



**HAL**  
open science

## Cinema as Social Knowledge. The case of The Beatles in the Studio

François Ribac

### ► To cite this version:

François Ribac. Cinema as Social Knowledge. The case of The Beatles in the Studio. Oxford University Press. The Oxford Handbook of Sound & Imagination. Volume 1, , pp.565-585, 2019, 1. hal-02423895

**HAL Id: hal-02423895**

**<https://hal.science/hal-02423895>**

Submitted on 26 Dec 2019

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

## Cinema as Social Knowledge. The Case of The Beatles in the Studio<sup>1</sup>

François Ribac

*in* Mark Grimshaw, Mads Walther-Hansen & Martin Knakkegaard eds. *The Oxford Handbook of Sound & Imagination*. Oxford University Press (forthcoming)

### <1>Introduction: The Beatles at Abbey Road as a New Paradigm

It has been generally accepted that The Beatles and their team invented a new way of producing music at Abbey Road Studios. In the mid-1960s, they started to compose music and to experiment with multitrack tape recorders in the studio instead of recording songs that had been rehearsed beforehand. Some of their sound and maintenance engineers, such as Norman Smith, Geoff Emerick, Ken Scott, and Ken Townsend, developed a series of new techniques and devices, while their producer, George Martin, in his orchestrations, drew upon instruments and sounds that the band did not itself play. Their innovations deeply changed the production of music in recording studios, the norms of popular music, and, more generally, the functioning of the music industry. The recording process became a decisive part of artistic creativity, even for musical genres outside of rock. If the Brill Building<sup>2</sup> had influenced The Beatles in many ways, its division of labor was partly obsolete. Far beyond the Anglo-American musical business, rock music (and often bands) became the dominant paradigm of popular music by the end of the sixties. With the advent of hip hop in the 1970s, and house music and the dissemination of the home studio in the 1980s, The Beatles' techniques spread even more. Nowadays, popular music usually means making music with sound samples, machines, and effects, following a timeline similar to The Beatles' techniques. But however accurate this story-telling may be, it has (at least) two disadvantages: first, it explains these metamorphoses through the genius of a team and the magic of a place (Abbey Road Studios) and neglects the intake of other bands like The Mothers of Invention or The Beach Boys or record producers like as Phil Spector or George "Shadow" Morton;<sup>3</sup> and, second, it considers The Beatles' innovations only through the lens of recording production and popular music studies. In this

chapter, I would rather highlight a social fact that culturally promoted the innovations at Abbey Road and influenced The Beatles: the cinema. This influence will be shown in at least two ways: on the one hand, the methods and temporality of the cinema, its convention, its different types of craftsmanship, and even its use of division of labor inspired The Beatles team; and, on the other hand, cinema also caught the attention of British teenagers born in the forties, particularly American movies with rock and roll acts. Hence, the conventions of cinema introduced The Beatles and their contemporaries to a non-naturalistic use of sound. Of course, other factors such as radio, the distribution of Dansette turntables, and the generational gap made the advent of The Beatles' techniques possible but, in highlighting the influence of the cinema on The Beatles and their sound, I would like to emphasize the *materiality of sound imagination* and to consider The Beatles innovations as a social process, paying attention to tacit knowledge.

———There are (literally) countless works devoted to The Beatles, to their history and influences, and to their legacy. As far as concerns studies of the band's work in the studio, researchers can draw, on the one hand, on the memories of the protagonists who were directly involved and, on the other, on (semi-) academic works.

The testimonies are of course an extremely rich resource, first and foremost among them the autobiography of George Martin, the band's producer and head of A&R at Parlophone to which he recruited The Beatles. In his memoirs (Martin and Hornsby 1979), Martin describes the metamorphosis that took place over the course of a few years at Abbey Road. The book describes the constant improvement of the quality of Lennon and McCartney's compositions, the rivalry that pushed them to surpass themselves, the contribution of Martin's orchestrations, the band's growing readiness to experiment, and the process by which he was made to relinquish his power at precisely the time when his contribution to the band's sound was becoming more and more flagrant. Martin does not forget to mention the prowess of the technical team that was constantly testing new procedures, cobbling together new tools (a number of which have since become standard items),

and responding to the string of challenges set to them by the producer and the musicians: inventing the direct injection box (DI) that can replace the microphone that is usually set up in front of the guitar's amp, slaving and synchronizing the motors of two 4-track tape recorders to get a 8 tracks, and so forth. This process, the protagonists involved, and the tools and instruments used have been meticulously recorded by Babiuk (2002) and Ryan and Kehew (2008). The testimonies of the sound engineers at Abbey Road are also extremely useful. Thus, Geoff Emerick (Emerick and Massey 2006, 12–14) describes how, during his first recording session as chief sound engineer, he suddenly had the idea of placing the microphones directly in front of the drum kit, and not at a certain distance, as was the usual practice. Thanks to this *close-up* effect, the toms in Ringo's drum kit pulsate in a completely new way in the introduction to the piece "Tomorrow Never Knows," from the album *Revolver* (1966). As for Ken Scott (another engineer), he perfectly describes how sound experimentation was intensified during the *White Album* sessions. Generally speaking, his testimony gives a good picture of the fundamentally collective dimension of this venture (Scott and Owsinski 2012, 20–82). The documentary *Anthology* (The Beatles 1995), and the book bearing the same title (The Beatles 2000), both of which were produced under the control of Harrison, Starr, and McCartney, offer the musicians' version and all of these contributions can be cross-examined against the detailed record of the band's recording sessions made by The Beatles' "official" historian, Mark Lewisohn (1989).

Based on some of this material, and on other research, the critic MacDonald (1994) has analyzed each piece recorded by the band, Moore (1997), Everett (1999; 2001), Julien (2009), Womack and Davis (2006), and Pedler (2010) have put forward musicological, analytical, sociological, and cultural analyses of The Beatles "revolution," and Zak (2001) and Moylan (2006) have reflected on the band's contribution to musical production, while Southal (1982) and Massey (2015) have documented the history of Abbey Road and of English rock studios.

Generally, these major bodies of work are devoted to reconstructing the various players,

interactions, objects, and technologies that enabled The Beatles' music to be produced. They often use three paradigms of analysis:

- The technological paradigm, according to which *Sgt. Pepper's Lonely Hearts Club Band* was made possible by the advent of multitrack and rerecording
- The individual paradigm, according to which the glory of The Beatles can be explained by the genius of the band members, and in particular of McCartney, and by the inventiveness of their sound engineers and the audacity of their producer
- The historicist paradigm (which often combines the two previous ones), according to which The Beatles moment was the result of a continuous development in rock music and technology.

In addition, many of these works attempt to contextualize The Beatles' music and innovations, either within the history of musical production and recording studios or within the history of ideas and societies.

While I do not want to call into question the importance and relevance of these various approaches, I would like to show that it is also possible to examine The Beatles' studio work by referring to a space other than that of (popular) music – in this case, cinema. This will lead me first to listing the various structures through which cinema and its conventions can have had an influence on The Beatles. I will then compare the methods employed in *Abbey Road* to those used in cinema. And, finally, I will reflect on the contours of these transfers of knowledge and what theoretical consequences can be drawn from them.

## <1>Talking Movies

In the mid-1920s, the Hollywood firm Warner Bros. decided to start producing talking movies (talkies). The aim of this gamble was to establish the company as a major player in the economy and production of cinema, and it was based on the conviction that audiences were ready to turn to a new technology and to new types of films. In order to achieve this, Warner acquired the patent for

the Vitaphone system designed by Western Electric, the AT&T research laboratory set up by Graham Bell. Using electric motors, this system made it possible to synchronize a phonograph with a film camera during the shoot and with a projector inside movie theaters. This system relied on the principle that the sound was recorded and broadcast using a specific device (a phonograph) and specific media (the discs). In order to impose this major development on the other big Hollywood studios, and to win over the public, Warner developed a global strategy: it invested in research and development (the Vitaphone patent), it acquired a network of movie theaters in the USA in order to be able to distribute its films, and, on the production side, it ensured it had the support of huge stars like the actor John Barrymore for the film *Don Juan* (Crosland 1926) and the singer Al Jolson in *The Jazz Singer* (Crosland 1927).

While, in *Don Juan*, the action was accompanied by a score and a few sound effects, in *The Jazz Singer* audiences were able to hear the voices of the actors and a series of musical acts.

The film met with immediate success. Other systems for synchronizing sound and image had already been tested and used in the past, but the reliability of the Vitaphone, Warner's economic, marketing, and artistic strategies, and the success at the box office of its first films gradually forced the entire industry to move into talkies (Bordwell et al. 1985; Crafton 1997; Augros and Kitsopanidou 2009).

However, Warner's innovation was no *tabula rasa*. First of all, its new technological attraction did not require the destruction of the cinematographic industry – on the contrary, it relied on its infrastructures, on the distribution circuits that had already been established, and on the existence of a vast audience. Furthermore – and this is a crucial point – the relationship between sound and image had existed before the invention of talkies, both culturally and technologically. Be it in the USA or elsewhere, silent movies were never really silent: musicians and/or vocalists would accompany (and/or announce to passers-by) the films as soon as cinema was born. While the music was mostly performed live – by pianists, narrators, singers, and orchestras – phonographs were used

at times, or even combined with a live performance. In the early twentieth century, phonoscènes consisted precisely of short musical sketches in which live singers would interpret the tunes that were performed by singers on screen. In other words, if for instance the character of Carmen was singing (silently) on screen, a real singer was singing the aria in question in front of the screen for the audience to hear. Sometimes, some of these vocalists would lip sync what a phonograph was playing behind the screen (see Kracauer 1973; Lastra 2000; Abel and Altman 2001; Pisano 2013). Likewise, films could be accompanied by speakers who would dub the voices of the actors, comment on the action during the screening, and sometimes even play an instrument (see for instance the novel from Hofmann 1990 about a “film explainer”; Kember 2013, 17–37; Bottomore 2013, 55–71). In short, the fact of adding music or comments to filmed actions, of superimposing music and dialogues and even synchronizing sounds and images was already familiar to audiences, all the more so given that these practices themselves were borrowed from stage shows and in particular from the world of vaudeville, in which music would accompany the Master of Ceremonies and the various skits he was presenting: dance, mime, theater scenes, comedians, circus, magic, and so on. More generally, a combination of music and talking set the rhythm of domestic life and the public sphere in early twentieth century North America: sermons were chanted in church, nursery rhymes were recited during children’s games, music was used on markets, in meetings, and so forth.

This cognitive continuity had an industrial counterpart: just as Hollywood had adopted the division of labor that characterized theater, talking movies incorporated pre-existing practices, skills and networks, particularly for the production of musicals, which started as early as 1929. The stars, performers, technicians, instrumentalists, and editors were recruited by the companies involved, while the works, history and mythologies of Broadway comedies and vaudeville provided material for the films. To put it bluntly, Hollywood fobbed off film audiences with warmed-up Broadway shows. (Regarding this continuum between the stage show and cinema industries, see for instance

Bordwell et al. 1985; Portes 2004; Singer 2001).

## <1>Sound Editing and Manipulation in Hollywood

When almost all of the film industry decided to move into talkies, a competition started between the Hollywood studios on the one hand, and electrical firms on the other, as to who could best improve sound/image synchronization. As with each new development, the challenge was to create technologies that would appeal to the public, and to impose one's own technology on the market. As early as the late 1920s, several sound-on-film systems (like the RCA Photophone) ended up supplanting the Vitaphone (sound-on-disk). Based on the principle of recording sound using a picture camera, and then placing the image and sound on the same medium, optical systems were easier to handle, above all when it came to editing. From around 1928 to 1931, the technical teams of electrical firms and the Hollywood studios mainly devoted their efforts to improving live recording systems, particularly in order to reduce noise on sound tracks, and to optimizing image/sound synchronization. In a pioneering article, Lea Jacobs (2012) gives an account of the process by which the manipulation of sound gradually changed its nature; it is her work on the development of rerecording in Hollywood that provides the main basis for the rest of this section.

During the first few years of the production of talkies, live sound recording during the shoot was the norm. Even lip syncing, which became a standard procedure for musicals from 1929, was produced in this way. Performers would thus record their singing and/or tap-dancing routines live on set, and then lip sync with the recordings in front of the cameras (Salt 2009, 209). Likewise, when the dialogue in a sequence was accompanied by music, the actors and musicians were recorded simultaneously during the shoot, which required pre-setting the sound level of each group before recording, and mixing these sounds live. Similarly, different types of sounds (dialogues, instrumental music, sound effects) were played after each other rather than superimposed on each other. If, for some reason or another, it was necessary to add a sound to a sound sequence that had



already been recorded, both elements would be broadcast over loudspeakers and rerecorded live onto a new track. This work was carried out in dubbing studios, small rooms specially designed for this type of “live rerecording.” This preference for live recording was rooted in the restrictions imposed by the equipment available since numerous technical problems, like the level of noise on the sound tracks and the difficulty of controlling the volume during takes, made it difficult to manipulate sound in post-production.

However, circa 1931, productions acquired new tools that allowed them to reduce noise and distortion levels, to modulate the volume and equalize the sound, and to utilize more sensitive and easily transportable microphones, new mix desks, editing tables equipped with viewers, systems that were able to synchronize and manage several sound sources, and filters. The way people thought about sound changed gradually, the use of editing and rerecording was intensified, and more and more time was devoted to these activities during post-production. Some companies specialized more in editing. The film reel was spliced so that fragments could be inserted into it – using tape – for example in order to replace wrong notes with better ones recorded during an alternate take. The film would alternate between different sound environments by sticking one behind the other and so on. Some teams even put together types of loopers, devices through which a sound sequence was played in a loop in order to create a continuous sonic environment. Other companies (in particular MGM and RKO) displayed their preference for rerecording. Different sounds were mixed together (ambient sound, a dialogue and accompanying music, for example), sounds recorded during the shoot were replaced with sound effects that emphasized what the camera was showing (for example the engine of a car speeding off), different takes from the same sequence were combined in order to best control and regulate the dynamics of the sound in the scene, and so forth. Jacobs notes that, for the film *The Silver Streak* (an RKO production from 1934, directed by Tommy Atkins), no less than 6 different tracks were used for the final mix. According to Jacobs (2012, 20), by 1932 all MGM productions used rerecording and favored processing the

sound after the shoot. Even if they were recording an orchestra and a singer live, technicians were careful to ensure – in particular by positioning the microphones close to the sources of sound – that each element could be rerecorded later, including in fragments. It also became common practice for vocalists to use headphones to (re-)record some sections of their interpretations after the shoot. As a result, techniques and tools were developed that allowed for the sound to be isolated as much as possible, both on set and during takes in a studio. As early as the mid-1930s, post-production in the field of sound, and the planning ahead it required, became as crucial as it was for the image, and recording before and after the shoot was increasingly favored. This change went hand in hand with an expansion of the spaces dedicated to sound engineers, with the development of editing tables that allowed the combination and mixing of numerous tracks, and with the specialization of technicians working with sound: editors, mixers, boom operators, Foley artists, sound library managers, copyists, for example.

While a portion of these practices were aimed at heightening the realism of the onscreen action, others strayed away from this goal. During post-production, editors started to insert acoustic perspectives that did not necessarily correspond to the framing of the image: hearing the voice of a character up close despite them being filmed at several meters' distance, adding in music during a dialogue or a scene without dialogue, replacing the sound of a piano played by an actor with that of an orchestra as early as the second verse of the song, and so on. By freeing themselves from the diktat of live recording and real time, Hollywood producers, directors, composers, and technical teams created a new imaginative sonic universe and developed *ad hoc* techniques (rerecording and editing) and tools in order to support these practices. We should note that this change coincided more or less with the adoption by most Hollywood majors of the producer unit system (Bordwell et al. 1985, 320), an organizational method characterized by the fact that small production units were entrusted with the management of a package of films, and which led to much emphasis being placed, in particular, on pre-production and on using very detailed scripts in order to anticipate

which tasks would need to be carried out, what skills would be needed, and how to plan the work schedule. We might put forward the hypothesis, that this way of organizing production, which was more flexible and certainly less centralized than the one that dominated in the twenties, promoted the creativity of technical and artistic teams as far as sound was concerned.

As Jacobs notes (2012, 6), this new relationship to sound nevertheless remained limited to the cinematographic field and was barely echoed in the professional world of broadcasting or in the nascent musical industry. In fact, it was only with the introduction of the tape recorder in the USA after World War II that the use of editing became widespread among North American radio stations (in particular at the instigation of Bing Crosby), and then with the boom of rock and roll in the mid-1950s that the artistic and technical teams at record companies started to break away from the diktat of live recording and made increasing use of rerecording, editing, and “non-realistic” sound effects (See Crosby and Martin [1951] 2003, 151–153). As a result, it does not seem possible to establish any direct line of descent between the rerecording techniques developed in Hollywood in the 1930s and the productions of Phil Spector or George “Shadow” Morton in the USA in the early 1960s and then, a few years later, those of The Beatles team in the UK. In a similar vein, while the technological principle on which the sampler is based was already foreshadowed by the looper of Hollywood studios, the world nevertheless had to “wait” for the early 1970s and the appearance of rap for the looping of a sample to become a generalized practice and the trademark of a particular musical genre.

In this process, the question that arises is the following: how did Hollywood sound conventions and rerecording techniques spread to other areas? In what ways they were disseminated? It seems, in fact, that it was first and foremost the films themselves that carried out a large part of this work.

## <1>The Frames of the Talkie Experience

Throughout the 1930s, 1940s, and 1950s, the Hollywood talkies naturalized their sonic conventions all over the world, all the more so given that other national film industries in turn adopted them. Let us take one example of these conventions.

The Western *High Noon* (Zimmermann 1952) opens with a shot of a cowboy rising upon suddenly seeing a horseman approach. Once this latter character has joined him, the film's opening credits start, at the same time as we hear the song "Do not forsake me, oh my darling" sung off-screen by Tex Ritter. While the title of the film, the names of the actors, screenwriter, producer, and composer (Dimitri Tiomkin) are scrolling down the screen, the two actors are shot in a close up. But we do not hear what they are saying to each other, no more than their movements through the grass or those of their horses – just the song. As we will discover over the course of the story, its lyrics (by Ned Washington) evoke the inwardness of the main character who is played by Gary Cooper, an example being: "I do not know what fate awaits me. I only know I must be brave."

Let us take another example: *Dial M for Murder* by Alfred Hitchcock (1954). In one of the film's central scenes, Grace Kelly receives a phone call in the middle of the night. She walks over to the telephone, and at the moment when she picks up the receiver, a harrowing and dissonant music starts to play. Grace Kelly obstinately repeats: "Hello? Hello? Hello?" but her caller remains silent. Of course, the symphonic orchestra playing the score by Dimitri Tiomkin is not sitting in the apartment in which the scene takes place. This non-diegetic music serves to intensify the sense of suspense and to warn the audience that a mortal danger is threatening the actress. And indeed, a man hidden behind a curtain silently creeps up to Grace Kelly and seizes her from behind in order to strangle her. The cries and convulsions of the actress then combine with the flourishes of the music. When Kelly grabs a pair of scissors that are lying on the table and plants them in her attacker's back, her gesture is amplified by a *fortissimo* from the orchestra, which returns with each

of the man's spasms and accompanies him as he falls to the ground. Then, the volume of the music is sharply reduced in order to allow us to listen to the telephone conversation that starts at last between Grace Kelly and her caller (a possible accomplice to this murder attempt?). But this is not all. If we listen closely to the soundtrack of this scene, we also realize that all of Grace Kelly's movements are strongly amplified, in the same way as the volume of her voice does not diminish as the camera moves away from her.

Why does no spectator of a film protest during or after the screening to point out that it is rare (or even inconceivable) for a symphonic orchestra to suddenly start playing dissonant chords during a tussle in an apartment? Why do we accept – and why have we been accepting for a long time – that we do not hear the sounds produced by the protagonists of an action that we are being shown in close up, but rather a song accompanied by credits? The answer is simple. These conventions were naturalized for audiences a long time ago, they are an integral part of the cinematographic vocabulary, both for those who produce films and those who consume them. But is this to say that these conventions have become so self-evident that, once we have accepted them, one might say they disappear from our first level of consciousness as spectators? Yes, in that we do not necessarily perceive them, and no, in that we know perfectly well how to identify them and are aware that they are conventions. In *Frame Analysis: An Essay on the Organization of Experience*, Erving Goffman explains this paradox of the spectator very well (1986, 123–155). When Hamlet dies on the stage of a theater, we can be moved to tears just as though he were dying in front of us, and yet we know that it is in fact an actor interpreting a role, and that he is not really dying. We appreciate, we evaluate the way in which he simulates the fact of dying, and we identify with the character. Likewise, when a piece of music accompanies a murder attempt in a film, it is just as integrated to our perception and is quasi “invisible,” as much as it can be the object of our attention and be appreciated as such. Goffman's theatrical metaphor brilliantly demonstrates that we are used to living within several frames of experience, to swinging from one to the other, even to

distinguishing them from each other. The sonic vocabulary of talking movies has become just as much a tacit element of our perception as an explicit attraction.

### <1>Cinema as Teacher and Cultural Messenger

The two films that I have mentioned were presented to the public in 1952 and 1954 and both were exported outside of the USA. I do not know whether John Lennon (who was born in 1940) or Paul McCartney (born in 1942) saw screenings of these films or not, but one thing that is certain is that, just like thousands of other young English boys and girls, their childhood and adolescence were marked by this form of cinema, its narrations and its sonic conventions: simultaneously mixing together different music and sounds, using noises and sounds in a nonrealistic manner, using a voiceover during a sequence, simulating different types of space and combining them with each other, perceiving sounds as though you were hearing them close up (mouth sounds, whispered words, cars etc.), and strongly amplifying some sounds to highlight a particular effect (fights, storms etc.). In other words, The Beatles team was shaped by these sonic vocabularies; it learned to view them as normal and even to identify and evaluate them.

In the biographies of The Beatles by Hunter Davies (2009) and Mark Lewisohn (2013), as in several other works, we realize that John, Paul, George, Stuart Sutcliffe (the band's first bass player), and Ringo spent a significant part of their childhood and adolescence in the cinemas of Liverpool (see O'Donnell 1996; Miles 1997; Stark 2005; Frontani 2007). They first went there with their parents, then alone or with friends, and then with their respective girlfriends; cartoons, comedy sketch films, American action movies or comedies, musicals (Bing Crosby, Sinatra etc.) filled their imaginations. In the mid-fifties, they discovered Marlon Brando and James Dean and, in 1956, one of the first incarnations of American rock and roll: Bill Haley and his Comets interpreting the song "Rock Around the Clock" off-screen in the credits of *Blackboard Jungle* (Brooks 1955).

Haley was about to become the first American rock star to play Britain. His nationwide tour of one-night stands, a Lew & Leslie Grade promotion, was heading to Liverpool on February 20 (1957), playing two houses on stage at the Odeon Cinema. Having thrilled to “Rock Around the Clock” Paul McCartney was desperate to see him. As George Harrison would reflect, “When Bill Haley came to Liverpool I couldn’t afford a ticket. It was fifteen shillings, a lot of money for a schoolboy. I often wondered where Paul got his fifteen shillings from, because he got to see him (Lewisohn 2013, 146).

(Rock) cinema even had a role to play in how John Lennon and Paul McCartney met. During a television program called *Chaos and creation at Abbey Road* (Hilton 2005), that was broadcast on BBC Two on 17 December 2005, McCartney described how he had been recruited into Lennon’s band after having played Eddie Cochran’s song “Twenty Flight Rock” (Fairchild/Cochran). More precisely, the version that was recorded for the film *The Girl Can't Help It* (Tashlin 1956), which preceded the version that came out as a single in 1957. In the same film, audiences could also watch and listen to Gene Vincent, Little Richard, Fats Domino, The Platters, among others – that is, a number of The Beatles’ idols. Paul loved the film so much that he interrupted the recording of “Birthday” (a song from the *White Album*, 1968) so that Chris Thomas – George Martin’s assistant – could watch it on television (Scott and Owsinski 2012, 56). As the reader will have understood, The Beatles’ love of American rock and roll was not based solely on records and radio programs, but also on musical films that transported and performed this music, its protagonists, its conventions, its representations in the public sphere. In *Jailhouse Rock* (Thorpe 1957), they learned, by watching Elvis, how to behave in a recording studio:

All of them—Starkey, Lennon, McCartney and Harrison—went to see *Jailhouse Rock* when it played the huge Forum cinema in Liverpool city center at the end of March. Elvis’s film

character was bad boy Vince Everett ... When Everett cuts the first song for his own label, Laurel Records, the producer in the booth says, “Laurel 101, Take 1!” and points the “go” finger, everyone plays great together in one room, and after two minutes the picture dissolves to Everett and a glamour gal packing 45s into mailing cartons (Lewisohn 2013, 225).

Soon, rock films were multiplying and constituted another material from which the band certainly drew part of its identity:

One film they saw together was *Violent Playground* (Dearden 1958), the juvenile delinquency drama shot in Liverpool in summer 1957 and which opened there the following March. The main character was Johnny and one of the screen lines was “What’s it tonight, Johnny?” This was grabbed by John, Paul and George and, over time, became bastardized into “Where we going, Johnny?” spoken with an exaggerated American whine. It was their catchphrase, voiced not only when they were wondering where to go, but at any time, in any circumstance (Lewisohn 2013, 228).

According to John himself, cinema provided them with their model of masculinity:

Not only did we dress like James Dean and walk around like that (...) but we acted out those cinematic charades. The he-man was supposed to smack a girl across the face, make her succumb in tears and then make love. Most of the guys I knew in Liverpool thought that’s how you do it (Lewisohn 2013, 276).

And, in fact, rock and roll films did teach John and Paul and the rest of their generation how to behave, hold themselves, dress, be boys, hold their guitars on stage, behave in a recording studio, be a “real” rock musician.



They also watched a short film entitled *The Running Jumping & Standing Still Film* (Lester and Sellers 1959) together, in which Peter Sellers and Bruce Lacey indulge in all sorts of eccentric behavior. They loved this film so much that they asked for its director, Richard Lester, to direct their first feature film, *A Hard Day's Night* (1964). In fact, The Beatles never broke off their connection to the medium of cinema. When Beatlemania stopped them from going to public spaces in London (or anywhere else), Paul and Ringo bought projectors that they had installed at home. As Paul said:

It was a showbizzy thing which came from more the Hampstead crowd. You'd rent a movie from a movie house and you'd have an evening for your children, 'We're showing *Jason and the Argonauts* tonight.' Ringo used to do it a lot, every night he'd just hire a movie ... I liked it, it was very liberating (Miles 1997, 238).

We also find explicit references to cinema, and in particular to the North American musicals that colored their youth, in The Beatles' work itself. Thus, in a scene from the film *Magical Mystery Tour* (1967) that was directed by the band itself with the help of Bernard Knowles, Lennon hums Irving Berlin's famous song "There's No Business Like Show Business," the title song from the musical *Annie Get Your Gun* (Sidney 1950). In their film, the four Beatles walk down a staircase dressed in white tailcoats, while we hear the song "Your Mother Should Know" playing off-screen. The scene gently parodies chorus lines, the lined-up and synchronized groups of female dancers that appear in many Broadway and Hollywood musicals. Another interesting aspect of this sequence is that the band is not trying to make us believe that it is interpreting what we are hearing live. As in several musical sequences in *A Hard Day's Night*, *Help* (Lester 1965), and promotional films produced in 1966 for the BBC (in particular the song "Rain," that was directed by Michael Lindsay-Hogg), performance is dissociated from song and vice versa (Ribac and Conte 2011; Ribac 2013; 2014).

In 1968, when the band's music was in its most experimental phase and would hardly have

been performable live, George Martin explicitly drew a comparison between the band and producer's work in the studio and the work of cinema when he announced to two journalists from *The Times*: "Until recently, the aim has been to reproduce sounds as realistically as possible. Now we are working with pure sound. We are building sound pictures" (Porterfield and Birnbaum 1968, quoted in Frontani 2007, 167).

During the same period, Paul (Miles 1997, 280–284), on the one hand, and John and Yoko, on the other, directed experimental films and socialized with several avant-garde as well as more mainstream filmmakers. I could mention many other examples of this constant presence of cinema that repeatedly appears in biographies of The Beatles and in their music and films. As a result, I believe that we can reasonably consider that, in parallel to their discographic models, the sonic conventions of cinema constituted one of the bases that influenced all of The Beatles team, allowing it to infringe some of the rules of sound recording that were applied in Abbey Road, and to invent their own way of producing music.

#### <1>Recorded Media as Instructors

Let us examine in more detail how recorded media – records and films – were the main *instructors* of The Beatles and their generation.

Many works devoted to The Beatles' work in the studio – in particular those of MacDonald (1994) and Babiuk (2002) – mention that, from the time they started recording at Abbey Road in 1962, the members of the band surprised the sound engineers because they would constantly refer to recorded pieces to explain what they were trying to achieve: the reverb applied to the voice track in a Carl Perkins piece, an unexpected sound effect heard in a Phil Spector production, and so on. In other words, recorded music was what constituted their repertoire of references and what shaped their musical imaginations (see also Green 2001; Ribac 2004). This is a first clue.

In a pioneering text, Bennett (1980) has provided an account of a survey he conducted in the

USA and in France in the 1970s into how teenagers learned to play rock music, and in particular how they would use records as their instructors. Bennett's survey shows us that young musicians who had never had a formal lesson on their instrument, or even been part of a rock band, were nevertheless able to reproduce Frank Zappa's solos note for note. Alone in their rooms with their favorite records, these apprentices learned not only to play specific pieces on their instruments, but were also initiated into the vocabulary and styles of rock records; the electronic processing of the instruments and voices, the circulation of instruments within the stereophonic space, the use and dosage of reverb, the various layers of the mix, and so forth – in short, all of the sonic conventions of recorded rock music. In order to define this process of incorporation and the consequences that it had, Bennett has suggested the concept of *recording consciousness* (126–129): a constant immersion in recorded music leads rock musicians to develop a familiarity with the conventions of recording, studio production methods, amplification tools, and electric instruments. And, as it happens, it is precisely in this way, by immersing themselves in rock and roll records at home, that The Beatles learned to play and that they explicitly and implicitly understood the uses and potential of the recording studio. By the time they started playing together, they had already acquired the basics of rock music, and were familiar – even if they were still novices – with the techniques and conventions of studio rock. The essential point to be taken from Bennett's analysis is to consider that media do not just distribute works, but also the knowledge that is connected to these works. To put it differently, this knowledge is disseminated throughout the social world by means of devices and repertoires. Any person who passionately engages with these repertoires naturalizes their conventions just as much as they learn to appreciate them. In so doing, and to put it in Goffman's terms, new frames of experience are added – explicitly and implicitly – to those that had already been identified. Basing ourselves on Bennett's contribution, and given the spread and impact of Hollywood production and rock cinema in Great Britain in the years following World War II and the immersion of The Beatles into its repertoires, we can without any doubt put forward the idea that

the vocabulary and norms of the talkies had an impact on The Beatles and their generation, and even that this impact was comparable to that of rock music records. This point seems all the more plausible if we consider the fact that The Beatles generation also encountered rock music via the cinema.

To summarize, I am contending that a kind of “cinema consciousness,” a knowledge that was at once diffuse, conscious, and collective, made The Beatles team familiar with the sonic vocabularies, conventions, and norms of cinema. The Beatles did not learn how sound was used in the cinema in a school but in the same way as we learn to speak, to walk, to distinguish one object from another, or one instrument from another: their initiation took place through a constant immersion in the world of moving images and sound effects. The cinema – that is, the films themselves – transmitted a certain collective tacit knowledge to them (Collins 2010, 86–137). But before returning to this point in my conclusion, I would first like to show that cinema can also be used comparatively in order to better understand what happened at Abbey Road.

#### <1>Understanding The Beatles’ Productions thanks to Cinema

When The Beatles started to record for the EMI label, they would play songs to George Martin who would select the ones that seemed the best to him, and then the band would record them live. In 1965, the song “Yesterday” was orchestrated by Martin with a string quartet and recorded with just Paul, his guitar, and the quartet. Many historians, and Martin himself, view this event as a kind of turning point, the moment when a sound texture that the band was not able to produce itself entered into its repertoire. From one album to the next, the orchestrations became more and more diversified, and many sounds were imported into the songs: real sounds recorded outside, feedbacks, sounds from the radio or from magnetic tape that had been cut up and played backwards, snatches of conversation, animals, classical instruments, orchestras, choirs, sound recordings carried out in unusual locations – the list would be very long if it had to be exhaustive. All of this sound

poetry is very well documented and – quite rightly – delights listeners and is the trademark of The Beatles' psychedelic period.

Another, no less important change occurred at roughly the same time: multitrack tape recorders became *partners* to the team in their own right. People played with machines where other players and sonic effects were embodied. The band or some of its members started to enter into dialogues with tracks that had already been recorded. In the language of Actor-Network Theory, we would say that different types of actants were (are) working together (Akrich et al. 2006). It is thus patently clear that McCartney developed his melodic style on the electric bass by improvising for hours with accompaniments that had been recorded onto tape. And this is the point that should hold our attention. Similarly, to certain musical sequences of the short and feature-length films made by The Beatles and mentioned above, studio recording stopped being mainly the recording of a live performance – the band freed itself from the constraints of performing in real time. Sound became a material that was recorded in order to rework it and not something that was captured because it was already there. Of course, this did not mean that the performance disappeared: The Beatles continued to record (parts of their) songs all together or individually – but they focused more and more on the post-production work, on rerecording, and on editing. One often reads that certain pieces from *Sgt. Pepper* or *Magical Mystery Tour* (the LP) could not be performed in concert because the technical equipment of the late 1960s, and in particular the PA systems, did not allow for it. I believe above all that these pieces could not be performed live because they were made in the way one makes a film. To be precise, the transition that took place at Abbey Road is reminiscent in more ways than one of what happened in between 1928 and 1933 during the transition from silent to talking movies, when the sounds recorded live on set were increasingly replaced (or completed) by sounds recorded in a studio before and after the shoot, when rerecording and editing were established as essential practices.

The convergence is also patently clear as far as space management is concerned. Just like at

MGM, the Abbey Road studios were increasingly insulated with partitions and screens in order to control reflections, Ringo's bass drum was filled with towels (a practice which is now almost universal) to limit its resonance, the microphones were placed closer to the instruments in order to cancel out the acoustics of the rooms. Just as in Hollywood, new tools were designed and existing objects were modified in order to best control the audio signal. The recorded sounds were increasingly directly put through the electric networks in order to blend, compress, and mix them, to slow them down or speed them up, to make them move from right to left (once stereo was adopted), to regulate their pitch and volume, and to make them resonate through mechanical reverbs that allowed one to modulate the partitions and reflections of a virtual room. In short, in order to better process sound, people endeavored to decontextualize it. Sound engineers and their machines took on an increasingly central role in the creative process before, during, and after the recorded performance. Just as at MGM, the issue was less to produce pure abstractions – the only truly electro-acoustic piece that The Beatles produced, “Number 9” (*The White Album*), is an exception – than to bring into play new techniques and sounds in order to create great songs. Even the division of labor that was established at Abbey Road seems comparable to that of the Hollywood studios: a producer/creator à la Arthur Freed,<sup>4</sup> creative and innovative teams of technicians, perfectionist artists collaborating in a building devoted to production and within which other teams from the same label were simultaneously working on other projects. Similarly, the autonomy enjoyed by George Martin and the Parlophone label that he was managing within EMI (Martin and Hornsby 1979), which was mainly devoted to classical music, are reminiscent of the workings of the producer unit system, which was more autonomous, and more favorable to technical and artistic experimentation, than the systems that preceded it.

Nevertheless, while the transition towards talkies has many points in common with the one that occurred between the albums *Please Please Me* (1963) and *Revolver* (1966) and most of the ones that followed, their time frames are considerably different. In mid-1930s Hollywood, the boom

of rerecording and post-production was accompanied by intensive upstream-planning in order particularly to predict and budget for the sound work. In contrast, the metamorphosis of The Beatles into a studio band coincided with their progressive neglect of preparation work, and ultimately the near-total abandonment of rehearsals prior to recording. This started with *Revolver*, when they stopped playing live, and became more pronounced with *Sgt. Pepper*, *Magical Mystery Tour*, and *The White Album*. The band members would often turn up to the studio with fragments of ideas, a series of chords, a bit of text, a riff, and would then start to work with the team on shaping them. It could sometimes be the case that the producer/arranger would work on an orchestration and record it without musicians, without the composer of the song or the band hearing it beforehand. Fragments of songs were combined with others, dovetailed into each other, or had all sorts of elements added to them. In addition, the sessions would finish later and later, the band members might come to the studio one after the other without crossing paths, many songs were recorded in several different versions which were then compared and from which particular sequences might be mixed together. In fact, work *started* in the studio in front of the microphones, usually without any established plan, no predefined set of instruments, and without any real work schedule.

These ways of working were not limited just to The Beatles and pop music. If we examine the production of films such as *Otto e Mezzo* (Fellini 1963), *Blow Up* (Antonioni 1967) and *Le Mépris* (Godard 1968) we can observe a certain convergence. Indeed, these filmmakers (and a few others) started at roughly the same time to shoot films with few scripted elements and sometimes even none at all (Jousse and Ribac 2003). At times, the actors would not even know the subject of the film or even the characters that they were meant to be playing. Dialogues, shooting locations, situations, sometimes even the construction of the sets could be decided upon as the shoot went along, depending on what had been produced on previous days. Why was this the case? Because the film was constructed at least as much during the shoot as during post-production (editing, sound effects, composition and recording of the film music, visual effects, mixing, matching). Thus,

Fellini would have his actors record the dialogues of the film after the shoot. In other words, the performances of the actors and everything that was recorded by the operators' cameras and the sound engineers' microphones served as materials with which to make the film. It was by manipulating the reel in the editing room, by testing different options, by adding in and combining music and sounds that the narrative was gradually constructed. This narrative was the result of the overall process, more than it was illustrated by the film.

The striking thing here is that these ways of working developed at roughly the same time in pop music and cinema, that they were consented to by the companies that were financing them, and that they were often well-received, and sometimes even celebrated, by the public and the press. It is clear that some filmmakers and musicians knew each other, and even sometimes worked together. During the Swinging London period, rock bands and artists collaborated with filmmakers on types of "open movies" like *Up the Junction* (Collinson 1968) with the band Manfred Mann, *One + One* (Godard 1968), in which we see and hear The Rolling Stones compose in a recording studio, and *Blow Up*, to name but a few. I have also already mentioned that McCartney, on the one hand, and Lennon and Yoko Ono, on the other, were themselves directing experimental short movies during the same period. However, what seems to be most significant to me about this convergence is above all that comparable methods started to be experimented with, and then became common practice in the early and mid-1960s, within two relatively distinct professional spheres: the attention to chance (as the photographer in *Blow Up* who discovers a murder scene when he develops a photo in his laboratory), improvisation, and post-production work became essential moments in production – with the consent of the companies and, of course, the public. What this convergence between music and cinema tells us is that segments of European society were thinking and producing in parallel, and that ideas and ways of working were shared by people and social groups that were not necessarily in contact with each other and were living and working in different countries.



## <1> The Beatles, their Sound(s) and their Imagination

Let us return once more to Emerick's memoirs, when he tells the story of how, by positioning a microphone in front of Ringo's drum kit, he made a decisive contribution to the sound of the album *Revolver*. The striking thing about this anecdote, whether it is true or not, is that Emerick's gesture is so unusual if we consider the world within which it was made. But if we examine this gesture within the *overall* history of recording, it is clear that film sound engineers were already positioning microphones right in front of instruments, voices, and all sorts of sound sources and had been doing so since the early 1930s. Likewise, thanks to optical systems, rerecording and editing were technically sophisticated and in use from the 1930s in Hollywood. However, the Abbey Road technicians used other types of tape recorders and cobbled together other systems to synchronize several tracks at the time of *Sgt. Pepper*.

It is therefore patently clear that it is perfectly possible for practices to develop within a given professional sphere without them being practiced in other spheres. People did indeed position the microphones right in front of the instruments when they were recording a big band and Frank Sinatra in the 1940s, but when they moved onto the mix, they endeavored to recreate the acoustics of a concert (for Sinatra in recording studios, see Granata 1999). With the exception of voice tracks, a *close up* for instruments only became common currency from the moment when rock music and its norms were established in the public sphere and in recording studios, following The Beatles' records.

To conclude, we might ask ourselves once more how it was that The Beatles team came to break with the rules and norms that applied to their professional environment.

The first, well-documented answer is that the studio sessions from The Beatles' psychedelic period involved experimenting in all directions, and in particular doing whatever you shouldn't normally do. In the same way that they took drugs to see what effect they had, they positioned the microphones differently to listen to the difference it made.

The second answer is that young musicians or sound engineers were all the more able to “liberate” themselves from naturalistic norms for not having been very much exposed to them. Amateurs often perceive things that professionals do not see or hear, or even refuse to consider.

The third “explanation” is that The Beatles team at Abbey Road made use of what it had learned tacitly through radio and cinema and that it transformed a social knowledge into a local, singular practice. Generally, the tacit dimension is most often viewed as something untranslatable. For example, Polanyi (1983) defines as tacit that which refers to immanent rules to which we cannot consciously agree. In other bodies of work, specific skills are referred to as tacit if they are not verbally expressible, and are therefore difficult to transmit to other people (see for instance, Lawrence [1985] on medical practices). When we talk about tacit knowledge, we also often refer to individual learning. Now, for Harry Collins (2010, 83–137), tacit knowledge is the most important, the most crucial medium that which we acquire through society. Let us take one of Collins’ favorite examples. If a human being who has never lived in society finds a bicycle in the desert, it is very unlikely that he will understand how to use it. Indeed, there has to be an interaction between individuals and the social world for them to know what the objects that surround them are for, and what conventions are attached to them. And most of the time, you know that a bicycle is used to move around before you are even told it. Conversely, objects – which condense practices and knowledge – (in)form us. This is in fact precisely what Bennet shows, namely that intensive contact with works – with records, with films – tacitly teaches us how they are produced, what material logics they involve, how they are organized. By imitating, loving, and playing these repertoires, we become familiar with their conventions. In addition, as Goffman has explained to us with the example of Hamlet’s death on stage, I am able to detect and even to evaluate the different frames within which my experience is taking place; I perceive the conventions that allow human beings to interact with each other, to feel emotions, to issue judgments.

Nourished by films, by rock and roll and Motown records and by the Brill Building, where

sound was already treated as an artifice and experiments with rerecording was carried out, The Beatles, as fans and fine analysts of these repertoires, and those that worked alongside them introduced the cinematographic dimension into music production and popular music along with the dimension of sound composition in film. They did not transpose cinema into pop music, but rather independently (re)discovered practices and even technical procedures that were *comparable* to those that the talkies had developed thirty years earlier in the USA. The cinema was thus their bicycle, or at least one of the vectors that allowed them to imagine a new world. And it is therefore through the intervention of amateurs, of outsiders from Liverpool, that the sonic conventions and production methods of cinema burst into the EMI studios. These approaches echoed other artistic spheres, and in particular that of the new cinema (Fellini, Godard, Antonioni, Lester). The Beatles' metamorphosis was probably primarily caused by the extent of their success, the ambition of the band members and the intelligence of their various allies helped them to free themselves from the EMI rules and procedures. But actually, how was it that The Beatles were able to gain access to EMI? Because George Martin thought he needed to recruit some artists for his label who were in tune with the public's tastes, to have at his hands a catalogue of bands that played rock music (Martin and Hornsby 1979). Here again, it is the social world that informed the producer.

Ultimately, drawing up the history of The Beatles moment requires at least as much of an understanding of the internal dynamics that characterize studio work, and the contribution of the production players, objects and spaces, as it does an ability to re-establish the external social knowledge that allowed for new conventions to appear. Unlike the modernist or historicist approach, which both insist on rupture and remain limited to their field of study, the analysis offered here involves identifying how what already exists and what is exogenous promote change, how knowledge travels and circulates within the social world and is constantly being reconfigured. This kind of approach has already been developed elsewhere. For around twenty years, some historians of cinema, of show business and of sound reproduction have taken at least as much of an interest in

the continuities as in the ruptures when they are examining the history of a specific sphere. In the recent field of sound studies, Jonathan Sterne (2003, 88–136) has convincingly demonstrated the translations between medicine and sound recording and domestic listening. When Sterne finds Laennec’s (French) stethoscopes on the ears of (American) radio listeners and of the users of the first phonographs, he is describing at once a technology transfer, the passage of an object from one continent to the next, and a way of organizing the world and social relations. The headphone/stethoscope documents the way in which sound becomes a *social bond* that connects people and transports knowledge.<sup>5</sup> This is what I have tried to do here by showing the connections between the optical sound of 1930s Hollywood and the tape recorders of Abbey Road, between the talkies’ knowledge and that of *Magical Mystery Tour*. By doing so, I want to propose the idea that the conventions of cinema – technology, competences, the norms audience experience, and so forth – have shaped the sonic imagination. Cinema was one of the strings (Collins 2010, 33–57) by which collective tacit knowledge (117–138) was disseminated into the UK and “touched” The Beatles team and their generation. In order to study how tracks and human beings were synchronized with each other, we must invent a history such that it too is connected and embraces different strings. In so doing, we might have a better understanding of *the social form of imagination*.

#### <1>References

- Abel, R., and R. Altman. 2001. *The Sounds of Early Cinema*. Indiana: Indiana University Press.
- Akrich, M., M. Callon, and B. Latour. 2006. *Sociologie de la Traduction*. Paris: École des Mines.
- Augros, J., and K. Kitsopanidou. 2009. *L'économie du cinéma américain, histoire d'une industrie culturelle et de ses stratégies*. Paris: Armand Colin.
- The Beatles. 1995. *The Beatles Anthology*. DVD EMI.
- The Beatles. 2000. *The Beatles Anthology*. London: Chronicle Books.
- Babiuk, A. 2002. *Beatles Gear: All the Fab Four's Instruments from Stage to Studio*. London:

Backbeat Books.

- Bennet, H. S. 1980. *On Becoming a Rock Musician*. Amherst: University of Massachusetts Press.
- Bordwell, D., J. Staiger, and K. Thompson. 1985. *The Classical Hollywood Cinema. Film Style and Mode of Production to 1960*. New-York: Columbia University Press.
- Bottomore, S. 2013. Eric Williams Speaking to Pictures. In *The Sound of the Silents in Britain*, edited by J. Brown and A. Davison, 55–71. Oxford: Oxford University Press.
- Brooks, R., dir. 1955. *Blackboard Jungle*. MGM.
- Collins, H. 2010. *Tacit and Explicit Knowledge*. Chicago: University of Chicago Press.
- Crafton, D. 1997. *The Talkies American Cinema's Transition to Sound, 1926-1931*. New York: Scribner.
- Crosby, B., and P. Martin. (1951) 2003. *Call me Lucky, Bing's Crosby's own Story*. Boston: Da Capo Press.
- Crosland, A., dir. 1926. *Don Juan*. Warner Bros.
- Crosland, A., dir. 1927. *The Jazz Singer*. Warner Bros.
- Davies, H. 2009. *The Beatles: The Authorised Biography*. London: Ebury Press.
- Emerick, G., and H. Massey. 2006. *Here, There and Everywhere: My Life Recording the Music of the Beatles*. New York: Gotham Books.
- Everett, W. 1999. *The Beatles As Musicians: Revolver through the Anthology*. Oxford: Oxford University Press,
- Everett, W. 2001. *Beatles As Musicians: The Quarry Men Through Rubber Soul*. Oxford: Oxford University Press.
- Frontani, M. R. 2007. *The Beatles - Image and the Media*. Jackson: University Press of Mississippi.
- Goffman, E. 1986. *Frame Analysis: An Essay on the Organization of Experience*. Boston: Northeastern University Press.
- Granata, C. L. 1999. *Sessions with Sinatra: Frank Sinatra and the Art of Recording*. Chicago:

A Cappella Books.

- Green, L. 2001. *How Popular Musicians Learn, a Way Ahead for Music Education*. Aldershot: Ashgate.
- Hilton, S., prod. 2005. *Chaos and Creation at Abbey Road*. BBC 2, 17 December 2005.
- Hitchcock, A., dir. 1954. *Dial M for Murder*. Warner Bros.
- Hofmann, G. 1990. *Der Kinoerzähler*. Munchen: Hanser.
- Jacobs, L. 2012. The Innovation of Re-Recording in the Hollywood Studios. *Film History* 24 (1): 5–34.
- Julien, O. 2009. *Sgt. Pepper and the Beatles: It Was Forty Years Ago Today*. Aldershot: Ashgate.
- Jousse, T., and F. Ribac. 2003. Rock et cinéma, une filiation. *Mouvements* 26: 108–115.
- Kember, J. 2013. Professional Lecturing in Early British Film Shows. In *The Sound of the Silents in Britain*, edited by J. Brown and A. Davison, 17–37. Oxford: Oxford University Press.
- Kracauer, S. 1973. *De Caligari à Hitler. Un histoire psychologique du cinéma allemand 1919–1933*. Paris: Flammarion.
- Lastra, J. 2000. *Sound Technology and the American Cinema, Perception, Representation, Modernity*. New York: Columbia University Press.
- Lawrence, C. 1985. Incommunicable Knowledge: Science, Technology and the Clinical Art in Britain 1850–1914. *Journal of Contemporary History* 20 (4): 503–521.
- Lester, R. and P. Sellers., dirs. 1959. *The Running Jumping & Standing Still Firm*. British Lion Films.
- Lester, R., dir. 1965. *A Hard Day's Night*. United Artists.
- Lewisohn, M. 1989. *The Beatles Recording Sessions*. New York: Harmony Books.
- Lewisohn, M. 2013. *Tune In: The Beatles: All These Years*. New York: Crown Publishing Group.
- Macdonald, I. 1994. *Revolution in the Head, the Beatles Records and the Sixties*. London: Pimlico.
- Martin, G., and J. Hornsby. 1979. *All you need is Ears*. London: Macmillan.

- Massey, H. 2015. *The Great British Recording Studios*. Milwaukee: Hal Leonard Books.
- Miles, B. 1997. *Paul McCartney: Many Years from Now*. London: Secker and Warburg.
- Moore, A. 1997. *The Beatles: Sgt. Pepper's Lonely Hearts Club Band*. Cambridge: Cambridge University Press.
- Moylan, W. 2006. *Understanding and Crafting the Mix: The Art of Recording*. Burlington: Focal Press.
- O'Donnell, J. 1996. *The Day John Met Paul*. New York: Penguin Books.
- Pedler, D. 2010. *The Songwriting Secrets of the Beatles*. London: Omnibus Press.
- Pisano, G. 2013. *Une archéologie du cinéma sonore*. Paris: CNRS Éditions.
- Polanyi, M. 1983. *The Tacit Dimension*. Gloucester: Peter Smith.
- Portes, J. 2004. *De la scène à l'écran, naissance de la culture de masse aux États-Unis*. Paris: Belin.
- Ribac, F. 2004. *L'avaleur de rock*. Paris: La Dispute.
- Ribac, F., and G. Conte. 2011. *Les stars du rock au cinéma*. Paris: Armand Colin.
- Ribac, F. 2013. Le rock filmé. In *Musique et cinéma, le mariage du siècle?*, edited by N. T. Binh, 81–88. Actes Sud/Cité de la Musique.
- Ribac, F. 2014. When Rock Songs meet Movies. In *Musiques de films, nouveaux enjeux*, edited by N. T. Binh, S. Abhervé, and J. Moure. Bruxelles: Les Impressions Nouvelles.
- Ryan, K., and B. Kehew. 2008. *Recording the Beatles: The Studio Equipment and Techniques Used to Create Their Classic Albums*. Houston: Curvebender.
- Salt, B. 2009. *Film Style and Technology: History and Analysis*. London: Starworld.
- Scott, K., and B. Owsinski. 2012. *Abbey Road to Ziggy Stardust: Off the Record with The Beatles, Bowie, Elton & So Much More*. Los Angeles: Alfred Music.
- Sidney, G., dir. 1950. *Annie Get Your Gun*. MGM.
- Singer, B. 2001. *Melodrama and Modernity, Early Sensational Cinema and its Contexts*. New York: Columbia University Press.

- Southall, B. 1982. *Abbey Road the Story of the World's most Famous Recording Studios*.  
Cambridge: Patrick Stephens.
- Stark, S. D. 2005. *Meet the Beatles: A Cultural History of the Band That Shook Youth, Gender, and the World*. London: Perfect Bound.
- Sterne, J. 2003. *The Audible Past. Cultural Origins of Sound Reproduction*. Durham: Duke University Press.
- Tashlin, F., dir. 1956. *The Girl Cant't Help It*. 20<sup>th</sup> Century Fox.
- Thorpe, R., dir. 1957. *Jailhouse Rock*. MGM.
- Womack, K., and T. F. Davis. 2006. *Reading the Beatles: Cultural Studies, Literary Criticism, and the Fab Four*. Cambridge: Cambridge University Press.
- Zak III, A. J. 2001. *The Poetics of Rock, Cutting Tracks, Making Records*. Berkeley: University of California Press.
- Zimmermann, F., dir. 1952. *High Noon*. Stanley Kramer Productions.



1 Many thanks to Kate McNaughton for her translation from French to English and for her enthusiasm.

2" The Brill Building is located in New York (USA). In the late 1950s and during the 1960s, many successful North American pop acts were published, recorded, and promoted by companies that had their offices there. The Brill Building is generally associated with rhythm and blues and with record producers like Phil Spector and Jerry Leiber and Mike Stoller (who wrote and produced songs for Elvis), as well as composers such as Carole King and Burt Bacharach.

3" Phil Spector distinguished himself by experimented with rerecording techniques. People often use the term *wall of sound* to describe his productions. Morton used sound effects in his productions, and in particular in a hit called *The Leader of the Pack* (1964, Morton/Barry/Greenwich) in which one hears a motorbike.

4 Arthur Freed (1894–1973), producer of musicals at MGM.

5" The same Sterne and others have demonstrated that engineers and know-how coming from radio, and in particular the engineers of Western Electric, intellectually and technologically influenced the designers of the talkies and enabled the electrification of gramophones.