to study sound reinforcement, whose objectives could be summarized up this way: understanding the social dimensions of technical facts, by studying what the techniques mean for those who invent and use them. It requires us to observing how techniques are made by humans, but also how they are thought and how they are said by them. Most of my works have concerned the world of music, and my last studies concerned a particular group inside the whole family of music producers: the stage sound technicians. By showing the questions that can be set from my ethnographical materials collected during fifteen years in fieldwork concerning french showbiz, I would first to consider this following point. In my fieldwork, I observed some strange representations and practices coming from technicians using high-tech, and who know a lot about their fundamental scientific principles. The technicians explain this by something like «Je sais bien, mais quand même...» that I can translate by «I known well, but...» as said the french psychanalyst Octave Mannoni about beliefs.

There are techniques so complex that we call them «new, high or advanced technologies». When we say this, we speak as if these techniques would be strangers to most of us, perhaps more, strangers to the human thought. Anthropological study of these techniques can find inside

them some magical practices and representations, for example in the language. That is to say there are also a symbolic dimensions in high-tech, as in every technical phenomena. Most of the times, this dimension is hidden in high-tech studies ; moreover, the technicist rationality explains it by using archaism or ignorance, topics of the «savage» people. In other terms, I ask myself whether, as an anthropologist, if I cannot find in these representations more than an irrational part of techniques, a logic that might be explained by culture.

As you have noticed, I used the term techniques rather than technology, and before going on in my quest, I have to explain why I do so. More of the times, techniques are considered as something apart from other social dimensions, and technology is limited as the applied science of scientific knowledge into industrial production. From the anthropological point of view, techniques are characteristic of human societies, and, to concieve technology as a science, it will be necessarily a social science. It's for this reason that French anthropologists choose to speak about «cultural technology».

But enough of theoretical considerations, now back to music and its producers. Let me begin by narrating a little story.

Once upon a time, there was a very angry old french singer, born at the beginning of the century, who was famous in the thirty's... I met him in the early eighteen's, and he was explaining music production to me before the so called «showbiz time». You have to know that today in French, what we call «music-hall time» is the period between the two world wars and showbiz time the period after. And the old singer said, remembering his time of glory: «When the mike came on stage, everything changed in the profession; yes, everything was over with the mike. As you know, I have created a lot of songs, as we said at this time. The singer who was the first to sing a song was considered as a creator. I had enormous hits with some of these. And I made records, many records. I was very popular, I sang on the radio very often. I sang in very big music-halls, in big theaters, the best ones. I was backed by big orchestras, more than twenty musicians. But never, you know, never, did I sing on stage with a mike, never. I was a true singer, I had a golden voice, I didn't need a microphone...» At the end, he added: «Now, it doesn't matter if the singer has no voice, it's the mike which makes the sound... When they began with mikes on stage, the singers lost the war, the technician took over the power in music.»

The moral of my story, ladies and gentlemen, it's that I always kept in mind the old singer's anger against the mike, while working for this lecture. And in the same time, I thougt about this joke very popular to day in the world of french sound technicians, that is «to make the sound is a enough good job, but it would be even better if there were no musicians and singers on stage...»

Since my meeting with the old singer, I have seen mikes differently and I looked at them, whenever there are. And everyday I have many opportunities to do so, because there are mikes everywhere now: in concerts, in churches, in political meetings, in university amphitheaters, even at the opera when it is performed in stadiums. Moreover, even if I can't see the mikes, when I hear music, on the radio, record or TV, I think that the voice of the singers and the sound of musicians has travelled through mikes before reaching my ears.

In their own way, the old singer's words and the technician joke examined the technical changes and their consequences on artistic production. The relations between technicians and

musicians, as you already noticed, are very complex ones! Between the artists who make music, and the technicians who make sound, it's seems there is a huge and ancient latent conflict.

Now, we are about to add more about this.

In music, like in other fields, the last fifty years were characterized by very big changes: new techniques, new production modes, new consumers products, news capital goods... In the period which one the old singer spoke about, the mike is the symbol of *machines parlantes* «the speaking machines», phonograph, radio or cinema : that period progress.

Fig. 1 and 2

As you will notice with these two archeological samples, witch are called in French *petits formats* or *feuilles volantes*. They were pages with the words and the music of a song, sold in the streets by «street singers», having sung them in a megaphone. At this time, the singers didn't use mike on stage.

The first use of a mike on a french stage has been in the middle of the thirty's, and its consequences were a big controversy. People spoke about "singer without voice", and they have gone on to do the same until today. The sound reinforcement took a long time before becoming a norm, and it was only in the sixties' that it became usual.

In English, the general term for the technique of sound amplification is sound reinforcement. In French, and also in Spanish, we call it *sonorisation*, or its abbreviation *sono*.

Most of the time, the term sound reinforcement is not used by the english-speaking concert's sound technicians, who prefer the term P.A., abbreviation for Public Address. French sound technicians also use the english term P.A., or they specify *sonorisation de spectacles*. By this way, they distinguish the «big» and «professional» sound systems that amplify the music on stage -the so called "live music"- from the other «little» sound systems that broadcast messages or recorded music in places like supermarkets, railway stations or night clubs. The men what make the sound are sometimes called by english-speaking «P.A. sound engineers», a term coming from the cinema, but more often, they are «sound mixers». In French, they are *sonorisateurs*, in Spanish *ingenieros de sonido*.

I am sorry I can't tell you what are the spanish-speaking sound technicians' specific terms. I have tried study this, but it seems that the spanish speaking sound technicians use only the american vocabulary. As a sound engineer coming from Cuba told me in a parisian latin-jazz concert : «A Spanish term for P.A. in latinos countries ? You may joke, it doesn't exist. P.A. doesn't exist in our countries, it comes from the States.» But sure it's not completely true, and that a fieldwork with the latinos indigenous sound technicians may bring a lot of news and interesting information about it...

We could find again in this a good sample of how the study of vocabulary and language's facts is a good way to analysis the diffusion of techniques, and their appropriation in the different cultures. «What can teach us the travelling words?» as said André-Georges Haudricourt, who is, with André Leroi-Gourhan, one of the main french pioneers of the cultural technology.

Let me now quickly explain how a sound reinforcement system works. The principle is converting sound waves into electrical signals. This signal is transmitted by wires, then finally changed back again into sound waves.

The elements of the sound reinforcement system are the following ones: mikes, a sound mixing desk (in French *console de mixage*, in Spanish *mezcladora*), power amplifiers, sound effects loud-speakers (in French *haut-parleurs*, in Spanish *alto-parlante*), and don't forget miles and miles of wires, for connecting all together. Between the music and the audience, we need mikes to catch the music, a mixing desk to mix the music sound, effects to process the sound, power amplifiers to supply to the loud-speakers that finally will deliver the sound of music. To get this system working, of course, we also need musicians and sound technicians.

For the first use of microphone in live music, where were only a mike, no mixing desk, a power amplifier, and two little «trumpet» loud-speakers, with the form of a megaphone. To the big contemporary systems, the logic of the technical evolution has only been the same, following a double objectives : first, giving the possibility of more people hearing music, second in better conditions. For this, we have had improvements of the sound captured, invention of the sound made, and transformation of the sound diffusion.

Fig. 3

Now, look together at this drawing, it's a technical schema, extracted from the *Sound Reinforcement Hand-book*, written by two american engineers for the industrial japanese company Yamaha.

Fig. 4

This example of a big contemporary sound system comes from a report published in a french sound professional magazine, and described the sound reinforcement of Paul Simon 1991 (ninety one) worldwide tour «The rhythm of the Saints» what was performed on States, Latin America, Europe and Asia. The sound was made by the reputed most important company in the word, which has branches in Europe, Latin-America, Africa, and Japan. There were seventeen musicians on stage, seventy-five (75) mikes. The mixing desk had eight-two (82) inputs coming from the stage. You have to know that there are more inputs than mikes, because the sound signal of some electronic and digital music instruments and the signal of sound effects -like electric guitars or keyboards- is directly taken, without mike. The mix was made on a mixing desk having fifty-six (56) tracks (in French *voies*, in Spanish *pistas*), with digital specially modified computer memory system. Seventy-two loud-speakers broadcast the sound all around in three hundred and sixty (360) degrees, and there are thirty-four (34) monitor loud-speakers on stage.

Now, lets look at each element.

First, the mikes, they are more and more, more and more little, more and more precise. On stage, the technical evolution of the mike has been first to separate it from its stand, with the hand mike invention. In France, we call it *micro baladeur*, because the singer can move on stage with it.

Fig. 5

Look to this advertisement for a mike, coming from a pro magazine: you will noticed this symbol of the hell. The text is telling about something as «a new invention for resolving this problem; when somebody sings *contre*, that in French has the polisemic meaning of near and against, and when the sound technician wants to reinforce the warm and the presence of the voice, he needs to manipulate the voice on the mixing desk, and so doing, takes the risk of introducing a lot of parasites.» You can also notice the technical and acoustical linguistic belonging of these terms: warm, presence, and parasites...

Last years, there has been a new main change, buy using the cordless mike (in French *micro sans fil*). They are high frequency mikes, abbreviation H.F., which use the technique of radio transmission. The singers wears a mike and a transmitter, big as a cigarette box, hidden under their clothes. The sound frequencies are picked up by antennas that are installed on either side of the stage, and limit the taking area of the sound. Rather than picking up the sound, the English-speaking technicians use the term «capture» and rather than *captage*, witch is the French broadcasting technical term, the French sound technicians speak always about *capture*. These terms belong to the hunting linguistic field.

There are miniaturized H.F. mikes, so little that they are invisible. They are ones used in opera. In this case, the singer wears a mike directly «ingrafted on his body», as was told me an well-famous opera singer.

Fig.6

By looking at these fieldwork pictures taken during the performance of *Carmen* opera in the biggest *Palais des Sports* in Paris, you can see the object, and how it's worn.

Now, the sound mixing desk: it has more and more inputs, more and more out-puts and auxilliaries, more and more switches (eight hundred for a «normal little one») that means for the sound mixer more and more possibilities of adjusting and modifying the signal.

Fig. 7

Sixteen tracks, in seventy-four (16/1974)

Fig. 8

Twenty-four to fifty-nine tracks, in eighty-eight (24-59/1988)

Now, sound mixing desk is beginning to be automated with digital controls, thus becoming a sort of *Machine Outil à Commandes Numériques*, a digital control machine.

We have to add the many special sound effects, also digital, installed in a rack; as frequency equalizer, reverb, delay, etc, which give the possibility of modifying the signal, and also, modifying the sound diffusion conditions, by giving to the diffusion some spatialisation effects. More, they may create an artificial sound space: for example, the sound mixer can choice having a cathedral sound in a concert performed in a stadium...

After, we have the power amplifiers, that are always very heavy, trust my experiences as participant observer!

Fig 9

«*Tout commence par là*», something like «it all begins this way», said the text of this advertisement, showing the gesture of a hand pluging a jack in a power amplifier...

Fig 10

Or more better, another one, «*La Puissance Divine*», something like «the God's Power»...

Finally, we have the loud-speakers, that have very poetical names: front of the house, castle, cabinet, cluster, crown... The technical trend is to miniaturized the speakers, what allows the «compacts» to leave their traditional place, in each side of the stage, that is called «front of the house's castles» in technical language (in French châteaux de façade), and to be rigged up over the head of the audience, in different place of the hall (French *salle*).

Fig 11

Loud-speaker «space series: reliability and perfection in full-power». No God here, just his message, thunder and thunder flashes, that is in the occidental myths the way for God showing his anger to human...

For allowing you to know all about the sound reinforcement, I have at last to explain the monitor sound system, that is the sound for the musicians on the stage. You already knew the main technical trend. I may add that in th P.A. early ages, the mixing desk was installed in side stage. There was not a sound technician. The mixing desk was manipulated on the stage by a musician, who has the double job of playing or singing and making the sound. This way of doing is still used today, by the popular dance orchestras, as we could notice by going and dancing here in *Bar León*... In this technical configuration, the loud-speakers are also on stage, so that the musicians heard the same sound that the audience. More latter, there is only on stage a little loud-speaker turned to the singer, to help him singing by hearing his voice and the orchestra.

In the middle of the seventy's, the mixing desk moved from the stage to the middle of the hall, and it began having special out-puts for the sound stage, with specific sound mix. So, there were two different outputs from the sound desk: ones are coming to the P.A. speakers and the others coming back to the stage place. In their stage monitor loud-speakers (French *retours de scène*), the musicians didn't have the same sound that the audience. Following the same technical trend I described before, there were more and more different mix stage outputs (one different for each musician). Then, another step happened in the middle of the seventies (70's): the invention of specific monitor sound desk. The monitor sound desk is installed on stage, and manipulated by a new specific technician -the stage monitor technician, who has only relation with the P.A. mixer by intercom. Sound reinforcement is now composed by a double systems: the P.A. one, sound mix for the audience and the monitor one, sound selection for the musicians.

I hope that you have managed to follow these technical explains, and that you haven't, as they say in my fieldwork, *tous les VU mètres collés dans le rouge* that can be translated by «all the Volume Units -abbreviation V.U.- meters stuck in the red». It means that the volume's indicator is blocked in the red part of its scale, indicating that the electrical level is abnormally high, and «that someone has very quickly to do something». In a metaphorical way, in the sound

technicians's language, it means to be in a hard situation. I hope it's not the same for you in this moment...

Now, try to understand the consequences of the sound reinforcement evolution about the relations between musicians and technicians.

In the first ages, sound technicians only took the music made in stage, and we spoke in this time about sound technique in term of "fidelity". The global result of the evolution is that, now, the sound technicians make the sound of the music. You are now able to perceive why there is a fight between the musicians and the sound technicians: it's just because the sound that the audience heard isn't the same that the musicians do and make. So, for a musician, the problem is that the sound can be more the result of the technician's work than the reproduction of his own musical expression... That is translated by this technicians joke: «It's always the same in P.A.: when they have a good sound, it is because the musicians are good; and when there is a rotten sound, it's because the sound technicians made a bad job...» We can underline the use of the term «rotten» for the sound (French *son pourri*), coming from the semantic area of living propriety (organic *matieres*). Rotten is a life transformation process, putrefaction, corruption and decomposition.

The most important for a musician, as they say, is to have the sound (French *avoir le son*). When a musician successes to find the sound, it becomes his sound, a sort of personal propriety. They speak about the sound of somebody. The use of the definite article "the" means that sound is for musicians something global, indivisible.

Having the sound is equivalent to have a good sound, but having a good sound is never used for a musician, it's only used for instrument or sound system. Having the sound, for a musician, is more than the result of a automatic technical acquisition obtained by a hard work on his instrument. It's this, but it's also more: it's possible that a musician hasn't the sound with a guitar that has a good sound, and that a very good musician has the sound with a very bad instrument. Having the sound is for a musician a sort of gift, a *don*, in the acceptation of Marcel Mauss. The *don* -the gift- gives to a musician the possibility to express something transcendent, some messages coming from the invisible world. Having the sound belongs to the area of feeling, inspiration.

Fig. 12

We can understand that is the object of the latent conflict, between musicians and musicians, throughout the making of the sound: it is the control of the sound production, and the power about it. Because made the sound is an human transformation of a expression coming from the invisible world, it's why to power sound is really a big affair, that bring us immediately into the area of myths and into the sacred dimension.

We often noticed during this quest, how many are the terms using by the sound technicians that belong to the area of the hunting and the domestication process. If the musicians have the sound, which is from the field of nature, the technicians make the sound, they catch it, and so one... That is the field of technique, culture.

In the representations, the sound is always at the same time a life phenomena and an invisible one. These representations can light how «making» the sound has a cultural dimension: by following Levi-Strauss's sentence about food, before being «good to heard», a sound has to be «good to think».

I have a special thought for the sound technician who gave me voice.

I thank you very much for your kind attention. Muchas gracias por su atención.

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«… When the mike came on stage, everything changed…» The relationships between musicians and technicians in live music

Since its emergence in the thirty's, the sound reinforcement technics underwent considerable changes. By studying the changes, we find a conflict between artists and sound technicians. The author shows how the analysis of emic representations of technology and its matter (the sound) allows to restituate in the field of culture a conflict that at first sight appeared to be a labour conflict of a tecnical nature.

Keywords: ethnology, Public Adress, innovation, technology, representation, magic, music, performance, culture, microphone

«… Quand le micro est arrivé sur scène, tout a changé…». Les relations entre artistes et sonorisateurs dans le spectacle

Depuis son émergence dans les années trente, la sonorisation de spectacles a connu d'importants développements. L'étude des changements apportés par l'emploi du micro sur scène révèle un conflit entre les artistes et les sonorisateurs. L'auteur montre comment l'analyse des représentations émiques de la technique et de la matière transformée (le son) permet de resituer dans le champ de la culture un conflit qui semblait à première vue un conflit catégoriel de travail.

Mots-clefs : ethnologie, sonorisation, innovation, technique, représentations, magie, musique, spectacle, culture, microphone

Bibliography

BALFET Hélène (ed.)
1991 *Observer l'action technique. Des chaînes opératoires, pourquoi faire?*, Paris, C.N.R.S.

BOURDIEU Pierre
1977 «La production de la croyance, contribution à une économie des biens symboliques», *Actes de la Recherche en Sciences Sociales* 13

BRAUDEL Fernand
1979 *Civilisation matérielle, économie et capitalisme XVe-XVIIIe siècle*, Paris, Armand Colin (3 vol.)

BROMBERGER Christian
1979 «Technologie et analyse sémantique des objets. Pour une sémio-technologie», *L'Homme* XIX 1: 105-140

CARTIER Michel (ed.)
1983 *Le travail et ses représentations*, Paris, Editions Archives contemporaines

CORIAT Benjamin
1983 *La robotique*, Paris, Repères

CORIAT Benjamin , Eliane DAPHY & al.
1988 *La productique en Ile-de-France : innovations, recherche et transferts de tetchnologie vers les PMI*, LAREMI-CRIIF/CRITT Méca-Conseil Régional Ile-de-France

DAPHY Eliane & Pierre MAYOL (eds.)
1987 *Les musiques des jeunes*, Paris, C.E.N.A.M.

DAPHY Eliane
1985 « Les caractéristiques du terrain rock : objet et problématique », Jacques PERRIAULT (ed.), *Rock ou micro-informatique ? Enquête sur des adolescents du treizième arrondissement de Paris*, Paris, I.N.R.P. (coll. « Rapport de Recherche ») : 49-75

1987 « La technologie nouvelle est arrivée : l'exemple de l'opéra au Palais Omnisports de Paris Bercy (P.O.P.B.) », *Actualité de la Scénographie* 35 : 20-28

1987 « Je l'ai vu dans *Usine Nouvelle*. Pour une analyse de la presse professionnelle », *Les P.M.I. face à l'automatisation*, Paris, Ministère de la Recherche et de l'Enseignement Supérieur et Association Française de Robotique Industrielle : 65-67.

1988 « Sonoriser l'Opéra : la technique invisible », Vibrations 5 : 145-162.

1991 « Le Palais Omnisports de Paris Bercy (P.O.P.B.) : techniques du spectacle, spectacle de la technique », *Les Publics des grandes salles polyvalentes*, Anne-Marie GOURDON (ed.), Paris, C.N.R.S. (coll. « Arts du spectacle. Spectacles, histoire, société ») : 119-35

1993 « Le micro à l'église », *Ferveurs contemporaines : Textes anthropologiques offerts à Jacques Gutwirth*, Colette PETONNET et Yves DELAPORTE (eds.), Paris, L'Harmattan (col. «Connaissance des hommes»] : 57-74

DAPHY Eliane & Marie-Françoise RAVEYRE
1989 « Nous on est du métier. A propos des représentations du travail », Martine SEGALEN, Claude MICHELAT et Marie-Anne COADOU (eds.), *Anthropologie sociale et Ethnologie de la France* , Louvain-La-Neuve, Peeters : 677-686

DAPHY Eliane & Colette PETONNET
1985 « Rêflexions sur l'acculturation », *Vibrations* 1 : 28-38.

DAVIS Gary & Ralph JONES
1987 *Sound reinforcement handbook*, Milwaukee, Hall Leonard Publishing Corporation for Yamaha Music Corporation

DUMUR GUY (ed.)
1965 *Histoire des spectacles*, Encyclopédie La Pléiade, Gallimard, Paris

DURKHEIM Emile
1930 *De la division du travail social*, Paris, P.U.F.

DURKHEIM Emile & Marcel MAUSS
1903 «De quelques formes primitives de classification: contribution à l'étude des représentations collectives», *Année Sociologique* 6: 1-72

FREUD Sigmund
1988 *Le mot d'esprit et sa relation avec l'inconscient*, Paris, Gallimard NRF [1905, *Der witz und seine beziehung zum unbewussten*]

GODELIER Maurice
1984 *L'idéel et le matériel. Pensées, économies, sociétés*, Paris, Fayard, 349 p.

1987 «L'analyse des processus de transition», *Informations sur les sciences sociales* 26 (2): 265-283

1990 «L'objet et les enjeux», Maurice GODELIER (ed) *Transition et subordination au capitalisme*, Paris, MSH : 7-56

1991 «Travail», BONTE Pierre & IZARD Michel (eds), *Dictionnaire de l'anthropologie*, Paris, P.U.F.: 717-720.

GUTWIRTH Jacques & Colette PETONNET (eds)
1987, *Chemins de la ville. Enquêtes ethnologiques*, Paris, Editions du Comité des Travaux Historiques et Scientifiques, coll. « Le regard de l'ethnologue ».

GUTWIRTH Jacques (ed.)
1982, « Etudes d'anthropologie urbaine », *L'Homme* 22 (4)

HAUDRICOURT André-Georges
1968 «Linguistique et ethnologie»,, Poirier J. (ed.), *Ethnologie générale*, Paris, Gallimard: 288-316
1987 *La technologie, science humaine. Recherches d'histoire et d'ethnologie des techniques*, Paris, Editions de.la Maison des Sciences de l'Homme

HIRAGA Jean
1984 *Lexique de l'électronique anglais-français*, Paris, Fréquences

HUBERT R & Marcel MAUSS
1902-1903 «Esquisse d'une théorie générale de la magie», *L'année sociologique* tome VII, [1950, *Sociologie et anthropologie*, Paris, P.U.F.]

IZARD Michel & Pierre SMITH (eds.)
1979 *La fonction symbolique. Essais d'anthropologie*, Paris, Gallimard

LEROI-GOURHAN André
1964 *Technique et langage. Le geste et la parole.I* , Paris, Albin Michel

1965 *La mémoire et les rythmes. Le geste et la parole.II* , Paris, Albin Michel

1968 «L'expérience ethnologique», POIRIER Jean (ed), Ethnologie générale, *Encyclopédie La Pléiade*, Paris, Gallimard: 1818-1825

1971 *L'homme et la matière. Evolution et techniques I*, Paris, Albin Michel

1973 *Milieu et techniques. Evolution et techniques II*, Paris, Albin Michel.

LEVI-STRAUSS Claude
1962, *La pensée sauvage*, Paris, Plon

1964, *Mythologiques 1 Le cru et le cuit*, Paris, Plon

1983, *Le regard éloigné*, Paris, Plon

MANNONI Octave
1969 «Je sais bien, mais quand même», *Clefs pour l'imaginaire ou l'autre scène*, Paris, Seuil

MAUSS Marcel
1950 *Sociologie et anthropologie*, Paris, P.U.F [1ére éd.1950]

1968 «Les techniques et la technologie», *Œuvres 3. Cohésion sociale et divisions de la sociologie*, Paris, Minuit: 250-256

1969 *Représentations collectives et diversité des civilisations*, Paris, Minuit

MORGAN Lewis H.
1877 *Ancient Society; or, researches in the lines of human progress from savagery through barbarism to civilisation*, Chicago, Kerr [1970, *La société archaïque*, Paris, Anthropos]

PERRIAULT Jacques
1981 *Mémoires de l'ombre et du son: une archéologie de l'audiovisuel*, Paris, Flammarion.

1989 *La logique de l'usage. Essai sur les machines à communiquer*, Flammarion

PETONNET Colette
1982, « L'observation flottante », *L'Homme* XXII 4.

PETONNET Colette & Michèle PERROT (eds.)
1982, *Ethnologie Française* XII/2 : « Anthropologie culturelle dans le champ urbain »

ROUSSIN Didier, Madeleine JUTEAU & Alain BOUCHAUX
1992 *L'argot des musiciens*, Castelnau-le-Letz, Climats

SCHAEFFER Pierre
1977 *Traité des objets musicaux. Essais interdisciplinaires*, Paris, Seuil [1ére éd. 1966]

TYLOR Edward
1871 *Primitive culture*, London, H. Murray [1876, La civilisation primitive, Paris, Reinwald]

VAN GENNEP Arnold
1908 «Essai d'une théorie des langues spéciales», *Revue des Etudes ethnologiques et sociologiques de Paris* [1968, Republications Paulet 1: 1-11]