The Digital Turn in Indian Film Sound: Ontologies and Aesthetics

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THE DIGITAL TURN IN INDIAN FILM SOUND: ONTOLOGIES AND AESTHETICS

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Abstract

My project maps film sound practices in India against the backdrop of the digital turn. It is a critical-historical account of the transitional era, roughly from 1998 to 2018, and examines practices and decisions taken 'on the ground' by film sound recordists, editors, designers and mixers. My work explores the histories and genealogies of the transition by analysing the individual, as well as collective, aesthetic concerns of film workers migrating from the celluloid to the digital age.

My inquiry aimed to explore linkages between the digital turn and shifts in production practices, notably sound recording, sound design and sound mixing. The study probes the various ways in which these shifts shaped the aesthetics, styles, genre conventions, and norms of image-sound relationships in Indian cinema in comparison with similar practices from Euro-American film industries. I analysed nearly 60 hours of interviews I conducted with sound practitioners in India, examined trade magazines, online journals, the personal blogs of practitioners, technological literature from corporations like Dolby and Barco, and, as case studies, analysed the soundtrack of key Indian films from both the analogue and the digital eras.

While my research clearly indicated significant shifts from the analogue to the digital era in India – increased stratification of sound recording and editing processes, aggressive adoption of multichannel sounds, wider acceptance of sync sound, the increasing dominance of the sound designer – it also revealed that many of the analogue era practices remain deeply embedded within digital era conventions. Moreover, technologies and practices from the Euro-American context have undergone substantial 'Indianisation' during the process of their adoption. I argue that digital technology, while reshaping deeply institutionalized practices of the analogue era, contributed to particularly radical changes in the practices of sound recording and editing in the digital era in India. While this dissertation is an ethnographic investigation of 'living history', it is largely informed by film sound theory, and seeks to achieve a balance between empirically grounded historical research and film theory.

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STATEMENT OF ORIGINALITY:

I certify that the intellectual content of this thesis is the product of my own research and extracts from other academic work have been duly acknowledged.

Indranil Bhattacharya

(London, March 2019)

Introduction

The Quest for an Alternative History

My doctoral dissertation maps the history of film sound practices in India – a history of intriguingly dynamic and fluid practices and shifting conventions. Film production practices from the 20th century such as cinematography or editing conventions, are often *lost*, or have become obsolete in the 21st century, due to technological or aesthetic shifts. While new conventions have emerged and replaced the old, there are occasions when lost and obsolete practices have been reinvented and resurrected in the form of *new* conventions or *new* 'production cultures' in the early 21st century. My project of mapping sound practices, focusing on the transitional period between the celluloid and digital eras (roughly 1998 to 2018), is a departure from traditional film histories in more ways than one. Standard film histories are largely constructed from textual and archival sources. From the start, my aim was to write a history of film sound practice in India as a form of alternative oral history, drawing on unknown, lesser known or neglected narratives, rather than a standard aesthetic history of the medium. While dominant aesthetic histories and oral histories of film practice are not mutually exclusive and often overlap, my aim was to shift the emphasis from broader approaches such as post-colonialism, audience studies or star studies, to issues germane to the film production process. In short, I was interested in decisions taken 'on the ground' by film sound practitioners, their relationship with technologies or technological platforms, and their professional ideologies and convictions. It was not only their decisions, as such, that I wanted to study, but more importantly I wanted to critically examine the discourses that inform those decisions. Thus, my account of film sound practice in India links practice discourses with aesthetic and philosophical questions about the nature of sound-image transactions in cinema, as well as ontological questions about the status of the cinematic experience in the digital era.[1] I want to describe my approach as a conversation between history and theory. Thus, while this is a film historical inquiry, it is largely informed by theory and philosophy and seeks to achieve a balance between empirically grounded ethno-historical research on one hand and speculative philosophy on the other. In view of the multiple trajectories that the

[1] Ontological questions about the status of cinema in the digital era has been theorised by scholars like Thomas Elseasser (2013, p13–44), David Rodowick (2009), and Lev Manovich (Manovich, 1996, p1–16), among others. The main issues raised by these scholars pertain to the status and nature of cinema as a moving image form – and whether the move from celluloid to digital influences this status.

project has acquired, it can be considered, epistemologically, as a work of film history and film philosophy, and methodologically, as a work of cultural or media anthropology.

My interest in histories of practice, more particularly sound practice in India, emerged from my own professional background and academic inclinations. A young film school graduate trained in film editing, I joined the filmmaking profession in the year 1995, working for both film and television. Being trained in the analogue era, I was experienced in both visual and sound editing as was the convention in those days. But more than my own sound editing and mixing experience, it was largely my collaborations with specialist sound engineers that sparked my academic interest in sound. The functions of visual and sound editing were deeply intertwined in the analogue era in India, but the arrival of the digital technologies started changing the practices. Film sound became more specialised and broke free from its close association with visual editing. I seldom had the time or opportunity to reflect upon things that happened around then and being a trained practitioner, I was conditioned to take changes in my stride. In the 21st century, there was a sudden surge in the amount of attention paid to film sound, especially from the industry at large in India, as well as from film festivals and journalists. As if responding to this new found love for sound, the Indian National Film Awards introduced a new category on film sound design in 2006, as a sub-category under the head of 'Best Audiography'. Similarly, around the same time, other prestigious competitions in India such as the Filmfare Awards also began recognising sync sound recording and sound design and created sub-categories within their film sound awards. Indian sound recordist Resul Pookutty received an Academy Awards (Oscar) for sound mixing in 2009 for his work on *Slumdog Millionaire* (Danny Boyle, 2008). While *Slumdog* was an international production, the field sound team, led by Resul, was entirely Indian. This was the first ever Oscar won by an Indian technician and was seen as a major breakthrough by the film fraternity in India.

During my academic stint which also began in the year 2009, I had both time and the desired objectivity required to reflect on the changes that I witnessed as a practitioner. The dramatic disruption of the century-old practices and conventions of filmmaking by the digital turn had to be confronted and analysed in the classroom. The shifts and transformation from analogue to digital image occupied the centre of the emerging discourse on digital cinema. I turned my attention to sound and sound aesthetics, as no

one else was analysing it. I initiated a lecture module on sound aesthetics for my students at the Film and Television Institute of India (FTII), and later on decided to do more substantial exploration of sound in India. These journeys into film sound and its practices finally led me to the present doctoral project.

A History of Indian Film Sound?

The project of writing *a history* of Indian cinema is fraught with the hazards of producing a homogenous account out of a complex and fractured narrative. Film historians have largely focused on specific phases (silent era, studio period, Bollywood), concepts (star-system, new wave, art cinema, popular cinema) and linguistic categories (Tamil cinema, Bengali cinema, Malayalam cinema and others). Given the contemporary challenges to the idea of 'national cinema', conceptualising Indian cinema as a singular cinematic culture gets entangled in a range of theoretical debates (Vitali and Willemen, 2006). These debates remain largely beyond the scope of my current study. As a historian of film practice, I have taken the liberty of treating Indian cinema as a homogenous category *only to the extent that it refers to shared practice cultures and conventions*. While Indian cinema is regionally and linguistically diverse, it is the same practitioners who simultaneously work for the dominant Hindi, as well as the smaller regional cinemas – and even effortlessly move between mainstream and independent cinemas, or sometimes between fiction and non-fiction forms. This renders the conventions of sound recording, editing and mixing as largely similar across the country. It is these shared practices and conventions of Indian film sound that I tap into in my research. Practice conventions and approaches do sometimes differ in India, especially between regional cinemas, or between mainstream and art cinema, as it does within American or European cinema. These differences in conventions are signposted, with reference to the broader shared practices, as I recount the history.

Research Questions

The specific research questions that I address in my work are as follows

1. What were the peculiarities and specificities of film sound aesthetics and industrial practice conventions in India in the analogue film era?

2. In what manner has the shift to the digital influenced recording and editing conventions of film sound in India?
3. How has the emergence of the sound designer as a new concept/designation influenced the ways in which film soundtracks are conceived and executed in India, compared to film sound conventions in Hollywood and the UK film industries?
4 How do various sound practitioners' in India understand and interpret the digital turn and its impact on film sound in India?
5 How have new developments like Digital Surround Sound (DSS) and immersive sound impacted on and influenced practice conventions and aesthetic styles in India?

A Note on the Originality of the Project

While sound has played a defining role in both mainstream and art cinema in India, studies of sound have been both sparse and sporadic. Ethnomusicologists like Ashok Ranade (2006), Alison Arnold (1988, p177–188), Anna Morcom (2017), Amlan Dasgupta, (2007) and Gregory Booth (2008) have done insightful studies on the songs and music of Indian and Hindi films. But these anthropological studies are focussed on film music as a cultural phenomenon and their approaches differ from the theoretical paradigm of contemporary film sound studies. Music is only one strand within the overall film soundtrack and exists in a complex relationship with a wide range of non-musical sounds. The musicological studies alluded to above focus on production cultures and the broad functions and nature of music in films, instead of on the overall soundtrack of the film and, more importantly, image-sound relationships.

The *Journal of Moving Images*, Kolkata, in a crucial intervention in 2007, published an issue on film sound. A series of articles in this issue explored music/songs, voice, sound archiving and sound in the films of Satyajit Ray (Biswas, 2007a). While these articles marked an important beginning for the study of film sound, nearly all the articles focussed on either voice or music, rather than the entire soundtrack, which includes the crucial component of effects and ambient sounds. I discuss a number of these articles in more depth at later points in the thesis. There is, to date, not a single book-length or comprehensive film theoretical study of cinema sound or sound culture in Indian films.

Art cinema masters like Satyajit Ray, Ritwik Ghatak, Mrinal Sen, Mani Kaul and others are known for their innovative use of sound. Whether it is the creative use of sound by the masters, or the conventions of sound practice in the mainstream industries of Mumbai, Chennai and Kolkata, Indian film sound history and theory remains largely underexplored. Film production studies, particularly with reference to Hollywood, is a burgeoning field with scholars researching conventions of cinematography, sound, art direction, acting and even niche areas like visual effects (Tashiro, 1998; McClean, 2007; Taylor, 2012). Indian film studies is yet to engage with this 21st century scholarly trend. Historically, the relationship between practitioners and academics/researchers in India has been marked by aloofness and often by suspicion. I am hoping that my work will address this gap by putting practitioner discourses at the centre of the research, thereby providing a much-needed and productive conversation between theory and practice. Given its theoretical ambition and breadth, I believe that this project will not only enrich Indian film studies, but also open up new trajectories of scholarly engagement with some foundational debates in film sound theory.

Methodological Issues and Challenges

Methodology – in Theory

Given the interdisciplinary nature of my research, I borrow methodological and theoretical insights from a cluster of interconnected fields. These include approaches and theoretical strategies from the fields of media ethnography, critical approaches from creative industry studies, traditional film history, film theory and discourse analysis. The field study is dominantly informed by methods used by anthropologists studying media industries in the 20th and early 21st centuries (Powdermaker, 1979; Ortner, 2009; p183–197). The studies referred to here, especially the study of Hollywood practices by the anthropologist Hortense Powdermaker, were based on participant observation combined with extensive interviews. My research, however, is based on a series of long semi-structured interviews with practitioners of film sound in India. Film sound work, especially for feature films, is distributed among amorphous groups of people working simultaneously from different locations. These include field recordists and production mixers who work in multiple locations, sound editors who work in the isolation of small studios, effects recordists who record sound in Foley studios, and mixing engineers, sound designers and directors who work privately from mixing studios. The demand for

privacy or secrecy by key members of the sound team forced me to exclude 'participant observation' from my project. However, as a practitioner-researcher, my work is informed by observational insights gained during my own work as a practitioner and during my 'on-field' interaction with colleagues while I was in active practice. These insights, however, remain largely as a peripheral analytical tool, sometimes used to frame an argument, sometimes to validate current field findings, or to scrutinise dramatic claims made by respondents.

While my general approach was tilted towards critical ethnography, I had to tweak my research methods according to the specific requirements of my project. Since the 'digital turn' has not passed but is still unravelling in the present, my historical account is not strictly defined within temporal brackets. And thus, unlike the film historian delving into the archive to excavate the past, I am writing a 'history in the present tense' or even by extension a 'history of the present' as proposed by Michel Foucault (1977). Here I allude to Foucault's mode of 'genealogical analysis' of the present:

> a method of writing critical history: a way of using historical materials to bring about a *revaluing of values* in the present day. Genealogical analysis traces how contemporary practices and institutions emerged out of specific struggles, conflicts, alliances, and exercises of power, many of which are nowadays forgotten…Genealogy's aim is to trace the struggles, displacements and processes of re-purposing out of which contemporary practices emerged, and to show the historical conditions of existence upon which present-day practices depend (Garland, 2014, p365–384).

I have not used the whole spectrum of what Foucault calls the 'toolbox' of genealogical methods. Rather, I borrow only certain aspects of it for my own 'toolbox' of methods, particularly in chapters four and five. Another crucial aspect of Foucauldian thought I refer to, as a film historian, is his notion of the archive. Instead of engaging with the traditional archive – a static location that stores the past in the form of materials and artefacts – my study taps into the Foucauldian archive or *archiv*, a set of dynamic relations or institutions that underlies "the general system of the formation and transformation of statements"(Foucault, 1970, p175–185). According to historian Thomas Richards, the Foucauldian *archiv* is "a utopian space of comprehensive

knowledge…not a building, not even a collection of texts, but the collectively imagined junction of all that was known or knowable" (Richards, 1993).

My account, in its process of unfolding, reveals unexplored dimensions of both past and present which challenge our notion of film history, film style, practice conventions, aesthetic beliefs and cinematic ontology. My research has shown that while digital technology has introduced new practices and radical interventions, it is not the revolution or 'rupture' that progressivist narratives from the film industry and certain academic discourses seem to suggest. My findings from the field, when subjected to genealogical analysis, have quite often revealed that the practices of the analogue film era are deeply embedded within so called revolutionary digital era innovations. On the other hand, Thomas Elsaesser in his seminal essay "The New Film History as Media Archaeology" (2004) argues that reconceptualising the 'digital revolution' as a rupture give us "the chance to rethink the idea of historical change itself, and what we mean by inclusion and exclusion, horizons and boundaries, but also by emergence, transformation, appropriation, i.e. the opposite of rupture." According to Maria Tamboukou, the essence of Michel Foucault's genealogical method is that "instead of seeing history as a continuous development of an ideal schema, genealogy is oriented to discontinuities" (Tamboukou, 1999, p201–217). Taking inspiration from Foucauldian 'genealogy' I argue that the history of film sound practice, as it crossed over from the celluloid to the digital era, is defined by both continuities and ruptures.

I also draw methodological insights from the influential ethnographic research of the recent past, especially studies of the film and television industries in Hollywood by John Thornton Caldwell, on the Hindi film industry of Mumbai by Tejaswini Ganti and the study of Hindi film music by Gregory Booth (Caldwell, 2008; Ganti, 2012; Booth, 2008). For core disciplinary insights, I borrow methodological strategies from film sound scholars like Gianluca Sergi (2004) and Mark Kerins (2010). While Sergi's exploration of Dolby-era sound practices are essentially ethno-historical, Mark Kerins' survey of post-Dolby practice is a critical speculative account that combines rigorous textual analysis with insights drawn from practitioner interviews.

Methodology – in Practice

To gain a critical-analytical understanding of practice conventions, I have conducted detailed interviews with 33 film sound professionals in Indian film industries – location recordists, sound designers/sound editors and re-recording mixers (also known as sound mixers). The interviewees were chosen based on the need to have a broad and representative group cutting across specialisations, region, and professional status. Unfortunately, the number of female respondents was very small. Film sound practice has been an extraordinarily male dominated field not only in India but across the world. According to Indian sound recordist Shalini Agarwal, film sound has the lowest participation of women compared with other major streams like editing, direction and cinematography. According to sound recordist Subhas Sahoo, the president of the film sound workers association in Mumbai, there are only about seven female sound workers working in Mumbai out of a total of approximately 200 sound workers Only three out of the thirty-three sound workers I interviewed during my fieldwork are women.

A sound worker does not operate in isolation, but as a part of a network of film practitioners who make up the production team. The two key members of the team that sound personnel work closely with are the director and the visual editor. To understand the perspective of these key collaborators I have interviewed five visual editors and three directors about the nature of their collaboration with sound workers. Moreover, the practitioners I interviewed in India made constant reference to the Euro-American film industry, especially Hollywood, comparing their own practices with those of the west, while creating an 'other' that they both love and hate. Because of this persistent reference to the west, at a later stage of my fieldwork, I decided to conduct formal interviews with three British, one American and one Continental European sound worker to gain a first-hand understanding of what actually goes on in the Euro-American scenario. Among these were two interviewees who have worked as mixing engineers on Indian films or have been associated as consultants to Indian productions.

In the interviews I conducted, my primary purpose was to investigate how the shift from analogue and celluloid film to digital technology affected my interviewees' practices and influenced practice cultures and industrial conventions more broadly. I probed senior sound workers how the advent of digital technology impacted both their individual work,

as well as everyday film sound practices in India. I posed questions to both senior and newly-inducted sound technicians about their relationship to technology and technological platforms. The senior sound workers were also asked to explain key analogue era conventions and to identify whether these conventions were continued in the digital era. During these sessions, I was trying to understand how decisions taken during the production process were affected by the shift to digital technologies, especially in the early days of their adoption. A majority of the film sound artists I interviewed (about 60%) worked in the dominant Hindi film industry in Mumbai, the others belonged to 'regional' film industries in the south (Chennai) and east (Kolkata). Some of the sound workers from Mumbai, also worked across the country and were involved in Hindi, Telugu, Bengali, Tamil and Malayalam language films.[2] Six of the sound workers I interviewed have worked with foreign film crews either abroad or when they were filming in India.

Since my aim was to analyse the shift in practice conventions from analogue film to digital, I interviewed three different categories of practitioners. The first category constituted those who started working with film and then moved over seamlessly to the digital when it arrived; the second category were those whose career ended in the celluloid era itself and had little or no experience in the digital period ; the third category comprised young sound workers – the film industry equivalent of *digital natives* – who were trained digitally and have had no experience of or exposure to analogue and film-based methods of sound work.

Given my research agenda, I have used the interviews in three different modes or registers. The first and the most recurrent use of the interview in this dissertation is based on their 'face value' – in the form of a historical account or a testimony. These observations from my respondents appear as direct quotations used to describe practitioner experiences that either support or oppose dominant approaches. The second category pertains to my indirect references to practitioners and their experiences, mostly used in a polemical context to argue a certain theoretical or aesthetic position. The third category is either a direct quotation or an indirect reference that reflects the professional ideology of the respondent. These responses are more than just testimonies and I have

[2] Sound Designers Satheesh PM and Bishwadeep Chatterjee, and recordist Resul Pookutty are involved in Hindi, as well as Telugu, Malayalam and Bangla language films.

examined them as professional discourses using theoretical and analytical tools.

I am aware that my project is not impervious to the problems of the oral history approach. Oral history discourses can be polyphonic and fragmentary, and the researcher should exercise caution in interpreting the data. R Kenneth Kirby cites two of the key problems that usually influence the oral history method.

> How can the interviewer ask relevant, informed questions yet still provide an atmosphere that will not improperly influence the informant's responses? How can the historian evaluate the responses of the informant, which can be tainted in a variety of ways? (Kirby, 2008, p22–38)

In the following section, I have tried to address these issues raised by Kirby. While ethnographic exploration of the production cultures of the film and television industries offer an established model as seen in the works of Powdermaker (1979), Caldwell (2008), Ganti (2012), Booth (2008) and others, the methods and approaches have always been informed by the insider-outsider dialectic. The researcher is almost always a professional anthropologist studying the film industry and its members as a social community, with the aim of uncovering embedded networks, conventions, values and structures of power and knowledge. Tejaswini Ganti, in an essay on ethnography, calls this the 'parachuting' approach, where the researcher arrives in the 'field' for a short period. He or she approaches the industry as an –'outsider'– with reference letters from powerful people or institutions and backed by institutional support (Ganti, 2014). Depending on the researcher's background, contacts and negotiating skills, he or she has to 'break into' what are most often closed communities.

"Almost an Insider" – Playing the Practitioner-Researcher

Within the legacy of ethnographic 'creative industry studies', my own research occupies a rather complex position. As a former film practitioner-turned-academic, I inhabit the peripheries of the film industry and the practice culture I intend to analyse. The insider status helped me in reaching the important voices in the film industry, while not being part of the current scenario equipped me with the necessary objectivity the study demanded. As a creative technician trained at the Film and Television Institute of India (FTII), India's elite film school, I was once a part of the film industry I had now set out

to study. But as a practitioner I was located mostly in the margins, having worked primarily with independent filmmakers, or for television, although, in Mumbai, TV production has always been closely linked with the mainstream film industry. My move to academia happened initially as a lecturer in film editing and television production in FTII of which I was an alumnus. The school's geographical proximity to 'Bollywood' and its close working relationship with practitioners in Mumbai ensured that my quasi-insider status vis-à-vis the Indian film industry remained fairly intact. Friends, film school mates and former students are now in key positions in the industry – especially in the fields of sound, editing and cinematography. As a result of this professional background, access to key practitioners and members of the film industries in Mumbai, Chennai and Kolkata did not usually pose a problem. The people I aimed to interview were mostly responsive and cooperative, some were even flattered to be contacted and interviewed by a 'professor from FTII'. While my background gave me certain advantages, it was important that I did not let my own views dominate my critical impulses as a scholar-historian. I feel, being a member of the larger fraternity of the film industry, I could solicit responses, largely devoid of personal agendas. Being a practitioner, I could put the respondents at ease during the interviews and could achieve a degree of informality. While interpreting interviews, I often dug into my own experiences as a film worker, to both interpret the information, as well as fill in vital gaps, especially in historical timelines. Sometimes the fact-checking and triangulation happened through comparing parallel accounts of my film industry peers. Thus, my own professional background gave my research an auto-ethnographic dimension and was marked both by its perceived strengths and disadvantages. But there was a crucial difference, because of which I do not strictly categorize my work as autoethnography. In autoethnographic investigations the researcher's own subjectivity informs the whole research. According to theorist Sexton-Finck, in auto-ethnography "the researcher's subjectivity is therefore always the primary subject matter, yet this personalised data is positioned within a social milieu to locate the researcher as both a translator of culture and a co-creator of it" (2009). Unlike, an auto-ethnographer I did not approach the research from my own subjective position. On the contrary, as a reflexive former practitioner, I was constantly conscious of my own subjectivity, preventing it from influencing my research questions and colouring my interpretations.

Being a practitioner, I was largely accepted as an 'insider', and despite making it explicit to my subjects that their interviews would be used for my dissertation (and hence become public), they were mostly relaxed, forthright and candid. During my preliminary fieldwork in my first year of doctoral research I became aware of the risks my own familiarity with and knowledge about the industry posed for me. When I listened to the recorded interviews, I could sense that I was not giving my respondents the chance to talk in detail and often cutting them off too quickly. I tried to correct this in my main fieldwork which was conducted in the second year of the doctoral programme. My proximity to the industry meant that I had internalized some of the narratives that the industry keeps on producing to represent itself. John Caldwell, in his study of the American film and television industry, has commented on this phenomenon of growing industrial self-reflexivity and self-analysis in practitioner communities (Caldwell, 2008, p2). Caldwell draws our attention to the fact that many of these creative artists also do part-time lecturing in film schools and universities, attend conferences as representatives of the industry and regularly give interviews to a proliferating number of online portals. Very often, as seen in the case of 'Bollywood', these industrial self-analytical narratives attain a hegemonic role, drowning out other minor, yet crucial voices that represent other artists and practitioners. During my fieldwork, I encountered a number of such narratives, which promoted a particular institution or a technology, or in some cases created myths around individuals. Here, paradoxically, my insider status, as well as my access to diverse people and views helped me to identify bias and analyse these narratives dispassionately. Bold claims and motivated self-assertions were subjected to close scrutiny, either through a neutral third person clarification, or, in certain cases, matched with information gleaned from textual or archival sources.

Textual Analysis

Apart from analysing the interviews, I have also examined a large body of theoretical and historical literature on film sound technology and aesthetics, connecting them to debates related to Indian film sound. Apart from well-known theorists like Rick Altman, James Lastra, Mary Ann Doane, John Belton, Gianluca Sergi and others, I have also referred to the writings and interviews of practitioner-theorists like Keshavrao Bhole, Walter Murch and Randy Thom. The writings of the practitioner-theorists have helped me understand the aesthetic issues and problems that film sound innovators were trying to address, especially in the second half of the 20th century. In addition to these, I have also critically

analysed technical articles on internet sites, equipment manuals, trade magazine articles, YouTube videos, films reviews, as well as published interviews with film practitioners and techno-innovators. I have scrutinized the publicity material of big multinational film technology giants like Dolby and Barco, especially their material on digital immersive sound formats, to gain a better understanding of how these technologies are promoted keeping technicians and film distributors in mind.

In addition to the above textual resources I have also analysed a series of film texts in chapters two and five as a way of understanding key film sound design strategies and sound philosophie*s* of filmmakers from both the analogue and digital eras. One of the crucial textual findings of my research was the memoirs of early Indian sound-pioneer Keshav Rao Bhole (1896-1967). Bhole was music composer, sound designer, film and music critic, but above all the sound collaborator of V. Shantaram – the principal director of the Prabhat Studio in Pune. The memoir, written in Marathi language (*Mazhe Sangeet*, 1964), is full of extremely important insights about early sound era practices in India. While its existence was known to historians, this book is yet to be translated into English and has not been on the radar of Indian film studies scholars.

Thesis Overview

The first chapter outlines the broad theoretical contours of my thesis by scanning the relevant literature in the fields of film sound studies, as well as that of digital culture and cinema. Since I locate my project at the intersection of film sound studies, production studies and film history, I have surveyed a wide range of literature from all three fields in this chapter, contextualised by the theoretical problems I wished to address.

The second chapter is linked to my first research question and is a survey of film sound practices in India in the celluloid film/analogue era. The chapter examines the key interventions in film sound between 1931 and 1990 – a period during which the practice conventions and aesthetic approaches of celluloid film were shaped. While my aim was to write a history of film sound practice in the transitional period between film and digital forms, this history could only have been written in relationship with the past – especially the period in which the key conventions in film sound in India were taking shape. To historicise this period, I have analysed the work of a few key filmmakers or sound authors to understand how the aesthetics of sound and image, practice conventions and a

rudimentary, proto-historical idea of sound design was fashioned in India. Through this analytical survey I aim to challenge a number of assumptions about the analogue film era that have been made retrospectively from the 21st century digital age.

The third chapter addresses my second research question and takes an in-depth look at two important conventions of the analogue era film sound in India and their eventual transformation in the digital age. The first convention I examine here is the widespread use of dubbing/ADR in India between the 1970s and 1990s, and the subsequent adoption of sync sound around the turn of the century, especially in Mumbai. The second convention I survey in this chapter is the shift of sound editing practices from 35mm film-based systems to Digital Audio Workstations (DAWs), examining how this shift, in turn, shaped conventions and ideologies of sound editing. I argue that these dual shifts, described above, define the emerging production culture of digital film sound in India.

Chapter four primarily addresses my third and fourth research questions. It explores the idea of film sound design and the designation of the 'film sound designer', unravelling the dynamic relationship between the theoretical construct and the industrial convention of 'sound design' in India, with reference to the use of 'sound design' in Hollywood. The reference to Hollywood is necessitated by the fact that the term was first applied and used by sound workers there in the 1970s and Hollywood technicians are still at the centre of the debate about sound design. The designation of 'sound designer' was introduced into the Indian film industries in the 1990s, nearly two decades after it emerged in Hollywood. The first part of this chapter surveys the history and theory of sound design in cinema; the second part explores the practices of the analogue period that can be understood as a form of 'sound design before sound design.'

The fifth chapter is devoted to my fourth and fifth research questions about the specific impact of digital surround and immersive technologies on Indian film sound practice. Immersive sound is seen as one of the biggest developments of the digital sound regime and it demanded a close scrutiny. In this chapter I do a detailed re-evaluation of these technologies to interrogate the transformational narrative associated with them both internationally, as well as in India. By adopting a genealogical approach here, I claim that immersion and immersive sound had a potentially disruptive and unstable aesthetic history. While examining its adoption by Indian sound designers, I analyse both its

general impact on the image-sound relationship in Indian cinema, as well as examine specific films where surround and immersive sounds were deployed.

The sixth or the conclusion chapter summarises my findings and conclusions vis-à-vis the research goals that were set and signposts the crucial conclusions of the research. I also indicate unexplored areas and research questions thrown up during my fieldwork and those which can be taken up for future research.

A Note on the Naming Conventions

In the dissertation I have followed specific writing conventions, especially in reference to names of places, of people, as well as industrial nominations and designations. Cities such as Bombay, Calcutta and Madras have been referred to by their contemporary names Mumbai, Kolkata and Chennai. While in scholarly writing on Indian cinema the term 'Bombay Cinema' or 'Bombay industry' is common, I have chosen to use 'Mumbai Cinema or Mumbai industry, acknowledging the renaming of the cities in independent India. However, in direct citations, if scholars have used older names like Bombay and Calcutta, I have retained them as in the original. Indian film practitioners interviewed during my fieldwork have been referred to by their first name, as some of them do not have second names or family names. Some of these practitioners are known widely in the industry by their first names. It seemed appropriate to retain this convention of first names in this dissertation. The phrase *sound worker* or *sound engineer* in this dissertation is a blanket term which refers to a person involved in sound recording, sound editing or mixing. The word *filmmaker* here refers to a film director, unless otherwise indicated. The word *editor* or *film editor* refers to visual or picture editors, as opposed to those working with sound who are referred to specifically as *sound editors*. A sound worker doing sound recording at outdoor locations is referred to as a *production sound recordist* or a *production sound mixer*. The sound worker engaged in the final mixing of the sounds is referred to as a mixing engineer or a re-recording mixer, in deference of accepted industrial designations. The word 'analogue', in this dissertation, is used to indicate celluloid film and magnetic tape-based systems used for film production, almost till the end of the 20th century. The word analogue and the descriptors 'film-based' or 'celluloid film-based' refer to the same systems and technologies. An important issue pertaining to the use of the word 'dubbing' has to be highlighted here. In popular parlance the word 'dubbing' is used to refer to the process of substituting the dialogue of a film with that of

another language. Film and television producers routinely use this process to release films in other countries or linguistic zones. In the Indian film industry, the word ‘dubbing’ is used primarily to indicate post-synchronisation of dialogue – also known as Automated Dialogue Replacement (ADR) in the western world. In this dissertation I have adopted the term ‘dubbing’ as it is used in India – primarily to indicate post-synchronisation of dialogue. Another key term used here is ‘sync sound’, used to refer to ‘live sound’ or ‘location sound’, although all three terms are used to indicate the process of location-based original sound recording. In using ‘sync sound’ in this manner, I have adhered to the film industry convention in India, whereby professionals use ‘sync sound’ to distinguish it from dubbing or ADR in the studio.

In terms of geographies of film production, – the term ‘Indian cinema’ in my dissertation refers to film production across all genres, languages and regions from India. The descriptor ‘Anglo-American’ when applied to film industries refers to production systems of UK and US, combined through their shared practices, conventions and resources. The appellation Euro-American, on the other hand, refers to US, UK, as well as Continental European filmmaking and production conventions.

My field interviews were conducted in three phases – spread over three months in 2016, two months in 2017 and a month in 2018. The details of all field interviews I have conducted are included in the reference section at the end of the dissertation. The appendix at the end of the dissertation includes short biographies of all the respondents interviewed in the course of my fieldwork.

CHAPTER 1: Film Sound and the Digital Era: A Literature Review

1.1.Problems and Pedagogies

In the second decade of the 21st century, armed with the privilege of hindsight, we can assert that the predictions about cinema's demise made in the 20th century were overstated. Those who predicted the end of cinema were conflating cinema with its material medium – celluloid film (Sontag, 1996, p96; Belton, 2014 p460–470). Since their birth, motion pictures have persistently absorbed and assimilated new developments such as the coming of talkies, colour, widescreen and stereo sound. The medium of celluloid film gave cinema an aesthetic direction and a formal stability throughout the 20th century. However, as the cinematic arts acquired new materialities following the demise of celluloid films, many of our beliefs and assumptions, which were based on cinema's analogue past, were challenged. The move from photo-chemical to electronic images is now largely perceived as a new beginning for cinema. The current understanding, among film scholars, is that the adoption of digital technology has not led to cinema's demise, but to a transformation. Is this transformation of the cinematic arts more profound than meets the eye? Are we then witnessing a 'digital revolution'? In what way has cinematic experience been transformed? Has it transformed image and sound to the same degree? Some of these issues have been at the centre of in-depth studies over the last two decades (Rodowick, 2009; Belton, 2014, p460–470). In this chapter I review some of these studies, connecting them to my exploration of sound in Indian cinema. In terms of structure, this chapter is divided into three sections, each looking at different but interlinked aspects of film sound scholarship against the backdrop of the digital turn. The first part of the chapter examines critical literature on the so called 'digital rebirth' of cinema and attempts to understand its aesthetic and technological ramifications on film sound. The second part deals with theoretical issues about the nature of film sound, surveying the critical interventions on image-sound transactions in film history. In this section I interrogate foundational questions in film sound studies in terms of their relevance to Indian film sound. In the third part I focus my attention on Indian film studies by examining the sparse but insightful literature on sound and the aural dimension in Indian films. The issues that I address here relates to the persistence of songs, the relative absence of ambient sounds, the problems of post-synchronisation and the recent shift to location-based dialogue recording, in the context of Indian cinema. I have located these

debates within a broader theoretical framework, thus situating them within 'canonical' film sound studies.

1.2. Riding the Third Wave

Gianluca Sergi, in his influential monograph 'The Dolby Era,' (2004, p56), refers to two key historical moments of transition, or what I would like to call transitional waves in the history of film sound. The first wave was the arrival of sound film or the talkies in the late 1920s and the second wave was the emergence of multichannel technologies pioneered by Dolby Inc. in the 1970s. One can extend Sergi's thesis to conceptualise a third transitional wave – a historically more complex and potentially transformative development. This third wave unfolded over the past two decades, as the material medium of cinema underwent a complete transformation into its digital reincarnation. By adopting digital technology, cinema has shed its century-old association with celluloid film, magnetic tape, and other relics of the analogue era to become a 'digital medium' in its entirety.

Riding this 'third wave', motion picture cameras and celluloid film have been replaced by High Definition (HD) cameras, while film projection systems have morphed into Digital Cinema Package (DCP) and Digital Surround Sound (DSS) systems. This process of cinema's migration into the digital form began two decades ago with an uneasy marriage between digital sound production and celluloid-based analogue image-making. In the late 20th century filmmakers were using a combination of analogue and digital technologies. But, following the drastic reduction in the manufacture of celluloid film by market leaders Kodak and Fuji in the early 21st century and the consequent obsolescence of analogue and film-based technologies, the *cinematic apparatus* became completely digital. Thus the transition to digital happened in a staggered way, as John Belton explains, through a process that started in the 1970s and reached a resolution in 2010 (Belton, 2012, p187–195). The *resolution* here refers to digitalisation of every aspect of the cinematic production process, as well as its eventual exhibition as digital electronic data, as opposed to the optical projection of the analogue era. Given the quantum changes it underwent materially, cinema today is a different medium than we knew it in the 20th century.

Unlike Hollywood, which adopted digital technology quite early, the Indian film industry's adoption of digital technology was slow in the 20th century but picked up speed in the 21st century, with enhanced standardisation and simultaneous lowering of costs.[3] High costs in the early days of its introduction, combined with the lack of familiarity among technicians and artists, kept digital technology out of the reach of most Indian filmmakers in the 20th century. Most of them kept on using a combination of analogue and digital-based technologies as was the norm outside the confines of Euro-American film industries – mixing or merging them according to budgetary and aesthetic requirements.

Indian film sound was dominantly monaural before the advent of digital technology, as analogue multichannel/stereo formats from Dolby and other corporations were never embraced widely because of cost and standardisation issues. The adoption of digital surround sound directly from analogue monoaural sound in the early 21st century, largely bypassing the intermediate stages of analogue multichannel formats, is a development I will describe at length in chapter five. Over its 100 years of existence the Indian film industry has been slow and hesitant to adopt newer technologies, including western conventions of sound. Seen in the light of this unhurried evolution of the Indian film soundtrack, the shift to Digital Surround Sound (DSS) from the monoaural (mono sound) was a quantum leap. But before I delve into the issues that shape image-sound relationship in the digital era, it is important to contextualise digitisation of cinema itself and analyse some of the issues and debates that this crucial transition has triggered in the recent past.

[3] The early attempts at digitizing the production process in South Asia were at best half-hearted – the producers were sceptical about investing in technologies that seemed to have limited shelf-life. Added to this were the problems of compatibility between different proprietary systems of exhibition and distribution. The researcher, being in active practice in India between 1990s and 2008, was part of these debates that went on in Mumbai, Kolkata, Chennai, Hyderabad and other film producing cities.

1.3. Digital Futures

1.3.1. Death or Resurrection?

> At the supposed turn of the millennium, the one-hundred-plus reign of celluloid was over; film was dead; digital was It.
>
> John Belton in *False Revolution*

The demise of the celluloid film and the emergence of digital technology-based image and sound has unleashed a fascinating range of theoretical speculations about the future of cinema. Cinema's adoption of the digital apparatus has been described variously as 'a shift', a 'radical break', 'a rupture' and even by some as 'a revolution' – the last used primarily by marketers and the news media.[4] Overwhelmed by the constantly morphing moving image forms that both feed into and compete with the cinema, some historians have hastened to announce its death (Lewis, 2001). The alchemy of celluloid-based sound and images in a dark theatre, with the whirring sound of the film projector in the background, is now a relic of the past and part of the nostalgia-laden, cinephile lore. Film as a dark theatre experience does persist, but through electronic images produced by the 'immaterial culture' of the digital age. Cinema in the 21st century shares its DNA with the televisual and communication media, and materially it has very little to do with celluloid film. Today, films are watched as widely on mobile phones and computer screens, as they are in large screen theatres with surround/immersive sound. The act of watching a film, streamed through high speed internet, on a small electronic screen remains a hybrid experience. Are we watching a film or a television show? Is this cinema or a quasi-cinematic experience? The scholarly world remains divided. From Thomas Elsaesser (2013, p13–44) to Stefan Jovanovic (2003), John Belton (2010) to Raymond Bellour (2003), this debate has brought in strikingly diverse perspectives. My purpose here is not to join or add to the ongoing debate, but to borrow some of the useful insights it has thrown up, as a means addressing issues which are more relevant to my research questions – how has digital technology transformed the aural experience of the moving image? How has it impacted the way sound and image interact with each other in the digital age? How are these transformations experienced in Indian Cinema?

[4] For a broader understanding of the idea of digital cinema refer to Lev Manovich's essay "What is digital Cinema"? source https://wp.nyu.edu/novak-mm13/wp-content/uploads/sites/41/2013/09/Lev-Manovich-_-Essays-_-What- is-Digital-Cinema_.pdf

1.3.2. The Many Deaths of Cinema

The anxieties about cinema's supposed death were aggravated with Paolo Cherchi Usai's influential monograph *The Death of Cinema* (2001). This unease with cinema's perceived death and the substitution of celluloid film with digital technology has been insightfully historicised by Andre Gaudreault and Philippe Marion. "The crisis brought about by the emergence of the digital media is not the first upheaval to rock the cinematic realm. It must be said and repeated over and over, tirelessly: *cinema's entire history has been punctuated by moments* when its *media identity has been radically called into question*." (Italics from authors) (Gaudreault and Marion, 2015, p3). Cynicism about cinema's continuing existence, reiterate Gaudreault and Marion, has been expressed at various junctures of its history. The authors enumerate 'eight deaths' of cinema starting with the 'utterance of Papa Antoine Lumiere' who thought that film was a child without a future;[5] the fears expressed about cinema's 'imminent death' during the conversion to sync sound; fear of cinema's demise following the invention of television; the coming of video-playback technology etc (Gaudreault and Marion, 2015, p12). Cinema, according to them, has never been a stable form and always been in transition, constantly negotiating new technologies, carving out new trajectories in the course of its evolution.

1.3.3. False Revolution?

Gaudreault and Marion describe cinema's 21st-century reinvention as its *passage* to the digital. The word *passage* underlines the fact that cinema's adoption of digital technology was not an abrupt break from the past but came gradually through a series of innovations and technological milestones, spread over three decades. It is through a detailed mapping of these moments that we can understand what the digital turn signifies. Thus, a detailed study of the modes through which digital technology transformed the experience of producing and consuming cinema will help us understand the cultural and aesthetic significance of this recent transition. John Belton, sound historian and digital sceptic, has described the digital turn as a 'false revolution'(Belton, 2010). His main criticism is that digital cinema as a form is trying to mimic or replicate the perfection of celluloid film and trying to recreate a digital version of the celluloid

[5] Antoine Lumiere (1840-1911) was a photography pioneer from France and the father of Auguste and Louis Lumiere – the inventors of the *Lumiere Cinematographe*.

image. He goes on to explain that every aspect of imaging – from colour and contrast to the interfaces of digital editing systems or the design of lenses – digital technology tries to replicate the strengths and peculiarities of celluloid technology. This, according to him, disqualifies the digital from being the 'revolution' that it is projected as. I feel that, as a historian of film sound, Belton finds himself implicated within the 'scopic bias' of film history that sound historians have drawn our attention to (Altman, 1999, p31–48). By restricting his view of the digital only as an aspirational medium trying to attain celluloid film's visual clarity, he seems to be ignoring the fact that cinema is also an aural medium. Sound in the digital age is seen as breaking fundamentally from the past by reinventing itself in terms of its relationship to images. Belton insists that the passage to the digital is less radical a transformation than silent film's conversion to talkies in the early 1930s, which, according to him, was more profound in terms of its formal implications (Belton, 2010, p113-114). At a juncture when the film industry, technological innovators and academics are grappling with the complex ramifications of the digital age, Belton's observation was certainly premature.

Mark Kerins, echoing Rick Altman, has identified obvious parallels in cinema's two *passages* – the adoption of 'sync sound' and the conversion to the digital medium – and has pointed out analogous concerns manifested in the transitional attitudes and aesthetics of the film form (Kerins, 2010, p2-3). Incidentally, later in the same essay, Belton makes a passing reference to the fact that digital technology has 'democratised' moving image production in a manner and scale never witnessed before. There is strong evidence from the ground that cinema, especially independent filmmaking, has reaped tremendous benefits from low cost digital technologies. As a former practitioner in South Asia, I have personally experienced the benefits of the digital cameras and editing systems. Unlike the analogue technologies of the past, new digital tools are comparatively much more affordable and accessible. This democratisation of the filmic apparatus has given a tremendous boost to independent feature films, short fiction, documentaries, and other niche forms.[6] Belton's contention that the digital explosion was engineered by corporate interests for the benefit of the mega-productions of George Lucas, James Cameron et al, completely misses this point. His Hollywood-centric approach blinds him to the fact that the digital technology, by its very nature, cannot be

[6] For a detailed exploration of the 'digital explosion' in cinema refer to the monograph: 'New Digital Cinema: Reinventing the Moving Image' by Holly Willis (2005)

completely monopolised in the same way large American behemoths monopolised the technologies of the analogue age.

The scenario has changed not only for the low-end technologies; so-called high end technologies introduced by western electronics and computing giants are suitably adopted for distribution outside the context of western film industries – notably in the huge film and television industries of India and China – an attractive market for the corporations.[7] Very often these digital tools are modified or tweaked to suit local conditions of these industries and these have fostered a global digital cinema movement in the last decade. Kyle Conway in a 2008 article refers to these creative spurts in digital filmmaking across the world as *microcinema movements* (Conway, 2008, p60–71).

Rick Altman has observed that the aural experience was embedded in the conception of cinema as foreseen by pioneers like Edison (Altman, 1999, p31–48). In that sense sound cinema can be historicised as the actualisation of the physical convergence of the technologies of sound recording (phonograph) and image recording (such as kinetoscope, cinematograph). Early talkies, in effect, could also be seen as the child born of the union of the twin technologies of mechanical reproduction inherited from the 19th century. But empirical evidence from the ground as well as recent theoretical studies contradicts this narrative of perfect union. James Lastra, through his influential monograph, has shown that film sound technology is not only a child of diverse early-20th-century "new media" (telephone, phonograph, gramophone) but also that the relationship of sound and image has been in constant flux throughout the century – changing courses to accommodate a range of different but interrelated technological innovations (Lastra, 2000). Moreover, different national cinemas reacted in their own unique ways to sound as Charles O'Brien has effectively argued in his monograph on French Cinema (2005, p1-2). The move to sound can be effectively theorised if one looks at it through the prism of Foucauldian genealogy (identifying the deep interconnections as well as disruptions in history) alluded to earlier and interpreting it both as continuity and as a rupture (ibid, p14).

[7] The easy availability of digital non-linear editing softwares (like Adobe Premiere) and inexpensive digital cameras made a huge difference to independent and amateur filmmaking in South Asia in the 1990s

The project of mapping contemporary talkie/sound cinema aesthetics has been initiated by Altman (2004), Lastra (2000), Sergi (2004), Whittington (2007), Kerins (2010) and others. Due to the intervention of these scholars we now have timelines, historical evidence and theoretical frameworks to understand how image-sound relationships evolved in cinema. But, most of these studies have been primarily oriented towards American cinema. This is a major gap in film sound studies which demands our attention. The dearth of scholarly studies on sound in contemporary European cinema or, for example, Iranian, Korean or Indian films, reflects the Hollywood-centric approach of film sound studies. The pioneers of film sound scholarship including Altman, Belton, Williams, Lastra, Doane and others based their study of film sound entirely on American and to a lesser extent on European films, which effectively puts a huge shadow over the universal applicability of these studies, sometimes buried in their findings and conclusions. The histories and theories of sound will be enriched and deepened when they are tested outside Euro-American contexts.

1.4. Sound Design, Technologies, and the Emergence of Film Sound Studies

One of the recurrent concerns in late 20th-century film sound scholarship is the 'image-centricity' in critical approaches, a tendency that has kept sound studies on the peripheries of the discipline. Rick Altman traces this neglect of sonic dimensions to twin 'fallacies' – one he calls the 'historical fallacy' and the other the 'ontological fallacy'(Altman, 1992, p35–45). The historical fallacy is based on the premise that 'cinema was cinema before soundtrack was added' and hence by implication sound is a non-essential element – a dispensable 'add-on'. The ontological fallacy stems from the belief that cinema is essentially visual ("cinema without sound is still cinema, but not vice-versa"). Altman feels that both these formulations are intrinsically flawed and suffer from the assumption that 'cinema is a firm unchanging category immune to history'(Altman, 1992, p35–45). This image-centric view of cinema had also been contested, even before Altman, by film practitioners like Robert Bresson and Walter Murch, who have pointed out the deeply sensory nature of aural experience, especially in relation to that of the visual. But, invariably these views, did not cross over to the academia immediately. Bresson questioned the primacy of the image through his poetic and insightful observations on sound in his famous 'Notes on the Cinematographe' (1986). He writes about the inward nature of human perception of sound, suggesting

that hearing may be the more primal, more fundamental of the senses (Bresson,1986, p61). Sound designer Walter Murch, commenting on the sonic possibilities of cinema, echoes Robert Bresson's position on hearing and sound. Observing that hearing or audition is the first human sense to be triggered in the foetal stage, he goes on to link the way sound works on us to the medium's primal nature.

> We begin to hear before we are born, four and a half months after conception. From then on, we develop in a continuous and luxurious bath of sounds: the song of our mother's voice, the swash of her breathing, the trumpeting of her intestines, the timpani of her heart. Throughout the second four-and-a-half months, Sound rules as solitary Queen of our senses: the close and liquid world of uterine darkness makes Sight and Smell impossible, Taste monochromatic, and Touch a dim and generalized hint of what is to come. Birth brings with it the sudden and simultaneous ignition of the other four senses, and an intense competition of the throne that Sound had claimed as hers. The most notable pretender is the darting and insistent Sight, who dubs himself King as if the throne had been standing vacant, waiting for him.
>
> Ever discreet, Sound pulls a veil of oblivion across her reign and withdraws into the shadows, keeping a watchful eye on the braggart Sight. If she gives up her throne, it is doubtful that she gives up her crown ? (Murch, 2000)

While Murch's stirring description of hearing appears acceptable from a phenomenological perspective, recent developments in the science of cognition point towards a more complex interplay of the aural and visual (Lipscomb, 1995). Against the backdrop of these developments, Murch's notion of sound, which after having reigned as the Queen of the senses "pulls a veil of oblivion across her reign and withdraws into the shadows" is an interesting, if not an entirely accurate description of hearing.

Sound and music scholar Giorgio Biancorosso, in his short but insightful essay on film sound, has found an inherent problem with the approach of film sound studies, which, according to him, has pitted 'sound against the image' and 'singled out' sound for 'particular attention' (Biancorosso, 2008). Having conceded that the current elevation of sound is a reaction to its marginalisation over the last century, Biancorosso adopts a more nuanced approach. Drawing our attention to the intricate connection between

sound and the image and the complexity of human reception of moving image arts, he observes

> ...the vastly different roles played by aural and visual cues in a film, despite their convergence in the mind of the spectator into something like a complex gestalt, make any attempt to establish a hierarchy between them simply uninformative. The significance of sound in cinema must be gauged in terms that are germane to hearing (Biancorosso, 2008, p260).

The attempt to decouple sound and image with a view to setting right the scholarly imbalance is an approach Biancorosso has contested in this essay. The perceived superiority of the image, he feels, has a direct relationship with practice conventions that produce this hierarchical relationship. Filmmakers, anywhere in the world, will agree with Biancorosso's observation that "...the tedious and enormously time-consuming tasks of arranging a set for shooting, positioning a camera, and achieving the most desirable conditions of light have slanted filmmakers' own jargon toward the visual" (Biancorosso 2008, p264). His interpretation of the ways in which film production cultures and scholarly engagements mirror each other is a valid explanation of the marginalisation of sound in 20th-century cinema studies. It is not surprising that the powerful voices from the world of filmmaking, advocating creative and non-normative use of sound in their films – Jacque Tati, Robert Bresson, Andrei Tarkovsky, David Lynch, Ritwik Ghatak and other film directors – coincided with increased scholarly interest in the function of sound in the second half of the 20th century cinema.

1.5. Indian Film Sound: Texts and Contexts

1.5.1. Sound, Music and Early Cinema

Indian mainstream films have been a productive site of scholarship, especially if one takes into account the flourishing field of scholarly essays and monographs on Bollywood. While there has been a sustained focus on Indian cinema's visual culture, style and aesthetics, examination of its aural qualities has been sporadic if not rare. The sparse literature on Indian film sound primarily looks at the early sound period and the studio period. In my introduction I have briefly alluded to the special issue on film sound by *Journal of Moving Images* (JMI) brought out by Jadavpur University, Kolkata. In a crucial essay in this issue on JMI on 'voice in cinema' M. Madhava Prasad, echoing

Michel Chion, draws our attention to the cultural and political configurations of voice in cinema. He argues here that voice in cinema is embedded as both speech acts and text, and it can be used as a tool for 'subjection' and 'seduction' in Indian films (Prasad, 2007). Moinak Biswas, building on Prasad's observations on voice, argues that voice can, as a part of the actor's body, be mobilised "to lend materiality to a fantasy figure of the middle-class Bengali male", as embodied in the actor Uttam Kumar in mainstream melodrama of the 1960s and 1970s, while in the 1970s' urban films of Satyajit Ray, the voice is disembodied or 'dialogue becomes non dialogic' by losing its bodily anchor (Biswas, 2007b). Anindya Sengupta, in his exploration of sound in the later films of Satyajit Ray, expands on Biswas' central idea (Sengupta, 2007). I will refer to Sengupta's essay in detail in chapter two, while analysing Ray's sound style.

While voice is a central issue in Indian film sound scholarship, music and song remain the dominant area, thanks to musicologists (rather than film theorists) from the west. Gregory Booth, a musicologist who has researched songs and music of Hindi films by undertaking an in-depth ethno-study of the production cultures of music in Mumbai (Booth, 2008). What makes Booth's intervention significant is his project and methodology. He constructs a persuasive history of Hindi film music by combining personal accounts of lesser known music directors, forgotten musicians from the past and sound technicians, collated through his exhaustive fieldwork in the old music studios of Mumbai, gleaning technical minutiae and anecdotal narratives. While Booth's monograph is methodologically exciting, his interest is restricted to the songs and music from mainstream Hindi films. Unlike other film sound scholars Booth is not examining music vis-à-vis the overall soundtrack or in terms of broader aspects of film sound aesthetics. The study of film music as an integral component of the larger design of the soundtrack has been initiated by Claudia Gorbman (1987) but is limited to Hollywood films. Equal emphasis given to all components of the soundtrack – dialogue, music, and effects – is a relatively new scholarly approach in Indian film sound studies.

Despite a body of influential scholarship on silent film sound in Hollywood, and with more work emerging in the recent past, scholars of Indian cinema are yet to engage with this subject. The primary impediment is the small number of silent films that have survived in India. According to Suresh Chabria, archivist and scholar, among the 1300 films that were made in India in the silent period, less than twenty actually survive (Chabria, 1994, p4). Lack of concrete textual and archival sources makes it difficult to construct an aural history of Indian silent films in the way this has been done for the Euro-American cinema (Altman, 2004). However, there have been some sporadic, but valuable, insights on the sonic cultures of Indian Cinema.[8] Chabria, for example, has observed in his essay that the sonic dimensions of Indian silent films were largely shaped by their unique audience, pre-empting the fact that song and melodrama emerged as dominant aspects of Indian films.

> One is the use of multi-lingual titles. These were generally in English and in one or more of the major Indian languages depending on the linguistic composition of the audience. For instance, titles in four languages—English, Hindi, Gujarati, and Urdu—were frequently used for many Mumbai releases. In several theatres, a commentator read out the titles for the illiterate among the audience and 'dubbed' for the actors.
>
> Music accompaniment usually consisted of an orchestra of harmonium, tabla and sometimes a sarangi or a violin. Foreign pictures were generally accompanied by a piano and violin. The musicians were also expected to provide dialogue and live sound effects for the most exciting action scenes. Since the practice of written scores did not exist, the music accompaniment for a film could greatly differ from region to region, bringing in the local folk and popular music styles. Thus, songs and musical sequences-the most common elements in our sound films-were in a sense, already a part of the silent him viewing experience (Chabria,1994, p7).

Film scholars have drawn our attention to crucial developments that took place with the coming of sound in India. It contributed to the birth of regional language film industries – Hindi, Tamil, Bengali and other film industries came into being in the early 1930s and were trying to forge their own cultural identity. The emergence of regional films in the early sound era sparked new interest in various groups of audiences, fostered a

[8] For an insight into early Indian cinema and its general aesthetics one should look at the essay "The Phalke Era" (Ashish Rajadhyaksha, 1987)

'reimagination' of public cultures in colonial India and introduced new discourses about cinema as an art and entertainment form (Dass, 2015, p174).

Technologies of film sound arrived in India in different phases beginning with the early 1930s. The industry had adopted the technologies and used them in ways that suited Indian cinema's unique dramatic requirement. The nature of Indian cinema sound – particularly mainstream cinema – does call for the development of new theoretical paradigms, that can accommodate the insights gained from three decades of film sound scholarship. Neepa Majumadar's two essays (2001), (2009) and Rosie Thomas' essay on JBH Wadia's curious first talkie film *Lal E Yaman* (2011) can be considered as the first concrete instances of scholarship that connects Indian film sound with canonical sound theory.

In her 2009 essay Majumdar uses instances from early sound cinema, contemporary journalistic accounts, archival sources and advertisements to foreground some fundamental issues of the Indian film soundtrack. She has pointed out effectively that the concepts of spatial fidelity, indexicality, noise and silence are concepts that have to be contextualised in order to arrive at a concrete theoretical framework to study Indian film sound.

> Without, I hope, falling into the trap of positing radical otherness… I explore some ways in which Indian cinema in the first three decades of sound provides a valuable counterpoint to some of the truisms of sound theory: such as the uncanny effect of the separation of sound and source, the tendency of commercial cinema to rely on sound synchronization and the imperative to remove the 'noise' of technology from the soundtrack (the aural equivalent of the 'invisible style' of editing) (Majumdar, 2009, p304).

One of the key debates in film sound in India, as introduced by Majumdar's essay, relates to the various ways in which normative relationships between sound and source are realigned and redefined in early sound cinema.

1.5.2. Sound and its Source

The primary aspect of Indian cinema that sets it apart from western cinema is evident in the relationship between sound and its perceived, onscreen source. While such

relationships between sound and image are relatively rare in western contexts, the aural culture of Indian cinema foregrounds these.

> The connection between sound and its source is less naturalized in Hindi cinema than in other mainstream cinemas such as Hollywood, despite the fact that the soundtrack of films from the first three decades of film sound is, for the most part, dominated by sync sound (Majumdar et al. 2009, p304).

While Indian popular cinema did adopt some of the features of classical narrative from Hollywood, – there was no attempt to conceal the workings of the *apparatus*. In early sound cinema one sees a self-reflexive awareness of sound which the film wants to 'share with the audience.' Rosie Thomas's examination of J.B.H. Wadia's sound fantasy film *Lal E Yaman* illustrates that the use of acousmatic voice and thematic reference to the 'aural' underlined early sound films' active and reflexive engagement with sonic issues (Thomas 2011, p66-86).[9] Thomas argues that "*Lal-e-Yaman* is structured, at its core, around an opposition between the visual and the aural, in which the power of the voice prevails over the illusory quality of the visual.…Technologies of the visual era – staples of the silent era – lose out to the magic of sound recording." Majumdar links the preoccupation with sonic issues to the existence of a strong culture of recorded music in India since the beginning of the 20th century. Majumdar believes that the reception of the film soundtrack becomes inextricably linked to the gramophone and its specific attributes – that demanded a certain kind of training or grooming in listening.

> …this training also had to do with a protracted negotiation with two types of noise, one of which was the literal noise of the machine - by which I mean the noise of poor recording technologies and conditions. But at the same time, gramophone, radio, and cinematic sound might also be understood as audio technologies that regulated and standardized a more broadly understood cultural 'noise', specifically in the arena of music and voice (Majumdar, 2009, p305).

Competing ideas of good, bad, or acceptable sound remains a constant refrain throughout the early sound period in Indian cinema, with the aural discourse being

[9] Jamshed Boman Homi Wadia (known as JBH Wadia) was the founder of the famous studio – Wadia Movietone. Wadia movietone was known for stunt, fantasy and mythological films

highly mediated by the looming presence of the gramophone. The recorded voice in the talkie era films was inevitably compared to that of the gramophone and the telephone – the two other modes of mechanical sound. Apart from noise, Majumdar also talks about the issue of spatial fidelity, especially with reference to early sound cinema. She is slightly ambivalent on the issue of spatial fidelity in the talkie era, as compared to the pre-talkie era. Sound in the pre-talkie era was a unique category that cannot be explained through the talkie era paradigms. It was produced 'live' at the site of the film projection by musicians or narrators, or in some cases pre-recorded sound was played back at the location with a primitive 'record player'. In both cases the sound was not profilmic – so the notion of spatial fidelity was only valid to the extent that it carried the signature of the space where it was produced and did not signify *presence* vis-à-vis the visual.

Majumdar goes on to underline the theoretical implication of reading Indian film sound through the idea of the differentiation of voice and source as rooted in the notion of *acousmetre* (Majumdar 2009, p321-322). The voice-body separation that informs the work of Schaeffer (1967), Chion (2009) and other scholars takes a particularly interesting turn when one considers the case of playback singing or 'lip synced songs' in Indian films.[10] Lip-synced songs or playback refers to a sound with two implied sources – the first 'on-screen' of the actor 'lipping,' and the other of the invisible singer whose voice represents a 'ghost presence' concealed by the cinematographic apparatus. Playback, common in film Euro-American film musicals and television genres, is relatively free there of the representational complexity one encounters in Indian cinema because of the inherent disconnect between voice and body. The playback mode employed in Hollywood musicals is naturalized by the genre expectations of the audience. Similarly, in music videos, lip-syncs are framed as a formal device. A rock star may be visually singing his or her own song (as opposed to the filmic playback), but the audience is aware that it is 'faux-singing' as the singer is 'lipping' a pre-recorded track. So, recording technologies serve the dual functions of separating and uniting the voice and the body and in the process foregrounding two different registers of 'disembodiment'.

[10] The tradition of playback singing is considered a distinctive feature of south Asian cinema. It has produced its own parallel star-system, often competing with the 'actors' in popularity and public adulation.

In her 2001 essay, Neepa Majumdar had drawn our attention to the manner in which the 'playback' *singing voice* 'produces its own stardom' (2001). This dual star system in operation simultaneously through the visual and aural is something unique to Indian cinema. The career of Lata Mangeshkar, the most prolific female star of the Indian music industry, demonstrates how through her cultivated public persona and professional choices she had become ''the ideal norm of aural femininity across numerous female bodies" (Majumdar 2009, p176). This is a curious case where the aural defines the visual, as Mangeshkar's cultivated sobriety finds a conduit through her voice and imbricates the corporeal presence of a wide range of female actors who had dominated the Indian screen. Majumdar sees similar linkages between the voices of the male singer Mukesh and the image of Raj Kapoor, although devoid of the moral and political dimensions linked to female singer-stars.

Majumdar's insightful analysis of playback singing in India and its theoretical implications does make a case for a culturally grounded analysis to be extended to other periods, as well as to non-mainstream forms of Indian films. A public talk by Shoma A Chatterji at the 'The School for Sound' (2007, p103–111) had also argued for 'cultural specificity' in the way sound and silence assume divergent values in Indian film texts, suggesting somewhat tenuously that such a reading has to emerge from an anthropological understanding of Indian society, Indian family and traditional values.

1.5.3. The Persistence of Songs

Indian film music, particularly the 'song-and-dance' sequences, resist analysis through the framework proposed by film music theorists like Claudia Gorbman (1987) and Jerrold Levinson (1996). Gorbman's approach tethers music directly to the films' diegesis – using the concepts of structuralist narratology of Gérard Genette (Gorbman, 1980, p194-195). While this approach is useful for film music in general, it may not be the most effective model through which to look at Indian film music. A case in point is the song in Indian films, which does not directly fit under the three main categories proposed by Gorbman – diegetic music, nondiegetic music and 'source music'. According to Gorbman non-diegetic music is 'unheard,' as the characters within the diegesis cannot hear it and is only accessible to the viewer. Gorbman's conceptualisation is not an adequate model to understand the dramatic nature of most Indian film music – where diegetic and non-diegetic music are intertwined. Picturised

songs – an omnipresent stylistic device in Indian films – blends voice (which is diegetic and lip-synced) with orchestral accompaniment. The orchestral accompaniment to the song is non-diegetic.

As briefly mentioned earlier, there has been a surge of interest in the music of Indian films as seen in the works of Ranade (2006), Booth (Booth, 2008), Morcom (2001, p63–84), Sarrazin (2006, p26–32) and others. There is a consensus among scholars that music in Indian films has been shaped by indigenous performance traditions. Lalitha Gopalan has observed that the persistence of songs in Indian films is linked to the early influences of Parsi theatre and other folk performative traditions. (Gopalan, 2003, p359). She has also drawn our attention to the apparent lack of structural integration between the songs and the films.

> Although musicologists have written extensively on the synthetic quality of Indian film songs and on the parallel economy of star music directors and singers, there is an absence of literature on song sequences, lending support to the assumption that the sequences are extra-diegetic or, in narratological terms, achronies, outside the temporal reckoning of the narrative (Gopalan 2003, p346).

Songs in Indian cinema represent a surprisingly diverse aesthetics – from songs that are well integrated into the narrative and propel it forward, to the ones that are grafted on to a film as a musical interlude, the so called ‘theme songs’, ‘title songs’ and other such instances. The history of Indian cinema is replete with films which have enormous ‘recall value’ linked to tremendous public popularity of the songs. There have been several attempts to read the spectacular excesses of ‘song-and-dance’ scenes in terms of the ‘cinema of attractions’ as formulated by early cinema theorist Tom Gunning (Vasudevan, 1995, p305–324 ; Creekmur, 2012, p63). Lalitha Gopalan has developed this idea further, conceptualising them as a manifestation of a ‘cinema of interruptions.’ Cinema of interruptions, Gopalan believes, is manifested in the structured disruptions that appear in the form of ‘song-and-dance scenes’, ‘intervals’ and ‘censored/removed scenes’ that one usually encounters in Indian films. About ‘song-and-dance’ in Indian cinema, she observes

> In contrast to these assumptions that promote their extra-diegetic relationship to the narrative or dismiss them as 'sequences of attractions' reminiscent of early cinema, song and dance sequences deserve another look, differentiating their relationship to the diegesis: delaying the development of the plot, distracting us from the other scenes of the narrative through spatial and temporal disjunctions and bearing an integral link to the plot. Even in one film, there can be different articulations of these sequences, thus complicating the idea of a single diegesis or the value of the extra-diegetic. The lack of uniform temporal sequencing across different films alerts us to consider genre differences and auteur signatures inflecting the choreography of song and dance sequences (Gopalan, 2003, p19).

Lalitha Gopalan, by proposing this framework of 'interruptions' as a mode of reading Indian popular films, wants us to rethink the notion of time-space continuum in film analysis. For her, Indian films are not only organized around these interruptions – but also celebrate them. She posits her approach as 'global', rather than confined to national, regional, or local audiences. Her aspiration is not only to create a theory of Indian cinema, but to 'identify points of intersection between different national cinemas or different languages cinemas.' In other words, she is suggesting that one can adopt her formulation to look at different cinematic cultures – their diverse visual and aural styles.

Gopalan's idea of interruptions is a particularly useful model to look at some of the changes that Indian Cinema has undergone with the passage to the digital. The adoption of unconventional narrative forms, dense digitally layered and richly affective soundtracks, spectacular action and period dramas demand new ways of looking and theorising. Gopalan acknowledges this in the final chapter of her book by extending the idea of interruptions into the digital era, by looking at digitally facilitated image and sound used by Indian filmmakers, especially Mani Ratnam. By analysing Mani Ratnam's and Kamal Haasan's increased use of dissolves, speed variations and morphing of visuals in films like *Alaipayuthhe* (2000) and *Hey Ram* (2000), respectively, Gopalan underlines digital technologies' inherent tendency to lend themselves to use for purposes of image and sound manipulation. Despite narrative cinema's link to realism and indexicality, the incursion of the digital offer new definitions of realism, as it reconfigures some of the primal impulses of film form. In

her concluding remarks Gopalan contextualises her assertion about the digital future of 'interruptions'.

> But, just as the early years of cinema enjoyed a space outside routinised narratives, digital technologies with their excessive specularity, promise different Utopias heralded through the violent manipulation of space and time. Even in one of its most aggressive forms, it returns us to the myriad possibilities offered by cinema in its early years of development that were systematically foreclosed by the domination of a particular form of narrative cinema (Gopalan, 2003, p197).

Gopalan's observations on the 'specularity' of digitally made films – their tendency to embrace visual and aural novelty and spatio-temporally disruptive elements – can be seen at work in the immersive sound designs I analyse in the fifth chapter.

1.5.4. Beyond the Songs

Songs in Indian popular films have attracted more attention in the recent past, because of their dual identities – both as a filmic element and as a popular musical form in its own right. Unlike studies of Hollywood and European films, both dialogue and sound effects remain largely unexplored areas in Indian cinema. In a recent essay in the journal *The New Soundtrack,* Budhaditya Chattopadhyay, sound artist and a scholar of sound studies, has initiated this debate. He turns his attention to the widespread use of dubbing or post-synchronisation of dialogue in Indian cinema since the late 1940s. As a part of this practice, the dialogue recorded on location were replaced with studio-recorded versions of the same (Chattopadhyay, 2015, p55–68). In this mode, actors had to perform the dialogue twice – once while performing on location and then re-delivering them by exactly mimicking the previous versions. Chattopadhyay describes dubbing as more of a salvaging act, particularly in the Indian context.

> Most of the actual location sound recordings were replaced in the studio and to mask the shortcomings of the technique, highly processed Foley and sound effects were often used (Chattopadhyay 2015, p61).

The studio recorded duplicates not only lacked spatial fidelity, as Chattopadhyay stresses in his essay, but also the actor's voice and body were 'uncoupled' and the voice reintroduced in the post-production lacked the spatial signature (Chattopadhyay 2015,

p56). In the dubbing booth the actor was performing to the screen and not to a co-actor. In the west, post-synchronisation was done only to replace unsatisfactory recordings, a missed word or instances of bad diction. In India, it was norm to replace the dialogue of the entire film.[11] Getting dubbing dates from the actors was a fundamental commitment that came with the assignment and lack of compliance of dubbing schedules was perceived as poor professional conduct or else was used as a bargaining chip to extract payment from recalcitrant producers.

As a practice, dubbing was introduced to ensure the complete intelligibility of dialogue in a dramatic narrative context, but as Chattopadhyay observes in his essay, it ended up making the sound non-naturalistic (2015, p61-62). To support his view, he gives instances of popular Hindi films where reverberations, Foley sounds etc were used to 'improve' the dialogue or the soundtrack. Beginning in the 1950s and remaining prevalent till the advent of location-based dialogue recording in the late 1990s, four decades of Indian films were fully dependant on dubbing. While historicising dubbing in Indian films, Chattopadhyay links it to two major technical developments – the coming of portable magnetic tape-based recording, and the introduction of Magna-tech Rock-and-Roll projectors which could move both forward and backward.

1.5.5. Spatial Fidelity, in Theory and Practice

The sonic style of mainstream cinema in India in the dubbing era, according to Chattopadhyay, is marked by a hierarchical ordering of various elements of the soundtrack. Synchronised effects generated by Foley technique, and dialogue dominate the hierarchy, while ambient sounds are pushed to the periphery of listening. The network of sync sounds/dialogue rule the soundtrack to an extent that ambient sounds are softened and barely audible, or even in some cases are completely removed so that there is no impediment to the comprehension of dialogue. This partial or complete muting of ambient sound, Chattopadhyay believes, reflects a lack, an absence – the stripping away of a vital element – that gives depth to the shot by 'establishing cognitive association between the viewer and the site, reinforcing impression of reality' (2015, p65). Chattopadhyay, here, is extending his defence of aural indexicality by positing an ontological relation between the viewer and the site. As an aesthetic position, this

[11] Despite the introduction of live or 'location-based recording' in Hindi cinema, most Indian films are still post-synchronised, due to a variety of reasons that I will deal with later in the dissertation.

argument is not only in conflict with the peculiarities of the digital form, but also overlooks the fact that in cinema location sounds, studio recorded replacements, wild tracks (separately recorded atmospheric effects), stock/archival sounds, location recorded sync effects and Foley effects are in most cases woven so intricately together that spatial fidelity becomes an unachievable idea, almost an aesthetic dogma.

1.6.Pierre Schaeffer and Walter Murch

French composer and musicologist Pierre Schaeffer, while conceptualising *musique concrete*, was deploying acousmatic sound to create music.[12] His work effectively problematises the idea of fidelity in a radical way (Schaeffer, 1967). The basic concept of *musique concrete* could be linked with Walter Murch's concept of 'worldising sounds'– a technique which introduced a new way of connecting sound and space (Jarrett and Murch, 2000, p2–11). In his various interviews, Murch often spoke about playing back tapes of clean, studio recorded music from one Nagra professional tape recorder and recording it on another Nagra in a specific outdoor location, to add 'spatial colour' to the music. The technique was used for the first time in the rock-and-roll infused soundtrack of *American Graffiti* (George Lucas, 1973) and was continued later in his other projects. 'Worldising' was Murch's way of harnessing 'original sounds' and adding acoustic dimensions to them according to the narrative context of the film. The sounds created by Murch through this form of aural layering were devoid of spatial fidelity. The sounds he created did not have loyalty to a single space and, as hybrid sounds, were not anchored to a real space through an indexical relationship. This technique of sonic manipulation pre-empted the digital processing of sounds in the 21st century by film sound designers and practitioners of sound art.

1.7. Dolby and Beyond

Murch's work with pre-existing sounds, his use of sweeping immersive sound that moved along the theatrical space and densely packed sounds (in *Apocalypse Now*) are some of the continuing preoccupations of sound in the digital age. Sound theorists like Altman (2004), Sergi (2004), Belton (1985) and Whittington (2007) who have explored

[12] *Musique concrete* was pioneered by Pierre Schaeffer and his associates at the Studio d'Essai (The Experimental Studio) of the French radio. The technique of composition exploited the use of recorded sound as raw material and the obscuring of the source of the sound as a means to acousmatic listening.

analogue monaural and Dolby era sound have revealed the ways in which the aesthetic concerns and technologies of the analogue era have interacted with each other. They have also shown us how some of the basic approaches of the so called 'Dolby stereo age' are carried forward in the digital period. Digital Surround Sound (DSS) of the 21st century can be seen as a progression from the 6-track Dolby Stereo that came into being in the 1970s. Mark Kerins believes that DSS, while reflecting the fundamental multitrack capabilities of the analogue era, represents "filmmakers' desire to move beyond the limited surround capabilities of Dolby Stereo" (Kerins, 2010, p4). Kerins, however, observes that multichannel sound still remains a vexing issue and digital sound systems "probably rely on the screen-centric notion of cinema sound, in the same way their mono and Dolby stereo predecessors did." Here Kerins is reacting to Sergi's assertion that that a "reassessment of the relationship between screen-sound and surround-sound" is due. Given the frontality of the conventional cinematic experience and the slippery notion of the off-screen space, such reassessment I feel is essential. The fifth chapter of the dissertation confronts digital immersive sound and its impact on Indian cinema, and in the process examines the discourses that define surround sound.

Indian filmmakers and the Indian film industry have made a relatively swift move to the digital form, as a direct result of the economic forces at play. While the digital processes were embraced, there is still scepticism about discarding celluloid as the material medium, especially among those practitioners who had started in the film era. The adoption of digital technology in India has started shaping the visual look, the sounds, the subject and the treatment of the films. In the subsequent chapters, I will take up some of the issues and concepts raised in this survey of scholarly literature such as sync sound, dubbing, sound editing, sound design and surround/immersive sound and see how digital technology has shaped the sonic practices and ideologies of Indian cinema.

CHAPTER 2: Sound During the Celluloid Era: Histories and Historiographies

2.1. Sound Histories

An exploration of how digital culture shaped film sound conventions in India has to start from the examination of the analogue sound cultures and processes. In this chapter my aim is to survey key celluloid film-based technologies, practice conventions and aesthetics which dominated Indian cinema in the celluloid era from the inception of sound in 1931. The purpose here is to identify the entrenched conventions and practices of the celluloid period, in order to trace its aesthetic legacy within the digital era. As part of this project, I study key practices and breakthroughs in Indian film sound from the early 1930s to the late 1970s.

Conventions of film practice almost always defy neat periodisation. Periodising film history as the silent period, studio period, technicolour period, celluloid period, mono period or digital period is fraught with inherent historiographic problems. For example, important practice conventions of the studio period do not end with the demise of the big studios in India. Some key practices continue, albeit in a changed form, in the post-studio era, and keep on evolving throughout the celluloid era. My forays into the practice conventions of Indian cinema have revealed that recordists working on non-mainstream/art films carry their expertise into mainstream films; from non-fiction to fiction forms ; from television to the film medium ; and move between from Hindi and Tamil films, or between Tamil and Malayalam films and so on.[13] Often technologies and practices are rejected at one specific juncture, but are revived later in another period. Identifying these 'hidden histories' and interconnections, ruptures and continuities between different regimes of sound aesthetics and practice conventions define the historiographic approach I adopt in this chapter. This is not a comprehensive survey of pre-digital practices. I look diachronically at specific sound practices from key junctures within the film era in India, to arrive at broad tendencies and aesthetic approaches.

[13] In India, it is extremely common for technicians like sound designers and cameramen to work for two or three different regional film industries. Moreover, the southern city of Chennai, formerly known as Madras, being the centre of Tamil film industry, also caters to Malayalam, Kannada, and Telugu industries. Some of the more advanced, cutting edge facilities and high-quality technicians are available in the studios of Chennai.

In the first part of this chapter, I outline my theoretical framework, especially the concepts of 'historiographic crisis' and 'jurisdictional strain' borrowed from Rick Altman. I use this framework to analyse the relationship between narrative, diegesis and sound in Indian cinema. In the second part I analyse the use of sound in selected films from the early sound and studio era, to understand the origins of sound design and sound aesthetics in Indian cinema and to develop a historiographic framework for the study of Indian film sound, especially of the analogue era. In the third part of the chapter, I develop this framework by looking at the work of post-independence directors, primarily from the art cinema movement in India, known for their creative use of sound. The filmmakers explored here are V. Shantaram, Debaki Bose, Satyajit Ray, Ritwik Ghatak, Mrinal Sen and Mani Kaul. I have tried to analyse the crucial role played by these filmmakers in shaping sound aesthetics and practice conventions in India.

2.2. Conceptual Issues in Film Sound History

2.2.1. The 'Conversion Era' a Historiographical Crisis

Scholars studying silent cinema sound across different film industries have looked at the theoretical implications of live musical accompaniments, commentaries and other sounds that constitute the soundscape of silent cinema (Altman 1945-, 2004).[14] While the primary difference between silent and talkie films was that the former lacked speech sounds, the crucial difference was that all sounds in silent cinema were performed live during the exhibition. Although *The Jazz Singer* (1927) is widely accepted as the first sound film or the first talkie, it was a stylistic hybrid, which combined both silent cinema conventions (intertitles) and voice (in the form of songs with live, intermittently used synchronised sound and dialogue). Over the next few years, passing through a series of transitional phases, silent cinema transformed into what is now understood as a mature, evolved form of the sound film. The era, which saw the gradual substitution of an aesthetic of silent cinema by a fully formed aesthetic of sound cinema, has been studied exhaustively by scholars in the recent past (Abel and Altman, 2001).[15]

[14] Since pre-talkie era cinema was mostly accompanied by live musical performances, narration and commentaries, scholars have questioned the continued use of the term 'silent cinema' when applied to this era.
[15] There is a dominant point of view that silent cinema was a very different art form compared to talkie cinema. Some influential silent era filmmakers like Eisenstein and Rene Clair believed that the arrival of synchronised sound undermined the expressive quality of cinema.

While the introduction of sync sound did bring about a disruption in the visual-driven language of silent cinema, films such as *The Jazz Singer*, as well as early Indian talkies blended aural conventions of the silent period with the new conventions of the sound film. The proposition that talkie films were a distinctly different media form from sound cinema fails to stand up to critical scrutiny. In his pioneering study of silent film sound, Rick Altman (2004) has proposed the concept of 'crisis historiography' to explain the departures from 'the presuppositions and practices of traditional history.' A new technological media form, Altman believes, does not have a stable identity.

> … new technologies are always born nameless. Assimilated to multiple possible models, new technologies always begin life with multiple monikers rather than a single stable name. Indeed, the multiplicity of identities imposed on most technologies makes identification of a "birth date" impossible, thus the metaphor itself inappropriate. Instead of birth we find crisis of identity, reflected in every aspect of new technologies' socially defined existence. The identity crisis is best understood in terms of three separate but closely connected processes: multiple identification, jurisdictional conflict and over-determined solutions (Altman, 2004, p18-19).

This 'crisis of identity' is noticed in certain films from the 'conversion era' – especially in their use of stylistic codes through which the notion of a 'sound film' is constructed. The move from silent to sound film is not a clean transition too, but one that passes through intermediate forms. Can the *The Jazz Singer* (Alan Crosland,1927) be accurately described as a talkie film? As mentioned earlier in this chapter, only the songs or performances in the film have synchronised sound. The film's dramatic scenes were largely silent – punctuated by intertitles. Often described as a 'part-talkie', the Alan Crosland film was trying to make use of the newly evolving technology of sound-on-disc to animate film experience with live recorded sound. The attempted marriage between sound and celluloid image through this short-lived sound-on-disc format was called Vitaphone.[16] In Vitaphone, while the visual was on the film, the sound was played back through quasi-synchronous disc that ran alongside the projector. Thus, Vitaphone was an 'intermedial' form that fused motion picture technology to the technology of the gramophone. During this period, theatre and opera, recorded forms like gramophone

[16] Vitaphone 'sound-on-disc' system was developed by Western Electric and was acquired by the Warner Bros in the year 1926. The sound was played from a disc like in a Gramophone, and synchronisation was achieved by mechanically interlocking the turntable with the projector motors.

and film, and technological aspects of telecommunication were drawing stylistic elements from each other's jurisdictions.

2.2.2. Jurisdictional Conflicts in Conversion Era Sound

As a part of my historiographical project, I will extend Altman's notion of jurisdictional conflict to taxonomies and concepts in film sound. Concepts like synchronised and non-synchronised sounds, diegetic/non-diegetic sounds, acousmatic or disembodied sounds have been at the centre of film sound theory. Film historians and scholars have used these key concepts to theorise the relationship between a sound and its real or imagined source. I will argue that the image-sound relationships in the conversion era films are characterised by 'jurisdictional strain' between the various conceptual categories of sound.[17] I will contend that concepts and notions in film sound theory have their own jurisdictions or borders, but these borders are often breached in the conversion era. These jurisdictional conflicts, arising from conscious and unconscious decisions, gave rise to complex interplays between sound and image, and between the sound elements themselves. I will use examples from the films produced by three major studios in India in the 1930s and 40s to argue my point.

2.2.3. Brief Survey of Technologies and Practices

A brief survey of the technologies and practices of sound prevalent in the conversion era is crucial to this inquiry. In the early talkie period, sound-on-disc (eg *Vitaphone by Warner Bros, Chronophone by Gaumont*) gave way to what came to be known as 'sound-on-film' technologies (*eg. Movietone by Fox, Photophone by RCA*). In the 'sound-on-film' versions image and sound were recorded simultaneously on the same strip of film. Technologies for segregation between image and sound during the process of recording were not introduced till the late 1930s. Sound was recorded on to the optical track of the film, even while the visual was filmed, through a process known as direct recording.[18] Most of the theoretical and techno-aesthetic issues of the early talkies

[17] 'Conversion era' here is broadly defined as the transitional era between major technological and aesthetic shifts and not solely the transitional period between silent and sound era.

[18] In sound-on-film formats sound was recorded directly on to the same piece of 35mm film as the images or on a separate optical film. Sound-on-film formats were the first step towards proper synchronisation between sound and images.

are linked to this method of recording. Gregory Booth, in his study of Hindi film music, draws our attention to this.

> In France and India (among other countries) … sound and image were recorded simultaneously on one strip of film for at least part of the 1930s. Thus, the songs and music heard in early Indian films were sung by the performers, who acted and sang simultaneously, just as if they had been on a music drama stage. Accompanying musicians played directly into the same microphones the singer was using but arranged themselves, so as to remain out of view of the camera… Early Indian sound filming entailed the recording of an event: in this case, the complete performance of a scene (or a portion of one) from what was effectively a music drama that was being performed in a film studio instead of on stage (Booth, 2008, p 34).

Across the world, dialogue, songs, and music were all recorded directly on location during the conversion era, across the world, but according retired sound person K Sampath this phase lasted slightly longer in India (interview of K. Sampath, 2018). The process almost resembled live-recording of a musical play or an opera, if we were to do it today. Songs and dialogue performed by actors, simultaneously, in the same scenes and often filmed in one continuous 'long take' were a common convention in that period in India. Booth's description of this convention as filmed 'music dramas performed on stage' emerges from a current understanding of cinema and is a problematic 'back projection' of a contemporary idea of cinematic specificity. In the early 1930s, cinema and stage conventions were interwoven in a dynamic relationship with film techniques of the period. There was no clear distinction between 'filmic' and 'theatrical' as rigid categories in the early 1930s and the initial sound conventions of cinema emerged from theatre. Accounts of early sound technicians tell us that the sound crew's job was to create effects sounds on location during filming, even to mimic animals and birds, or artificial nature sounds (Bhole, 1964, p51).[19] There was no scope to add these sounds once the filming process was concluded and Foley techniques were still far from the horizon. Before the formal advent of sound mixing in 1936, Prabhat Studio composer Keshavrao Bhole admits to using mimicry performers to create specialised sounds on location and 'live mix' them with dialogue and music (ibid.). Conversion era films from

[19] According to Rick Altman, using mimicry artists to create live sound effects was a common practice in the silent era. He also talks about special devices to reproduce "duck quacks, rooster crows, hen cackles, and pig grunts." (Altman, 2004)

Prabhat Studio and New Theatres, especially from the early 1930s primarily use long takes with static compositions, or sometimes minimal camera movements. However, the 1934 film *Amrit Manthan* directed by V Shantaram was a unique exception in which extreme close ups, shorter shot durations and camera movements were deployed. Film sound conventions, in this era, also kept on evolving new identities, although clear distinctions between dialogue, music and effect with respect to the narrative or the diegesis were yet to take shape. So was the idea that dialogue, music and effect combine together to form the complex entity called the film 'soundtrack'. The study of film sound has been based on the idea of the 'soundtrack,' – a conceptual entity accompanying the 'image-track' – the container of all aural information.[20]While soundtrack and image-track were distinctive notions – the categories of dialogue, music and effect are not easily distinguishable and are subject to 'jurisdictional strain'.

2.2.4. Diegesis and its Strains

The binary distinction between diegetic and non-diegetic/extra-diegetic sound has been a contentious subject (Winters, 2010, p224–244). Despite the concept's centrality to the study of film sound, defining the role of sound in a cinematic work based on its relationship to the diegesis has been a tricky issue, particularly so in Indian cinema. Sounds in the cinematic soundtrack that are perceived to originate in the narrative world of the film (and hence are heard by the fictional characters) are understood as 'diegetic sound'. The sources of the diegetic sound are visible on-screen. Dialogue, incidental and effect sounds, and music performed by the characters onscreen, are considered diegetic. Non-diegetic sounds do not belong to the narrative world and are heard only by the film's audience, and not by the characters in the film. Claudia Gorbman (1987) refers to this *unheard* nature of background music when she labels it 'unheard melodies'.

In the recent past, analysing film sound through the concept of diegesis has also been interrogated by film sound and music scholars. David Neumeyer (2009, p26–39), while discussing this issue, has quoted veteran sound designer Randy Thom.[21]

[20] It may be relevant here to point out Michel Chion's contention that there is no 'auditory container for film sounds' in the same way there is a visual container for the image (Chion, 1994). Chion goes on to say that "there is no soundtrack" implying that it may not be useful to look at the film sound as a singular entity.

[21] Randy Thom is an internationally renowned sound designer and mixer working Hollywood. Since 1994 he has been a staff member at 'Skywalker Sound' facility founded by George Lucas. He is currently the 'Director of Sound Design' in the same studio.

> In the thirty years of conversations I've had with co-workers on feature films in the USA and Britain, nobody has ever used the word diegetic except to deride it as an academic term of little practical use." But Thom admits that, in postproduction, "the music mixer may ask whether the sax should be treated as 'source' or 'score' to know if it should be muffled and treated with artificial reverb ... or if it should be played cleanly and crisply (Neumeyer, 2009, p26).

However, Thom's comment, underlines the fact that the implied source of a sound does determine the way it is to be recorded and processed by the sound technicians. It also determines the relationship a sound element is likely to have with the image and how it will be received and interpreted by the spectator. For example, a music which is 'scored' (hence background music) can be used in multiple scenes or sequences and can also appear as a leitmotif, unlike a 'source' music or diegetic music. 'Source' music is always tethered to a visual or a scene. Source music will share its spatial qualities with other sounds that are 'heard' by the characters within the diegesis, rather than sounds which are 'unheard' (to use Gorbman's formulation). Background music does not 'belong' to a designated space – its spatial properties are thus undefined. Being spatially non-specific and neutral, it will be recorded in a sound-proof studio and processed for clarity and aural appeal, rather than spatial fidelity. Thus, despite the obvious 'strains' evident in approaching sound through spatiality and diegesis, the conceptual categories of diegetic and 'non-diegetic' remain as useful tool for the film sound theorist, especially with reference to musical sound.

2.3. Sound and Music in the Conversion Era

According to Madhuja Mukherjee the coming of sound led to a major upheaval in the studios in India, as it did in the rest of the world. But the issues in India were slightly different, given the unique social and cinematic conventions.

> In Calcutta and Bombay, the structure of the studios underwent a drastic change. After 1931 large-scale, well equipped studios like the New Theatres, Prabhat Film Company and others emerged with a crew of trained technicians, writers, musicians, and actors (who had a theatre background). A number of successful actors disappeared because of their inability to handle Hindi and other languages. Sound also put an end to the practice of casting men in female roles, though a reverse tendency (generated by the popularity of songs and music) encouraged the casting of female actors in male roles. In

> most cases popular theatre actors were hired for their abilities to sing and perform (Mukherjee, 2007, p39–61).

Non-diegetic or background music occupied an ambiguous, liminal space in early sound cinema in India. In some cases, the use of background music was considered as a logical extension of the silent cinema practice of live musical accompaniments and was avoided by filmmakers because of its 'non-realistic' ancestral link to theatre. Since the technology of re-recording or mixing was yet to arrive, sounds were simultaneously 'performed' on the location and live mixed into the optical sound recording machine. While actors spoke their dialogue, musicians hiding from the *mise-en-scene* performed music pieces which were live-recorded along with the dialogue. This led to the perception that background music is just the recorded version of live musical accompaniment prevalent in the silent era. But in the early sound period it was difficult to distinguish between the various components of the soundtrack and all sounds were deemed diegetic. "Simultaneous recording encouraged the seamless integration of music into the story and a comparatively flawless transition between music-oriented and dialogue-oriented scenes" (Booth, 2008, p35). Songs, dialogue, music and, non-musical effects all originated from the same diegetic universe.

A study of the soundtrack of the first synchronised sound film *Ayodhecha Raja (The King of Ayodhya)* (V.Shantaram,1932), made by Prabhat studio, Pune, reveals some of the unique aural conventions of the transition era.[22] True to the generic demands of the studio era mythological film, *Ayodhyecha Raja'*s narrative featured numerous songs, used as a tool to "set the scene, provide spectacle and narrative commentary, and introduce major characters." (Booth, 2008, p36). The first scene is a song, executed as an elaborate *plan sequence*, shot with a dolly-mounted camera. The scene introduces King Harischandra in his court, surrounded by his court singers and musicians – evidently real musicians performing for the scene. The coming of sound had resulted in the disappearance of the 'orchestra pit'; *Ayodhyecha Raja*, cleverly reinvents this, by making the musicians part of the film's diegesis and the *mise-en-scene*.

[22] Prabhat Film Company, also referred to as Prabhat Studio, was a film production company founded in the city of Kolhapur in Western India, in the year 1929, by a group of film workers led by director V. Shantaram. Prabhat was relocated to the city of Pune in 1933. The studio was the largest one in Asia at that time and produced some of the greatest films of the early sound era.

As the film progresses, songs follow each other at regular intervals, sung by both major and minor characters. Court musicians appear in the shots, establishing the source of the music accompanying the vocals. So, what initially appears to be background or non-diegetic music is actually diegetic music. Structurally, these 'background music' segments are continuations of the musical accompaniment of the diegetic songs. Thus, background music was merged with preludes, interludes, or postludes of the songs. As actor-cum-singers stop singing, the live accompanists continue playing the same theme and the same music takes on the new function of background music. A scene, nineteen minutes into the film, introduces Queen Taramati, singing the song '*anand de'* ('bring in joy') in her boudoir. The scene ends with King Harischandra, her husband, walking in. While they start speaking, the tune of the song '*anand de*' continues softly in the background, and in effect, continues the musical accompaniment. Thus, there is a blurring of boundaries between diegetic and non-diegetic, or rather diegetic music assumes the role of background music. When one compares this to Hollywood films from the same period, one notices the full-blown use of background/non-diegetic music, as seen in the 1928 film *Lights of New York* or in the title scene of the 1930s film *All Quiet in the Western Front*. Unlike *Ayodhyacha Raja* the source of the music in the Hollywood films is completely concealed and the music is softer indicating its non-diegetic character. The integration of the music into the soundtrack in these 1920s Hollywood films matches the conventions of non-diegetic music that we associate with l940s films from the Indian studios.

2.4. Supra-diegetic Sound

Like *Ayodhyacha Raja,* the film *Chandidas* (Nitin Bose, 1932) from New Theatres, Kolkata, shows a similar use of live orchestral music as a background score. The silent film practice of playing orchestral music during the film screening metamorphosed into orchestras playing live on the locations of early silent period films from some major studios in India. These orchestral pieces had to be played 'live' by the musicians during the filming because of the 'simultaneous' or 'direct recording' technology. The orchestral music, here, operates simultaneously as diegetic and non-diegetic music, and puts these categories under 'jurisdictional strain'. To describe these directly recorded sounds, which resist clear demarcation vis-à-vis the film's diegesis, I would like to co-opt the term 'supra-diegetic'. Rick Altman (1987) applies the term 'supra-diegetic' to

describe the reversal of the image-sound hierarchy in Hollywood musicals. In musicals, rhythm and the music gain dominance and determine the visuals.[23] In the context of Indian films, I use the term supra-diegetic to denote live musical accompaniments and live background music which transcends our conventional expectation from a film's diegesis. What makes this category unique is that unlike non-diegetic background music, supra-diegetic music is not added during the post-production, this music physically inhabits the soundscape of the location and is part of the 'profilmic event. With the emergence of post-production methods like track-laying and mixing, music and songs were added during the editing process, and mixed together with dialogue and effects during re-recording/mixing. Supra-diegetic sound and music, as defined in the Indian context, died a natural death in the 1940s.

2.5. Sonic Naturalism

A turn towards a sonic naturalism, linked to the use of sounds and music, is observed in the 1936 film *Kunku/Duniya Na Mane* (The Unexpected,1937) by V. Shantaram – a 'contemporary' social drama about a young woman duped into marrying an elderly widower with grown up children.[24] The principles guiding the sonic design of this film were different from those of the mythological films that dominated the production of Prabhat studio till the mid-1930s. This time, Shantaram, Prabhat's principal director, driven by a social reform agenda, decided to explore a realist narrative material. Shantaram decided that the contemporary scenario depicted in *Kunku* demanded a different approach to sound, compared to the mythological and historical films he had made in the early 1930s. The film's music director Keshavrao Bhole, who was also effectively the 'sound designer', recounts in his memoirs the unusually long brainstorming session he had with Shantaram to strategize the use of sound in the film (ibid.p38). It is evident from Bhole's notes that the Prabhat team was acutely conscious that a film from a social genre cannot replicate the songs and music-based approach of the mythological films that Prabhat had specialised in earlier. One can infer from Bhole's observations that the consistent naturalist approach to sound noticed in *Kunku* is a result of the collaboration between Shantaram and Bhole. The first and possibly the

[23] Inversion of image-sound hierarchy refers to the fact that in the musicals, there is privileging of the sound track over the image-track, as music and rhythm takes over and decides visual editing, movement of characters and the camera.

[24] Some films made by Prabhat film company were bilinguals and were made in both Marathi and Hindi. This is why Kunku is also referred to by its Hindi name *Duniya Na Mane*.

most important aesthetic dilemma the two men encountered was related to the use of songs within the naturalist and diegetic sound-driven design of the film. To circumvent the issue, a gramophone is introduced into the *mise-en-scene* for all the songs in the film in order to justify the source. The actors switch on a gramophone, on-screen, in a quasi-'karaoke' logic, before they start singing– to explain the presence of the orchestral music that accompanies the actors' voices.

Thus, the music heard on the soundtrack of *Kunku* is diegetic – even though the music fulfils the expressive functions usually performed by non-diegetic music scores. These sections of orchestral music play an important role, as background music normally would, by conveying the range of emotions and mental states that Nirmala, the protagonist, passes through in the course of the film's narrative. Director V. Shantaram and sound/music director Keshavrao Bhole deftly weave the narrative around important music and sound elements, often underlining important narrative developments with the help of sound. Nirmala, during her wedding rituals, realises that she has been tricked into marrying an old man, and not the young man who was introduced to her as the groom by the matchmaker. She is shocked, but before she can protest, her uncle gestures to the musicians to play their music aloud, so that the drumbeats drown Nirmala's cries of desperation. In the following scene, when Nirmala, deceived and despairing, reluctantly accepts her marital status by applying traditional vermillion on her head, the same music played by the wedding musicians reappears on the soundtrack. We hear the music while we see a morose Nirmala alone in her bridal chamber, but the director cuts to the wedding musicians outside in the courtyard to establish the source of this music. Shantaram is clearly worried that, bringing in music without establishing a source, would puzzle his viewers. For every key scene, the filmmakers ensure that the musicians are revealed at some point in the narrative/scene. In a similar vein, the use of music for emotive effect is always explained by the presence of street musicians and minstrels inhabiting the peripheries of the diegetic space or the geography. The scrupulous adherence to this 'diegetic sound and music' based approach, makes *Kunku* a unique, early instance of realist-naturalist sound practice, at a period when Hollywood was unabashedly using background music. Bhole's exhaustive explanations in *Mazhe Sangeet* does not explain this particular aspect of his work with Shantaram. However, as a sound historian, I can speculate that Shantaram felt that his audience, being used to Indian traditional use of on-stage musicians in theatre, needed to *see* the source of

music. Bhole and Shantaram, go on to use a wide variety of sounds and music, but they tether each one of them to the diegetic space – there is no non-diegetic music or sound in the film. No other early cinema sound cinema, to the best of my knowledge, uses this convention so religiously.

There is also an attempt in *Kunku* to use non-musical effects sounds in a structured manner, rarely noticed in the conversion era films. Footsteps, the sound of horse drawn carriages, the murmur of people, or ticking clocks acquire a recognisable character and create a distinct off-screen diegetic world. These sounds have a strong spatial presence and enable the audience to separately identify and distinguish between the domestic and public spheres that make up Nirmala's life after her marriage. This strong individuation of specific sounds, sometimes aurally substituting for the image, reminds us of Bresson's dictum of sound-image relay I discussed in the previous chapter. The Bressonian principle of sound was also adopted by Mani Kaul, as seen in his film Uski Roti (1969), which I discuss later in this chapter.[25]

Songs in early Indian talkie films constitute a curious category that resists our attempts to explain them within the framework and categories of film sound theory. Unlike Shantaram's consistent attempt to establish a source for all musical and non-musical sound in *Kunku,* his contemporaries like P. C. Barua were more adventurous on this issue. Barua's film *Devdas* (1935) uses non-diegetic music consistently, without attempting to bind it to a source. Non-diegetic music is conspicuously absent in the 1930s films from another major Indian studio, – Bombay Talkies.[26] While Prabhat studio was known for its films based on religious and mythological themes, Bombay Talkies avoided traditional subjects to concentrate on reformist and social themes. Interestingly, well-known Bombay Talkies films like *Achhut Kanya* aka *Untouchable Maiden* (1936), *Prem Kahani* (1937) and *Nirmala (*1938), all directed by Franz Osten, deploy songs but avoid the use of background or non-diegetic music. Compared to most films of that period, the soundtracks of the early Bombay Talkies films focus on songs and atmospheric sounds in dramatic moments. The lack of background music is sometimes compensated for by continuing a song sequence, aurally, and overlapping

[25] Mani Kaul's use of sound is analysed in this chapter.
[26] Bombay Talkies studio based in the Mumbai suburb of Malad was one of the three major studios that dominated the studio period in India. The other two were New Theatres based in Kolkata and Prabhat Film Company, Pune.

the sound onto the next scene, as Shantaram does in *Ayodhyecha Raja* (1932). This technique of intercutting songs with normal action-based scenes partly eliminated the need for non-diegetic music in those scenes.

The ambivalence about using non-diegetic music seems largely a conversion era phenomenon. The flexibility of the technology and the delinking of background music from the aural conventions of theatre, made background music more acceptable to the filmmakers and the studios. This is reflected in some of the key films of the early 1940s, as I will describe next.

2.6. Consolidation of Sonic Styles In 1940s

Two important developments hastened the process of consolidation of sonic styles in the 1940s. One was the acceptance of the use of background music in films; the other was the use of the 'playback system' in filming and deploying songs. While songs were part of the soundtrack from the initial days of synchronised sound, they were not set apart from the dialogue, primarily due to the 'direct' and 'simultaneous' recording on location. This was as true of early Indian talkies, as it was for films like *The Jazz Singer* (Alan Crosland, 1927) and *The Applause* (Rouben Mamoulian, 1929). The process of recording/filming was cumbersome – musicians had to camouflage themselves to remain outside the *mise-en-scene*, while actors had to perform and sing at the same time.[27] The songs were usually recorded in one or two long takes and had to be performed several times during the filming process because of the technical limitations of 'simultaneous recording'. However, the sound recorded during song sequences reflected the original sound and sound event, and carried what Altman calls the 'spatio-temporal' signature of the location. My study of the major Indian film soundtracks from the early sound era (1931-1936) confirms that 'live recording' created a sonic continuum and a consistent sound-image correspondence throughout the entire film.[28] I feel that the introduction of the playback system in 1936 (see below) destabilised this

[27] The need to sing and act at the same time was eliminated as the playback system became entrenched in the Indian film industries. In the playback system, since the song was pre-recorded in the studio, actors could concentrate on the physical performance.

[28] The recording of the entire scenes and sequences, containing songs and dialogue, in temporal continuity ensured that songs were not set apart from the dialogue like in the playback era. With the advent of playback, the difference in sound quality of songs (recorded in studio) and dialogue (recorded on location) was initially jarring. Later, partly because of audience acceptance and partly due to 'balancing' during post-production, the aural discontinuity became naturalised and accepted in Indian cinema.

sonic continuum and brought in a new regime in which song/musical scenes became almost independent units, both in terms of aural as well as visual design. In this regime in which song and dance sequences often disrupt the films narrative and temporality, referred to by Lalita Gopalan as the Cinema of Interruptions. The use of songs in Indian films was marked by the use of the 'playback system' – a convention that became synonymous with Indian popular cinema. Premendra Mazumdar observes in his essay on background music

> The biggest revolution of Indian film music was the successful experimentation with the playback system in 1935 during the shooting of the Hindi film *Dhoop Chhaon* (Sun and Shade), a remake of the Bengali film *Bhagya Chakra* (Wheel of Fate, 1935) under the New Theatres banner. The director of the film, Nitin Bose, desired changes to be made to frames during a song sequence, which was impossible at the time, but the sound engineer, Mukul Bose, took up the challenge and suggested recording the song first and then shooting the visuals. Everyone took it as a joke, but the success of the experiment heralded a new era in the history of Indian cinema (Premendra Mazumdar, 2013, p259).

Because of the convention of live recording in the early talkie era, and due to the popularity of songs, all major actors from the 'conversion era' – Shanta Apte, Devika Rani, Ashok Kumar, Kanan Devi, M S Subbulakshmi, Kundan Lal Saigal, Pahadi Sanyal – were singer-actors. In the direct/live sound era they were acting and singing on location, but after the introduction of playback, the practice was radically changed. The actor/singers were recorded first under controlled studio conditions, with all musical accompaniments. During this process, freed from the pressures and constraints of physical performance before the camera, they were expected to give their best to the vocal performance. In a curious way, the beginning of playback introduced this convention of the bifurcation of performance into physical and visual, which was later manifested in the practice of dubbing/post-synchronisation. The 'disembodied voice', created through studio recording, was reunited with the body when the actors lip-synced with their own voice.

The most decisive phase of the 'playback system' began with actors 'lipping' songs which were not sung by them, but by singers who remained 'behind the curtains'. The 1940s saw the emergence of playback singers – professionals who lent their voice to actors. The playback system brought an end to the era of the singer-actors in India and

also consolidated the practice of film music as a form of recorded music and also as a formidable industry running parallel to film production.[29] The playback system had a unique aesthetic consequence, too. It resulted in the delinking between the voice and body, which had not been prevalent earlier.[30]

The technological separation of voice and body, and the combination of two registers of performance, one by the actor and the other by the singer, while accepted only in musicals in Hollywood, became normalised within all forms and genres in Indian mainstream cinema. While playback reoriented both sonic and performance conventions in Indian cinema, the hesitant but inevitable acceptance of background music in the late 1930s brought about a sharp departure from the sonic principles prevalent in the conversion era. Filmmakers, in tune with changing conventions internationally, started accepting that music used for expressive purposes need not have an on-screen source. Rather, it was important to offer audiences a pleasing and affective experience, thereby tapping into the vast popularity of recorded music created by the widespread proliferation of the gramophone.

A look at some emblematic films of the 1940s reveals the nature and extent of the use of non- diegetic music in films. In the film *Aurat* (1940) by Mehboob Khan (remade 17 years later by Khan himself as the iconic film *Mother India*) one encounters a song used non-diegetically without characters lip-syncing it.[31] This song (*kahe karta der barati* !- *Why are you late, the wedding revellers*) forms the background to a spectacular scene of the protagonist Radha's ritualistic journey, as a young bride, traversing the landscape in a caravan to her husband's home. The song is visualised through a series of shots of the landscape and of the travellers and is sung by an *acousmatic* voice. Playback, with actors lip-syncing, was very much in existence by the 1940s, but Mehboob Khan seemed more interested in mounting the scene against the striking rural landscape. As a filmmaker, he was more interested in visual exploration of the meaning and emotions

[29] Music and songs of the film, especially, in the 'cassette age, formed a big part of a film's earning. Music rights for a film were often sold by film producers to music companies at prices that helped them recover a part of the film's cost even before the film was released. Digital technology and the rise in piracy drastically brought down music revenues of mainstream film's in India.

[30] I have referred to Neepa Majumdar's articles in the previous chapter where she draws our attention to this characteristic of Indian film music.

[31] Mehboob Khan, who started his directorial career in 1935 with Sagar Movietone at Mumbai, grew to be one of the most prolific directors of the studio period. His 'magnum opus' *Mother India* (1957) was the Indian entry to the Academy Awards.

of the song, deploying human bodies and landscapes as a canvas, rather than in lip-sync. This ploy of using the acousmatic voice helps him liberate the song and music from the spatial confines of the human body. Instead, Mehboob uses the landscape as an expressive tool, almost like what T S Eliot calls an objective-correlative – evoking particular emotions associated with the bride's journey.

Like Mehboob, V Shantaram continued re-inventing his style according to changes in the technologies of film sound and practice conventions. While *Kunku/Duniya Na Mane* (1936) scrupulously stuck to the naturalistic convention of establishing a source for all the sounds, *Shejari/Padosi* (The Neighbour, 1941) deviated completely from this norm. The songs of *Shejari* were recorded in 'playback mode' and not as direct/ synchronised recording. But more importantly, in *Shejari* one sees the introduction, even if a slightly tentative one, of non-diegetic music, which was not seen in the earlier films of Prabhat.[32] The sparse introduction of background music in *Shejari* is also echoed in the films produced by Bombay Talkies in this period. *Basant* (Amiya Chakrabarty, 1942), *Kismet* (Gyan Mukherjee 1942) and *Jhoola* (Gyan Mukherjee,1941) each have about five minutes of background music within an average duration of 120 mins. By the middle of the 1940s however, the use of background music was standardised across Indian film studios. A study of the late 1940s films from Bombay Talkies – *Bari Behen* (Kashyap and Daryani,1949) and the hugely successful *Mahal* (Kamal Amrohi, 1949) – show an elaborate use of non-diegetic music, marking the ascendance of melodrama as the most enduring form in Indian cinema. By the end of the 1940s, the sonic styles that one associates with 20th-century Indian popular cinema (Chattopadhyay, 2015, p55–68) – songs visualised through the playback system, non-diegetic music, and emphasis on dialogue in the final mix – had become more or less crystallised.

2.7. Towards a sound design aesthetic of Indian art cinema

2.7.1 From the Studios to the Authors

The 1930s and 40s saw the formation of an idiom and language of Indian popular cinema across the film producing centres of the eastern, western, and southern parts of the country. This was also the period which saw the consolidation of sonic styles and

[32] Films from Prabhat Studio show an extremely ambivalent attitude towards non-diegetic music, till the early 1940s. One can infer that the association of non-diegetic music with musical accompaniment in silent cinema was the primary factor that discouraged Shantaram from using it till much later.

conventions in Indian cinema, most of which endured for over half a century. Studio-based melodramas that dominated this period had a lasting influence on the stylistic conventions of Indian popular cinema, irrespective of the language in which they were produced. A nearly identical template of popular cinema simultaneously evolved in western, southern, and eastern India. The sound design style privileged voice or dialogue, while non-vocal and non-musical sounds like sync and non-sync effects were underemphasised, as Buddhaditya Chattopadhyay has emphasized (2015, p55–68). The dialogue tracks created through dubbing were noiseless, but mostly lacked perspectival qualities or even traces of the atmosphere evoked or suggested by the visuals. The voices of characters talking to each other in a crowded market or a noisy railway station would often have an unrealistic clarity, as dubbing engineers ensured that the intelligibility of the speech was not lost to the ambient sounds. Apart from voices, diegetic effects like footsteps or galloping sounds were recorded in Foley Studios, while background music formed the main sonic ingredients of the final mix. This aural style primarily catered to all films made by Mumbai filmmakers until the emergence of western forms of realism and art cinema in the 1950s and the 1960s. Satyajit Ray was a pioneer of this movement that created the foundation for a non-mainstream film aesthetic to flourish in parallel to the thriving mainstream cinema dominated by melodrama. Ray's 1955 film *Pather Panchali* (The Song of The Road), the first film of his celebrated *Apu Trilogy*, announced the beginning of a delicately etched realist style that became synonymous with the formal advent of art cinema in India.

2.7.2. A Template for Sonic Realism: Satyajit Ray

The realist aesthetic Ray adopts in the *Apu Trilogy* (1955-1959) is often labelled as 'neo-realism influenced' – almost implying that it is a by-product of the Italian neo-realism.[33] While Ray did watch De Sica and other neo-realist masters closely, he evolved his own distinctive realist style. The lyrical realism one discovers in early Ray grew out of his encounter with literary realism in Bengal, as opposed to neo-realist directors who gleaned their material from life almost in a quasi-documentary style. Ray, himself, has spoken about his attempt to capture the rambling quality of Bibhutibhusan Banerjee's novel and his attempt to somehow transform that essence in cinematic terms.

[33] In his book "Our Films, Their Films" Ray mentions the revelatory experience of watching "Bicycle Thieves" (1948) on a business trip to London in the early 1950s. He watched the film many times during his stay and the experience stayed with him.

> The cinematic material dictated a style to me, a very slow rhythm determined by nature, the landscape, the country. . .. The script had to retain some of the rambling quality of the novel because that in itself contained a clue to the feeling of authenticity: life in a poor Bengali village does ramble (Ray, 1976).

Ray needed to arrive at a filmmaking style marked by spatial and temporal configurations distinct from both European realism and Classical Hollywood, that could translate Banerjee's lyrical realism into images and sounds. A study of the 'trilogy' reveals continuing stylistic concerns – both visual and aural – from *Pather Panchali* (*Song of the Road,* 1955), evolving into the second film *Aparajito* (*The Unvanquished, 1956*), and culminating in Ray's personal favourite among the three films – *Apur Sansar (The World of Apu,1959*). The three films chronicled episodes from the life of Apu, the hero of Banerjee's novel, thematically representing an Indian modernist *bildungsroman*.[34]

Ray's aesthetic in *Pather Panchali* has often been described in terms of a move away from the studio towards the actual location. In the 1950s, when rural melodramas in India were largely studio-based, this was a huge decision, given the technical problems associated with location filming. But while location did play an important role in the film, the film's indoor scenes were recreated in the studio. The textural matching of the studio and location was achieved through the combined brilliance of the film's art director, Banshi Chandragupta, and cinematographer, Subrata Mitra. Ray and his team visually recreated the quotidian details of rural life in Bengal by interweaving visual and aural elements. Clouds, rain, wind, insects and, birds evoke the rhythms of nature, and form the sensuous backdrop against which the tragic human drama unfolds. In *Pather Panchali*, one encounters, for the first time in Indian cinema, a deeply synesthetic experience of nature rendered through a sonic design heavily dependent on atmospheric sounds. Gleaned from the original locations, the sounds of nature spatially anchor the visuals to the diegetic world – a world that combined Ray's cinematic vision with Bibhutibhusan's visually evocative narration. This was a clear departure from what

[34] The three films of the trilogy were adapted from the novels (Pather Panchali, 1929) and Aparajito (1932) written by the Bengali novelist Bibhutibhusan Banerjee. All the three films earned a huge amount of critical acclaim, as well as National and International awards.

the aesthetics of the period, which Chattopadhayay calls the 'dubbing era'. While Ray did use a brilliantly evocative score by pandit Ravishankar at places, his overall design was not music-or-dialogue centric. He deployed atmospheric sounds and silences effectively even while using music or musical sounds impactfully in selected scenes. Sangita Gopal describes other ways in which Ray's aural style deviated from the dominant sonic style of Indian films.

> Sound design in Indian cinema has tended toward "asynchronicity" in so far as all manner of sounds tend to be post-produced such that the suture of sound and image is not necessarily the result of the direct recording of source sounds and dialogue onto the audio track of the filmstrip but rather added in later (Gopal, 2015, p202).

Gopal's contention that Indian sound design 'tended towards asynchronicity' is inaccurate, as is her belief that sound and image were not 'sutured' in Indian films before Satyajit Ray. As mentioned earlier in this chapter, direct sound recording was practiced in the studio period, and even on outdoor locations recordists managed to record sound directly onto the optical film. This was being done by Mumbai filmmakers like Bimal Roy and Mehboob Khan even when *Pather Panchali* was filmed in Bengal in the 1950s.[35] While, as claimed by her, sound recorded on site 'does evoke realism and ethnographic particularities of space', Ray was certainly not a pioneer in that. What Ray does achieve is a sophisticated sonic realism constructed through the careful selection and mixing of specific sounds appropriated from the locations. But Gopal is right in pointing out that the strong sense of off-screen space that Ray manages to generate through sound design was largely unknown in Indian cinema before *Pather Panchali*.

> This careful annexation of off-screen sound into the story world is a crucial component of realism in Ray's cinema. All sounds inhabit the story world and reveal their sources (Gopal, 2015, p203).

In *Pather Panchali*, off-screen sounds emphasise the presence of a sensory world outside the cinematic frame. In his film *Jalsaghar* (The Music Room, 1958), Ray uses off-screen sound not only to spatially anchor the visuals, but also to evoke absence and

[35] According to Gayatri Chatterjee *Mother India* (1957, Mehboob Khan) was filmed in Indian locations and sync sound recording was deployed in it. Some selected scenes were dubbed.

loss. Ray's tragic-ironic study of the downfall of an ageing, obsessive aristocrat in *Jalsaghar* was filmed on location in a huge feudal manor. For the old aristocrat who refuses to leave his dark, crumbling palace, the outside world only exists through sound. The proud, self-destructive angst of the patriarch is set against the pragmatism of his aspirational nouveau-riche neighbour. While the use of sound remains largely naturalistic, Ray introduces some expressionist elements to underscore the brooding nature of the narrative. This study of feudal decadence is both thematically and sonically arranged around music and does mobilise certain melodramatic elements and visual symbolism to serve his broad realist agenda. While we experience the crumbling mansion of the patriarch through the tonally rich black and white photography, the rich neighbour's home is only conveyed acousmatically. Like the patriarch Bishwambhar, we only experience it from a distance and through the sound elements that represent it. The rumble of the electric generator represents the unseen mansion of the nouveau-riche neighbour. Sometimes it is the sound of *shehnai* (a musical wind instrument played on festive occasions) that signifies both the physical presence, as well as the affluence, of the rich neighbour. These sounds help construct a sense of spectatorial identification with the patriarch. Like him we do not have access to the origin of the sounds and can experience them only from a distance, almost as a mocking reminder of his lost wealth and social status. The off-screen sounds here assume both a metaphorical and spatiotemporal resonance, connecting past and present, inside and outside, feudal and modern, decadence and opulence.

According to Anindya Sengupta the image and sound relationship in Ray's later 1970s films deviates from the normative modes of the use of sound in realist cinema.[36] He feels that the use of sound, especially voice-overs, 'destabilises' the naturalistic 'contract' between image and sound. Giving examples of three films from this period, Sengupta argues that "definitely, the sound-image correspondence was changing in Ray's cinema to a large extent, pointing towards a revision of his realist mode which he so thoroughly assimilated over the first couple of decades" (2007, p16). He goes on to explain what he calls "a particular orientation of the soundtrack forcing the images

[36] In his so called 'urban trilogy' made in the 1970s Ray, turns towards contemporary urban life for the first time. Set in the backdrop of his own city, Kolkata, Ray examines socio-political issues like unemployment, political violence, sexuality, corruption, and moral ambiguity.

towards particular registers and arrangements", leading to certain forms of 'overdetermination' of the soundtrack by the image track.

Sengupta draws our attention to Ray's overt use of speech in the films from *The Calcutta Trilogy* (*Pratidwandi*/The Adversary, 1970, *Seemabaddh*a/Company Limited,1971, and *Jana Aranya*/The Middleman,1975). The incursion of the verbal, according to him, disrupts the sound-image contract that was evident in early Ray.

> The density of elements in the images of the city, the feel of a jostling crowd and the wider distractions which issue, now force the director to define the 'individual' through means which the reticence of Ray's style avoided earlier. The uncertainty of the contract renders primacy to the soundtrack not merely by making the films verbose but also by structuring the image-track in terms of the verbal (ibid, p10).

The three urban films of the 1970s mark a sharp deviation from the literary roots of *The Apu Trilogy* and a beginning of a new stylistic phase in Ray's career. In the urban films, Ray confronts the immediate political reality of his time and of his city. He delves directly into the ideological crises of left radicalism, unemployment driven frustration and the ethical transgressions of urban youth. These themes, in turn, lend themselves to a shift in aesthetic style in Ray's work which mobilised 'non-realistic' expressive elements. Sengupta believes that the film *Pratidwandi* (The Adversary, 1970) is structured like an 'internal monologue.' (ibid). Ray here borrows representational codes from a style of self-reflexive realism made popular in post-second-world-war Europe. He mixes footage from newsreels and documentaries with disruptive flashback scenes, cutting back and forth between dreams and reality, using negative images and sudden asynchronism between sound and image. The sound track combines the naturalistic sound of street noises with sounds of political marches and agitated crowds, radio advertisements and the sound of Kolkata neighbourhoods, sometimes mixed in a way that communicates chaos and disorder. In terms of sound style, the film combines both naturalist and formalist elements. Among the formalist elements, Ray introduces an aural or a sound flashback in this film – an unusual device given his naturalist leanings. The flashback comes in the form of a call of a mystery bird, a sound that protagonist Siddharta first hears during a holiday with his siblings in the countryside. Here Ray leaves his comfort zone of realism and steps into the realm of the symbolic, when he introduces the bird sound later in the film. A symbolic intervention of this nature is very

unlike Ray's usual sound style. Is the bird real or mythical – is its sound only heard by Siddharta or his brothers? From the politically charged atmosphere of Kolkata we are transported to a symbolic world of primal innocence through this simple aural motif.

2.7.3. Epic Conception of Sound Design: Ritwik Ghatak

While Satyajit Ray's films were marked by a sonic realism that reinforced his visual style, his contemporary Ritwik Ghatak is known for his unique version of a formalist-expressionist approach to film sound. While Ghatak's major films were made between the 1950s and 1970s, his recognition as a major Indian filmmaker and his critical acclaim as an international cinema author happened only in the 1980s. Known for his extraordinary use of music and songs in his films, Ghatak "drew on his experience in leftist street theatre, the writings of Brecht and Stanislavski, conventions of Bengali and Hindi melodramatic fiction, theatre, and film, and the work of his two cinematic heroes, Eisenstein and Buñuel, to create a style that is simultaneously modernist and melodrama." (Dass, 2010, p246)

Ghatak's films are marked by his 'thematic obsession' with the tragic and violent partition of Bengal that resulted in the death and displacement of millions of people. Ghatak's personal experience of this massive human displacement, famine and death was a central influence on his work as an artist. As a filmmaker, he was on a lifelong quest for a cinematic language which could represent the pain of partition and the trauma of displacement. The use of 'melodramatic excess' in his films, especially in the handling of narrative, the use of songs and music, as well as acting styles that often went beyond naturalism, marked his unique directorial signature. A piece of music or a sound would often appear suddenly in his films, without any reference to the image or the diegesis. This disruption of the normative image-sound relationship in some of his films is seen to be introducing a "trans-sensorial address that is no longer anchored in the purely visual or the purely sonic." (Stubblefield, 2006, p17).[37] While the traditional narrative film creates a subject-position, "what we experience in the work of Ghatak is a much more complex and unstable address that works through the "gap" between an

[37] Stubblefield explains what he meant by trans-sensorial address, a term he borrows from Michel Chion, wherein the film experience momentarily steps outside of the boundaries of "image" and "sound" as such in favour of a "third space" based on contingency, open-endedness, and fluidity, those qualities appropriate to the reality of the refugee experience."

often-discordant sound and image." (Stubblefield, 2006). In his 1958 film *Ajantrik* (Pathetic Fallacy) we are witness to the unusual attachment between a man, Bimal, and his car – a run-down 1920s model of Chevrolet he has named *Jagaddal* (meaning invincible). Bimal uses *Jagaddal* as a taxi, ferrying passengers across the countryside. *Jagaddal* is more than a car – the sounds that emanate from him are both mechanistic and humanoid. Bimal talks to him as he was "a living creature and an extension of his own personality." In the course of the film, *Jagaddal* literally croaks, groans, sputters, squeaks, whines and rattles through the countryside. It is as if the feelings of the living are transferred onto the non-living. The guttural noises made by *Jagaddal* resist attachment to the image of either the car or the human and inhabit what Stubblefield calls the transsensorial space. These are sounds that transcend the usual sensory signification that we associate with the aural.

Ghatak's commitment to Brechtian Epic Theatre and 'estrangement' is also mobilised in *Ajantrik* through his use of aural elements – especially extra-diegetic sound effects and music. Narrative immersion is interrupted by Ghatak through the non-naturalistic use of sound – a strategy he uses to draw his audience into the larger historical context of partition and post-partition trauma. This technique is most evident in the film *Meghe Dhaka Tara (*The Cloud-Capped Star, 1960), a film that depicts a displaced refugee family's struggle with poverty. The narrative centres around Nita, a young woman who sacrifices her own aspirations to support her siblings and the aspiration of her aged parents. The family's home, amidst the refugee shelters of Kolkata, is the primary backdrop for the unfolding tragedy of Nita's life. Ghatak portrays the life of East Bengali settlers in suburban Kolkata with stunning accuracy. The refugees try to rebuild their fragmented lives by re-building their lost homes and communal lives in Kolkata. Ghatak invokes this community through the astute use of ambient sounds. Off-screen voices of school children, the crackling sound of food cooking in earthen ovens, and the sound of passing trains spatially evoke life in the colony. But Ghatak's soundtrack is not framed simply by naturalistic logic but is often curiously underlined by larger expressive requirements. Sound effects in *Meghe Dhaka Tara* often serve dual roles – as normal atmosphere for a scene and as a carrier of metaphoric meanings.[38] For

[38] Ghatak's strategy of using sound elements and music with a non-representational agenda should be read in the context of his conscious use of melodrama as a part of his style. The affective quality of sound and its capacity of sound to convey powerful emotions is what Ghatak was interested in.

example, the ‘prosaic’ ambient sound of school children reciting multiplication tables is repeated on the soundtrack when Nita or her family members discuss money. A diegetic sound thus becomes an aural leitmotif – accruing symbolic functions in the context of the narrative. Nita’s mother, a housewife dependent entirely on her daughter’s earnings, feels insecure at the prospect of her eldest daughter – the family’s breadwinner – getting married and deserting the family. It is this insecurity that eventually prompts her to subvert her daughter’s love-life and Nita’s eventual break-up with her fiancé. A crackling sound of the oven is amplified and foregrounded by Ghatak to sonically underline the mother’s feeling of insecurity when she realises her vulnerability and the need to latch on to Nita’s income. While these are diegetic sounds that Ghatak plays with, they are invested with both spatial and metaphoric meanings that momentarily disrupt the naturalistic relationship between the image and the sound.

Jonathan Rosenbaum has drawn our attention to this complex relationship between sound and image, especially pointing out the manner in which Ghatak combines these, “(our) visual attention can shift in certain shots from foreground to background and back again because of the construction of the layered images, our aural attention might shift at times between music, dialogue and sound effects, which might in turn affect the direction of our gaze in relation to those images.” (Rosenbaum, 2007). A construction of this kind is seen in an evening sequence in *Meghe Dhaka Tara* when Nita meets her brother Shankar to comfort him after he has been insulted by their younger brother Mantu. There is a strain of sitar music playing in the background. Shankar is in a pensive mood tuning his ‘Tanpura’: the sound of the Tanpura string being tuned, the background music of the sitar, the sound of an amateur play being rehearsed in the neighbourhood, and the dialogue between Nita and Shankar constitute four layers of sound. Aurally the emphasis is distributed among these four layers of sound, with the sound mix privileging the dialogue between the siblings. The sound of the drama rehearsal is still off-screen. At the end of the scene, in an over-the-shoulder shot, Shankar notices Gita, their younger sister, through the window, flirting with Sanat - Nita’s fiancé. In this shot, composed in deep focus, one can now see a member of the drama group presumably rehearsing dialogue in the adjoining house, behind the animated couple. By increasing the level of the background sound of the rehearsal, Ghatak shifts our attention to that

zone outside the house where Gita bids goodbye to Sanat and prances into the house. The layering of different kinds of sounds and selective amplification, thus, becomes a tool with which Ghatak directs the viewer's attention from one zone to another in this complex *mise-e-scene*. The scene, interestingly, is constructed from Sanat's point of view and Nita remains oblivious that her lover is seen with her sister. The scene ends with Shankar asking Nita if she trusts her fiancé Sanat, underlining the fact that he is aware of a clandestine love affair between Sanat and Gita.

The most celebrated use of sound in *Meghe Dhaka Tara*, mentioned by most commentators on Ghatak's work, is an extra-diegetic sound of a whiplash used thrice in the film. Ghatak introduces this whip sound for the first time when Nita arrives at her fiancé Sanat's new apartment and discovers a woman hiding behind the curtains. His lover, presumably, is Nita's sister Gita who has managed to win over Sanat's affection, effectively ending his engagement to Nita. The recognition of this betrayal is traumatic for Neeta – an extraordinarily tragic moment created by Ghatak through the disruption of the sound-image relationship. Nita walks out of the apartment and, coming down the stairs she is overcome with agony and clasps her throat in a gesture of being strangled. The sound of the whiplash appears on the soundtrack – as if the indescribable pain and humiliation lacerates Nita's soul. The destruction of her dreams which began with the selfish exploitation of her by her own family, is now completed by her lover.

Ghatak seems to indicate that Neeta's humiliation is both individual and historical and the echoes of the whiplash become a carrier of both familial exploitation and historical trauma. It does not remain as an ordinary 'sound effect' but becomes a powerful instrument with which Ghatak ruptures the realist surface of his film. The extraordinary tragedy of partition and displacement becomes embodied in the suffering figure of Nita.

Realism and fidelity to the location are often considered as the crucial issues in sound aesthetics. The use of dubbing and non-diegetic music or sound was often perceived as antithetical to the notion of serious cinema. In the Indian context, location sound had its limitations, especially in outdoor locations. Ghatak, like most of his colleagues from that era, was using dubbed sound. But as a director who was keenly aware of the power of the aural, Ghatak managed to convert that limitation into an opportunity. Moreover, his epic melodramatic vision did not limit him to a restricted mimetic approach to sound as followed by most realist filmmakers. He constantly ruptured, synthesized,

recombined, and reinvented the sounds he recorded. Given Ghatak's aesthetic beliefs, it is no surprise that the soundtracks of his films are as constructed as his image tracks. His films really exemplify sound designer Randy Thom's contention that we need to 'design a film for sound' rather than 'design sound for a film'(Thom, 1999, p9–20). In that sense, Ghatak was using sound design in an auterist sense of the term, much before the historical and conceptual use of the appellation by the likes of Murch, Thom and Burtt.

2.7.4. Sonic Rendering of the Political: Mrinal Sen

According to Suranjan Ganguly, 'Brechtian Cinema' was born in India "when a young man in a crowded bus looked directly into the camera filming him and started to deconstruct the film and the filmmaker. The man was an unknown non-professional actor Ranjit Mullick, the film was *Interview*, the year 1970, and the filmmaker, Mrinal Sen (Ganguly, 2000, p56)."

If one goes by Ganguly's formulation of Brecht-inspired radical cinema in India, Sen's formalistic, political cinema was born a year earlier when he made *Bhuvan Shome* (1969), a playful, ironic look at an ageing bureaucrat who goes out on a life-altering hunting adventure. Sen was clearly moving away from the realism of Ray or the epic melodramatic style of Ghatak to a more non-naturalistic, avant-garde style of political filmmaking. *Bhuvan Shome* adopts a bricolage-like approach to bring together formal elements of the avant-garde with certain aspects of the documentary realism of post-war European films. Documentary-like filming techniques, blended together with the regional flavour of Saurashtra in Gujarat and a linguistic naturalism that combined Hindi, Gujarati and Bangla language, made *Bhuvan Shome* an unusual film.[39] Sen also moved away from a conventional realist style and deployed formalistic techniques like elliptical cutting, freeze frames, newsreel footage and animated scenes within a live action fiction film. Aurally, the narration was interspersed with non-diegetic voice over, interior monologues, manipulated diegetic effects and music.

This film also marks the beginning of the collaboration between experimental musician and composer Vijay Raghav Rao and Sen. Filmmakers were already familiar with Rao's

[39] 30 Films using more than one language is strangely uncommon in India, despite a highly multilingual society.

work, because of his unconventional scores for Films Division short films by filmmakers like SNS Sastry, Sukhdev and Pramod Pati. Rao's role in these films was more than that of a film composer, he was virtually a sound designer. Raghav Rao was not only composing music for the films in the conventional sense of the term but also laying out a blueprint for the entire soundtrack.[40] A trained classical musician, Ragahav Rao was one of the earliest Indian musicians to experiment with fusion music – a blend of Indian and western styles. In his compositions, he would often use phrases from an Indian raga in combination with Indian and western drums, and guitar. His forte was creating discordant aural textures by mixing music with non-musical sounds generated acoustically or mechanically, akin to *musique concrete*. Raghav Rao's 'experimental' music for *Bhuvan Shome* (1969) was organically merged with the mishmash of diverse representational techniques adopted by Sen. The montage sequence on Bengal, constructed from newsreel footage, is accompanied by a soundtrack that cuts between Bengali folk music and the sound of bombs and crowds and political speeches that drift in and out of sync with the images. The montage cuts to a scene where the protagonist Shome arrives in a railway carriage apparently on a mission to punish an erring employee. The pomposity of the colonial-style bureaucratic system is conveyed by the sound of a horse carriage on the soundtrack of this scene. Rao's score for the film also includes the high pitched *jhala* renditions of *sitar* music and high octave classical vocal pieces for emotional emphasis. For intense moments, Sen and Rao strategically used sounds as a counterpoint to the visuals, a style continued into his later films, especially in the most politically charged films from the *Calcutta Trilogy* of *Interview* (1970) *Calcutta 71* (1971) and *Padatik* (The Guerrilla Figher,1973). Suranjan Ganguly sees a clearly Godardian influence in Sen's approach.

> In France, Godard had already shown the way by successfully integrating Brechtian alienation devices into his highly polemical cinema. As Sen followed suit, his major films - from *Interview* onward - began to bristle with a forbidding Brechtian arsenal: non-linear, episodic narratives; an aggressive montage designed to rupture the text; intrusive voice-overs; written texts and slogans; a mix of documentary and fictive

[40] In the 1960s a group of filmmakers, working for the newsreel unit of Government of India called Films Division (FD) made some highly experimental and formally challenging documentary films. Sastry, Pati and Sukhdev were among the most creative and the most subversive among the FD directors. Interest their work has seen a revival in the recent past, thanks to initiatives taken by the organisation to actively disseminate the films.

> modes; sound as a counter-point to the content of the film, and so on (Ganguly, 2000, p57).

In music, counterpoint refers to the relationship between voices that are interdependent harmonically (polyphony) yet independent in rhythm and contour. This is a compositional technique that originated in Renaissance and Baroque music and is fundamental to a large body of western music. The opposite of polyphony is homophony where the voices move in parallel using the same rhythm or have a dominant melodic presence. Indian music is largely homophonic and hence 'counterpoint' as a concept is generally unknown – both in classical and popular forms. Indian classical music is marked by variations in tempo and rhythm within the same melodic line. Conventionally most film sound (and music) tends to be illustrative and hence is non-contrapuntal and purely naturalistic. Sound in films is largely used to illustrate the content of the image, and sound and image mirror each other. Sound and visuals are said to be in counterpoint when they represent superficially divergent ideas or emotions. Musicologist Zofia Lissa conceptualises the various functions of film music in her influential monograph (ästhetik der filmmusik, 1965). The role of contrapuntal music, she observes, is "contradicting the connotative sphere of the visual action, e.g. mellifluous melody for atomic holocaust, horror music for love scene. Another type of comment is the presentation of music providing an emotional dimension to a series of events that has just finished "(Lissa, 1965).

In an important sequence described below from Sen's *Calcutta 71*, the first film of the *The Calcutta Trilogy*, the decadence and hypocrisy of the affluent and famous citizens of Kolkata are underlined by the contrapuntal use of sounds - both diegetic and non-diegetic. Sen cuts elliptically from the main scene, where the rich and famous are seen partying amidst raucous music and flowing alcohol, to scenes of poverty and depredation. The soundtrack features diegetic rock music by a live band in the 'party scene' and non-diegetic Bengali devotional music. The sound of rock music is intermittently faded out and the non-diegetic sound of kirtan (Indian religious music) is faded in to create a sound-image counterpoint. The purpose of this contrapuntal use of sound and image is to disrupt narrative immersion and bring in the dimension of Brechtian interventionist spectatorship that Sen introduced in *Bhuvan Shome* and continued deploying through the *Trilogy*.

Mrinal Sen, having started his career as a sound technician, always remained receptive to ideas of creative sound design in his films. As a 'sound author' his films stand out, from both the realist aesthetic of Ray and the melodramatic-expressionist approach of Ghatak – his two main contemporaries in Indian art cinema.

2.7.5. A Radical Ontology of Sound: Mani Kaul

Mani Kaul, along with Kumar Shahani, is often considered the radical and experimental face of the 'post-Satyajit Ray and Ghatak' Indian New Wave that began in the late 1960s. As filmmakers and film aestheticians, they rejected the post-Satyajit Ray inspired realist cinema which they called 'bazaar realism' (Dass, 2004). The Indian New Wave or the Indian Parallel Cinema movement (1969-1985) refers to the diverse and amorphous body of work which drew inspiration from not only Ray and Ghatak, but international art cinema movements like Italian neo-realism and the French New Wave. Some key films of this movement were state funded and produced outside the structures of the mainstream film industry. Although Mumbai was an important centre and a slew of Hindi films heralded the movement, New Wave films were made across India in different languages. What united these films was a deep concern for social and political issues, the problems facing the newly formed nation-state, entrenched feudal conservatism, casteism, violence and religious orthodoxy.[41]

> If cinematic experimentation and new forms of film narration defined one characteristic of this cinema, the other was cinematic realism, both of form and content, evident in a number of the early films: Mrinal Sen's *Bhuvan Shome*, Basu Chatterji's *Sara Akash*, Kantilal Rathod's *Kanku,* all from 1969, Pattabhi Rama Reddy's *Samskara* (1970), Rajendra Singh Bedi's *Dastak* (1970), M.S. Sathyu's *Garam Hawa* (1973), and Avtar Kaul's *27 Down* (1973), among many others (Bhaskar, 2013, p19).

Even though some of these filmmakers were driven by realist concerns, the movement in general was marked by diverse aesthetic impulses that ranged from classism to high modernism. The styles ranged from the social realism of Shyam Benegal and Saeed Mirza to the formalist experiments of Mani Kaul and Kumar Shahani, and even films

[41] The word casteism refers to oppressive exploitation and discrimination based on caste system in India. The idea of caste is associated with the social stratification called Varna system, as prevalent in ancient India.

like *Dastak* (Rajinder Singh Bedi,1970) and *27 Down* (Avtar Kaul, 1974) which were tilted, stylistically, towards the popular Mumbai films.

> When I made *A Day's Bread*, I wanted to destroy any semblance of a realistic development, so that I could construct the film almost in the manner of a painter (Mani Kaul) (quoted by MacDonald, 1998, p171).

Mani Kaul's first feature film *Uski Roti* (Daily Bread,1969) was among the three state funded films (the other two being *Bhuvan Shome* by Mrinal Sen and *Sara Akash* by Basu Chatterjee) which formally launched the New Cinema movement in 1969. It was Kaul's first feature film, where he set out to define the outlines of the unique formalist-minimalist idiom that marked his oeuvre. *Uski Roti* (1969) was the beginning of a lifelong aesthetic journey that Kaul undertook to interrogate the idea of cinema and his persistent attempt to free that idea of its conventional associations. Ashish Rajadhyaksha has explained Kaul's departure from cinematic specificity.

> For him (Mani), at the time he made these films, cinema was explicitly not a composite of disciplines arriving at a specificity. He argued that whereas most forms, preceding the cinema, attempt transformations into specific modes, in film in sharp contrast, the extreme particularization of image/sound denotation inhibits any finite cinematic linguistic, and furthermore, it is only when the specificity of the image/sound formation is treated as substantial and unique that a violation of this specificity becomes disciplined and positive: open to development (Rajadhyaksha, 2012).

It is useful to try and understand Kaul's cinematic practice in the light of the aesthetic theories that he engaged with early in career as an image-maker. His essay "Seen from Nowhere" (Kaul, 1991) gives us some directions on how to view his approach to cinema. His belief in a 'perspectiveless totality' was based on a conviction that a departure from perspectival conventions inherited from the European renaissance was essential for his art. Kaul was opposed to the idea of *convergence* that lay at the heart of perspectival construction. He refers to the perspectiveless spatial depiction of Indian miniature painting and what he conceptualised as the 'concept of total musical space.' Since space is constructed both through visuals and sound, Kaul approached both image and sound through the prism of 'absence.' He borrowed his painter friend Akbar Padamsee's idea of the absent or 'excluded space' of painting and applied it to the

notion of 'consonant space' and 'dissonant space', the latter representing what is absent. Central to his aesthetics was the idea of the *varjit*, a Sanskrit word implying 'lack'. Kaul used it to refer to the 'stripped out elements' or the concept of the 'absence' that he posited in his essay. In terms of Indian music, it is the idea of the *vivadi* – the absent note in the Raga, "best described as an absence which is arguing with the invariant present, with invariance itself." (Kaul, 1991). Apart from Indian music and aesthetics, Kaul was also influenced by Ritwik Ghatak and Robert Bresson, the French master, especially the ways in which Bresson framed and edited his shots.

> Ghatak's influence manifests itself primarily in a shared interest in epic forms, in a form of cutting that is used to fragment the human figure, in the prominent use of windows and doorways as framing devices, and in circular camera movements that sensuously traverse space. For Ghatak, these formal strategies are used primarily to stress the liminality of human figures in relation to fractured landscapes, onto which melodramatic emotions are displaced (Suchenski, 2017, p32-33).

Compared to Ghatak's influence, the influence of Robert Bresson was perhaps more fundamental to Kaul's style and imagery. Mani Kaul's Bressonian aesthetic is also evident in his handling of dialogue/speech in his film. Like Bresson, Kaul dispenses with dramatic performance – often using non-actors or making actors deviate from the norms of dramatic performance.[42] The sparse dialogue spoken in a monotone by the actors is stripped of its dramatic weight and becomes relegated to the status of speech or text. The combination of flatly spoken, minimal dialogue and the muted ambience track creates a sense of quietness and stasis. *Uski Roti's* soundtrack alternates between this sense of stasis and a strong spatial existence with respect to the image.

Like Bresson, Kaul follows a minimalist *mise-en-scene*, refusing to crowd his frames with too many elements. Image and sound often work individually, rather than constantly illustrating each other. Like Bresson, Kaul is fond of close-ups, especially of the hands of his characters as we see in *Uski Roti* (1969) The idea of absence takes various forms in Mani Kaul's cinematic practice – as evident even in his first film. Adapted from a Hindi short story by Mohan Rakesh, *Uski Roti* depicts a young woman Balo waiting at the bus-stop for her truck driver husband Succha Singh.[43] Interspersed

[42]Kaul was not using actor-models' like Bresson and was mostly working with trained or groomed actors or mixing non-actors with actors.
[43] Mohan Rakesh was an influential writer in the Hindi language and one of the pioneers of the *Nai Kahani*

with this act of waiting, we see snatches of her life in the village, her fight to protect her sister from the advances of a lecherous neighbour, her indifferent husband's parallel life with his mistress in the city, and the aftermath of a tragic suicide of a neighbour. Mani Kaul manages to represent complex cinematic temporality, a slow passage of time experienced through the repetitive act of waiting and through the subjective coordinates of sounds and visuals. The distension of time signifies Balo's subjectivity as well as the slowness of life in a Punjab village. The temporal articulation is matched by a spatial construction based on flat compositions that stripped the frame of perspectival elements and depth cues.

Departures from the western perspectival modes is evident, also, in the way Kaul constructs his soundtrack. Instead of layering dialogue, music and effects, his effort is to isolate them, so that each element of sound is individuated. In a realist-naturalist mode of sound design, sound elements are given emphasis based on their importance to the narrative and diegesis. Mani Kaul's sound design does not adhere to the perceptual hierarchy derived from classical dramatic narration. The sound in *Uski Roti* is fundamentally different and in many ways what Kaul achieves in this film lays down the ground rules of the sound-image relationship in his later films. Suchenski, while talking about his technique in *Uski Roti*, speaks about his alternate use of two camera lenses and what he achieved through it.

> In that film, Kaul employs two lenses, a 28-mm wide-angle lens and a 135-mm telephoto lens. Early on, the two lenses are kept fairly distinct — the wide angle, with much greater depth of field, is used for groups, while the long lens is used for close-ups as the film starts moving forward and backward in time. It eventually becomes apparent that *Our Daily Bread* is rooted in the confused, drifting memory of a housewife standing by a tree waiting for her husband; yet because the film moves with such liquid fluidity through different moments, the idea of temporal passage ultimately becomes more important than the actual shape of the narrative (Suchenksi, 2017, p36-37).

(New Story) movement. Other formidable writers involved with the movement were Nirmal Verma, Rajendra Yadav, Kamleshwar, Manu Bhandari and Bhisham Sahni. The stories from *Nai Kahani* movement were adapted by a number of Indian filmmakers in the between the 1960s and 1980s.

The crucial point that commentators of Kaul's work have missed is that the director's move away from perceptual realism towards subjectivity and interiority is also augmented by the expressive modes of sound mixing and editing. Sounds appear in his soundtrack not because of naturalistic logic, but through a logic of interiority and subjectivity. In *Uski Roti*, Kaul follows the strategy of subduing atmospheric and ambient sounds so that specific diegetic sounds rise to the surface. This strategy is evident in the sound design of the first scene itself. The scene is set in a guava orchard and is a prelude to the molestation of Balo's sister Jinda. A series of graphically composed shots follow each other – two stones hit the branches of the guava trees in succession; Jinda walks into the frame in extreme long shot, goes around the tree and throws one more stone at the branches; a fruit falls on to the ground; an outstretched hand misses the falling fruit; the same hand picks it up from the ground. The next shot reveals that it is the village rake Jangi, presumably stalking Jinda, who picks up the fruit. Jangi offers the fruit to Jinda in the following shot. Jinda bites into the fruit, spits it out and then walks away. Kaul does not construct this scene as per classical continuity – the cutting delays the action and stretches the scene temporally. There is a clear spatial dislocation achieved by Kaul through this editing pattern and through the violation of the 180-degree axis. In terms of the soundtrack, the scene is devoid of any continuous or recognisable atmospheric sound. It is evident that Mani Kaul is not attempting to create a realistic soundscape of a village orchard. The only sounds we hear are the stones hitting the branches, Jinda biting and spitting out the fruit in disgust, and a distant sound of a crow. These four sound elements are not layered together, but follow each other successively, with silent intervals in between. Given the bareness of the overall soundtrack in this scene, the above sounds acquire an unusual intensity. Thus, even from the first scene, the film starts conveying a sense of interiority by foregrounding selective sounds. It is not an objective representation of the world, but an impression filtered through Balo's consciousness.

Kaul's second film *Ashad Ke Ek Din* (1971) is an adaptation of a Mohan Rakesh play based on the 'love story' of the Sanskrit Poet Kalidasa with a woman called Mallika. Kaul takes on a classical dramatic text but strips it of dramatic material in adapting it for screen. Kaul, for the first and possibly the last time in Indian cinema, uses a unique technique. The film's sound recordist Narinder Singh mentioned during the interview I conducted with him that the film's dialogue were pre-recorded, and actors were asked

to lip-sync to playback during the filming (interview of Narinder Singh, 2017). With this technique, Mani Kaul was able to destabilise the dramatic and performative elements and shift the focus to formal aspects of his cinematic language. Used in this way, dialogue loses the dramatic force that allows it to dominate the soundtrack at the expense of the non-verbal. In the stylistic world of Mani Kaul, a film's dialogue are as important as sound effects or music.

2.8. Conclusion

The approaches to sound, as seen in the works of a diverse group of filmmakers from the 1930s to the 1970s, constitute the basis of which Indian film sound evolved over the next four decades. The early sound experiments by Keshavrao Bhole in the films of V. Shantaram are possibly the first example of sonic design which incorporated, perhaps intuitively, a realist-naturalist framework, but at the same time used a huge range of sound elements for the sounds of films like *Kunku* and *Manoos* – unknown in the early studio period in India. The emphasis on diegetic effects in *Kunku* and incorporating these strongly in the narrative technique was never developed in the mainstream cinema in India. The technique was revived much later by art filmmakers like Ray, Ghatak and Kaul. Filmmakers from other major studios like Bombay Talkies and New Theatres were tentative in their use of diegetic effects and non-diegetic music during the 1930s, while adopting and refining the use of songs through the playback mode. The use of non-diegetic or background music became an established convention in the 1940s and 1950s. The adoption of dubbing or post-synchronisation in the 1960s consolidated a dialogue and music-based approach to the soundtrack – a regime in which music became dominant and atmospheric and effects sounds were underplayed. This convention changed to a large extent with Ray, Ghatak and other filmmakers from art cinema practice and later influenced both mainstream, as well as auteur cinema in India. Filmmakers like Shyam Benegal and Govind Nihalani, in the 1970s and 1980s understated music and emphasized atmospheric sounds and effects. Prolific sound re-recordist Mangesh Desai, who worked with Satyajit Ray on his later films, adopted a more nuanced style of atmospheric sound and used it in mainstream films, especially to indicate change in locations (see chapter three). In the films of Satyajit Ray, one sees the materialisation of a full-blown realist aesthetic of sound. Ritwik Ghatak combines both realist and expressionist approaches and made sound an active participant in

cinematic construction. Sound was an effective tool in his quest for the 'epic cinema' that he believed in and professed. Mrinal Sen's use of sound was more formalistic, driven by his political agenda and his ideology, while Mani Kaul's formalism was part of an exclusively aesthetic project that stretched the limits of cinematic ontology.

The common feature that unites these filmmakers is the fact that they worked within the boundaries set by analogue technology and celluloid film. Yet, the practice conventions and aesthetics one finds in their films laid the foundation of sound aesthetics, as developed and practiced in India. While this overview of the sonic conventions of these five decades of Indian films from the 1930s to 80s is far from a comprehensive account of Indian film sound, its purpose has been to signpost the important developments of the pre-digital era and define the historiographic and aesthetic parameters of studying film sound in India.

CHAPTER 3: Dubbing, Sync Sound and the Digital Shifts

3.1. Sonic Practices and Film Style

In this and the next two chapters I take up four crucial aspects of sound practice in India which have been dramatically transformed and reshaped by the adoption of the digital medium. These four broad areas are sound recording (the shift from dubbing to sync sound); sound editing (the adoption of Digital Audio Editing systems); the emergence of sound design; and the use of digital surround/immersive sound forms. The transformation in these four broad areas have taken place over the first and second decades of the 21st century in India. Using evidence drawn from my field interviews, along with analysis of textual and archival material, I argue that compared to other major world film industries, the effect of digitalization on sound practices in India has been more intense, and this has impacted the styles and aesthetics of Indian films in complex ways.[44] I frame this argument with the help of historiographic approaches and concepts outlined in the previous chapter and use them to trace how key practices and conventions of film sound in India have responded to the demise of celluloid film and to the arrival of digital technology.

My particular focus in chapter three is the first two areas, field sound recording, which includes both dubbing and sync sound, and sound editing. Here I specifically examine the practices and ideologies of the widespread practice of dubbing/post-synchronisation in the analogue period along with the much-discussed subsequent adoption of live or sync sound around the turn of the century. I also survey the celluloid era practice of sound editing/ track-laying and examine how the adoption of digital technology impacted the celluloid-based sound editing style and its entrenched professional ideologies during the transition from film to digital. While engaging with these dual issues, I also explore the manner in which sync sound and dubbing have shaped screen acting modes and the genre conventions of mainstream films. In doing so I claim that digital technology, while reshaping deeply institutionalized practices of the analogue era, contributed to radical changes in the practices of sound recording and editing in the digital era. The theoretical framework used here is inspired by scholars that include

[44] Unlike in the analogue period, there has been, a steady flow of new technologies into the film industry in India, in the digital era. This can be understood in the overall context of digital economy in which India is a major market in digital products and services.

sound theorists such as Altman (1992), Lastra (1992), Doane (1980), Metz (1980), Alan Williams (1980) and Indian cinema scholars like Buddhaditya Chatterjee (2012, p65–78), Lalitha Gopalan (2003) and Neepa Majumdar (2009).

The first or introductory section of this chapter is devoted to outlining the conceptual issues relevant to the theoretical understanding of the changing conventions, notably the relationship between sound and space. The second section explores the debates around both dubbing and the subsequent shift to sync sound. The third section explores analogue film- based editing practices and the impact of the eventual shift of sound editing to Digital Audio Workstations (DAWs).

3.2. Theories of Sound-Image Interaction

3.2.1. Reproduction Vs Representation

Among the foundational debates in film sound scholarship, the most persistent one is that of the relationship between the so called 'original sound' and sound as a 'copy.' The analogy stems from the photographic process which turns an 'object' into an 'image.' Do we produce a 'copy' of an original when we record a sound, as we do in photography? Is the sound, before the recording apparatus captures it, essentially an 'original,' and is the captured version a mere copy? "What is the relationship between a sound recording and the sound it purports to depict?" asks James Lastra (2000, p126), drawing our attention to an issue that has vexed scholars of film sound. There have been a long line of theorists – Bela Balazs (1985, p116–125), Stanley Cavell (1979) and Christian Metz (1980, p24–32) – who felt that a recorded sound is not an image of an 'original sound' the way visuals are, but the sound 'itself.' Jean Louis Baudry asserts that "one does not hear an image of the sounds, but the sounds themselves . . . they are reproduced and not copied" (Hak Kyung Cha, 1980, p47). Christian Metz echoes Baudry in his equally famous pronouncements that "auditory aspects, provided that the recording is well done, undergo no appreciable loss in relation to the corresponding sound in the real world: in principle, nothing distinguishes a gunshot heard in a film from a gunshot heard in the street" (Metz and Gurrieri, 1980, p24–32). This idea of recorded sound as a repetition of an 'original' has been contested strongly by another school of sound scholars. This opposing view is articulated by Alan Williams's convincing argument against sound as reproduction: "it is never the literal, original

'sound' that is reproduced in the recording, but one perspective on it, a sample, a reading of it" (Williams, 1980, p53). Similarly, Tom Levin feels that it is fallacious to think that recorded and original sound are identical. In his view, our "familiarity [with recorded sound] has dulled the capacity to recognize the violence done to sound by recording" (Levin, 1984, p66). Our inability to distinguish between a recorded and real gunshot, he contends, is our 'incapacity' stemming from our overexposure to recorded sound, rather than an intrinsic quality of recorded sound itself.

Altman, in his seminal work on film sound, had introduced the idea of cinema as an 'event'(1992).[45] Based on Altman's notion, every example of a recorded visual or sound has a specificity based on the material circumstances of its production. Was the sound produced in a busy street or a deserted street? What time of the day was it produced? Given that every sound is unique, based on the conditions of its production, Altman and Williams introduce us to the idea that recorded sound is a representation, rather than a reproduction. Seen in this light, every sound is a unique, material event taking place in real time. Based on the nature of the sound event and the individual filmic/technological intervention, every act of recording yields a different representation.

The notion of sound as an event and as a representation makes us rethink some of the concepts, as well as practice conventions, of film sound, especially ones unique to Indian film practices. Sound recordists often record a speech sound using two different microphones - a close mic (a 'lavalier') placed or hidden on the body of the actor, and a 'boom mic' that is directed at the actor from a distance. [46] The 'lav' or 'lapel' mic is designed to give clear dialogue at the cost of spatial fidelity, largely devoid of ambient sound, while a boom mic gives a richer sound, with appreciable fidelity and appropriate perspectival quality that links the sound to the space of origin. The 'lapel' and the 'boom' mic have been designed to interpret the sound differently. The sound these mics record does not signify a singular representational logic, but rather blends two different representational logics – the first being the exactitude and clarity of the information recorded and the other being fidelity to the space from which the sound originates. Film

[45] Altman proposes the idea of cinema as an event, rather than as a text, charting a route for sound's inclusion in the image-centric notion of studying films. By taking this position Altman includes sound, as well as the production and reception of films, within his broader formulation of 'cinema.'

[46] A lavalier mic is also called a 'lapel' mic in film industry jargon. These mics provide a good "signal-to-noise ratio" and can pick-up comparatively noiseless sounds in noisy environments if kept close to the speaker.

sound, thus, is rarely experienced as a singular strand loyal to the profilmic event, as the same sound is most often recorded with two different kind of mics. Moreover, it is continuously processed and mixed with other sounds. This makes the relationship between sound and space in cinema particularly complex. This complexity gets further amplified when we attempt to untangle sound from space in Indian cinema, as we will see later in this chapter.

3.2.2. Sound and Space

> Because sound is always recorded in one three-dimensional space, and played back in another, we are able to sense the spatial cues that give film sound its personalised spatial signature
>
> Rick Altman (1992, p5)

Sound recording technologies, beginning with the invention of gramophones and up to the most sophisticated digital surround sound systems, have tried to address film sound's complex relationship with space. Technologies of film sound, as well as practice conventions, have developed around the idea of space and spatiality. James Lastra, in his essay 'Sound Theory' provocatively hints that space, especially architectural space, can be considered as a part of the technological apparatus of sound representation ' (2000, p123–153). He explains that an opera staged and recorded in a concert hall will sound completely different from one recorded in a studio space, because of the reverberant quality of the architecture of the concert hall. Thus, the architecture is as much a part of the techno-representational system of the opera recording as are microphones, mixing consoles and recorders of moving image sound.

In the above example of recorded music, the recorded sound is played back and heard by a listener, evoking the architecture of the opera hall. Thus, the sound evokes a space that is virtual and experienced only through the medium of sound. Based on this phenomenon, listeners are able to decipher whether a musical piece is recorded in a studio or a concert hall. In the case of cinema, the sound mostly has a material relationship with space. Film sound is perceived and judged with respect to and in combination with a *space visualised on screen*, rather than purely on the intrinsic quality of the sound itself. Ambient sounds heard on the soundtrack with the visuals of a tropical forest may not have been recorded in the forest seen in the visual. The sound

may have been recorded at a different location at a different time, but its placement could make the forest appear denser than it was. I borrow a term from sound studies and describe this space as sonic space (Camilleri, 2010, p199–211). The successful integration of the sonic space with the visual space is considered the hallmark of effective film sound.

Sonic space is dominantly constructed from sound elements which are not directly linked to the original geographical space or to the pro-filmic event.[47] In his essay on sound in Indian cinema, Ashish Rajadhyaksha comments on this dimension of the mixing of sound elements in cinema:

> The gradual tendency in any film towards the elimination, in the mixing, of *all* material inherited from the shooting phase, with the concomitant increase in post-shooting generation of effects created within an entirely new spatial coordinate produced, explicitly, during the recording phase: the spatial grounding of all source into a single point produced in the studio regardless of whether the diegetic action was taking place in a room, on a hillside or a beach… (Rajadhyaksha, 2007, p6–7).

Rajadhyaksha's proposition is largely accurate when applied to the analogue era practices in India but this notion cannot be extended to film soundtracks in the digital era. The effort made by sound workers to record synchronised dialogue and location-specific effects and ambient sounds and to find newer ways to integrate them into the soundtrack makes it evident that it is not a simple move away from the space of diegetic action to the studio or a removal of the traces of the location.

In filmic construction, sounds have paradoxical tendencies of simultaneously moving away from the sonic space and also towards the sonic space. Veteran Indian re-recording mixer Arun Bose, the former head of the sound department of Prasad Sound studio, shared an interesting anecdote related to the sound post-production of Richard Attenborough's film *Gandhi* (1982) – filmed largely in India. The sound team, working in Britain, realised they had a major problem with the sound. After adding atmospheric sounds from their library on the track, they realised that the chirping birds heard on the track were not birds of Indian origin. They had used atmospheric sounds from the

[47] Profilmic event is an event or a situation that is happening before the camera and can be recorded by it..

library, as they did not have adequate ambient sounds from the original location in India. Arun received a request from the London studio to send more India-specific atmospheric sound with recognisably Indian birds to be included into the soundtrack. Thus, the need to inscribe space into the sound, either directly through location recording or through editing, is embedded within sound practices. Deviations from these conventions often disrupt the logical relationship between image and sound, prompting last minute interventions, Arun's anecdote described. Sounds and spaces are, thus, integrated organically when actual location sound is used, or virtually in the minds of the audience, when sounds from similar sources are added for an effective image-sound coupling. Sound recordists I have worked with often complain that the original footsteps recorded on location do not sound 'real' but have to be mostly replaced with Foley recorded footsteps where heavier boots are used in the studio to simulate the walking.

3.3. Space, Sound, and the Indian Recordist

Buddhaditya Chattopadhyay's conception of the late analogue era as the so called 'dubbing era' underlines the fact that the relationship between sound and source went through a period of strain at that time. Not only was dialogue post-synchronised, but effects sounds were also grafted onto the soundtrack during post-production, very often from the sound banks or libraries, to evoke the original location or the site.

Chattopadhayay sees this as a departure from the normative approach adhered to in the Anglo-American production industries since the introduction of the talkies. Apart from European countries like Italy, the western world liked to record images and sounds, especially dialogue or speech sounds, simultaneously during the filming process. "Blimps' or covers were used on cameras inside the studio, which made them extremely bulky. These blimps concealed the noise of the camera motor. Moreover, studios also offered protection from external noises to a large extent. In Italy the purpose of dubbing was completely different from that in India. Dubbing was part of a nationalist project initiated by the Fascists who sought to homogenise all dialects into standard Italian, or in some cases sanitise foreign influences on the language of film dialogue (Sisto, 2014,

p10).[48] Since the mid-1960s, Indian film industries have deviated from this practice of simultaneous recording and somewhat aberrantly followed the system of post-synchronisation or dubbing. Post-synchronisation was prevalent in Hollywood and the UK, but was largely a marginal practice, deployed to rectify small sections or scenes where the microphone has inadvertently picked up a noise or a minor lapse in dialogue or diction was detected after the filming concluded. Dubbing, as a process, was rarely deployed for the entire film. In pre-1960s India, during the early analogue period, sound recording was largely live and synchronous, and, as discussed in the previous chapter, even background music was recorded live along with the dialogue before the advent of re-recording or mixing in the 1940s. Since films in that period were largely shot in studios, sound technicians could control noise effectively and record acceptably good sync sounds. Until the 1960s, sound was spatially connected to the site and image and sound were the parts of the same 'profilmic' event. The sound event and the visual event thus were conjoined and had the same temporal origins and were captured, processed and edited together for the final film.

In the mid-1960s, an important shift took place. The senior technicians I interviewed in India agreed that it was the appearance of the Arriflex cameras in the 1960s, especially the Arriflex 2C variant, which made sync sound shooting 'practically impossible'. Increasingly, in the 1960s, producers started insisting on filming in outdoor locations, primarily to harness the potential of the newly introduced colour film-stock. During my interview with Hitendra Ghosh, he explained that the locations in India were incredibly noisy, compared to other big filmmaking countries in the west, and it was virtually impossible to get acceptable sound amidst the chaos and the crowd. Because of this, for most Indian films produced between the 1960s and 1990s dubbing of dialogue became the norm. The sound recorded on location was referred to as a 'guide track' or 'pilot' and was supplied as a 'reference' through a headphone to the actors in the dubbing studio. The actors were required to repeat the dialogue in synchronisation with the 'guide track.' A clean and noiseless version of the sounds, devoid of the disturbances and noises from the location, could thus be recorded in the studio under controlled

[48] Dubbing in Italian films was a common practice, introduced to market foreign language films to Italians. Later, it became a normative practice even for Italian language films and was often done to homogenise the dialects used to one standard national version of the language.

conditions. This also meant that this studio-recorded dialogue was devoid of the peculiarities and spatial signatures of the location.

This practice of dubbing not only marked an important phase in sound recording conventions but also had much broader ramifications.[49] Acting conventions and production practices were realigned according to the requirements of dubbing. It also impacted the overall organisation of film production in India including the conditions of employment of actors and technicians, the choice of locations and even the acquisition of equipment.

The most crucial impact was the lack of importance accorded to 'pilot' sound recording during the dubbing period. As recounted by sound practitioners of that period, very little attention was paid to the recruitment of the location sound person. Since the sound recorded on location was no longer used, recording came to be considered a purely functional role. As Indrajit Neogi, a senior sound recordist from the Mumbai industry, told me:

> **INDRAJIT**: It was as if the recordist was another 'prop' in those days. The 'boom-man' would be standing in one corner holding a mic to record a pilot track.[50]The concept of live sound had disappeared.

Given the provisional nature of 'pilot sound recording', the main recordist would often send a junior assistant to the location, especially if he had another 'clashing schedule' of dubbing or mixing. Very often the producers did not allocate enough funds for proper sound recording, given its functional status, and a senior sound recordist could only be taken on board during the dubbing stage when the final voices were recorded. Recordist Rakesh Ranjan, also practising in the Mumbai industry in the late analogue period, recollected that he would send a single assistant to record pilot sound for some of his 'low priority shoots.' On the other hand, it was extremely crucial that the dubbing process was supervised by a senior sound recordist – not only to ensure that the aural quality of the final dialogue was consistent with the scene, but also to be vigilant for

[49] In the American film industry, the practice of dubbing is referred to as ADR, short form for Automatic Dialogue Replacement.
[50] The word 'pilot sound or track' is applied to sound recorded during the filming process, only as a guide or reference for actors, to be replaced later during the ADR.

lapses in performance during the 'takes.' Sound recordists were expected to see that there were no embarrassing lapses like missed words, wrong accents, flawed diction etc, although, normally this would have been the job of the direction team, especially the directorial associates. Given this criticality of dubbing, the services of senior and experienced recordists were necessary, who, if required, could guide top stars and actors during the recording process.

These practices were at odds with the production practices of Hollywood in the analogue period, where, observes Mark Kerin, even in the smallest crew "the sound will be handled by a two-person production mixer, boom operator team, often assisted by a third person dubbed the cable person or the utility sound" (Kerins 2015, p134).For big productions in Hollywood the sound recordist would usually have about 6 to 8 assistants and even more could be hired for complex shoots. Location sound recording in Hollywood, unlike India, was a crucial process and the entire crew were sensitised to the needs of the sound team. The process of sync sound recording ensured that the opinion of the sound person was given due importance. A shot had to be 'okayed' by both the camera and the sound teams in the 'sync sound' regime in Hollywood. As the quality of the sound recorded on location was crucial, extra takes would have to be allowed, when demanded by the sound crew, even if it meant delay in completion of the filming. On the contrary, given the practice of dubbing in India till the 1990s, sound recordists did not command much authority on location. Being entrusted only with 'pilot' or provisional sound, a recordist's job in 1960s -1990s Mumbai would be low-profile, especially in comparison with the cinematographer whose function was more central to the filmmaking process.

3.4. Sync Sound

3.4.1. *Lagaan* And the Second Coming of Sync Sound

The history of film sound practice in India has been marked by the constantly changing relationship between sound and its source as evidenced by shifting attitudes towards sync- sound. Dubbing – and its four-decade-long domination during the late analogue period (1960s to 1990s) – was challenged in the year 2001 in Mumbai. Actor and producer Aamir Khan announced in a press conference that the sound for his latest film

Lagaan (The Awakening, Gowaraikar, 2001) would be recorded in the sync sound mode. Tejaswini Ganti, in her book on production cultures in the Mumbai industry, remarks

> In interviews with the press, Khan explained his preference for sync sound in terms of his commitment to cinematic quality, representing his decision as a practice of distinction (Ganti, 2012, p229).

Ganti continues, quoting Aamir Khan "everybody I knew in the film industry, including Karan Johar and Aditya Chopra, advised me against using sync sound. It has never been used in a film from Mumbai. But it worked for us in *Lagaan*. I think sync sound makes a vast difference to the scenes, performances, everything" ("Aamir Khan denies re-shooting *Lagaan"* 2001)". Ganti also quotes from Satyajit Bhatkal author of the book *The Spirit of Lagaan* (2002) "which assiduously detailed the making of the film," describing dubbing as "much more than the technique of recording sound. It is part of a work culture"(Ganti, 2012, p229). As a consequence of the adoption of dubbing, "actors have got used to being casual about their dialogue delivery on set, directors pumping up the emotional levels while dubbing, and the unit members functioning in a noisy fashion during the shoot." Ganti argues that, given this background and the domination of dubbing in Mumbai, Aamir Khan's intervention was "a radical action" and also what she describes as a "practice of distinction" (ibid., p134).

It is manifestly clear from press reports of that period that sync sound shooting in the film *Lagaan* was represented as the 'coming of age' of Indian film sound and pitched as a major technological breakthrough and conscious push towards adopting the Anglo-American norms of sync sound. An *India Today* news magazine report from the period describes sync sound as part of the growing sophistication and corporatisation of Bollywood. The report titled *'Lights, Camera, Hitech'* linked sync sound recording to the larger efforts at corporatizing and modernising a film industry that was considered 'disorganised' and 'chaotic.' In this article, sync sound is interpreted as being part of a project of technological re-invention of the Mumbai film industry. Sync sound was clubbed together with new developments like structured script vetting methods, corporatized financial organisation, 'sheeted shoots', new cameras, rigs like the

Phoenix crane and Jimmy Jib, and digital post-production studios etc. [51] In Mumbai, technology is often seen as an answer to all the problems facing the industry, observes Ganti. According to her Mumbai practices are underpinned by a combination of 'minimal use of technology' and 'extreme fetishisation of technology' (ibid., p235). Sync sound became a signifier of technological modernity with the potential to radically transform the practices of the world's largest film industry.

But despite this much celebrated re-invention of sync sound through *Lagaan*, my fieldwork reveals there was also a certain degree of resistance to this practice in other sections of the Mumbai industry. P M Satheesh, sound engineer, who started as a location-based sync sound recordist around the same period that *Lagaan* was being filmed, observed that in the 1990s sync sound was perceived as "a brash new move", both time consuming and unreliable. However, other respondents, including Subhas Sahoo and Boby John, revealed that the ability to record good quality sync sound was considered a professional achievement among sound technicians. Despite the initial resistance from the industry, most trained and ambitious sound recordists in the early 21st century aspired to do sync sound recording. Recording 'pilot sound' or the temporary reference sound was considered routine, uncreative work, and recording sync sound was the Holy Grail. Film school graduates from the 1990s that I spoke to – P M Satheesh, Subhas Sahoo and Vinod Subramaniam – aspired to record sync sound in this period. Over the succeeding years producers and investors in Hindi films became largely convinced about the importance of sync sound and a budget for this was put in place. Film rental facilities in Mumbai introduced specialised gear suited for sync sound, including microphones, recorders and mixers. A number of sound recordists started offering a 'one-stop solution' by providing for both services and equipment, instead of being dependent on studios. Most of the senior production sound workers I interviewed mentioned that they purchased their own gear between the years 2000 and 2005.

> **SATHEESH**: There was resistance to sync sound as it was expensive, and in some quarters, considered unreliable. The technology to process the sound and clean noise

[51] 'Sheeted shoot' in Mumbai refers to elaborate shooting plans that list every detail of a shoot. While they are common in Hollywood and the UK, and even in China, they were only introduced by corporate production houses in Mumbai in the 21st century.

> had also not arrived in the late 1990s. But I decided to stick to sync sound, I didn't want to end up being a pilot sound recordist. At that time, only some art films, TV shows and documentaries were offering the scope to record sync sound. I concentrated on documentaries and ended up doing a few of them.

While feature films, had been using dubbing since the mid-1960s, the practice of sync sound was kept alive largely by documentary filmmakers, as well as both by fiction and non-fiction TV shows. TV shows, being mostly shot in studios and to tight broadcasting schedules, would only use sync sound, as it was faster and more efficient. To fulfil their desire for location-based sync sound recording expertise, Satheesh and Resul also started working with Euro-American crews which came to film in India. These foreign filmmaking teams, unlike Indian productions, were accustomed to recording sync sound and did not want to deviate even when faced with the challenges of the noisy Indian locations. Production sound recordist Shalini Agarwal was a fresh graduate from FTII when she joined Resul as one of his assistants for *Slumdog Millionaire*. Shalini feels that while Resul had experience in doing location sound for Indian films, Danny Boyle's film brought unforeseen challenges.

> **SHALINI**: The experience was new for Resul, as well. There were multiple cameras – seven cameras were being used at the same time for a scene and hiding our mics was a challenge. How do we go about recording this film? But despite the challenge it was an educative experience. I was really able to develop myself as a technical person and as a sound person. Also, to observe a director like Danny Boyle and cinematographer Anthony Dod Mantle in action, first hand, was an experience. Recently I got to work with Anthony Dod Mantle, again, in *First They Killed my Father* (Angelina Jolie, 2017). It's a challenge working with him as he not only works with multiple cameras, but sometimes even with hidden camera set ups - guerrilla style shoot where camera angles are constantly changed. During *Slumdog* sync sound techniques were not established in India, for the *Slumdog* foreign crew it was the 'done thing', but they did appreciate the difficulties we were working with, although there were times when we had to make them understand the issues. Often, we needed to put our foot down, pressing on them that we could not do things in the way they wanted.

Echoing Shalini's experience, other sound recordists I interviewed also agreed that working with foreign crews demanded constant readjustments in style and working

methodology. Filming with multiple cameras almost all the time is relatively unknown in India, even to this date. Recording assignments for international teams filming in India both helped Indian recordists tap into the established methods of sync sound recording and also gave them opportunities to come up with innovative solutions to overcome challenges faced on the shoots. The dynamic camera used by Danny Boyle forced the recordists to use concealed mikes that were not captured by the camera and invent ways to move handheld mics continuously according to the needs of the scene. Resul observed, during his interview, that there were some moments during the *Slumdog* filming when he felt that recording a proper sync sound in a noisy Indian location alongside the restrictions imposed by the camera was next to impossible.

Satheesh describes himself as one of the few sound engineers who got into this niche area of recording sound for foreign crews, especially, documentary crews shooting in India. This experience helped them to understand the various techniques and dimensions of recording sync sound, as the practice was new to India. Three decades of dependence on dubbing had undermined live recording skills in the industry. All sound recording equipment in studios and rental houses was geared to the needs of a dubbing-based sound post-production.[52] Location sound required specific mics, mixers and other accessories that were scarce in Mumbai of the 1990s. Satheesh tried to solve this problem with the help of an influential documentary filmmaker who owned equipment suitable for location recording. This was Anand Patwardhan, radical activist and documentarian known internationally for his *verite*-style anti-establishment political films.

> **SATHEESH**: Anand had a professional cassette recorder which could generate a pulse and thus synchronise with film cameras. I went and pleaded and got it from him. After that, I also started working with him and that gave me access to his equipment. In the same way, we would contact other filmmakers who had gear of their own. We would plead with them to rent it to us and convince them that it would be cared for properly.

Around 1998 Satheesh got a large and lucrative contract with MTV Asia, the Singapore based arm of MTV, to do their entire location-based recording in South Asia for 6 years.

[52] As most films were being dubbed, it was not profitable for equipment renting agencies to keep mics and mixers required for location recording.

The financial promise that came with this massive contract enabled him to buy his own dedicated sync sound recording equipment. “I got good modern microphones from Sennheiser, I got an advanced Digital Audio Tape (DAT) recorder with timecode facility, radio/cordless mics with very good range, and of course production mixers.” While sync sound recording had a cautious second coming in Mumbai, the practice swiftly caught on, due the collaborative approach among television, documentary and feature film sound practitioners.

3.4.2. Interrogating the Sync Sound Myth?

When Aamir Khan advertised his film *Lagaan* as a project that revived sync sound shooting in India, he had inadvertently left out an important fact. Several sound technicians I interviewed during my research felt that Aamir Khan’s assertion can at best be described as a half-truth. Their testimonies suggest that Satheesh’s claim to be a sync sound inventor in Mumbai was not entirely accurate. Indian New Cinema filmmakers such as Shyam Benegal were already using sync sound in the 1970s. While accepting the fact that sync sound did exist in a certain form, Satheesh asserted that the sync sound recording of the 1970s and 80s was completely different from that using the techniques and methods of the digital era. National award-winning sound person Indrajit Neogi, a graduate of the national film school FTII who was working in Mumbai around the same period, felt that Aamir Khan and *Lagaan* should not be credited with the ‘introduction’ of sync sound in India.[53]

> **INDRAJIT**: Aamir Khan’s description of *Lagaan* as the first sync sound film is a false statement. Sync sound was there even in the early periods in Indian Cinema, dubbing came only in the 1960s … the dubbing phase was a ‘terrible’ period and resulted in the loss of ‘status’ of the recordist. During this phase ‘sync sound’ recording was kept alive by the graduates of the national film institute, FTII.
>
> One person that people forget or ignore in the context of sync sound is Mr Hitendra Ghosh. His contribution to the practice of sound in this period is grossly underestimated. He played an important role in bringing back sync sound. Shyam Benegal and Govind Nihalani were the key directors who started recording sync

> sound.[54] They were working against all odds. There were no cordless mics, no lapel mics. I consider myself as a part of that history as I started my career assisting Mr Hitendra Ghosh, who was the main recordist of all these directors.

Hitendra Ghosh, an alumnus of the 1974 batch of FTII, started his career doing sound for Shyam Benegal, beginning with the director's second film *Nishant*, made in 1974. Ghosh was involved in sound work for several films directed by Shyam Benegal and was instrumental in using sync sound at a time when the entire industry relied on post-synchronisation. Ghosh and Benegal devised a slew of methods to record sync sound even in the most difficult of circumstances. One of the techniques included the creation of an improvised blimp to mask the sound of the camera. Benegal, during my interview with him called this a 'padded housing or a chamber' to encase a noisy Arriflex camera and prevent noise. Benegal is known in the industry as a steadfast believer in sync sound and was ready to address the demands of recording sync sound. He spoke to me at length about his philosophy of sound and why he went against the norms of the industry to record and use location sound.

> **SHYAM**: I was against dubbing from the very beginning … I find dubbed sound like a dead sound; it is not alive. You actually require a certain amount of the environment (in which you are shooting) to be heard. The only difference I find is that if you are going to be shooting in a silent studio, and you are going to be doing real life situations, then you require to bring in environmental sound that you want while shooting. Dubbing being done in the studio is removed from the time it was being done, it was removed from the time when you were living in the atmosphere when the narrative was being picturised. Right from my films *Ankur* (1974) and *Nishant* (1975) (only exception is *Manthan*-1976) I have done sync sound. Sometimes I have shot with a studio camera (on location) to avoid picking up the noise. I used a Mitchell studio camera which needed a generator. It was possible to find a silent generator. But when I was shooting *Manthan* in a remote location in Gujarat, I did not have a steady power source, and I had to switch to Arriflex.

[54] Shyam Benegal and Govind Nihalani are leading Indian filmmakers and are key figures in the art cinema movement that emerged in the 1960s. Benegal started in 1973 with *Ankur* and made 25 feature films and a number of television programmes. He is still making films. Nihalani has made 16 feature films since the year 1980, when he released his first film *Akrosh*.

From an aesthetic point of view, Shyam was clearly against 'bifurcating verbal and physical acting' as he believes in the integrity of the performance of an actor. So, for him it was not strictly an issue of sound quality, but a process of mobilising the 'natural acting' which unfolds organically during the process of filming. Benegal was not the only filmmaker who attempted live-sound in the 1970s and 80s. Govind Nihalani, the cinematographer-turned-director, also recognised the merits of the process and tried to adopt sync sound for his films.

Indrajit Neogi was working with recordist Hitendra Ghosh as an assistant recordist on Nihalani's third feature film *Ardh Satya* (Half-truth,1983) – a film about a reckless but honest police officer fighting corruption and crime. According to Neogi, while Govind had initially decided to avoid sync sound, he was keen on getting a 'good pilot track.' He had chosen to film with a noiseless 16 mm camera (Arri SR) and thus location sound was relatively free from camera noise. Sync sound requires a lot of discipline on the set, apart from constant co-operation from the actors. Neogi recalled that Govind was extremely supportive about the sound team and almost 'pushed them to do sync sound.' This was despite the fact that the film was shot against the urban backdrop of Mumbai, with its high level of ambient noise. As cordless or radio mics (considered integral to sync sound/ recording) were not available in those days, the recordists used 'corded lapel mics' which were usually clipped to the actor's body. The actors also needed to get used to them. The sound team, also, had to devise inventive ways to hide the microphone and cables during the filming, as sync sound required a more elaborate system compared to pilot sound.

> **INDRAJIT**: There was a big resource gap between Hollywood and us in those days. Ironically, those doing extreme low budget films were trying sync sound. As we did not have adequate finance, we had to be imaginative and find low cost solutions to our technical problems. Despite the challenges, we managed to record decent quality sound for *Ardh Satya*.

As the location sound was initially found inadequate, Govind decided to dub the dialogue of *Ardh Satya*. After dubbing the film he realised that the 'pilot' or the sync sound was superior to the dubbed track. The director, in consultation with the sound team, decided to replace most of the dubbed dialogue with that recorded live on

location: he felt that it was far more effective. This included most of the scenes involving Om Puri, who was playing the lead character. In some cases, when actors other than Om Puri were involved, the director preferred to go with dubbing, but with Om Puri, Govind decided to adhere to the sync sound despite the imperfections. The intensity of performance that the director was striving for was captured by the sync sound and he decided not to replace it with clean, dubbed dialogue. *Ardh Satya*, thus, remains an interesting case study, a unique instance in Indian cinema, when a film meant to be dubbed, finally co-opts the 'pilot sound' and deploys it in the final version of the film. Several films of the social realist genre from the New Cinema Movement at this time deployed sync sound long before *Lagaan* was produced, effectively challenging *Lagaan*'s claim to be a pioneer in sync sound. *Ardh Satya*, *Mandi* (Shyam Benegal,1983), *Party* (Govind Nihalani,1984), *Holi* (Ketan Mehta, 1984), *Trikaal* (Shyam Benegal,1985), *In Which Annie Gives to Those Ones* (Pradip Kishen, 1989) largely used live/sync sound and made it an acceptable practice in non-mainstream, realist cinema made in the 1980s. It also established a parallel practice regime which prompted recordists to train themselves to record sync sound with very basic and equipment available in the 'dubbing era'. However, *Lagaan's* success made the sync sound more acceptable to the mainstream filmmakers in Mumbai.

Indrajit regretted that, despite the innovation and rigour of the recordists, poor and unreliable mastering practices influenced the final quality of the soundtrack in the films. One of the reasons for the poor quality of the recordings was related to the recycling of magnetic film used to record and edit sound during the post-production process. The magnetic stripe film used for sound editing was mostly second-hand and had 'joints' or splices.[55] The more expensive full-coat magnetic film stock was deployed only for recording the music or important sound effects. Given these limitations, Neogi felt, sync sound done by recordists in India during the analogue era did not match up to accepted international standards.

[55] Magnetic stripe film, also known as SEPMAG, was often reused after joining them into reels. Being cheaper than new film, these were sold in bulk and were often preferred by film producers keen on economising.

3.4.3. The 'Small Screen' Route to Sync Sound

Another factor that influenced the move to sync sound in Indian film production was television. While, based on electronic images, television was fundamentally different from cinema in the celluloid era, the rudimentary conventions of sound recording were gradually shared by the two forms. The TV medium was and still largely is based on sync sound, primarily due to its formal properties. The need and urgency to go on air on a regular basis does not, usually, allow television producers the time to dub the programmes, even in India. In the middle of the 1980s, several television serials were launched by *Doordarshan,* India's public broadcaster, the sole operator in the television sector in the 1980s. [56] Fiction shows like *Hum Log* (We the People, 1984-1985), *Yeh Jo Hai Zindagi* (This is What Life Is, 1985), *Karamchand* (The Detective, 1985-1988) and *Buniyaad* (Foundation, 1987-88) followed each other and gained unprecedented popularity across India, especially in the Hindi speaking parts. Indrajit Neogi believes that the entry of television and its production practices influenced the practice of recording sound in films in Mumbai. As most TV shows were filmed in the controlled environment of the studios, it was possible to record relatively noiseless sound, when compared to outdoor shoots for feature films. The same recordists started to successfully introduce this practice from television and adapt it for films.

Neogi considers his own work on the extremely popular crime detection serial *Karamchand* (*The Detective*, Pankaj Parashar, 1985) as an important part, not only of his own career, but of the evolution of sync sound in India. What distinguished *Karamchand* from the more popular shows like *Humlog* and *Buniyaad* was the fact that it was almost entirely shot outdoors. The filming style was improvisatory in nature, with the cameraman and recordist following the actors as they moved from one urban location to another. The director, according to Indrajit, would encourage the actors to improvise scenes and often end up doing long takes or long duration shots. The recordist's job was to maintain a consistent level and quality of dialogue throughout these long duration takes. Indrajit recalled that in a production context dominated by dubbing it was a challenge to record acceptably good sync sound for this television

[56] Doordarshan, India's public broadcaster, is controlled by an 'independent board' called Prasar Bharati. Before the satellite television revolution of the 1990s it was the television broadcaster in India. Doordarshan produced some of the most popular fiction shows in Indian television in the 1980s and 1990s.

serial. The technical and logistical challenges, he felt, were staggering. The recordists had to continuously innovate techniques of microphone placement and work out strategies to stay outside the field of the camera. He recalled that *Karamchand* was the first TV programme to use a cordless or a radio mic.

> **INDRAJIT**: There will be times when the mics won't work, there will be times when the signal would break, you know we were figuring out. It was a time when we were learning to do *live* sound, actually. It was a self-teaching process. We were learning how to mic properly in those kinds of situations. The actors – Pankaj Kapoor and Sushmita Mukherjee – understood our predicament and were extremely cooperative.

Their fresh and innovative techniques used for sync sound in television created wider possibilities for adoption in mainstream films. Feature filmmakers, especially those working within a realist aesthetic and shorter timeframes, could recognize the benefits of this process. The problems and challenges faced while recording sound for television serials helped sound recordists like Neogi to prepare for their feature film work. *Karamchand* was filmed between 1985 and 1989. Soon after this, in 1989, Neogi completed recording for Pradip Kishen's film *In Which Annie Gives It Those Ones* (1989), an irreverent comedy that explored the lives of young people in an elite architectural college in Delhi in the 1980s.[57] In line with the spirit and the quasi-documentary style of the film, the sound was recorded entirely live on the location. By then the filmmakers had started to procure cordless mics, as they realised the future of sync sound recording. Indrajit admits dubbing about "3 to 4 %" of the sound in this film ("*Annie*") for technical reasons. Even those parts were dubbed on the actual location by playing back scenes using a VHS tape, but using the same mics and recording equipment to maintain uniformity.[58]

Dubbing on location was an innovative technique that have often been used by filmmakers like Satyajit Ray who understood the necessity to include the aural signature of the location in the scenes. In location dubbing, actors were asked to repeat the

[57] Pradip Kishen is a filmmaker and an environmentalist. He made three films beginning with Massey Sahib (1985), which was won the FIPRESCI prize at the Venice Film Festival. In Which Annie Gives It Those Ones scripted by Arundhati Roy, Krishen's former partner.

[58] Dubbing on location was a technique that was used by filmmakers like Satyajit Ray, as well. Since the actors had performed during the visual take, it was easy for them to replicate the sound and emotion in the same location, after the main shooting got over. It also gave the dubbed sound similar spatial properties as true location sound.

dialogue in the location only for the sound recordist, after the completion of visual filming. Being immediately recorded after the visual filming, as opposed to conventional post-sync which happened months later, actors could easily give a performance that matched the tone of their original performance. Location dubbing was, thus, a process which adopted the middle path between sync sound and dubbing. As Indrajit asserted, this technique helped the sound person to record a sound that spatially matched the visual and helped extract a better performance from the actors compared to studio-based dubbing.

Indrajit Neogi's argument that sync sound recording in India never actually stopped but was continued by the New Cinema directors was verified by most senior sound workers I interviewed. But it was a marginal practice, used by about a dozen films out of thousands that were produced in India, over the two decades of 1970s and 1980s. The rest of the films, and especially all of the mainstream films, were dubbed. Thus, it is not mistaken to label these two decades as the 'dubbing era' in Mumbai.

3.4.4. Acting, Before and After Sync Sound

Sound engineer Subhadeep Sengupta, a sound person practising in Eastern India, describes the shifts in sound practices from sync sound to dubbed sound and back to sync sound as largely an actor-driven phenomenon and not primarily decisions linked to sound. He echoes a view that Indrajit Neogi also expressed that "actors and stars exerted 'invisible pressure' in moulding sound practices in Mumbai". The invisible pressure refers to requests for dubbing, even when filmed in a silent background such as in a studio-based scene. Indrajit also added that this was "known to everyone but never mentioned. (sic)"

Veteran sound person Kuldip Sood, whose active career spanned from 1973 to 2003, proposed a contentious theory. He observed that the nature of the actor's contracts played a vital role in installing dubbing as an essential practice in Mumbai. In the pre-corporatisation era of the Mumbai industry, and in the absence of strong legal protection of their financial interests, dubbing gave actors a bargaining chip, to exert pressure for the timely release of their principal remuneration for acting before they would commit to dubbing dates. With the advent of sync sound, however, the situation was reversed

in a curious way. Indian actors recognised the convenience of not having to commit to a second set of dates for dubbing, as they were committed to do in the analogue era. Released from this age-old practice the need to juggle dates between shooting new projects and dubbing for old projects, actors, mostly from the younger generation, in Indian films started strongly endorsing sync sound practices.

This opinion must be seen in the historical context of the late analogue era in India – the period between the 1970s and 1990s – when dubbing, celluloid film and the inherent limitations of analogue technology gave rise to a distinctive performative culture. In this period, especially in Mumbai, a small number of specialised dialogue writers were catering to several films at the same time. According to sound recordist and designer Rakesh Ranjan, the dialogue writers would often not be ready with their dialogues and would improvise their dialogue scripts on the shooting floors. Because of this practice, actors would not have the time to prepare their lines before they arrived for the shoot. They would focus more on the physical part of the performance, often paying scant attention to the accuracy of the dialogue or, sometimes, to the expressive demands of a scene. Dubbing era recordists like Rakesh, Indrajit and Ashwin agreed that actors would say their lines mechanically while filming, with the knowledge that they would be replaced during dubbing. The acting philosophies of actors and their individual signature styles became inextricably linked with the practice of dubbing. Dilip Kumar, the star of some celebrated films between the 1950s and 70s, was known to be a brilliant actor, specialising in tragic roles.[59] Because of Dilip Kumar's soft voice, veteran recordist Kuldip Sood observed, it was difficult to get the acceptable loudness level while recording him, especially on outdoor locations. The close mic placement used for dubbing, according to Sood, was the best way to record Dilip Kumar's soft voice and this preserving the nuances of his dialogue delivery.[60] Indrajit Neogi reminded me that Amitabh Bachchan's famous, full baritone voice, an integral part of his star persona, was also 'a product of the dubbing era'.

[59] Younus Khan, known by his screen name Dilip Kumar, is a Hindi film actor known for his intense, yet languid style of acting and the tragic, tormented characters he played. Sound recordists sometimes found it difficult to record him because of his soft dialogue delivery.

[60] During the dubbing or post-sync process a mike would be placed, by default, close to the body or the vocal cord of the performer. This was not possible during filming process, especially in the 1970s and 80s, where a directional boom mic was used by recordists. To keep the boom from appearing in the frame, it had to be kept away from the performer especially in long shots. Hidden mics were sometimes used and close to the body of the performer, but it was not possible for all scenes.

Dubbing, thus, gave rise to a performative regime in which the physical and the verbal components became bifurcated and 'delinked' and would only be re-linked in the post-synchronisation process. This made acting in mainstream Indian cinema a fusion of physical and verbal acting, rather than one integrated whole. The practice of dubbing was so widespread in the late analogue era that the actors who dominated that period would, eventually, find it extremely difficult to adapt to sync sound recording when it was reintroduced at the turn of the century. Senior actors and stars from the analogue era are known to request their recordists to dub specific scenes, while doing a 'sync sound film.' Several recordists I interviewed testified to this fact. P M Satheesh described his encounter with 'megastar' Amitabh Bachchan during a shoot.

> **SATHEESH**: I was putting a cordless mic on him, which is a little uncomfortable with wires going around. He was obviously not used to that. He said, "why are you doing this, I can give you a better sound during dubbing. You don't need to do this." I explained to him we are doing location sound and why we need to this – to get flavour of the location. Amitabh just did it because I asked him. I could see he was not convinced. I thought it was my job and I did not give him leeway. He kept insisting that he will improve it in the dubbing. Later we asked him to come to the dubbing studio for some alterations. He requested me to playback the sound recorded on location and again insisted he could improve it. With him, we know that he could improve it. Many people claim to improve their dialogues, in Bachchan I could actually see it happening.

As recounted by almost all the sound recordists I interviewed, actors from the dubbing era feel that sync sound takes away the chance to rectify their performance or better their diction in the quiet environs of the dubbing studio. While Amitabh Bachchan has started accepting and appreciating sync sound, there are other actors such as Rishi Kapoor who are still known to resist sync sound. Indian film sound recordists working simultaneously with international productions recurrently pointed out the difficulties of recording sync sound with analogue era actors from India. The plea to dub is often backed up by the claim that the dialogue performance could be improved in the dubbing studio, the studios being free from the distractions and chaos one finds on locations. Recordists who have specialised expertise in sync sound recording expressed concern about this lack of adaptability in actors and even attributed this to an overall lack of concern for quality in Mumbai.

> **SHALINI**: You know how hot it is in Mumbai? Rishi Kapoor can't bear the heat of Mumbai, he always needs a fan or a cooler next to him even in a sync sound film. So how does one record sync sound with him? He is a seasoned actor and he has come from the dubbing era. And he is not used to this. Whereas I have worked with British actors like Judy Dench, Maggie Smith, Tom Wilkinson, Bill Nighy on *Best Exotic Marigold Hotel*, some of them are 75 or 80 plus in age – the cream of British actors – and they would never falter even once on long two-page scenes and would deliver dialogues perfectly. They would never even complain about getting miked up even in the heat and humidity of Asia.

For actors from the UK and US, sync sound and what it demands is an unavoidable necessity – an integral part of the vocation of acting as it has evolved in the fields of theatre, film and television. For Indian actors, especially those trained in the 20th century, sync sound is often seen as a new fashion or "the soundperson's new fetish". Interestingly, films which are recorded live, still need to use dubbing, at least in parts; it is extremely rare to have a film recorded one hundred percent live due to technical issues or lapses in acting. It is in these situations that the dubbing skills of Indian actors become valuable for the recordist. Resul recounted a dubbing session in London with a mixed cast of Indian and foreign actors in which the Indian actors effortlessly lip-synced their dialogues in the dubbing booth, while the western actors struggled to get the correct sync and emote at the same time. Tejaswini Ganti, referring to the persistence of dubbing in the Indian film industry, observes that it is a reflection of a larger tendency towards 'orality.'

> Orality is apparent during the dubbing process as well. Instead of working from a script, actors use their aural and memory skills: they listen to the lines that they had uttered and repeat them verbatim. Since an assistant director is responsible for overseeing the process and making sure that pronunciation, grammar, and syntax are correct, dubbing offers a chance to correct errors that occurred while shooting (Ganti, 2012, p226).

Sound workers have testified to me that, conversely, in the case of younger Indian actors who started working in the 21st century, dubbing is often seen as a huge challenge. To salvage scenes where sync sound has failed, engineers' practice 'patch dubbing' or 'part dubbing'. Satheesh shared his experience of seeing younger actors struggling, even when they needed to dub only small sections of a film.

> **SATHEESH**: Most often they are unable to either maintain sync or maintain the quality of the performance. When they concentrate on the quality of the performance, the synchronisation goes out. These days we employ digital tools to maintain or to correct the synchronisation and request them to just concentrate on the performance. That way we save both time and effort.

In the early analogue era, it was assumed that the actor's lines would be rectified or perfected during the post-synchronisation/dubbing process. The value and competence of a good actor would invariably be linked to his or her ability to dub quickly. In acting schools, including in the national film school FTII where the acting course commenced in the year 1960, dubbing was emphasised as a key skill for actors looking for a career in cinema. In the star-system prevalent between the 1970s and 1990s, dubbing enabled an actor to handle multiple roles or characters filmed simultaneously on different films. He or she had the scope to tweak on-location performance by working on the dialogue or the vocal part during the ADR process. At the same time, there were concerns that a long gap of three to four months, or sometimes even more, between the actual filming and the eventual voice dubbing process undermined the quality of the performance. The view was expressed by Indian sound recordists like Resul and Satheesh, as well as Italian sound person Leonardo whom I interviewed in the final phase of my research. The role of dubbing in determining the broader conventions and economics of the industry aligns with sound designer Subhadip Sengupta's view of sound culture as being dominated by the conventions of the star system. Being part of the dubbing-based production milieu of Kolkata, Subhadeep did not ascribe much merit to the sync sound promoted by the Mumbai film industry. He argued that "what we call sync sound is not really sync sound – at best it is *sync dialogue.* A film has so many different sounds that do not belong to the location". His colleague Sukanta Majumdar from the same film industry in Kolkata, also expressed similar views

> **SUKANTA**: In film sound practice hundreds of sounds are recorded and reproduced. Most of them are not live sounds or sync. The only benefit I see in the process is that, during sync recording, we accidentally get some atmospheric and effects sounds which can be useful during sound editing and design.

Majumdar was trying to underline the fact that films have numerous sound elements, both diegetic and non-diegetic, which do not originate in the location. The extreme

naturalist style of filmmaking, like the European Dogma school, rejects sound mixing and deploys sounds that are only from the location.[61] But for films in general, it has been an age old and standard practice to glean sounds from different locations and spaces, as well as from libraries or sound banks, Foley studios, synthesizers and other sources. They are added, processed and blended together to produce the final soundtrack. Cynicism about dubbing was expressed not only by sound recordists, mixing engineers, but visual editors as well. The visual editor is still the first person in post-production to work with the dialogue. While the link between sound and site dominates academic sound studies, in the day to day practices of the film industry the relationship is often tenuous, as evidenced by the testimonies of these practitioners. But at the same time a majority of the practitioners I interviewed during my fieldwork, both Indian and international, persistently took a line which aligned with naturalism. Amala Popuri, a sound designer and location sound recordist, reiterated this point: "ambience contributes to what your idea of realism is; the natural mixing of dialogue and ambience is what adds realism to a film. It is the space which determines how the dialogue is diffusing in the environment and the kind of mics we use in the location versus the kind of mics we use in the studio."

According to Amala, it is not the vocal component of the sound itself, but the manner in which ambient sound is integrated with the voice that makes sync sound an 'alluring concept' for her. Even when it was not possible to record voice or dialogue on location, the sound person devised ways to simulate the location through a slew of techniques. This included the manipulation of the tonalities or the introduction of noise into the soundtrack in order to make the voice appear as if it was recorded on location. But matching studio recorded sound with that recorded on location was not always a seamless process. Directors and editors, I interviewed, also pointed towards the difficulties and challenges of simulating or replicating location sound in studios. Arghya Kamal Mitra, an award-winning visual editor who has worked extensively with sound, underlined the problems of matching studio sound with location sound in terms of perspectival and other sonic attributes. He cited the example of simulating the 'locational qualities' of a person speaking on a 'long image' or a long shot. When the dialogue is recorded in a studio, its

[61] Dogme 95 was a film movement started in Denmark by the filmmakers Lars Von Trier and Thomas Vinterberg. Their 'manisfesto' professed an ascetic style, that focused on story-telling and avoided post-production

sonic qualities are strongly mediated by the spatial qualities of the studio walls and proximity of the person to the mic. Digital tools used in recent times can approximate the original sound, by artificially giving it the spatial colour of the original through the process of digital inscription of the site into the sound. In terms of its genealogy, this technique is used to place an actor in a location, without actually having to take him there. The visual equivalent of this aural technique pertains to the use of 'green screens' to place a character in an artificial location. Even though such simulated sounds may seem authentic to most viewers, 28 out of the 30 sound specialists I spoke to asserted that the digital approximation in a studio could never simulate actual sync sound. Their point was that the impact of location sound on the audience is often unconscious and affective, and even if dubbed sound appears to sound like the original, this similarity is superficial. In other words, they felt location can never be simulated – there will always be a difference.

The preponderance of dubbing during the three decades of its existence had indirect benefits for producers. It was possible to keep on casting actors who did not know the language or had an inadequate grasp over the language. Their voice could be dubbed by actors trained to dub for others and they brought in better diction, better voice and sometimes even better expressive qualities through vocalisation. All Indian films, irrespective of their genre, style, or period, have made use of this technique of replacing one voice with another. This practice has conceptual similarities with the practice of playback singing in Indian cinema – a convention where a singer lends her voice to an actor, remaining invisible, but most often easily recognisable through the voice. I have referred to this aspect of Indian films analysed by Neepa Majumdar (2009) in Chapter 1 of the dissertation. Majumdar borrows this concept from Michel Chion to describe this as synchresis (Chion et al., 1994) – a kind of voice that is, simultaneously, both acousmatic and de-acousmatic.[62]

The re-introduction of sync sound has triggered a fresh debate on the relationship between sound and space, as well as the ethos of screen acting in Indian cinema. The younger stars and actors in Hindi film industry have taken sync sound practice as a given and are better prepared to give a holistic performance on the sets. Sync sound specialists usually avoid

[62] French philosopher Michel Chion proposes a category of film sound in his book Audio-vision (1994), where the source of the sound is not visible or is not revealed. The sound of the wizard in "The Wizard of Oz" or of HAL in 2001-A Space Odyssey are cited as examples of acousmatic sound.

projects which opt for dubbing instead of sync sound as they see dubbing as a regressive practice. Amala Popuri asserted that dubbing undermines the idea of 'good sound' in a project, especially when the actors are not used to it.

> **AMALA**: Nowadays I see a lot of dubbed films, for example *Death in the Gunj* (2016), most of the actors are not used to dubbing. The performance that you see – the pitching of the dialogue – everything is kind of unreal. There I would say directors who have great control over actors can achieve parity during dubbing– these are processes where directors sometimes don't even sit in on the process of dubbing, so in that case the performance of the actors during dubbing is different. When you don't have another actor to give the cue, we don't recreate the sets, or make the actor walk while he or she is talking (during the dubbing process).

Amala's critique is not just an assessment of dubbing per se but underlines the fact that with the advent of sync sound a new regime has come into force in which actors are neither trained nor encouraged to pick up dubbing as a skill. Her view of dubbing echoes similar debates that took place with the advent of sound in the 1930s when actors from the silent period were required to speak dialogue and emote at the same time – perceived at that time as two different skills. So, actors trained to 'perform characters' physically or visually had to train themselves to do it verbally as well in the new aesthetic regime of talkie films. Moreover, Amala's distrust for dubbing is also linked to the way, as she observed, dubbing was mostly practiced in India. She added that actors are usually made to sit during ADR in India, irrespective of whether they are walking or running in the visuals they are lip-syncing their dialogues. This practice can potentially give rise to a mismatch between visual and sound, even though digital post-production manipulations can neutralize it to a certain extent.

3.5. Dubbing in South Indian industries

Despite the adoption of sync sound recording in the Mumbai industry, the industries in South India have resolutely stuck to dubbing dialogue even to this date. The southern part of India produces films mainly in four languages – Tamil, Telugu, Malayalam and Kannada. The borders of these film industries are porous, which is attributed to the cultural and linguistic similarities between the provinces. For example, the studios in Chennai city, apart from being the centre for Tamil film production, also service a certain number of Telugu and Malayalam films each year. There is a considerable

sharing of technical resources, technicians and actors between these industries. Many of the south Indian sound technicians I interviewed, such as Arun Bose and M.R. Rajaksrishnan, are based in Chennai and work for Tamil, Telugu and Malayalam films. There is a consensus among the filmmakers I interviewed that this unique nature of the south Indian industries has come in the way of the adoption of sync sound. Sound Engineer Rajakrishnan, during an interview, attributed this to the fact that most often South Indian films feature actors in leading roles who do not speak the relevant language. This is particularly true for female leads or 'heroines' who are non-locals and hence do not speak the language. Thus, according to Rajakrishnan, professional dubbing artists dub the voices of these 'heroines', often in more than one language, to cater to a thriving industry in dubbed films. Sound recordist Shalini Agarwal, who specialises in sync sound recording in Mumbai, linked another interesting formal attribute of southern films to the practice of dubbing. General apathy and secondary status of sound in India, according to her, adds to the lack of understanding of sync sound and its importance.

> **SHALINI**: As far as south Indian films are concerned; a lot of mainstream films are action based. So, when most of the film is action, chase sequences, or loud explosions then there is not much space left for sync sound. Dialogue takes a back seat. As it is, we don't have proper understanding of recording sync sound, the *attitude* is not there. First of all, deciding on the sound itself is the last thing that happens on production and then when it comes to choosing, we have to depend on the budget. Our film industries are so rooted in the star system, 60 to 70 per cent of the budget just goes to the stars. And then of course there is not enough money allocated to sound – when 70 per cent is being spent on stars, then very little resource remains for the technical departments. We all know that sync sound costs more than doing pilot sound, but it gets neutralized later when you spend hours and hours dubbing and trying to make it sound as realistic as you want it on location – which is possible these days.

Shalini's assertion that genre elements of action spectacles have prevented sync sound from being adopted in South India could be contested on the ground that dialogue-oriented melodramas are also produced in South Indian films regularly. These dialogue-oriented films also stick to dubbing or post-synchronisation. As producers refuse to opt for sync sound recording in the south, the expertise in this field has not developed, claimed M R Rajakrishnan. However, in the recent past, a handful of films from south India have tried sync sound recording and have used specialised sync sound recordists

for this purpose and the directors have been satisfied with the results.[63] According to a report in the online version of the journal *India Today* Mani Ratnam is a new convert to the sync sound regime. "I thoroughly enjoyed shooting the film in sync sound. It breathes life into a film, especially with artistes who speak the language in which you're making the film. The experience was so good that I'm thinking of making more films in sync sound" (India Today, 2015).

To adopt sync sound south Indian filmmakers have to start using actors who have a good grasp over the language, rather than just for looks. But given the fact that the south Indian industries, especially that in Chennai, have always maintained their stylistic differences with Mumbai, dubbing might continue to be adhered to in south India for the foreseeable future.

3.6. Technology, Cost and Efficacy

Over the last decade, the Mumbai industry has largely accepted sync sound practice as the *proper* if not the most efficient way of recording sound. According to sound recordist Subhas Sahoo, who also heads the Sound Association of Western India, about 70 per cent films produced in the film industry at Mumbai are now recorded as sync sound. Interestingly, most smaller industries in India cannot afford to use the relatively expensive sync recording method and prefer to adhere to dubbing. Location based sync sound recording has, over the last decade, developed as a specialised craft that requires not only a different skill set, but also dedicated equipment and a production climate appropriate to the needs of noiseless sound recording. The most important tool for sync sound recording seems to be digital sound editing software that can remove unwanted sound from the dialogue tracks without causing appreciable loss in the aural quality of the sound. Thus, according to Pankaj Seal, sync sound practices in India required digital technology to flourish. The noises that are invariably picked up during live recordings in Indian locations required digital intervention in post-production. One can thus infer that sync sound could be effectively deployed only in the digital period.

The need to enforce discipline during a sync sound recording in India's most noisy locations has become a production management issue and has given rise to a new industry

[63] For an insight on the growing interest in live-sound and dubbing in south India look at this article from the *New Indian Express*. http://www.newindianexpress.com/entertainment/telugu/2016/aug/20/Dubbing-gets-drubbing-sync-is-in-at-Tollywood-1511002.html

in the digital context of the 21st century. Priya Jaikumar, in a brief article in an internet blog on sound studies, has drawn our attention to the fact that the need for noiseless sound during live location recordings in Mumbai has created the concept of 'sound lock'. 'Sound Lock' refers to the practice of using security agencies and bouncers, recruited largely out of the migrant population, to enforce silence around the shooting area. She describes this newly emerged practice in detail by citing case studies of production and security crew engaged in the location sanitisation process.

> For instance, Security Provider Narendra Baruah started with security work on the film *Lagaan* (2001), the first big-budget film shot with sync sound, although it was preceded by the smaller scale *Bombay Boys* (1998), which also recorded in sync. Baruah created Active Squad Security while working on sound security for the location shoot of *Veer Zaara* (2004). He has provided security protection to stars (such as Madhuri Dixit Nene, Shah Rukh Khan, Aamir Khan and Preity Zinta), but his primary employment is in sync sound security. He retains a small group of men on a monthly salary with additional per diem top-ups during assignments, which may range between INR 5,000 to 10,000 to over 20,000 a day, depending on the nature of the shoot. Additionally, he hires men on a temporary basis from a pool of local Mumbaikars and immigrants seeking employment in the big city. Baruah's company is in competition with actor Ronit Roy's security company ACE and movie star Salman Khan's Tiger Security. Although he lacks their star profile and their facility with English, he has made a name for himself through his entrepreneurial practice and expertise in shooting at "*jhopad pattis*" (slums) for films such as *Slumdog Millionaire* (2008) and *Barah Aana* (2009) (Jaikumar, 2017).

Gunjan Shah, the production sound recordist of the 2019 film *Gully Boy* (Zoya Akhter), told me that the film required about 50 bouncers to achieve a 'sound lock' in their location at the Asia's largest shantytown of *Dharavi* in Mumbai. Interestingly, Gunjan, also added that the bouncers were also instructed that they should not be so severe that the ambient sound becomes too quiet and the recorded sound 'does not sound like *Dharavi*.' Sumit Ghosh, an editor with two decades of experience both in analogue and digital eras, observed

> **SUMIT**: The amount of resources and time that is invested in recording sync sound sometimes seems too disproportionate to the actual gain. You have to deploy a huge

> number of people, sanitise big areas, so that there isn't too much noise. Our locations here in India are too noisy and the process of sync sound becomes a huge affair. For example, if *Lagaan* was dubbed, I feel, it would not have a made a difference to the film. I also do not subscribe to the idea that sync sound reduces the work we have to do later. You have to spend a lot of time processing it in the studios, if not in dubbing. For example, when you have recorded dialogue outdoors and use it during editing – quite often there will be a lot of difference between the level of ambient sound. If these levels are not matched manually there will be a jerk. Matching them requires a lot of hard work. Dubbing in the studio seems to be a less cumbersome affair. I also do not agree with the view that dubbing affects performance. If we have the scope of improving performance through dubbing, we should embrace it.

One of the dominant discourses around digital technology and its impact on cinema in India has been the shift in the material culture from the resource heavy and elaborate analogue era practices to quicker and largely 'immaterial' computational processes employed on the editing console. But the resource-heavy process of sync sound recording, contradicts this discourse. According to Sumit, Kuldip and Rakesh, the 'undue' emphasis given to sync sound or sync sound has taken the focus away from the fundamental issue – whether sync sound is necessary for the dramatic and technical requirements of a film. For these practitioners, live-sound recording need not be a default mode for films and can be used on a case-by-case basis. Amala Popuri, a specialised sync sound person, observed that sync sound could potentially obstruct specific dramatic and technical requirements of the film. She cites the example of 'day-for-night' filming, an effective and age-old process of simulating a night scene during the day through optical manipulations of lighting and the use of optical filters. Since ambient sound/noise levels during the day are much higher than those of the night, dialogue recorded live cannot be used and hence has to be dubbed to give it a night-like feel. Thus, because of this disconnect between visuals and sound, live-sound as a technique becomes incompatible with day-for-night shoots.

3.7. Complexities of Sync Sound Recording

As explained earlier in the chapter, the conventions of 'pilot or guide tracks' used primarily as reference for dubbing only required rudimentary recording skills. The idea was to record a functional dialogue track to be deployed only for picture editing and eventually replaced through post-synchronisation. When sync sound recording was

reintroduced in the mainstream industry in Mumbai, the mode of recording became increasingly complex and more technical. Instead of the one or two microphones of the 'dubbing era', recordists now deploy anywhere between seven to twenty microphones depending on the complexity of the scene. Using multiple mics of varying categories for a scene, putting radio mics on the actor's body are techniques used by recordists in the Anglo-American world. This has been a standard practice globally but became normalised and mainstreamed in Mumbai only in the 21st century as sync sound became more common. The output of the different microphones would be recorded separately as discrete tracks on a multitrack recorder and could be separately processed and manipulated during the mixing process. A basic mixed dialogue track would be created using a 'production mixer' for use in editing. [64] Film commentator Gautam Pemmaraju, in his article on Indian film sound, refers to the recording techniques employed in the 'first' sync sound film *Lagaan*.

> Nakul Kamte, one of the more prominent sound designers working today, speaks of the crowd sounds in *Lagaan* (2001). Cables were laid out and planted in the dusty fields of Bhuj; multiple microphones placed at strategic points captured the largeness and density of the animated crowds (Pemmaraju, 2013).

The technique referred to here was designed to capture the overall animated atmosphere of the cricket match which forms the central event in *Lagaan's* narrative. There were main actors, supporting actors, and the 'extras' forming the crowds or the spectators of the match. This, according to Pemmaraju, demonstrates the new approaches and techniques employed by the recordists to capture the essence of the space. Analogue technology resisted the practice of recording multiple layers of sound on location or even introducing them effortlessly during track-laying and editing. Recordist Subhas Sahoo, a leading location sound specialist, told me that for the film *Neerja* (Ram Madbhavani, 2016) he deployed about 30 lapel mics, 15 boom mics and multiple electronically interlocked recorders. A group of ten assistants helped him control this massive sound set-up. The director used multiple cameras to shoot key scenes in the film. This made the job of the recordist even more daunting as he had to set up the mics

[64] Production mixing consoles are simplified, portable versions of sound mixers used by recordists on location, to mix, process and equalise sound.

in a way that they were outside the field of the cameras. The above project, along with other examples shared here, indicates that sync sound in today's context can be extremely resource intensive, not only for the core recording process, but also for ancillary processes like sanitising the location from excessive sound. While all sync sound projects are not equally elaborate and resource intensive, the average cost of location sound remains outside the reach of small productions. The minimum cost of sync sound recording in Mumbai can range between Rs30,000 and 40,000 (approximately 450 to 550 USD) per day of shooting. For an entire project this would come to one million rupees (about 15,000 USD). For a small feature film this can eat up 5 to 10 % of the budget and remains a difficult proposition. However, there have been instances when small budget films have also employed sync sound shooting by adjusting from other budget heads.

Despite the high costs and complexity, leading sound designers in Mumbai are largely equivocal about the difference sync sound makes, not only to the quality of the sound, but also to the integrity of the performance. Well-known practitioners like Bishwadeep Chatterjee, P M Satheesh and Boby John were convinced that sync sound practice had made a huge difference to film sound in Mumbai. According to them filmmakers are now particularly keen to adopt it.

> **SATHEESH**: The moment they come to dub, and the artist says one line, and the directors have heard the original location sound, they ask 'is there any way to clean up the original and salvage it? We are ready to pay anything to do this.' No actor is coming anywhere near their original performance [in dubbing]. I can tell you about 'n' number of directors I worked with, every one of them will ask you to salvage the original location sound. Every director today feels that the original is the best.

Sync sound recording, in the initial days of its reintroduction in Mumbai, faced persistent technical issues. But digital technology made a significant difference in eliminating the fears of the recordists and technicians by addressing some of these concerns. One of the developments that came as a boon was the introduction of the digital multitrack recorders. In the 1990s, the first generation of digital multitrack recorders appeared in the west. Technicians in Mumbai got their first digital multitrack recorders in the 2000s. These recorders allowed the sound person to record sounds from

multiple mics independent of each other. This enabled them to precisely control the quality and fidelity of the sound recorded. During my interview with Subhas Sahoo, he agreed that the strengths and benefits of digital recording encouraged recordists and producers to gravitate towards sync sound recording. According to P M Satheesh, one of the major advantages of doing sync sound on digital formats was the absence of tape noise and wobbles which were sometimes known to happen in the magnetic format.

> **SATHEESH**: Apart from this, being in digital format, there was no generation loss when we transferred or made changes to the sound. But we also had some apprehensions about the quality and richness of the sound, because theoretically we knew that the sound was being split into so many parts during digitisation through the process of sampling. The sound was not real in that sense, there were fidelity issues. But we were not unduly critical, it was a new technology and we were observing how it behaves. Generation loss was a huge issue in the analogue era which was [now] no longer there. The industry was mostly using third grade, multiple used tapes for analogue recording and that would affect the quality of our work. Digital recording helped us overcome those issues.

Location recording used to be synonymous with the equipment known as the Nagra, recorder, manufactured by the famous Kudelski company in Switzerland. [65] Nagra came out with the digital multitrack version (Nagra D) of its famous recorder in 1992. It had a frequency range of 96 Khz and a dynamic range considered 'promisingly high.' The digital version of the Nagra replaced the analogue version slowly by the end of the first decade of the 21st century. While the appearance of the digital Nagra was crucial, another development was the adoption of Digital Audio Workstations (DAW). Film sound historians, too, observed that that DAWs made things completely different on the ground.

> Digidesign's Sound Tools DAW was rechristened Pro Tools in 1991 as an integrated sound editing system for film and video. Purchased by Avid in 1994 and linked to their video editing software through the OMF file exchange lanai, Pro Tools eventually became the dominant audio editing platform in the 2000s (Beck and Ament, 2015, p129).

[65] Nagra refers to portable audio recorders manufactured by the Switzerland-based Kudeski SA. The first model based on magnetic quarter inch tape appeared in the late 1950s and revolutionised field recording for film and broadcast.

Indian film producers started acquiring Pro Tools DAW machines from the early 2000s. As had happened with the appearance of digital video editing in India, the 'users' – in this case sound recordists who had previously worked on analogue formats – had to re-skill rapidly to be able to adapt to the new technology. Digital Workstations provided a range of solutions to problems faced by recordists in uncontrolled, outdoor locations. The digital editing and processing tools, Sahoo believes, were extremely useful in cleaning noise from sync sound recordings and improving their clarity. Sound recordists became much more relaxed about the prospect of recording sound live on location.

3.8. The Shift to Digital Sound Editing

3.8.1. The Indian vs Foreign Debate

It has been universally acknowledged by all the filmmakers and sound practitioners I interviewed that the shift to digital post-production is one of the most radical developments in filmmaking in the recent past. In hindsight, some of techniques and processes of the celluloid-based analogue era seem extremely difficult, time consuming and cumbersome. Film technicians I worked with, or those I interviewed during the research, sometimes look back with awe at some of the more difficult and critical processes of the analogue era such as 'looping' or '16mm negative cutting.'[66] The speed and ease that marks digital picture editing, sound editing, sound mixing and visual effects production have completely transformed the celluloid-based material processes to computer-controlled digital electronics. In the case of the Indian film industries, the impact of digital processes has been radical. During the analogue era, the industry was known to have developed its own unique modes and practices depending on access to technology and local filmmaking and acting conventions. Digital processes, while simplifying some of these analogue era labour-intensive practices, also ensured that Indian filmmakers adopted many of the dominant models prevalent in the Anglo-American industries.

[66] The most important advantage digital systems have is that they are 'random access' – any shot or scene or sequence of a film can be immediately located, unlike in celluloid film where one had to go through rolls of film to reach a desired scene or sequence. Instead of actual film and negatives, technicians are dealing with digital data.

3.8.2. Track-Laying and Sound Editing Conventions

In this section I will be analysing the nature of sound editing and track laying conventions and will examine how the entry of digital workstations impacted these practices. In the analogue era, dialogue recorded by sound persons was sent to the editor, who synchronised it with the picture, before the 'cutting' process commenced. After the picture editing was finalised by the director and the editor, reels would be sent to the dubbing studio for the process of ADR. As I described earlier in the chapter, the 'inferior' and 'noisy' dialogue recorded on location would be replaced by clean dialogue recorded in the studio under controlled conditions. Thus during in the analogue period, dubbing in the studio was a key role that the sound recordist had to either perform themselves or closely monitor.

Apart from dialogue dubbing, the other key function of the recordist at the post-production stage was to record effect sounds and music. The dependence on library or archival sounds in Mumbai was high, as sounds recorded from the location either had noise or were not adequate for effects track laying. Kuldip Sood, the recordist for *Sholay* (1976), recalled an elaborate schedule for recording diegetic effects for various action scenes of the film, done in the precincts of Rajkamal studio in Mumbai, which later became the job of Foley recordists. Foley studios were a later development in Mumbai, compared to Hollywood, and only came into being in the late 1970s.[67] As part of the analogue workflow, all the sound effects and music would be transferred to the 35-mm magnetic striped film and sent to the editors for track laying.

During the process of track laying, editors or their assistants would prepare separate reels of magnetic sound in synchronisation with the picture. Each roll or track would have specific sounds – dialogues, off-screen voices, effects – and the music would be clubbed into separate tracks or group of tracks. Effects would comprise sounds like traffic, thunder, gun shots, or any other special sounds as and when required. An important aspect marked the difference between the editing and sound post-production practices between Hollywood and India during the celluloid era. In Hollywood, the editing process was highly compartmentalised. The picture editing team would be

[67] Foley refers to the technique of recreating everyday sounds in specialised studios, equipped with a range of materials that can mimic dramatic/narrative sound effects. For example, the sound of horse's hooves would be simulated with coconut shells.

different from the sound editing team. The picture editor was credited mostly as film editor, and his or her assistants would work only on the visuals and dialogue. The sound editing team, credited separately, would prepare the music and effect tracks in consultation with the sound recordists. The sound editing team would have a subspecialisation, and, most often, music and effects editing would be done by different editors of the team. In the Indian industries of Mumbai, Kolkata and Chennai, the editing process was not as stratified – the editors and their assistants, apart from editing the picture, would also take over the track laying/sound editing process. In the absence of the separate group of sound editors, the dialogue, effects, and music would be done at the editing table by editing assistants, under the supervision of the picture editor. Effectively, in the analogue era, visual editors would additionally do the sound editing, as sound workers were not conversant with celluloid-based editing processes.[68] This would make the communication between sound and editing somewhat complicated. Debashish Guha, a visual editor who started his career in the 1980s in Mumbai shared his experience of the typical complications in the process.

> **DEBASHISH**: It happened in the beginning of my editing career. I had just graduated from the film school and was working as an assistant editor in the mammoth TV series *Bharat Ek Khoj* by Shyam Benegal. Despite being a TV project, it was filmed on 35mm film, almost like a feature film. I prepared 7 tracks for a battle scene following a blueprint prepared by a senior editor working on the project. To my utter dismay, the re-recording engineer in charge of the project, Hitendra Ghosh, was upset when I presented the tracks to him. He said it was just too elaborate and beyond the scope of the mixing process. Ghosh instructed me to remove a lot of sounds. He also showed me a short-cut process to do these elaborate changes. We had only that day to complete the mixing. Later, Hitendra Ghosh explained that with so many layers of sound it would have been impossible to mix the sounds to a mono-track without reducing the number of tracks through an elaborate pre-mixing.

Guha's experience throws light on some of the non-standardised processes followed in Mumbai in the analogue era. In this case, it is about the nature of the editor-driven process of track laying that was prevalent in India, as opposed to specialised sound

[68] 33 In the analogue era sound technicians in India were not trained to operate editing consoles – their task was restricted to recording sounds, transferring them into 35mm film for editing and eventually mixing the tracks.

editors who worked on the soundtrack in Hollywood. While it was theoretically possible to achieve complex layering of sounds in the analogue and monoaural era through pre-mixing, it was a time-consuming process. Given the average duration allotted for sound work in India, it was impossible to adopt pre-mixing in India, unless it was extremely crucial to the film. Kuldip Sood asserted that there were some instances in his career when elaborate pre-mixes were done, but it was very rare in Mumbai. According to Indrajit Neogi, the lack of the technological means to effortlessly deploy multiple layers of sound prompted filmmakers to focus more intensely on the specific sounds used and their relationship to the image, rather than dense sound designs. Instances could be seen in the soundtracks of Ritwik Ghatak, Mrinal Sen and Mani Kaul, where the sound design would focus on specific sound elements in relation to the image, as discussed in chapter two, rather than simultaneous layering of sounds to saturate the soundtrack – a common practice in the digital age.

The 'tracks' prepared by editors in the analogue period were sparse, but precise, if one compares them to the dense sound layers one comes across in the digital age.[69] To make up for this sparseness, experienced sound engineers would often introduce additional sound effects directly during the mixing process, fading them in or out as and when required. These effects would be mostly from the library, sometimes personally maintained by the sound engineer. This process of maintaining personal databases of sound, Shyam Benegal shared with me, was initiated by sound engineer Mangesh Desai in the early 1960s. By the late 1970s he had personally put together a large collection of sound effects. Hitendra Ghosh and Kuldip Sood, two senior sound engineers from Mumbai, told me that they adopted this skill from Desai and often deployed it to add additional textures or colour to the final soundtracks of the films they worked on. Often, mixing engineers would mutually share or exchange their sound banks with colleagues.

3.9. Digital Reinvention of Sound Editing

Digital Work Stations or DAWs enabled sound engineers to edit and process dialogue, lay tracks, process sound effects, and even, in case of short films, do the final mix – all

[69] Films usually had seven to eight tracks during the analogue period. Sometimes, due to time constraints, the number of tracks would be even less.

from a single computer and single connected mixing console. In the analogue era in India, control of the soundtrack and the sound process was shared by the sound team with the visual editors. The adoption of digital software allowed sound workers to electronically integrate the various phases of the sound editing and mixing process and gave the sound team complete control over the soundtrack. Sound now belonged exclusively to the sound specialists and engineers. Sound editor Boby John began his career in the analogue era when editors prepared the tracks.

> **BOBY**: In the analogue age, since there was no software available, editors would physically cut the sound. They would mostly get it in from the recordists or procure it from the library, match it on *Steenbeck* and send it to the sound studio for mixing… An editor's choice and a sound person's choice of sounds are always different. In the analogue era, we gave them different kinds of sound, but they would often select the wrong option. Moreover, a sound person would have the expertise and the resources to play with the sound. In a rainy scene, an editor would put a general rain sound. But a sound person would go beyond that. If there is close-up of water drops in the scene, we give a separate sound for the close-up of the water drops, as the sound perspective is different. Like for a mid-shot we would give a sound that matches the mid-shot. We can bring much more complexity to the sound, which film editors, doing sound editing in the analogue age, could not have achieved. In the digital age, we can work on the details.

The kind of aural minutiae referred to by Boby has become the sole preserve of the specialised sound person in the digital age. It is not that the visual editors were unaware of what layering could achieve, but the nature of film-based analogue technology prevented them from accomplishing such a detailed soundtrack. P. M Satheesh also expressed similar views about the analogue era practice of editors doing the track laying and the sound design. The workflow, according to him, would be particularly cumbersome. After coming back from location, the sound recordist would go to the transfer room, sift through all the sounds, select the relevant portions, and record them on a 35mm magnetic film. This transfer was done so that it could be edited on the analogue 35 mm editing system. Even after this elaborate and cumbersome process, as a sound person, he felt disappointed when the various sounds he would record on the location would go unutilised or underutilised. It was difficult for the editors, who were

primarily tasked with visual editing, to go through all the sounds supplied by the sound person and effectively utilize them on the edited tracks.

This transfer of the track/laying and sound editing function from visual editors to the sound crew ensured that the sound person had a bigger say in defining the relationship between the sound and the image. Debashish Guha, having worked as an editor in Mumbai in the 1990s, also agreed that the sound person laying the track had its advantages.

> **DEBASHISH**: Our scope as sound editors was limited. We were given a sound and our job would be to place the sound on the track as precisely as possible. Sound editors in the digital age can not only do that but can also change the tonality of the sound, make it fast or slow, or give it a different perspective. This gives a lot of power and flexibility to the sound editor working in the digital environment.

This shift, of course, was not specific to India. Anglo-American industries went through a similar process during the analogue to the digital editing shift. But in Hollywood film one would often encounter complex and layered sounds on soundtracks from the analogue era, even when the final sound was monoaural .[70] This was because big and dedicated sound teams could transcend the restrictions of analogue sound editing by laboriously pre-mixing and reducing the number of tracks before the actual mix. Practice cultures in India did not have room for such elaborate work on the soundtrack. Limitations of resources and time allocated for sound mixing prevented Indian sound editors from adopting such elaborate techniques and processes. The introduction of digital technology made a huge difference to sound editing and mixing. Editing sound on the DAWs ensured that even individual sound editors could work with a large number of tracks and were relatively free of the restrictions imposed by the analogue-based systems. The complexity could be witnessed in the soundtracks that emerged in the late 1990s – especially genre films. Film scholar Sangita Gopal, while talking about the sound design of horror films from this period, attributes much of their impact to the complex and dense layering of sounds (Gopal, 2011, p105-111).

[70] One comes across very complex layering of sounds in the films of Orson Welles. One comes across complex designs in Citizen Kane, Touch of Evil and Lady from Shanghai among others.

3.10. Conclusion

In this chapter I have explored the complex histories of sound recording and sound editing, with specific emphasis on the practices of dubbing/sync sound and sound editing. The practitioner narratives I alluded to in this chapter point to the fact that the dependence on ADR or dubbing had deep implications vis-à-vis the actors' performances, acting aesthetics, as well as the economics of the film industry. Although the move to sync sound in the Mumbai mainstream industry brought in more organic and integrated performances, as well as retaining the spatial qualities of sound, my research established it was not the 'new landmark' described by the film industry lobbies. The practice of live recording was already very much alive through the work done by sound recordists like Hitendra Ghosh, Indrajit Neogi and others for art film makers like Shyam Benegal and Govind Nihalani in the analogue era. But this form of live recording for these 'parallel films' was done with great difficulty. The sound workers had to face myriad technological challenges, as the mainstream Indian industry neither practiced sync sound in the 20th century, nor had the technological support for sync sound. The recordists had to continuously improvise and, as described by P M Satheesh and others, had to borrow specialised equipment from niche practitioners. While the use of dubbing allowed a dialogue-centric and music sound aesthetic to take shape, I have shown that the adoption of sync sound recording in the 21st century enabled the sound editors to shift the emphasis from clean and crisp dialogue tracks to spatially anchored ones. The appearance of high-quality microphones and on-field mixing consoles in the digital era, and the use of Digital Audio Workstations for post-production, helped the sound workers deal with the issues of noise in location-recorded sound and in turn helped the spread of sync sound recording in India. While sync sound has now been largely accepted in Mumbai, the film industries in Chennai, Hyderabad, Kolkata and others are yet to adopt it, given the costs and complexities. It is not only the producers or financers: some practitioners, especially from the above-mentioned industries, still remain sceptical about whether the effort of sync sound recording is really worth the huge resource allocation. But this view was expressed primarily by directors and editors; all the sound recordists I interviewed agreed that dubbing was a regressive process and best avoided.

Along with sync sound, the simultaneous adoption of Digital Audio Workstations (DAWs) also contributed to the emerging sound style, especially the partial shift of emphasis from dialogue and music, to effects and ambient sounds. DAWs enabled sound

editors to layer as many different kinds of sounds as they wanted in their attempt to create rich soundscapes. Instead of augmenting the dialogue and the music, sound editors started deploying myriad diegetic, atmospheric sounds to enrich their soundtrack. This use of atmosphere and ambience was the hallmark of the sound style of Satyajit Ray, especially in the *Apu Trilogy* and New Cinema filmmakers like Shyam Benegal. Till the end of the 20th century mainstream cinema paid little attention to effects and atmosphere, but in the 21st-century, thanks to the ease of layering sounds in DAWs, these sounds finally became more acceptable in mainstream cinema sound.

Apart from the facilitation of sync sound through digital means, the other major development that transformed sound practices in India, especially in Mumbai, is the emergence of the specialised breed of sound workers who have started using the designation of 'sound designer'. How influential is this new role? Was it really a new role or, as some of my interviewees hinted, 'old wine in a new bottle'? The following chapter explores the emergence and rise of the sound designer in Indian cinema and how the phenomenon shaped the practice conventions and aesthetics of the film industry.

CHAPTER 4: "Sound Mixer? No, I am a Sound Designer!"

4.1. Introduction

In the year 2009, the international success of Resul Pookutty gave a massive boost to the idea of sound design in India. Resul received a BAFTA award, an Academy Award and a host of other national and international awards for recording and mixing production sound for *Slumdog Millionaire* (Danny Boyle, 2008). Resul had been appointed as a recordist by Boyle's production team in Mumbai when they decided to do sync sound for the film. They wanted a local recordist who could cope with the noisy and chaotic locations in India. Some of the dialogue and sounds recorded on location during the film had noise and needed to be dubbed and matched with the original location sounds and Resul was asked to complete that too. Thus, being the location recordist and the dialogue mixer, Resul was credited as being part of the mixing team and shared the film's sound-mixing Oscar. While Resul did not do sound design for this film, the fact that he identified himself as a 'sound designer' and had been credited as one in the past, contributed towards making him a poster-boy of sound design in India. A series of articles and news stories on Resul, as well as on 'sound design', were published in leading newspapers like *The Sunday Guardian* (Kaur, 2012). 'Sound Design', thus, arrived on the shores of India through this serendipitous link with its new Indian idol.

The sound designer – both as an aesthetic concept and as a techno-industrial designation – emerged in the Anglo-American film industries in the late 1970s and was unheard of in India until the late 1990s. However, the designation is now used cautiously in the west due to conflict with established production nomenclatures and union regulations (Andriano-Moore, 2018, p1–19) while in the Indian film industries 'sound design' and 'sound designer' has emerged as a frequently-used designation, especially in the 21st century, and crucial practice discourses have developed around the terms.

Although the practice and concept of sound design originated in Hollywood and was adopted in India around 1998, this crossing over has been far from seamless, as we will see in this chapter. The encounter between the Hollywood concept and local Indian convention produced a conceptual and industrial hybrid we now know as a 'sound designer' in Mumbai, Chennai or Kolkata. It is this intertwining of the historical,

technological and the social in the contemporary practice of film sound design that I have examined closely here. Borrowing insights from Michel Foucault's genealogical approach, I have examined whether sound design in India can be understood to have existed in specific sound practices from the early and mid 20th centuries, much before the term sound design actually came into being. In this chapter I will be looking at elements of what we understand as 'sound design' today in the sound editing and mixing conventions of the analogue film era in India. But this link between past (film) and present (digital) is not drawn in a linear, causal way. David Garland in his essay on Foucauldian genealogy remarks

> Genealogy is motivated not by a historical concern to understand the past – though any historical claims it makes must be valid, verifiable ones – but instead by a critical concern to understand the present. It aims to trace the forces that gave birth to our present-day practices and to identify the historical conditions upon which they still depend. Its point is not to think historically about the past but rather to use *historical materials* to rethink the present (italics used by the researcher) (Garland, 2014, p365–384).

The 'historical material' I use in this chapter – textual, archival material, early practice discourses – throws light on the context in which the sound designer emerged in India and rapidly evolved to occupy a central position in practice hierarchies. Drawing from international practices and film sound theory, I also analyse the practice discourses related to sound design in India and argue that the dominance of sound designers in India is linked to the demise of celluloid film and the simultaneous emergence of digital film technologies.

The chapter begins with my examination of the multi-layered history behind the term sound designer, especially in the US and UK film industries. I explore the formal origin of the term and examine how it has been interpreted over the years by film historians and film sound theorists. I analyse why the term sound design, despite four decades of existence, remains discursively diffused and ambivalent. I move on to trace the modes and interventions through which sound design has been 'Indianized' in the recent past, through a comparative analysis of the production practices of the celluloid and the post-celluloid digital periods. In this section, I investigate why sound design became a key discourse in India in the digital period and examine the practices that distinguish sound

design in India from those of the Anglo-American world. Finally, I survey the methods and practices that define contemporary sound design in India through the case study of Bishwadeep Chatterjee, a leading sound design practitioner based in Mumbai, in order to understand how the digital era has redefined film sound practices in the Indian film industries.

4.2. The Analytical Framework

In my analyses I have contextualised the views of the Indian professionals, by setting them in relation to international practices and norms. I also examined aesthetic claims and professional postures adopted by Indian practitioners. As a researcher and a former film practitioner I was aware of the convenient narratives that film practitioners are often known to construct in order to distinguish their own practices from those of the larger industry. These often surface in the form of what Tejaswini Ganti calls "the sentiments of disdain and the practices of distinction" as manifested in the disregard of an Indian film worker towards his or her own industry.

> The sentiments of disdain and the practices of distinction, I argue, play key roles in the self-making practices of Hindi filmmakers. Although disdain and distinction are semantically divergent—the former being affect-laden and evaluative and the latter connoting status and hierarchy – I maintain that within the Hindi film industry they operate together as the most marked forms of "boundary-work," a concept employed by sociologist Thomas Gieryn (1983) to describe the ideological efforts by a profession or an occupation to define legitimate membership and practice (Ganti, 2012, p5–43) .

During my fieldwork I came across views expressed by a number of film sound-workers who described their work as being more innovative, professional and technologically updated than the rest of the film industry and their immediate peers. The Mumbai industry is often described by them as "chaotic", "eccentric", especially in comparison to Hollywood. Hindi filmmakers, observes Ganti, "are quite self-critical while comparing themselves with Hollywood," also noting that this admiration is for the "perceived efficiency and organization" of an "imagined Hollywood." To understand the nuances and objectively analyse practitioner narratives and discourses, I have referred to my own professional experience as a film editor in the Indian cities of Mumbai and Kolkata between 1995 and 2005, alongside opposing accounts from fellow practitioners and academics.

4.3. Unpacking Sound Design

As briefly surveyed in the first chapter, the term sound designer has a complex and shifting history within the critical lexicon of cinema. Since its initial appearance in the USA in the 1970s as a part of a film's credit list, the use of the designation sound designer has been inconsistent and sometimes even abstruse. What is sound design and who is a sound designer? In popular discourse a sound designer is the aural equivalent of the cinematographer or the 'director of photography' and is in control of the soundtrack of a film in the same way that a cinematographer defines and controls its visual look. Contemporary film productions, across the world, often employ a sound designer, along with other key members like a cinematographer, an editor or a production designer. But on many occasions the producers simply employ a recordist/production sound mixer, a supervisory sound editor and re-recording mixer. These three sound workers are key members of the sound team and they, in turn, put together a team of associates in their respective sub-domains. The supervisory sound editor usually has a team of sound editors working under him. In India, often, it is the sound designer who chooses his or her team of collaborators and puts together not only the sound editing team, but the entire sound team. Gurvinder Singh, a National Award-winning independent filmmaker from India, shared with me during his interview that he preferred to hire a sound designer for his films and not just a recordist and a mixer. Shalini Agarwal, sound recordist observed that the word 'design' attached to the role gives it an artistic weight and makes it appealing to filmmakers, especially those in the independent and art cinema circuit in India. But compulsory hiring of 'sound designers' is not a universal practice and not every film that is produced today in India or elsewhere in the world has a designated sound designer. My own analysis of film crew lists on online databases like IMDB for a cross section of films across the world shows that sound designers are not an integral part of production teams in the same way that cinematographers and production designers are.

In the Anglo-American film production culture, a sound team member being credited as a 'sound designer' is relatively uncommon, compared to Indian film industries, where it has, in the recent past, become a catchword among sound post-production specialists. In the context of the Anglo-American film industries, the use of the designation is more nuanced, as I will discuss later in this chapter. Despite the word's origins in Hollywood,

the American film industry has never been at ease with the designation. The reasons for this have been highlighted by Jeff Smith in his essay on sound during Hollywood's 'auteur renaissance.'

> The main problem seemed to be that the sound designer almost invariably combined the duties of the sound effects man, the re-recording mixer and the supervising sound editor, it quite consciously blurred the boundaries associated with more traditional designations found within the typical studio sound department (Smith, 2015, p 99).

Hence, both in theory and practice, an ideal sound designer seems to violate the strict jurisdictions prevalent in mainstream Hollywood. Most film trade unions for sound workers in the west are still uncomfortable with the designation and insist that sound designers introduce themselves as sound editors or supervising sound editors. However, despite the resistance from unions and production lobbies, the concept and the designation of sound designer has persisted to some extent, both in industrial discourses as well as film sound studies (Whittington, 2009, p555–568; Mancini, 1985, Sonnenschein, 2001). The complexity is evident in the way leading sound designers such as Randy Thom and Walter Murch credit themselves. In their more recent film projects, both Murch and Thom are credited separately as sound designer and re-recording mixer or sound-designer-cum-sound editor. When probed about this practice, both Oscar-winning production sound mixer Resul Pookutty and Dean Humphreys confirmed that because sound design is not recognised as an award category by Academy of Motion Pictures Arts and Sciences, sound designers combine it with sound editing or sound mixing credits.

While in practical terms *sound design* was not always consistently used within Hollywood industrial conventions, as an aesthetic concept it has dominated the Anglo-American academic space since the 1970s. According to the influential website www.filmsound.org, "the sound designer works with the director to shape an overall, consistent soundtrack that exploits the expressive possibilities of the sound medium". In the UK and US film industries, experienced sound editors are sometimes referred to as sound designers, especially when they assume supervisory roles. However, in terms of formal credit attribution in the films, they are still largely referred to as sound editors or supervising sound editors. The supervising sound editor usually functions as a sound

designer on certain projects but not on others, depending on the complexity demanded by the film's soundtrack. However, this is not the norm (interview with Hayward, 2018).

4.3.1. The Liminality of Sound Design?

Despite the discursive productivity of the term, the meaning and import of the term 'sound design' keeps shifting depending on the context in which it is used. The term also keeps on accruing new signification over time and space. My discussions with sound workers in the UK suggested a blurring of boundaries and roles between the sound editor and a sound designer (interview of Zane Hayward and Andy Walker, 2018). This issue has persisted since the 1970s, when the designation was first used in Hollywood, but has intensified over the last decade. On IMDB, Anglo-American editors Gary Rydstrom, Randy Thom, Julian Slater and Richard King describe themselves as sound designers. While the sound editors referred to here are among the best in the field and considered to be legitimate sound authors, there are other sound editors doing no more than routine sound editing who also take on the designation. The issue was underlined during an interview with Andy Walker, a sound editor based in London and working for both British and continental European films.

> **ANDY**: It has always been a bit of a bone of contention. When I first started out as film sound worker in the early 1990s, some of the older and more established sound effects editors started using the term sound designer. It is just so loose now that even in two years' time they won't know what the person did on the film. Could it be legitimately called sound design when you are sourcing effects and slapping them on top of the pictures? The line between designing and recording can be blurred. Does the designing and recording of the sound of a car or recording animal roars qualify as sound design? I don't know – it is a tricky issue.

Both Andy Walker and Zane Hayward effectively expressed the view that senior sound effects editors with a strong understanding of the entire sound post-production process are regarded as legitimate claimants to the designation of the sound designer. But, in the course of my fieldwork I encountered sound workers who prefer to combine the sound designer designation with the term sound editor or sound mixer, so that they can also be contracted for routine editing and mixing assignments. Major film industrial designations – like cinematographers, editors, directors, production designers and

others – have a stable meaning and usage across countries and periods. It is evident that a similar consistency is lacking when it comes to the designation of the sound designer. The term thus exists in a liminal conceptual space and its meaning is always in flux, both within the Anglo-American context and outside it. Sound theorists, however, while defining sound design, have identified broad tendencies, even within this liminal space.

4.3.2. The Plurality of Sound Design

William Whittington discerned four distinct approaches towards conceptualising sound design and sound designer. These four categories are : (a) the sound designer *as the sound author* doing conceptual design of the whole soundtrack and (b) the sound designer *as the sound effects* creator c) the sound designer as someone who places the sound, strategically, within the theatrical space of the auditorium and d) sound design as a discursive practice (Whittington, 2007, p3). The first two categories as described by Whittington – sound designer as the sound author on one hand and as sound effects creator one the other – are key concepts necessary to unpack contemporary discourses on sound design.

The idea of the sound author pre-supposes a creative control over the decisions that determine the relationship between sound and image. The professional histories of two prominent film sound artists – Walter Murch and Randy Thom – best exemplify this *auteurist* understanding of sound design. Similarly, the creative trajectories of Frank Serafine and Alan Splet represent the idea of sound designer as the sound effects creator.

4.3.3. The Sound Designer as an Auteur

As ‘auteurist’ sound designers of the analogue era, Murch and Thom started their careers as editors and re-recording mixers. Walter Murch began his journey as an assistant editor working with Francis Ford Coppola on his early films, essentially as a sound editor on *The Rain People,* (1979) and *The Conversation* (1974). In these two films, he is credited as having been responsible for ‘sound montage’ – almost as a homage to the European aesthetic traditions influencing these young filmmakers. It is apparent that the film school background of Murch and Coppola shaped their cinematic sensibilities and their practices, as they selectively borrowed or discarded stylistic

elements from mainstream Hollywood. Later on, with films like *Godfather 3* (Francis Ford Coppola, 1990) and *Ghosts* (Jerry Zucker, 1990), Murch also worked as a visual editor, effectively combining the role of image editing with that of sound mixing, something unusual not only in Hollywood but anywhere else in the world. The dual roles of picture editing and sound mixing allowed Murch to control the correspondences between image and sound, and to design the soundtrack in harmony with the visual design of the film.

Randy Thom began as a re-recording mixer, assisting Murch in films like *Apocalypse Now* (1976), and eventually went on to work on a diverse body of films ranging from *Forrest Gump* (1994) to *The Incredibles* (2004). Like Murch, most Hollywood sound workers who prefer to be identified as a sound editor or a sound designer began their careers as an apprentice to a picture editor or as an assistant in the editorial teams in studios. These teams usually had people who had expertise in both sound and picture editing. But, at a later stage in their career, some of these apprentices chose sound editing as a future specialisation, as opposed to visual editing. Since sound editing consists of multiple subspecialisations like dialogue editors, effects editors and Foley editors, the demand for sound editors is substantially more than visual editors. Consequently, there are more opportunities for editing apprentices seeking employment to find their niche as sound editors, than as picture editors.

4.3.4. The Sound Designer as the Sound Effects Creator

The other discourse of sound design running parallel to the *auterist* discourse is one which sees sound designers as 'wizards' who create specialised sounds, especially those which need to be artificially synthesized. During my research I discovered that the sound creator notion still dominates the Anglo-American understanding of sound design and was highlighted by two experienced sound professionals I interviewed – Resul Pookutty and Dean Humphreys. This idea of sound design emerged out of the need to create or manufacture unusual sounds often required in a film, especially genre films. The job of the sound creator here was to either electronically synthesize the specific sound or manipulate a recorded sound acoustically or electronically and transform it, drastically, into something completely unrecognisable from the original. Most often, the filmic context demanded sounds without real-world referents – often described in

practice parlance as futuristic sounds, i.e. the sounds of aliens, robots, UFOs or the light sabres as used in George Lucas' Star War series, or 'psychedelic sounds' used in the horror genre. Critic and commentator Mark Mancini, when explaining the role of these sound effect designers in Hollywood, refers primarily to the work of sound designers Frank Serafine and Ben Burtt, placing them in the second category of 'sound designers' – the sound effects creators (Mancini, 1985).

Serafine is a multifaceted musician and audio technician who had collaborated with filmmakers like Clint Eastwood and artists like Indian sitar-maestro Ravi Shankar (Serafine, 2012). Serafine is a techno-geek and his work is deeply informed by his knowledge and understanding of sound processing technologies. He is a pioneer in working with electronically synthesized sounds, especially the *Emulator* – an electronic synthesizer capable of creating unique sounds. Serafine, with his diverse musical interests ranging from rock to Indian Classical, was able to harness the capabilities of electronic sound synthesizing used by musicians and apply them to film sound design. From creating sounds for planetarium shows and Disney amusement park rides, Serafine went on to become a member of the sound teams of films like *Poltergeist* (dir. Tobe Hooper, 1982), *The Hunt for Red October* (dir. John McTiernan, 1990) and TV series like *Baywatch* (1989-2001).

While Serafine is a techno-geek, Ben Burtt, according to his own internet website, is a film school-educated 'movie buff'. Burtt, who went on to become perhaps the most talked about 'creator of sounds,' was especially celebrated for his effects for the *Star Wars Series* of films alluded to earlier. Critic and commentator Mark Mancini, who attended film school with Ben Burtt, describes Burtt's method of creating his signature sound effects for *Star Wars*.

> (Burtt) blended the sounds of his TV set and an old 35mm projector to create the hum of the light sabre, tapped the wires of a radio tower to obtain the snaps of the laser bolts. And he conjured the whoosh of Luke Skywalker's land-speeder by recording the roar of the Los Angeles Harbour Freeway through a vacuum-cleaner pipe (Mancini, 1985).

The use of manufactured or synthesized sounds in genre films has often been described as the true beginning of sound design. I found out while interviewing sound technicians

from the US and UK film industries, the designation of sound designer is often invoked when a film demands the production of inventive sound effects, which regular sound recordists are not capable of. Dean Humphreys and Zane Hayward remarked that they prefer to use the word sound designer when there is a requirement for special sounds in a film, but not for the 'standard films' (interviews with Dean Humphreys, 2018; and Zane Hayward, 2018). Zane gave the example of soundtracks for science fiction or horror films which, according to him, require a 'non-literal' approach and hence are in need of sound design. By referring to 'non-literal sounds' (used a number of times during the interview), Zane was pointing to sounds which did not have a naturalistic source or which do not originate in the real world. To further explain this, he referred to Skip Lievsay's unique use of sounds for the films of the Coen brothers as exemplifying what he understood as sound design (Barnes, 2005).

For mixing engineer and sound designer Dean Humphreys the prime example was Alan Splet and his unusual use of sound effects for David Lynch. Splet's philosophy of sound creation was different from Burtt and Serafine's, although he, too, was also creating unique sound effects. Instead of electronic manipulation, Splet was deploying unconventional recording techniques, recording sound from nature rather than synthesing sounds like Burtt. Ann Kroeber, recordist and designer, has described the significance of her late husband Alan Splet's contribution to the art of film sound, especially his use of effects.

> Sound effects (in the past) were used to fill. There would be birdy tweets, footsteps and doors closing. Nothing really dramatic. Alan discovered that sound effects could have an incredibly emotional impact on us. It's a different experience from music, which takes you out of the film. Effects bring you into the film and make you more involved (Hilton, 2017).

Splet, active between 1970 and 1992, was gleaning sounds from nature, but using them in ways which were seen as unique by his peers. According to Ann Kroeber, Splet used unfamiliar ways to record familiar sounds. "He would put the mics where you wouldn't expect so you could hear the winds in a certain way. He thought it was important to capture the wind hitting an object or crossing a door or windows or through trees." (Hilton, 2017). The fundamental principles of Splet's recording techniques and effects-

based approach to sound design were adopted and deployed by other sound designers in later years, especially contemporary young composers and designers like Diego Stocco.[71] Sound design in Indian cinema, we will see in the following section, borrows from these two dominant ideas of sound author and sound creator, but moulds them according to its own aesthetic and technological context.

4.4. Sound Design: The Indian Perspective

4.4.1. Designing Sound in The Film Era

Sound design, as a designation, was never used in the analogue period in India. While, in principle, film sound was *designed* even when it was done on celluloid film,[72] it had not been conceptualised and developed either as an industrial convention or as an aesthetic practice, as had been the case in the UK and US. The analogue film era in India was characterised by the fluidity of technical roles and the porous boundary between the editing and sound specialisations. A strong demarcating line between the tasks of image and sound editing was yet to come into being. While the idea of a specialist who could invent novel ways to create or capture sounds was around in the early sound age (as seen from the memoirs of Keshav Rao Bhole), the idea of one person deciding the whole soundtrack was not there. This was a much later development and was probably a response to European *auterist* theories. The physical job of arranging and editing sounds according to the demands of the film and of the soundtrack lay with the editors. Visual editors were responsible for both sound and image editing, as briefly discussed in the previous chapter. Editorial associates tasked with tracklaying and editing sound were also often credited as sound editors. The preparation of the tracks would be taken up after the 'first cut' (the industry name for the preliminary picture edit) was completed. The assistants would run the film on the editing machines to identify the sound sources as dictated by the images or the shots. Fragments of celluloid film consisting of individual sounds would be assembled and edited to form multiple reels or tracks of sound film, each corresponding to a 'reel' of visual film. The sounds were either supplied by the recordists working on the project or sourced from the sound effects libraries of the studios. The assistant editors, who worked alongside the picture

[71] Diego Stocco is known for his experimental and cutting-edge sound work for film, TV and games. He has collaborated with composer Hans Zimmer for the film *Sherlock Holmes* (Guy Ritchie,2009). For more information on his work see http://designingsound.org/2017/11/16/diego-stocco-sound-composing-fear-from-his-diy-nightmares/

[72] For a detailed explication of sound design principles in the celluloid era refer to chapter three of the dissertation.

editor, were in charge of sound editing and track laying. This was a convention that the Indian film industries of Mumbai, Chennai and Kolkata shared with the Anglo-American film industries. However, in the west, the editorial assistants doing track laying focussed only on sound editing and went on to become specialised sound editors. So, while they were trained as editors, they were doing sound editing and were not involved in picture editing. This contributed to the growth and consolidation of the craft of sound editing, especially in Hollywood. Zane Hayward, a senior sound editor in the UK whom I interviewed, started off as an assistant picture editor in the 1980s analogue film era and went on to become a specialist sound editor in the 1990s. In India, on the other hand, editorial assistants working on sound aspired to be picture editors, as it was the top of the hierarchy within the broader discipline of editing. Sound editing was thus done by editing assistants or apprentices, under supervision of the visual editor. Sound editing as a specialisation, did not exist. Thus Jethu Mundul – an Indian editor and a former colleague at FTII, who worked as an editorial assistant on sound to filmmaker-editor Raj Kapoor in the 1980s – continued working as a picture editor in feature films and not as a 'sound editor.'

4.4.2. The Film Editor as the Sound Designer

In this section, I argue, that the picture editor was a de-facto sound designer in the analogue film era in India. In this period the centre of the editorial team in a film, universally, was the picture editor and his/her assistants. In India, this role was especially significant as the visual editor was also responsible for sound editing and he/she supervised the work of the assistants who prepared the tracks. This allowed the editors to make key decisions with respect to the relationship between the sound and the image. This, in a way, made the picture editor almost a sound *auteur*, as he or she took the all the decisions regarding placement of specific sounds with respect to the overall soundtrack and with respect to the image. Arghya Kamal Mitra, who started editing feature films in the celluloid era in the late 1980s, did the entire sound editing of a 35 mm feature film himself. However, he shared during his interview that he would constantly consult the film's sound team, especially the mixing engineer. But, as far as placement of the sound with respect to the image was concerned, Arghya asserted that he would be free to decide that himself and that a control on both the sound and image effectively made him a better image editor. His explanation was that taking editorial

decisions about the image with respect to the sound makes the editing more effective than editing the image is isolation. Directors and sound workers I interviewed in India felt that editors should have a concrete say on the sound and this, they felt, was crucial for a film. They were, in effect, arguing in favour of the integration of picture and sound editing – as it was in the early days of sound cinema. Senior mixing engineer in Mumbai Anup Dev observed that, apart from the director, the picture editor was and still remains the most important person as far as the creative decisions about the film are concerned. Anup explained that the editor, being the key contributor to the film's structure, needs to be closely involved in the sound editing and mixing. However, an alternative discourse also exists as far as the role of the picture editor is concerned. According to sound designer Boby John, who started working in Mumbai in the mid 1990s, very few film editors or picture editors in India had a deep understanding of sound – something that was required of them as de-facto sound designers. As a result, Boby asserted that the sound designing, or the sound editing done by visual editors in the analogue era, had its limitations. Filmmakers and technicians that I interviewed cited the names of a few visual editors who had a strong sense of sound, also adding that such expertise was rare in the Mumbai industry. Madhu Apsara, another sound designer who started working in the late 1980s, pointed out that the late Renu Saluja was among the rare breed of editors who knew how critical sound was to the editing process.[73]

> **MADHU APSARA**: Renu Saluja was one of those editors who was an exception. She was careful with the sound. In the film *Dharavi* (Sudhir Mishra, 1993) I worked with her in my capacity of location sound recordist. If there was a shot for which I had done some effects recording, for example particular car sounds – like when a Maruti car is stopped by a stuntman and some other special sounds from the location, Renu would ask for the authentic location sound rather than stock sounds or Foley. Renu would make a list of sounds that she wanted changed during the tracklaying process, but also specifying sounds that she wanted to retain from the original location sounds. There, as a film editor, she had found those sounds important for her work, for her editorial decision making. Sometimes the original sounds were either replaced by highly augmented ones or replaced later on, during Foley recording, making the sound more

[73] The late Renu Saluja was a leading film editor in Mumbai film industry between 1980 -2005. She is known for her work in both mainstream and art cinema productions. According to The Enclyclopedia of India Cinema she is known for her distinct editing style that 'heightened the visual impact of the film, making a departure from the dialogue based Bollywood style." (Rajadhyaksha and Willemen, 2014)

> 'clinical.' But the sounds she is talking about shape her visual edit. She said her edit was dependent on those sounds.

Thus, according to Madhu, Renu Saluja was taking decisions about the sonic quality of the sound effects, and not just their placement vis-à-vis the image. Since the quality and timbre of the sound could potentially influence a cutting point, Renu would insist on monitoring the effects that were sent by the sound team. This view echoed a similar position taken by Arghya Kamal Mitra about the critical role of the editor in deciding the sound design in the analogue era. Whether a sound effect is recorded in the location during the filming process or recorded later on in a studio is an important decision in sonic design for films. Thus, by deciding whether to use the 'original' effects from the location or studio simulated sounds, as well as deciding the sound placement, Renu was co-opting the function of the sound designer, as sound design is currently understood. This concern with the micro-details of sound, according to her contemporaries, set her apart from the other film editors working in the celluloid era. However, there are other editors who contest this view and explain that since sound design was done by editors in the film era most editors had an understanding of sound. It was part of their training. Madhu's description of Renu's proficiency with sound and his endorsement of her as having an understanding of sound issues, despite being an editor, is an example of 'boundary-work' as used by Ganti to describe claims to exclusivity in the Hindi film industry (Ganti, 2012). By implication Madhu was inferring that while picture editors did have a privileged position with reference to sound editing and by extension sound design, it is only those with the special skills and insights who were actually able to fulfil this brief. But there were other editors and sound workers I interviewed who did not subscribe to this view and felt that sound specialists were better equipped to work as sound editors or sound designers, than visual editors, even when it was a convention in the celluloid era.

According to editor and film school lecturer Debashish Guha, editors in the analogue period were prone to misjudgements about the sound in general and effects track laying in particular, by either over or under-using sound effects in a particular context.[74] This

[74] Guha had recounted an episode during his interview where he mentioned that elaborate effects tracks prepared by him for a war scene in Shyam Benegal's '*Discovery of India'* were 'shot-down' by re-recording engineer Hitendra Ghosh. Ghosh felt that given the limitations of the analogue mixing process such elaborate tracks were unrealistic and unusable. He asked Guha to make the tracks less dense by substantially reducing the number of sound effects.

view that a qualified sound recordist would do better sound editing than a visual editor was echoed by Guha's colleague from the same industry, another of my interviewees, practicing senior editor Sanjib Dutta, whom I briefly consulted on this issue.

4.4.3. The Re-Recording Mixer as The Sound Designer

As a practicing editor in the 1990s era I have a direct experience of the analogue era editing conventions in India, especially Mumbai. It was the last phase of the analogue era of Indian cinema and senior film editors in Mumbai usually had between three to five assistants to help them with the labour-intensive process of working with celluloid film. In this process the picture and sound were 'marked' on flatbed viewing machines, also referred to generically as editing machines. The flatbed editing machines used widely in India were manufactured by Steenbeck &Co – a company specialising in precision engineering based in Germany. After the picture and sound were synchronized and cutting points identified on the *Steenbeck*, the actual cutting would be done on tables or synchronisers. The German machines were omnipresent during the late analogue period, having replaced the American-made *Moviolas* during the 1960s and 70s. Practitioners in India who worked in the analogue era still nostalgically refer to the late analogue period as the *Steenbeck era*, as a tribute to the sturdy European workhorses that dominated film editing.

Seen from the perspective of the multiple track editing capabilities of digital editing, the *Steenbeck* posed a number of technical challenges. The machine could usually run a pair of sound tracks or reels at the most, along with the pictures. As a result, the sound editor and the filmmakers could hear only two tracks – either the dialogue and the music, the dialogue and the effects or only two effect tracks together. While this was not a uniquely Indian problem, the flatbed editing machines in Mumbai, Chennai or Kolkata would often have only one operational sound head. Thus, in practice, only a single track of sound could be heard in combination with the image.[75] Since the mixing studios could handle only about six to eight tracks at a time, the tracks had to be clubbed together and pre-mixed, usually in sub-groups of four (interview with Ashwin Balsavar, 2017). So, during the sound editing or track laying processes on the *Steenbeck,* the

[75] The number of tracks depended on the film – for a standard a mainstream film it would be about 10 or 12, but for big budget spectacular films it would be nearly twenty.

editor could hear just one more track in addition to the one that was being prepared. Thus, at any given point during the sound editing, only about 10 per cent or even less of the final soundtrack could be heard or monitored. Unable to hear all the tracks, the sound editors or post-production team had to depend on guesswork and imagine how all the tracks together were likely to sound. The editor or the sound editor in the film era had to wait until the film went to the sound mixing or re-recording stage to able to hear all the tracks together. The re-recording or mixing would be attended by the director, the key members of the editorial team including the picture editor, along with the re-recording engineer. But, if a sound editing problem was detected at this stage, an improvised solution was usually worked out by the mixing team, mostly in consultation with the visual editor. Thus, the tracklaying or sound design done by editors would be based on absence or partial presence of sounds and was largely an imaginative process. Madhu Apsara and A M Padmanabhan both spoke about this issue during the analogue era.

> **MADHU APSARA**: A simple scene at home, for instance, – cooking happening, used not Foley but location recorded sound of pressure cookers, layered with, say, the sound of television. Maybe this is combined with another sound of birds outside and rain. So, you need to add the sound of rain too. You don't know how these sounds will sound when they are all together, as in the analogue system of editing you could not play them together. You had to use your imagination to figure out how they would sound in unison. It's only when they are taken to the mixing studio and played back together then you get to know the real impact.

> **PADMANABHAN**: When you were tracklaying on the *Steenbeck* you could at best listen to two tracks at a time. You kept running the dialogue while you created the music, then you would imagine the music and play the effects, then turn off the music and dialogue and layer the effects, or you would lay two tracks of effects and imagine the rest. Actually, there was a greater sense of design then compared to now when you can listen to all the tracks all the time. It was a trial and error process and then an ideation process. The same thing happened in editing too, you lost a frame when you made a cut before the advent of the tape splicers. You had to think twice before you went on and made a cut.

Most sound professionals I interviewed throughout my fieldwork persistently voiced the inadequacies of film era and observed how digital technology has solved these problems. But a few of them, like Padmanabhan and Anup Mukherjee, felt that digital technology undermined the capacity of sound workers to do imaginative work by taking away the intrinsic challenges. Given the huge flexibilities offered by technology, – sound professionals are not approaching their project with adequate rigour. However, the majority of the sound workers who started in the 1990s felt that the inability to hear the tracks while editing sound on flatbeds was a major issue that was resolved by the coming of the digital. Not able to hear the whole soundtrack while editing was seen as a serious limitation that affected the quality of their work.

Subjected to a film-historical scrutiny one finds that similar 'shortcomings' were part of filmmaking and film technology in every era. Analogue era film editors in India edited colour films by using black-and-white rushes or work prints to avoid the prohibitive costs of colour printing ; cameramen, before the advent of video assists, could not see the effect of the lighting and composition until the film was processed and printed in the laboratories; editorial assistants today can do provisional editing on location to see if a scene is working – this was unthinkable in the film era. In the digital era, editors, by default, can edit in colour. These 'inadequacies' of 20th-century film technology sometimes fed into the stylistic approaches and trends and became the stylistic marker for the period or for a particular aesthetic. In fact, most of these so-called limitations were perceived as such, only in hindsight. So, while Madhu has pointed out the problem of having to decide sound design by hearing the track in pieces, Padmanabhan has described it as a process that encouraged creativity. However, both of them agreed that the crucial aspects of sound design and editing were left for the mixing stage during the analogue era.

4.4.4. Film Era: Mixing as 'Embedded' Sound Design

The inability to hear all the tracks together until the final mixing/re-recording process was a defining feature of the analogue period, exacerbated in India because of poor equipment and budget. This made the final mixing a definitive process where the soundtrack of the film would take shape. The process would be marked by contingency and innovation in various forms and degrees as described by most analogue era sound

workers I interviewed (interviews of Sood, 2017 and Ghosh, 2016). Since the editors only decided the position and synchronisation of the sounds and were not equipped to process or alter the quality of the sound on the analogue editing system such as Moviola and *Steenbeck*, the sounds would require processing and adjustments. Sounds added to the picture during the tracklaying would thus be supplemented with more sounds during mixing. During the mixing/re-recording process existing sounds could be, sometimes, replaced with sound deemed more appropriate or would be processed or equalized substantially to match other sounds. Often ambient sounds would be introduced by the re-recording mixer and the assistants to complete the soundscape. There were occasions when new diegetic effects would also be recorded in the mixing studio to augment the soundtrack or replace a missing sound. These sounds would be in the form of hastily made 'loops'[76] and were even sourced from audio tapes and played back from cassette players into the mixing console. According to senior sound workers from the analogue era I interviewed – notably Kuldip Sood, Hitendra Ghosh, Ashwin Balsaver and Indrajit Neogi – most mixing engineers or re-recordists added key atmospheric sounds at the mixing stage. It was at this stage that the sound track took final shape through a dynamic and improvisational process. The tracks coming from the editing team were, often, mere aggregations of dialogue, music and effects. Sounds were added or subtracted, moved around, processed and equalised, specific sounds amplified or subdued, during the final mixing.

Because of the provisional nature of sound editing in the film era, primarily due to the restrictions of analogue technology, the final soundtrack would be heavily dependent on the mixing engineer – their skills and resourcefulness, their understanding of filmic narration and their acumen in blending new sounds into the existing tracks even at the final stage.[77] Thus, mixing engineers in Mumbai's analogue era were largely responsible for giving the soundtrack its final shape, effectively defining the relationship between its various components and reconfiguring the relationship between the soundtrack and the image track. It is because of this practice culture that the mixing engineer or the re-recordist was the second de-facto sound designer in the celluloid era

[76] Loops were fragments of film visuals joined end to end so that they play continuously to enable studio engineers to dub or mix the relevant part.
[77] Re-recording or mixing for films in India have been, historically, all men. In the UK and US, it is also still largely a male-dominated field, although there are a number of women sound engineers working in the music industry.

in India, apart from the visual editor. Bishwadeep Chatterjee, who is familiar with both the analogue and digital work cultures, emphasized this aspect of analogue era sound.

> **BISHWADEEP**: So, the guy who would sit and design [the soundtrack] was actually the guy who was mixing it. So when he realised that a certain 'loop' was not working out here he would call the editor and tell him that I want this particular sound replaced, I need this particular effect or he would have his own cassette bank from where he would pull out his effects and put it over there, and start giving it some dimension.

By Anglo-American standards of precision and exactitude, re-recording in India would be considered 'chaotic' and 'improvisational.' While, as Tejaswini Ganti remarks, Indian film workers generally valorise Hollywood and belittle local practices, I did not, during my interviews, come across critical views about mixing or re-recording conventions in India. When it came to sound re-recording practices of the analogue era, most of my interviewees felt that the sound engineers in India could turn the perceived weakness into a strength. They did not feel that mixing or re-recording engineers were less qualified than their western counterparts – but because of their ability to work under difficult circumstances they were considered much more versatile. They were effectively arguing that the Indian sound engineer deployed what I would call an artisanal style of mixing, marked by improvisational skills, an organic approach to the soundtrack and insights to blend in from newer circumstantial elements.

4.4.5. The Dynamic Sound Design of Mangesh Desai

A master of this artisanal style of mixing, according to most of my interviewees, was the late Mangesh Desai (active between 1956 and 1988) – a central figure in the Mumbai film industry in the 20th-century. As the chief recordist of V Shantaram's Rajkamal Studio, he mentored and groomed a generation of sound engineers. According to Resul Pookutty, Desai's working style and techniques made him into a leading 'sound author' of the Indian film industry. Desai also contributed to making the mixing or re-recording the backbone of sound post-production in the analogue era. Re-recording mixers who have dominated the period after Desai – Hitendra Ghosh, Kuldip Sood and Anup Dev – were part of Desai's team before they embarked on their independent careers. Anup

Dev, who has been active since 1984, explained why Mangesh became the focal point for most filmmakers wanting to do their mixing in Mumbai.

> **ANUP**: He has given a different style in the mix, he started playing with the music. Before him mixing engineers did not intervene on the music at all, they usually left it the way composers had given them it. Mangesh would try to create drama by moving the music, and then, according to the filming location, he used to have a different atmospheric sound. In the analogue days, having separate pre-laid tracks of ambient sounds was rare. They would be sourced from cassette tapes kept in the re-recordist's own library.
>
> What I learnt from him in those early days is what sound could do to a scene. He used to have at least 10 different types of 'night cricket' sounds, 15 kinds of birds chirping sounds in his library. If there were multiple night scenes in a film, Desai would make it a point not to repeat the ambient sounds. This would be useful to distinguish between various locations or scenes in a film. While they may have been standard practices in the west, these were done at the editing stage and not left till the mixing stage. Desai introduced these simple practices which other mixers were not always particular about. With composed and recorded background music, if he found that the music was not working, he would bring some other piece from some other reel. So, in a way he was creatively intervening with the work of the background music composer. He used to remember the entire film and would recollect which music could be taken out from one scene and used in another. He would watch the final cut of the film with the directors, with only the scratch dialogue track and give advice to the director about how to improve the film's soundtrack. It was the director's decision whether he would do this or not. Most of the directors would listen to him as his suggestions would almost always work. He would somehow add a magical touch to the mix.

Anup and Bishwadeep added that the re-recordist's intervention was extremely important as the tracks that were brought to the mixing studio were unprocessed and unequalised and, in many cases, lacked finesse. They would be recorded in their full loudness and, as the editors had no means to adjust their levels on the *Steenbeck*, they would be passed to the mixing engineer for loudness and tonal adjustments, as well. It was the mixing engineer who would then decide the final levels and tonal qualities of the individual sounds. The process of mixing in the analogue era in India would be marked by a large degree of contingency, because of the last-minute additions and

alterations and the overall improvisational nature of the mixing technique. In stark comparison, mixing in the digital age happens under controlled circumstances as the technology prompts the sound editor or the designer to process, equalise and level the sounds before they reach the mixing stage. “Sound is already half-baked before reaching mixing” was how mixing engineer Dean Humphreys described it (interview of Humphreys, 2018). Bishwadeep, having worked with both analogue and digital technology, underlined why mixing was a critical act in the analogue era. His description sums up the process I have called the artisanal approach to sound mixing.

> **BISHWADEEP**: In those days the mixing engineers were so important; they would organize the sound once and for all. It was their ‘sleight of hand’. A mixer like Hitendra Ghosh would say “I have only a few fingers to control it”. So, you let him do his thing without distracting him. If he made a mistake he would have to go back and do the thing all over again. He had to figure out where exactly his faders were. Analogue mixers, unlike digital mixers, could not retain the memory of the fader position. This combination of ready tracks – with even external sound inputs played back live during the mix – required a lot of skill and lot of imagination. When it became digital it was all there. Now when we take a track to a mix, it is already pre-mixed.

As the final mix was critical to the entire sound process, directors and producers were keen to do it with the best re-recording mixer available. The technology allowed live or *on the fly* mixing and the re-recordist took instant decisions as he mixed a section of the film at one run. At the height of his career, Mangesh Desai was the most sought-after person in the film industry (interview of Dev, 2017). Kuldip Sood, Desai’s one-time deputy, told me during his interview that producers would sometimes wait even for two years for the opportunity to work with Desai. Desai also inspired directors from Mumbai and from regional cinema to shed their casual approach to sound, and filmmakers like Shyam Benegal benefitted from working with him (see chapter two). So, while sound design as a designation and a formal practice was yet to be introduced in the Mumbai film industry, re-recording mixers like Mangesh Desai started introducing their authorial stamp on the soundtrack and in effect were designing the soundtrack much before the formal category of sound design was actually introduced.

4.5. Sound Design as a Digital Age Construct

> So, we were the sound editors, we were the sound designers, we were the sound recordists, we were the ones who were assisting and helping in the final mix to tell what will go where, to redistribute for example, where the music should come. We thought every part of the soundtrack is expression - music, effects, dialogue… sound is about controlling the dramaturgy of a scene.
>
> Resul Pookutty

Resul's statement in his 2017 interview with me is a brief manifesto for the newly emerging influence of film sound workers, especially sound designers in India. His assertion was that the digital age has brought in a new importance to the art and craft of sound in India, which he felt was missing in the previous era. In effect, he was suggesting that technology and changing conventions have elevated the status of sound workers in India. In the following section I will examine Pookutty's claim about this new-found importance of sound work by analysing the changes in practice conventions in Mumbai.

The first change that needs to be taken into account and examined in this context is the complete bifurcation between picture and sound editing in the post-celluloid era. In the digital era, image and sound editing have become extremely specialised fields involving different technological platforms and requiring the sound person to master new production processes and conventions. Pankaj Seal, a practicing sound engineer and a professor in a Satyajit Ray Film and Television Institute of India (SRFTI) in Kolkata, described why film editing professionals from the analogue era could not continue editing sound in the digital age. The use of digital electronics in sound, Pankaj Seal reiterated, has made sound a technology-intensive process. Film sound, he added, was always more 'technological' compared to fields like cinematography and editing. This status of film sound, I feel, went back to the time when the talkies were introduced, and films started speaking. A look at the practice conventions of the early sound era of the 1930s reveals that the first generation of film sound workers in the USA were engineers from telephone and radio (Altman, 1985, p44–53). The increasing use of electrical and electronic technology in sound recording in the mixing studios of the 1940s and 50s ensured that the sound workers identified themselves, at least in the early years of sound

films, as technicians more than their colleagues in cinematography and editing (interview of Seal, 2016).

The emergence of Digital Audio Workstations (DAWs) in the 1990s altered the way work responsibilities were distributed in most film industries around the world. The impact was felt across the entire film production process, but, according to Seal, it was more visible in the field of sound post-production in India. Additional sub-specialisations like 'Foley editing' and 'dialogue editing' emerged, in addition to 'traditional' specialisations of sound editing and mixing. Most often these new roles mirrored similar roles in the UK and US film industries, where such specialisations had existed even in the analogue era (interview of Humphreys, 2018). Sound editing, which was not strictly considered a part of sound work in India, now became a legitimate and integral part of the sound process in a film. As elaborated by Pankaj Seal, the digital era workflow necessitated a different approach to film sound. The sound editor in the digital era needed to be a 'proper sound person' rising from within the ranks of the sound team – usually a sound recordist with adequate exposure to the sound editing and the mixing processes. Sound recordists who mastered digital workstations like Pro-tools and used them for sound editing, track-laying and pre-mixing, emerged as sound editors and designers.

Sound designer and sound editor Boby John, who attended FTII with me, started his professional journey in 1995 – the transitional period between the analogue and digital phases. According to Boby, sound editing during the analogue period in India was self-limiting because of the nature of the technology and the prevailing practice conventions.

> **BOBY**: As a recordist I would give a lot of sound effects to the editing team; they would usually have a lot of options. But they would seldom have the time or the judgement to use the best possible sound supplied by us. Sometimes, despite us supplying custom recorded sound effects, the visual editors doing the tracklaying would end up using 'stock sounds' or 'library sounds.' With the appearance of digital sound editing, the whole sound post-production process came to us. Since the sound was recorded by our team or sometimes by us directly, we would know exactly what sound was there. This way we could utilise the best possible sound effects during the post.

Boby is referring here to the conventions of the analogue era, when specialised sound workers or *audiographers* had a limited say in the process not only of sound design but also the overall sound post-production. Sound specialists wanting to work in films would commonly start their careers as production sound-recordists, because, as outlined above, sound editing was done by the picture editing assistants and mixing was done by the sound engineers in top-most rung. For a newly trained sound person this was discouraging, as working in the capacity of location recordists was not challenging enough and did not test their skills. Practice conventions prevented sound specialists from getting into sound editing and there was no formal discipline of sound design. Resul Pookutty who also started off in the year 1995, described this scenario succinctly.

> **RESUL**: The editor was executing everything. As sound workers we were just suppliers; we would do ADR, record or source effects from libraries and supply all the material to the cutting room. We would sit with the editors and make RR (re-recording sheets) and assist the mixing engineer during the RR or the final mix. We were not working conceptually on the films.

In this climate it was common for trained sound recordists to feel frustrated, as their skills and expertise could not be utilised in the film industry where their primary function was to record 'pilot sound' on location or to supervise dubbing or ADR. The basic credit attribution followed the western system – dialogue and effects recording would mostly be done by the same recordist. A survey of the different credit titles used by sound workers on major films of the analogue era, such as *Sholay* (Ramesh Sippy, 1975) and *Coolie* (Manmohan Desai, 1983), shows the following designations: audiographer, assistant sound, associate recordist, dubbing/effects matching, recordists, and re-recordists. These designations were not standardised and were seen to change according to the film, the language or the nature of the production (mainstream or independent/art film) and the collaborators on the soundtrack. For example, in the art cinema production *Nishant* (Night's End, Shyam Benegal, 1975) made in the same year as the blockbuster film *Sholay* (Ramesh Sippy, 1975), the credit attributions are Sound, Sound Assistant and Sound Re-recordist. As formal credits could be accessed through IMDB and other sources, the title *sound designer* seemed to appear much more frequently after the year 2000. Sound specialists Nakul Kamte (active since 1982) and P M Satheesh (active since 1992) have been using the designation of *sound designer* consistently since the early 2000s. According to Resul Pookutty, the meaning of the

phrase ‘sound designer’ changes depending on the nature of the film and the region where it is produced. During my fieldwork I found that sound associates in Tamil and Malayalam films doing tracklaying and editing often call themselves sound designers, as opposed to the convention in Hindi films where only senior supervising sound editors with considerable control over the soundtrack take the designation of sound designers. In the Bengali film industry, I found that sound designers not only edited the soundtrack, they also sometimes recorded sound on location and supervised or even performed the final mixing. Sukanto Majumdar, who works mostly in Kolkata, felt that a single sound person doing the entire process brought in stylistic uniformity, while accepting that a single person recording, editing and mixing sounds is impossible in big feature films. Thus, sound design depended on regional conventions, the budget allocated to sound, the scale of production as well as generic demands. Sound editor Boby John, who uses the designation of sound designer occasionally feels that the term has been adopted and its meaning changed in the Indian scenario.

> **BOBY:** Sound designer is not used regularly in the west. It is the sound editor who is responsible for the placement of sound. I think it is a fancy name invented by Mumbai sound engineers. I call myself sound editor and sound designer. Not all sound designers are sound editors, but sound editors usually have the skill to become sound designers.

The 30 Indian sound workers I interviewed in the cities of Mumbai, Chennai, Pune and Kolkata belonged to different sub-specialisations: they were sound recordists, sound editors and production sound mixers. A survey of their credit attributions showed that they had all used the designation of sound designer at some point in the past two decades. The same sound person may be designated as sound editor and as sound designer, sometimes even as sound designer and re-recording mixer. It was thus evident that the use of the term sound designer – and understanding of what the role comprises – is more fluid and dynamic in India than in the Euro-American world.

4.6. Sound Design and The Film School Connection

While technology did play a crucial part in the emergence of the concept of sound design, it was the national film schools and their sound specialisation graduates who also contributed to the emergence of the term sound designer in the digital era. The discourse of sound design, I will argue here, was a result of the film school background of most of the leading film sound professionals who emerged in the 21st century. According to Boby John, about thirty percent of sound editors and designers currently working in India are graduates of the national film school at FTII in Pune or its new sister school SRFTI in Kolkata. A large number of the remaining sound designers were former associates who had assisted graduates from these film schools and were groomed and trained by them. There is a dominant view that sound specialisation students in film schools are taught to be 'good technicians' and that adds to their success in the film industry. As confirmed in my interviews with well-known graduates like Bishwadeep Chatterjee and Resul Pookutty, the training in the national film schools does put a lot of emphasis on technology and the maintenance aspects of sound work, apart from sound editing and mixing. In the analogue period there was an emphasis on laboratory processes and electronics, and a practising sound person needed to troubleshoot technical issues, especially during crises. This was crucial, as it ensured that the equipment was maintained well, and minor glitches did not delay the production work for the films. Film school alumni like Bishwadeep and Resul felt that this input had helped them in the industry and gave them an edge over other technicians. But, along with the technology, when the sound specialisation students started to appear in the industry, they brought their 'FTII sensibilities' to the realities and practices of the job. An important manifestation of this has been explained in chapter two, which described how sound alumni from FTII started introducing sync sound into non-mainstream cinema in the 1970s and 1980s. Re-recording mixers like Hitendra Ghosh, Kuldip Sood and Anup Dev and music recordists like Daman Sood, Suresh Kathuria and Bishwadeep Chatterjee were amongst notable FTII graduates who dominated the sound scene in India at that time.

In the late 1990s the concept of sound design was strategically pushed by individual film sound experts, many of them from FTII, as well as studios and equipment manufacturers. Sound post-production facilities also reinvented themselves as 'sound

design studios', the pioneer being Studio Fireflys co-founded by Satheesh and Resul. Both Resul and PM Satheesh graduated in the early 1990s from the film school in Pune and began their career in Mumbai as sound recordists. They felt that the prevailing production culture and practice conventions in Mumbai were limiting them from actualising their training as film sound professionals. Sound recordists, even those trained at FTII to work independently in recording and mixing, had to begin their professional journeys as production sound recordists or as apprentices in the dubbing or mixing studios. They could not work as sound designers or sound editors unless they had started along the conventional path of being apprentices or location recordists.

> **RESUL:** That's what changed in the mid 1990s. Satheesh and I were the people behind this – we were arrogant, we thought a director should listen to us first: we had a concept about the sound of a film, and they owed us a hearing. The whole idea was to take tracklaying out of the *Steenbeck*, and it made us hatch a 'conspiracy'. The conspiracy was based on the fact that they owed us a hearing. My first film *Private Detective* (Rajat Kapoor, 1997) was the first film edited on Pro Tools. We went to a very small place, somewhere in the corner of Lakshmi Nagar (in the outskirts of Mumbai), we sat in a room and we had multi-tracks – 16 to 20 tracks and played a reel to the director, trying to demonstrate how we were seeing this. So, he said I don't like this sound here and this one there, and so we started moving things around. First day he was very resistant. He said, "I am not used to this, let us go back to the *Steenbeck*". I said, "Give me one more day". That's how we started. So, the whole idea of a sound design studio and setting up Fireflys, came from that history: they listen to the cameraman so much, they listen to the production designer so much, they listen to the actor so much, why are they not listening to us? It came from that.

Satheesh, described Studio Fireflys as 'the first sound design studio' in Mumbai, which he started after filmmakers showed interest in the concept of sound design that he and Resul were trying to promote.

> **SATHEESH**: There was no sound design studio before we launched Fireflys Post Sound. A sound design studio was unheard of in those days. There was no single soul who encouraged us. I jointly purchased Pro Tools with my friend Kabir and put it in my bedroom. The first project we worked on was called *Kumar Talkies* (Pankaj Rishikumar, 2000) and we got a National Award for our work on the sound. But since

> there was no award for sound design, it was for "audiography." But the citation mentioned "recreating the soundscape of an era that's vanishing"- what they defined was an idea of sound design. This was a morale booster for us.

Satheesh, Resul and associates started doing sound editing and design work initially for small projects like documentaries and independent feature films. Later, mainstream Bollywood filmmakers became curious and approached them 'to see what they were doing in their sound design studio'. They described that the team at Fireflys would work intensely for seven days on one reel of a 12 to 14-reel feature film, almost as a 'demo' of their work. As the results were 'interesting', filmmakers, to begin with, would give the studio a month to work on key scenes. Eventually, according to Resul and Satheesh, on seeing how the sound design added to the production values, they would commit to hiring the studio facilities for the entire film. Satheesh claimed that within a period of three years his studio became extremely popular among filmmakers and they kept coming back to Fireflys. The idea of sound design soon caught on and several other sound design studios were opened in the following years. Initially, only the independent filmmakers would agree to work on the digital platform for their sound design. Working outside the limits of the mainstream idiom, and driven by artistic aspirations, independent feature film and documentary filmmakers embraced the sound design model offered by Resul and Satheesh. As recounted by Satheesh, big Bollywood projects started arriving at the Studio Fireflys from the mid-2000s, which was an acknowledgment by Bollywood that the idea of sound design was accepted. The sound design for *Mangal Pandey* (Ketan Mehta, 2005), *Black* (Sanjay Bhansali, 2005), *Kaminey* (Vishal Bharadwaj, 2009) and *Ishqiya* (Vishal Bharadwaj, 2010) was completed by Fireflys in that period.

4.7. The Proliferation of *Sound Design*

Most Indian sound professionals I interviewed during my fieldwork during 2016 and 2017 attributed the rapid growth of the concept of sound design to digital technology and its adoption by Indian film producers in the early 21st century. As digital workstations increased in number in Mumbai at the turn of the century, more sound workers started to recast themselves as sound designers. These were sound workers who aspired to work in the field of sound post-production, rather than on locations during

the production or the shooting phase. However, in the digital era the boundaries between the different sound sub-specialisations would most often be breached by sound workers working on small budget and independent projects. It is relatively easy and acceptable for a sound person to have proficiency both in recording on location, as well as studio-based editing and design. My interview with sound workers Sukanta Majumdar and Subhodeep Ghosh, both based in Kolkata, revealed that for independent films and documentaries they double up as both recordists and sound designers. So, the entire sound of the film, other than the final mixing, is done by one sound person, apart from the boom microphone operator recruited during the filming process. According to Sukanta, the fact that he alone handles different aspects of the project gives him a level of control over the soundtrack that was not possible within the mainstream cinema framework now or even during the analogue period. Thus, the authorial aspect of sound design is best manifested, according to Sukanta, in the independent films and documentaries, as the entire sound process is not only supervised by one person, but most often actually done by a single sound designer with one recordist or boom person assisting during the filming process.

During my interview with him Resul made a crucial observation about the preponderance of sound designers in India. His contention was that given the nature of filmmaking in India, where Hollywood-like super-specialisation is yet to take shape, directors expect to interface with one single member of the sound team, rather than individually negotiate with members of each sub-departments like production sound, sound editing, Foley, ADR and re-recording. According to editor Arghya Kamal Mitra the 'sense of ownership' of the films is very strong among leading Indian sound workers which prompt them to monitor every aspect of the post-production including sound post.

> **ARGHYA**: Even in the studio period, it was not the producers but the directors who had the final say, mostly. The hierarchy is very strong in terms of who owns the film – camera, editor, sound person? But it is not that the cameraman is divorced from the rest of the crew while capturing the visuals. It is all under the guidance of the director. We are in discussion with the director, in constant conjunction with the director the way everything is taken forward. Our ownership is via the director. We do not have disjointed departments with minimal communication (in comparison to Hollywood).

> **AMALA**: In the west, for example there is specialisation for everything – there is a dialogue editor, there is an effects editor, there is a Foley editor, music editor etc. But there is someone breathing down their necks – one who supervises everything. We do not have that role here, mostly. There is a new designation now sound… A designer may not have too much of technical know-how, but he is required to have a strong aesthetic sense and may not be a master of the overall process.

While, sound design as a role is omnipresent in the 21st century in India, in the mainstream industries of Mumbai, Kolkata and Chennai it is understood differently than sound design in independent and art cinema. As in Hollywood, the sound designer in Mumbai is effectively a supervising sound editor, but with more responsibilities. In Hollywood, Resul feels, the work responsibilities are more compartmentalised and sound-editing teams do not have control over the final mixing process, like they do in India. In India, by assuming the status and designation of the sound designer, professionals like P M Satheesh and Bishwadeep Chatterjee are able to supervise and control the entire process of sound recording, editing and mixing. This convention also reassures Indian film producers and directors that someone is answerable for the final soundtrack. For the sound workers working on a film project, this ensures cohesion of a kind not found in Hollywood or Britain. Pookutty, despite his international exposure, admitted during his interview that he prefers to work in India because of the control the sound designer has over all aspects of the sound, ensuring that a uniform style and aesthetic informs the entire soundtrack. However, editors like Sumit Ghosh and sound designers like Madhu Apsara drew my attention to the fact that sound designers are often not involved in the early stages of the production. As a result, they feel, the sound designer is underutilised in India and his or her role becomes superficial. For the sound designer to be effective he or she has to be involved during the script stage so that sound elements can be effectively integrated into the script itself.

These conflicting voices communicate a complex, multi-layered narrative about sound design in India. Being a large industry with many different compartments – sound design is interpreted differently according to the filmmaking context. A sound designer in India could be as equally involved as Walter Murch or Randy Thom as sound author, but even more so when the scale of production is small. Hollywood sound designers – big or small – are never known to do location recording and mixing themselves, but in

Indian industries such examples are common, as borne out by my research. For big Mumbai productions the approach is slightly different, though, as we will see from the case study of one well-known sound designer.

4.8. The Mumbai Sound Designer – A Case Study of Bishwadeep Chatterjee

How does a leading sound designer in Mumbai conceptualise his work and how do we identify the discursive elements embedded in his/her practice? During my interview with Bishwadeep, I probed him about the concept of sound design and the notion that this designation is often seen as both vague and tenuous. While acknowledging that the term has become nebulous in the Indian context, Bishwadeep preferred to conceptualise sound design though his own approach towards film sound, rather than align himself with existing discourses of sound design. He proposed 'his personal philosophy' of sound design based on his own practice, effectively setting it apart from his peers in the Indian film industries in the mode that Tejaswini Ganti describes as boundary-work. During his interview Bishwadeep connected his view of sound design to his own professional history. As discussed earlier, a majority of sound editors and sound designers in Mumbai started their careers as production sound recordists – usually the first assignment for beginners in film sound. 25 of the 33 sound professionals I interviewed began their professional careers recording dialogue on film shoots and eventually branched off into various aspects of post-production sound. The exceptions to this rule, including Bishwadeep, were the five sound professionals among my respondents who joined the music recording studios in Mumbai and were recording background music and songs for both film, as well as non-film, music. Bishwadeep was an established music recordist in Mumbai before he decided to change track and re-invent himself as a sound designer. In 2003, Bishwadeep started working as a sound designer and is now well-known for his work for Mumbai filmmakers like Sanjay Bhansali, Rajkumar Hirani and Shoojit Sircar.

> **BISHWADEEP**: Sound design for most people today is equivalent to effects track laying. For me, sound design is composing the entire soundscape of the film. Since I have a music recording background, I would like to mix the background scores, I would like to do the music edit also, along with laying effects tracks, along with setting the right tones for the dialogue. For me the dialogue, the effects and the music have to be in perspective when I am doing the sound design. So, I set the tone for the dialogue,

> and what the dialogue would sound like in a room like this, what it should sound like when someone is walking down the corridor – I am creating that perspective. Digital workstations allow me to do that. I don't have to wait for the mix studio to do it, so for me mixing is the natural extension of my elaborate sound design.

Bishwadeep claimed that, along with being in charge of the sound editing and design of a film, he is also closely involved in the final mix. In fact, as he argues, the technology allows him to do a preliminary mix even during the sound design process. Moreover, sound designing is not only about being in control, horizontally, over all phases of the sound production process, but also having vertical control over different components of the soundtrack – including the background music, usually considered the job of music directors and composers. In mainstream Mumbai films, songs and music are not initially handled by the sound designer, but by a different sound recording team. But Bishwadeep insists on getting involved in the music process as well. He asserted that his belief in micro-controlling different aspects of the sound process was completely integral to the role of the sound designer as he saw it. So, while he does have a team in place for physical track-laying and editing, as the sound designer he himself oversees the entire process. Bishwadeep's description of his involvement at so many levels in the sound process of a mainstream Bollywood film is unique and has no precedents in Hollywood, where music, dialogue, and sound effects are all handled by different teams.

> **BISHWADEEP**: …because it [the process] is so elaborate that it is not physically possible for me to sit and keep doing everything, I have a team in place. They have to process the dialogue and they know exactly what to do, what kind of processing I want. They do that, and they bring it onto the table. I sit together with the guy who is doing the action effects and I tell him what exactly to do. I tell him: this sound is there in the library; this is the processing I want; I want these elements to be emphasised. When the background music comes to me, I make it a point to sit with a composer to show what exactly is there. In *Madras Café* (Shoojit Sircar, 2013) I had the chance to give the composer Shantanu Moitro the sound design, so he knew exactly where the clutter was. He knew design elements in different sections of the film. He composed the music tracks in such a way that the elements of the overall soundtrack do not clash and interfere with each other.

During the analogue film era the background music composers scored music according to the overall emotional content of a scene. Its precise placement and its loudness relative to other aural elements was decided by the picture editor and the re-recordist during the final mixing process, a process I had described as dynamic sound design earlier in this chapter. Bishwadeep's conceptualisation of sound design shows a conceptual shift from the re-recording based dynamic sound design of the film era in India, to sound design that is centred around a precise tracklaying and editing process, effectively taking away the criticality and improvisations associated with re-recording or the final mix. While this move is largely enabled by the affordances of the digital technology, the extent to which it is mobilised depends on the people using it. For Bishwadeep the digital technology allows him to control and micromanage the design during every level of the execution. His model of sound design – where he controls every aspect, starting from dialogue, music and effects to the final mix – could only exist because of the digital technology and the transformation that has taken place in sound editing and mixing because of the DAWs like Pro Tools.

The sound designer's goal is to achieve precision in sound selection and the placement and integration of the musical and non-musical sound. As a former music recordist Bishwadeep is particularly careful about mixing the songs and music. Music and songs in Indian mainstream films occupy a curious position. They have an independent existence as recorded music and at the same time are part of the overall soundtrack of the film. They are recorded and mixed individually for commercial release as music albums, while being re-mixed and reprocessed for the film's soundtrack. For Bishwadeep, this coming together of the musical and the non-musical is an important aspect of the sound designer's responsibilities. To achieve this kind of seamlessness between the two, Bishwadeep chooses to deviate from the usual norms and conventions of the film industry, as he indicated through this example.

> **BISHWADEEP**: So, during *Bajirao Mastani*[78] I also sat with the composer and told him that this is the action, so let us not have too many percussive elements here, let's not have a complex drum arrangement there, because there is a lot of sword fight

[78] *Bajirao Mastani* is a one of the biggest productions to come out from the Mumbai film industry in 2015. It is period film based on the legendary love story between the warrior Hindu king Peshwa Bajirao and the Muslim Princess Mastani, set in the 17th century India.

> happening, a lot of horses' hooves happening. These kinds of sound effects are very percussive, so they will clash with your musical percussion. So, you can have that tension by having more legato elements, so that I can merge the two. Done that way, they will not interfere with each other, they will complement each other. For me the background score and effects should not be two different things. They have to be so that you do not notice the music or effects individually but as part of a whole.

But sound design, according to Bishwadeep, is not limited to placing the right sound on the track and processing it. It also includes looking for special sounds or even synthesizing them. Being in charge of the sound post-production, Bishwadeep primarily operates out of a studio rather than travelling to film locations. But there are occasions when he has to venture out to the locations to record distinct sounds required by a scene or by the director. Approaches such as his are not always supported by directors and producers, as they require more resources and time. Bishwadeep admitted that he preferred to work mostly with filmmakers who trust his judgement and allow him the resources to work on individual details.

> **BISHWADEEP**: The film *Baji Rao Mastani* had an important scene where a Vedic chant had to be recited in a particular way. I was told that Brahmins (priests) in the mountain town of Wai (200 miles from Mumbai) recite the hymns in an authentic way. I went there on my own and recorded 30 to 40 Brahmins chanting in chorus. Despite the time and resources involved in such processes the directors almost always give me this license as they know that these add value to the soundtrack.

While interviewing sound editors and designers in the UK, I realised that processes like Foley recording are contracted out or outsourced to specialist Foley studios. As far as UK and US film industries are concerned, the Foley studios would often be in overseas locations like France or Australia (interview of Dean Humphreys, 2018). In India, sound designers and supervising sound editors try to work in close collaboration with Foley departments and Foley artists. There are major Foley studios in Mumbai which work in close collaboration with different sound teams, and Foley recordists share a personal rapport with most of the sound designers working in Mumbai. Bishwadeep mentioned that he pays particular attention to the Foley sounds, which form an important basis of his sound design philosophy.

> **BISHWADEEP**: I always have a very intense discussion with my Foley team. I go regularly (to the studios) to check the Foley... sometimes I even do certain Foleys myself. Sometimes I ask them to redo and send.... till I'm satisfied. I layer the Foleys with further effects from my library or what I record myself. Foley for me adds "grains" to the track. It defines the character... for example I had five layers of footsteps for Bajirao...being the Peshwa (or the ruler) I needed to give him authority: the particular sound of footsteps – the leather squeak of his footwear, the crunch etc.

While Foley sounds are technically contracted out in India too, they are nevertheless done in a studio in Mumbai, enabling the sound designer to supervise this process in person. Bishwadeep's approach to every aspect of the soundtrack represents the discourse of the 'sound author' in the same way cinematographers have control over the image. His approach integrating different elements of the soundtrack, and the nature of his collaborations shows an emergent discourse where a sound designer is much more than a supervising sound editor but a person I would call 'sound author' or an 'audiographic director.'

Euro-American sound workers I spoke to during my fieldwork, as well as books and commentaries available, makes it evident that the level of control by an individual over the soundtrack described by Bishwadeep is near impossible to achieve in UK or US industries. Even when a Randy Thom or Skip Lievsay works on the sound of a film, – the actual process is fragmented and decentralised. The informal structure of the Indian film industry as well as the lack of over-specialisation as seen in UK and US, makes it easier for the authorial model of sound work to flourish in Mumbai, Chennai or Kolkata.

4.9. Conclusion

We saw in this chapter that, while the formal designation of sound designer is a 21st century phenomenon, the idea of sound design was embedded within the practices of the analogue age. A person in control of the sound department may not be a recurring feature in the history of film sound in India, as it was in Hollywood which retained its studio-inherited horizontal compartmentalisation. Indian sound workers are comfortable projecting themselves as sound designers, especially because the roles and functions of recordists, editors and mixers are not as strictly demarcated, as they are in

Hollywood, and are more fluid. The fluidity of the process was much more dominant during the analogue film era – when sound design was distributed between the visual editor and the re-recording mixer. Then the mixer played a much more dominant and critical part in design, and the soundtrack took final shape on the mixing table. Enterprising technicians in Mumbai like Mangesh Desai thus became the de-facto sound designers of this period.

While sound design emerged in the west in the 1970s, it has gained prominence in India in the post-celluloid era. The enthusiastic acceptance of sound design is linked to the formal possibilities opened up by the digital medium and capability of the sound person to create detailed and elaborate soundscapes. But unlike in the Anglo-American context, where the role of sound designer has existed alongside the sound editor since the 1970s, in India the sound designer emerged as a distinct voice in the digital age, an age that commenced in India around 1997-98. Along with these, new practice discourses about the ideal role and aesthetic potential of sound design came into being. These discourses drew from the ideas of western sound designers like Walter Murch and Randy Thom. The influential practitioners in India I interviewed such as Resul Pookutty, P M Satheesh, Bishwadeep Chatterjee and others, posit their practice as legitimate sound design as opposed to most other sound designers, who according to them are merely sound editors preparing tracks. The claim to legitimacy by the above sound designers is based on the control they exercise over every aspect and stage of sound production and their ability to collaborate closely with other members of the sound team because of the nature of the industry.

In the next chapter of the dissertation I will examine surround and immersive sound, their origins and their impact on the film soundtrack in general. But more importantly, I will examine how these new formats have gained new significance in the digital age and analyse their relevance to the aesthetic requirements of Indian cinema.

CHAPTER 5: Embracing 'Immersion': A New Sound of Indian Cinema?

5.1. Introduction

In chapters 3 and 4 I have argued that new technological interventions such as digital field recording, the adoption of sound design as a practice ideology and digital sound post-production have not only transformed specific production conventions but have also given rise to new regimes of film sound in India. In this chapter, I will be examining the use of digital multichannel forms such as surround and immersive sound and their impact on Indian film sound practice. The word multichannel here refers to film sound exhibition forms other than monaural or 'mono' sound. It is a generic term used by media historians to refer to a range of forms like Dolby Stereo, Surround Sounds like Dolby Digital 5.1 Surround and Digital Theatre Systems (DTS), as well as the more recent spatial/immersive sound technologies like Dolby Atmos and Auro 3D. A more specific term 'immersive sound' is also loosely applied to the latest multichannel sound forms like Atmos and Auro 3D in order to distinguish them from more generic forms of multichannel sound. All these forms mentioned above, fundamentally, give the audience an all-enveloping sonic experience. Thus, while surround sound could be seen as a form of immersive sound, 21st-century formats such as Atmos and Auro are technically described as immersive sound. Thus, immersive sound does surround the audience from all directions, but is considered a more evolved version of generic surround or multichannel sound. I will explain this difference later in the chapter. Surround and immersive sound technologies are seen as defining aspects of the film sound experience in the digital era.

The present chapter focuses on a key research question: How have digital immersive sound technologies impacted sound design and sound mixing in India? Are these changes aligned with the stylistic and generic requirements of Indian cinema, given the fact that these technologies were born in America, in response to specific aesthetic needs of Hollywood cinema? In the context of the key research question, I also want to probe further conceptual issues and possibilities. Do Indian film practitioners respond to these changes in ways that are different from Anglo-American film sound conventions? How do immersive technologies impact contemporary practitioner ideologies in India?

The dominant view among practitioners, borne out by my own fieldwork, is that immersive sound formats like Auro 3D and Dolby Atmos have radically transformed the experience of cinema. But not all academic theorists and practitioners are convinced. There are critical voices which contest the radical claims made about these technologies. My aim here is to explore the emergent practice paradigms with reference to the competing claims made by the different stakeholders to arrive at a nuanced assessment of this latest intervention in Indian cinema.

The first part of the chapter explores the historical origins of 'immersion' and immersive sound. In this section I address the conceptual and theoretical issues that inform the history of multichannel and immersive sound. In the next section I move on to examine the practice conventions and debates pertaining to surround and immersive sound among film sound practitioners in India, probing the impact of the emerging discourses on actual practices in India and their role in shaping aesthetic conventions. In the third and final section I analyse the soundtracks of selected films from both mainstream and art cinema, as case studies, to examine the practitioner discourses and aesthetic issues that inform the sonic design of these films. I connect these discourses to crucial debates about the nature of the image-sound relationship in Indian cinema, most crucially the relationship between screen, space and sound.

5.2.Practice Cultures of the Celluloid Age: Mono vs Surround Sound

Multichannel and surround sound is often mistakenly perceived solely as a digital era innovation. But a rudimentary form of surround sound, identified as stereo or binaural sound, appeared in the analogue era – initially in magnetic and optical track-based forms in the 1970s and the 1980s, and eventually also as a quasi-digital, disc-based form called DTS.[79] While surround sound was there in the analogue period, as observed by most sound workers I interviewed, the inception of digital technology made it a more potent and effective tool for filmmakers.

[79] DTS or Digital Theatre Sound is a California based company that launched a surround sound with 5.1 configuration. The trial version of the technology was first used by Steven Spielberg for the 1990 remastered version of *Close Encounters of the Third Kind* (1977) and then for *Jurassic Park* (1993). In early DTS format the sound would come in a separate optical disc along with a film print.

As examined in the previous chapters, film sound in India in the 20th century was dominated by analogue monaural sound technology and its deeply entrenched conventions. Although Dolby Stereo did make its appearance in India briefly in the late 1970s, it was not widely adopted because of the high costs of upgradation of the entire production and distribution chain. In Hollywood and in British cinema, the use of stereo sound was quite common, even in the analogue period, and sound technicians had developed the art of constructing multi-layered sounds (interview of Dean Humphreys, 2018) using analogue era magnetic and optical film-based methods. But production conditions in India – especially the neglect of sound by the mainstream industry and the limited resources allocated to the sound department – made it difficult to create the elaborate soundtrack that stereo or surround sound demanded. However, as seen in chapter two, filmmakers, especially art cinema practitioners such as Ritwik Ghatak, Mani Kaul, and Mrinal Sen, worked with celluloid-based monaural sound and still managed to experiment with the sound-image relationship in their films. Filmmaker Gurvinder Singh, who assisted the late Mani Kaul, observed during his interview that given Mani's fascination with sound, he would possibly have been the first filmmaker in India to adopt immersive sounds, given its experimental potential.

While the practice conventions of sound in India had started to transform radically by the end of the 20th century, the discursive approaches to these new developments remained largely buried beneath an uncritical admiration for anything digital. The fundamental debate that came up in my interviews was about whether surround sound has really added anything to cinema which is of enduring formal consequence. It was pointed out by some of the sound practitioners I interviewed that monaural sound and its technologies indirectly encouraged a minimalist and precise work culture, especially among art cinema practitioners, who had to find inventive ways to interplay sound and image within the limited resources they had. In the Mumbai industry, for instance, resources, even in big budget films, were primarily mobilised towards perfecting the visual look. Sound was, invariably, the most neglected part in the production chain, and irrespective of the film's overall budget, sound work was always a casualty. Some of the improvisatory practices and techniques used by resource-starved art cinema makers were thus shared and also adopted later on by commercial mainstream cinema. This was because the same sound workers worked on both parallel and mainstream films and wanted to make up for the lack of resources for sound through creative solutions.

Mangesh Desai's use of ambient sounds discussed in chapter four is one example of this practice, which began with art cinema but was carried over to the mainstream. Indrajit Neogi, sound professional and teacher, believes that the efforts of a generation of sound persons of the analogue era were lost, as the final technical quality of the soundtrack did not reflect the efforts of the sound workers. This, Indrajit asserted, was related to the lack of standardisation of certain crucial processes, as well as the inferior quality of the raw material used. The most common example of this was the practice of overuse or reuse of magnetic film and tapes used for recording and dubbing, and the processing of sound negatives in the laboratories. Since the intermediate materials used were damaged or inferior, the final product often suffered, despite the effort and creativity put in by the sound designers or mixers.

5.3. The Ontology of Filmic Immersion

5.3.1. Understanding Immersion

In contemporary screen studies immersive sound is seen as part of a cluster of media technologies which powerfully mobilise the human sensory apparatus (Ross, 2012, p381–397). These technologies, essentially designed to give audiences a multi-sensory, synesthetic experience, started to appear in the 1950s in the form of the large screen cinematic forefathers of today's IMAX, combined with analogue versions of stereo or binaural sound.[80] But despite their six decades of existence, serious scholarly interest in these forms is fairly recent. In their analyses of cinematic immersion, scholars like Mary Ann Doane (Doane, 2016) and Tim Recuber (Recuber, 2007, p315–330) refer to a wide array of technologies, ranging from Cinemascope, IMAX, 3D cinema, Virtual Reality (VR) and Augmented Reality (AR) to multichannel and 3D spatial sounds for cinema and television. Thomas Elsaesser, in a recent essay on 3D films, has rightly pointed out that the early versions of 3D cinema were generally discredited as merely a 'spectacle', rather than seen as an important formal intervention in the art of motion pictures (2013, p217–246).[81] However, Elsaesser in the same essay also asserts that 3D cinema, in its digital reincarnation in the late 20th century, has become more

[80] The introduction of the large screen format called Cinerama in 1952 was an example of this. The wide screen visual was accompanied by multitrack magnetic sound on magnetic 'full-coat' film.

[81] Thomas Elseasser observes that "3-D as a special effect in the 1950s mostly concentrated on thrusting big, round, or pointy things at the audience—be it arrows, swords, boulders, or bosoms. Hampered by competing and incompatible technical systems (anaglyph and polarized 3-D), cumbersome glasses, restricted angles of vision, and suspected headaches, 3-D movies were indeed a passing fad for Hollywood"

mainstream and has attracted the attention of major filmmakers across the world. John Belton has recently argued that the proponents of digital cinema turned their attention to 3D technology to add the 'novelty' which was missing in the conventional 2D digital cinema, almost as a manifestation of what Tom Gunning calls 'attractions' (Belton, 2012, p187–195). Belton suggests that 3D stereoscopic projection technology in its digital form has managed to attract audiences in a way 2D digital film projection was unable to achieve. Barbara Klinger feels that it is not only the novelty aspect but also the fact that 3D cinema "has quickly established a highly codified stylistic repertoire" that amplifies certain storytelling aspects and genre-specific features of recent Hollywood films (Klinger, 2013, p423–431). Over the past decade, directors, ranging from James Cameron to Michael Bay, Wim Wenders to Werner Herzog, have produced films in digital 3D.[82] Documentary filmmakers have adopted 3D technology in order to exploit its unique representational features. Theatrical release of feature-length documentaries has become more common in the recent past, and 3D projection has helped documentary reinvent itself as a large screen experience that draw audiences. While the first wave 3D technology of the analogue era failed to make a significant mark, its resurrected 21st-century digital version has gained from its coupling with surround and immersive sound. In the new digital 3D films the feeling of pictorial depth is intensified by the aural depth of surround sound. Influential film producer and former Chairperson of Disney films Jeffrey Katzenburg had described this development in a 2009 interview with a trade magazine.

> It's not about throwing things out at the audience [with 3-D effects]—it's not about assaulting the person. It's actually just the opposite. It's about bringing them in, allowing the audience to actually exist inside the film's world in a way in which we exist here with one another [in real life], and to heighten the feelings that you get. One thing which was very deeply and strongly debated here was an artistic question: Are we using this as a device in which we would engage the audience consciously in this new technique—in which we would reach out and play to the audience? Which is how 3-D has been used almost exclusively to date. Or is this a way to immerse an audience into the story-telling, to enhance the emotions of a story? (Handy, 2009)

[82] Wim Wenders and Herzog both made extremely successful non-fiction features – *Pina* and *The Cave of Forgotten Dreams*, respectively. Both released theatrically in 2011.

The power of the visual to draw the audience 'into the story' is one of the ideas that proponents of 3D cinema see as its defining quality. This discourse has directly challenged our traditional understanding of the cinematic screen. In 3D cinema, the visual is not 'there on the screen,' and the screen is not at a distance from the audience, but in an haptic relationship with the viewer – a phenomenon Laura Marks describes as the move from optical visuality to haptic visuality (Marks and Polan, 2000, p 162). Theorists have underlined this hyper-haptic feeling experienced when objects "float free from their background and exist in unspecified screen space leaving us without clear spatial coordinates" (Ross, 2012, p381–397). This notion of sensory immersion linked to the hapticity of the image defines the current discourse on immersive visuals. As opposed to early discourses, visual immersion is now not seen as a tool to achieve naturalism or realism but as an instrument for a hyper-naturalism that renders familiar objects unfamiliar. However, when it comes to immersive sound, specifically, the discourse is still dominated by notions of perceptual realism and naturalism. Among the sound professionals I interviewed, both in India and the UK, a majority referred to multichannel/surround or immersive formats with adjectives such as 'lifelike', 'natural' and 'real.' The key aim of these technologies, some sound designers believe, is to replicate the binaural nature of human hearing.[83] Hearing, unlike vision, is three-dimensional – we can hear sounds from behind us and from far away. Does immersive sound, then, encourage filmmakers to counter the ocular-centricity of cinema by posing hearing as equally important as seeing? Classically, sight, represented by the screen in cinema, is frontal and limited to a rectangle. But, as far as sound is concerned, it now has complex relationship to space. Sound designer Bishwadeep Chatterjee observed that analogue mono sound did not stand up to the rich visual experience of large screen forms and digital surround seems to be the answer.

> **BISHWADEEP**: When the image was becoming so beautiful and elaborate with Cinemascope and lovely colours, sound didn't seem to be complementing it. It was just a small mono sound we were left with. Sound was really small compared to the visual evolution that was going on.

[83] In most of my interviews with film sound workers, I was reminded about this crucial difference between vision and hearing. The fact that sound came from the direction of the screen in mono era sound, was posited as a non-naturalistic phenomenon adopted by cinema.

The dominant thinking among most Indian practitioners is that the advent of digital images, especially the High Definition (HD) variation used for cinema, has led to a profusion of details on the screen. But there is a counter view that still dominates filmmaking and cinematographic debates. This pertains to the notion that celluloid film is still superior in terms of its capacity to represent colour and detail. Anup Mukherjee, a senior sound designer and re-recordist in India who had designed sound during both the analogue and digital period, underlined the complexities of the image-sound relationship encountered in the digital age. Surround sound, he believes, complements the inherent depth of the rich 35mm image and thus image and sound depth could come together effectively, creating a seamless and integrated audio-visual experience. However, while working with digital images and sound, he felt that the images lacked the depth that 35 mm images had. His contention was that digital images are unable to match the aural depth and tonal richness of surround sound.

> **ANUP**: The audio information in surround sound is comparatively more than the visual information in the digital. Digitally shot footage is a form of video/electronic image and has to catch up with the depth and perspective of 3D audio. Film had depth, digital images do not have that depth, as yet. As recordists, we are facing this constantly, despite the cameraman trying to match the depth and perspective of film through lens and lighting, in the digital medium. This, of course, does not apply to off-screen sounds as they are not in a 'direct' relationship with an image.

As a former practitioner I have personally felt this mismatch between the depth of the image and the depth of the sound, especially when working with standard definition digital video. This issue indicates that digital film technologies are, effectively, not moving towards a greater realism in image and sound, although popular technological discourses still support this teleological notion (HomeToys, 2016). More in line with Anup's observation, it seems that image and sound technologies have divergent trajectories and are not driven uniformly by an impulse towards a greater naturalism. More than realism or naturalism, it is digital immersive technology's capacity to lend itself to the production of cinematic spectacles that seems to be a key factor in their acceptance by practitioners, as well as the larger film industry.

In the recent past, the term immersive has become a catchword in motion picture industries and has lost its accuracy and nuance. Sometimes the words 'surround sound' and 'immersive sounds' are also used interchangeably by non-specialists. However, in the industrial parlance of sound engineers and mixers, the two terms have slightly differing meanings, which I will be probing in the next section.

5.3.2. Understanding Surround Sound

The word surround sound refers to the slew of multichannel film sound formats like Dolby Digital 5.1 or Digital 7.1, DTS, Dolby Digital EX and THX etc. In current film industry parlance, surround and immersive sounds are considered to be different, although, in essence, both belong to the broad category of multichannel sound. As opposed to 3D and immersive sound, surround sound is described in sound engineering terms as "a strictly a channel-based technology" (HomeToys, 2016). This implies that in surround sound architecture, the soundtrack plays back as discrete streams or channels across the theatrical space. The sound designer or the mixer pre-assigns which direction or location in the theatre a specific component of the soundtrack will derive from, corresponding to its visual source on the screen. The sound does not remain fixed with respect to a specific channel or direction and is moved or 'panned' from one channel to another, as and when the source of the sound moves on the screen. A spaceship visually flying into the screen from an off-screen space will have its sound 'panned' from the rear to the front channels. In surround sound architecture the sounds appear either from the direction of the screen itself or from behind the audience. The normative practice in surround sound design is to place the dialogue and diegetically important sound effects on the 'screen speakers' or front speakers, while supplementary or add-on effects are placed on the rear speakers. The reason for putting narratively important sound on the front channel was dictated by the fact that audiences sometimes misinterpret or even miss the sounds coming from the rear. In addition to this, in some theatres the rear speakers are subdued, and the sound may not be heard properly.

Over the last three decades, sound designers and mixers have developed the conventions whereby sounds integral to the narrative are put on the 'screen channels'. This is to ensure that viewers do not miss these sounds in case the surround track is not played back properly, or the surround speakers are not working. Background or nondiegetic

music, however, is usually spread between both front and rear speakers and is allowed to mobilise the full capacities of the surround speakers and create a deep, affective experience. As mentioned earlier, the basic principle of surround sound has been in existence since the 1950s in a primitive form, but it was only in the 1970s, with Dolby laboratories' version of surround sound, that the concept was finally noticed by the filmmaking fraternity. The precursor of the contemporary surround sound – as used by Walter Murch in *Apocalypse Now* (Francis Ford Coppola, 1979) – was a variant of what came to be known as Dolby Stereo. *Apocalypse Now* was mixed in a 5.1 magnetic stereo format but only for the 70mm prints of the film – the precursor of today's surround and immersive form sound forms. According to sound historian Jay Beck, Murch and Coppola wanted to position the sounds at different points of a 360-degree quadrant spread around the theatrical space, and not just the plane of the screen.

> This format was the initial template for surround sound and its capabilities could be partly or fully deployed according to the needs of the narrative. Its effect was spatially unique and this model of five-channel discrete sound with low-frequency enhancement became the template for 5.1 sound in the digital era (Beck, 2010, p75).

But 70mm production was prohibitively expensive. Moreover, magnetic sound-based prints were susceptible to damage and above everything else only a few selected theatres had 70 mm projection facilities. Not all exhibitors were ready to make the investment necessary for the upgradation to play the Dolby 6-track stereo. This was especially true for India which had thousands of theatres, most of which did not have the resources to go for this major upgradation. Thus, 70mm print with stereo sound was a novelty only available in a few metropolitan cities. The standard theatres across the country stuck to standard 35 mm projection with monaural sound. Even a spectacular action-based melodrama film like *Sholay* (Ramesh Sippy, 1975), which had a 70mm stereo release, was largely shown in 35 mm and mono sound in most of India. The original stereo mix was done in Twickenham Studios in the UK by re-recording mixer Gene Humphreys and his team.[84] The stereo sound was 'mixed down' to mono by re-recording engineer Mangesh Desai. According to Hitendra Ghosh, who assisted

[84] Gerry is not mentioned in the credit titles of *Sholay*. I came across numerous references to Gerry Humphreys role in the film, by practitioners in India during my fieldwork and his stereo mix of *Sholay.* Gerry's role in the film was also confirmed by his son Dean, who had assisted his father during the mix.

Mangesh on this film, it was the mono-version which was mostly seen in India, evidently because of the limited reach of 70mm stereo. But in terms of its original sound design, the sound of *Sholay* was conceived as multichannel. Stereo sound for an action spectacle necessitated a layered and detailed soundtrack to be prepared by the sound editors, so that the mixing engineer could play with the different elements. But the intricate sound editing and track laying meant for the stereo version of the film were lost in the mono version. Despite a major Indian film using the 70mm stereo sound, it remained as what John Belton calls a 'frozen revolution' (while referring to the unrealised potential of magnetic sound in the 1950s)– a technological breakthrough which never reached the people it was intended for (Belton, 1992, p154–170).

This magnetic medium-based stereo sound, as used in *Apocalypse Now* and *Sholay*, was relatively short-lived as a sound format. However, surround sound endured in the form of optical 35mm-based Dolby Stereo and was widely adopted in the US and UK film industries in the 1980s as the industry standard. It was the multichannel precursor of the contemporary digital surround sound and more or less reigned for two decades – the 1970s and 1980s. Theatres equipped with the stereo decoders for Dolby were a rarity in India in the analogue period and thus the film sound experience there was largely monophonic. As a result, Indian sound editors of the analogue era did not have the opportunity to do the intricate sound designs and mixes required for stereo – they were only editing and designing with mono sound in mind. According to the sound designer P M Satheesh, the potential for layering and playing with different sound elements was actualised only with the arrival of the digital variant of the surround sound, known to us as DSS.

> **SATHEESH**: The Digital Surround Sound (DSS) formats that appeared in the 1990s were comparatively cheaper and more stable. This facilitated the rapid dispersal of surround sound – by the early 21st century most Indian filmmakers were using surround sound. What Dolby stereo could not achieve in the analogue period, especially in a country like India, was achieved by DSS because of the considerably lower costs, universality and availability. It was the beginning of the digital revolution in sound.

Thus, Satheesh claims that surround sound, while having arrived in India in the 1970s analogue period, was not used by filmmakers because of the costs, lack of equipment

and exhibition facilities. This view was echoed by two other Indian sound professionals I spoke to Resul Pookutty and Boby John. The inexpensive, desktop computer-based sound editing and sound designing platforms of the digital era of the 21st century, observed Boby John, allowed filmmakers to try out surround sound without the massive investment that was required in the analogue era. This was also the period in which multiplexes were born in large numbers in India in response to changes both in film exhibition and wider economic changes. All the new multiplexes adopted surround sound as it was the latest available technology and the single screen theatres followed them. Digital Surround Sound (DSS) was pitched to audiences as the new cinematic landmark and promoted aggressively by both filmmakers and film exhibitors. Ethno-musicologist Jayson Beaster-Jones, in his study of Hindi film music, has drawn our attention to the fact that surround sound increased the appeal of the songs that Indian popular cinema is known for (2014). Thus, technologies of sound production, new economics of film exhibition and techno-aesthetic imperatives combined to make surround sound a defining achievement of the Indian films in the digital age.

5.3.3. Surround as a Digital Form

While, in theory, multichannel sound started in a rudimentary form in the 1950s and was improved in the 1970s with Dolby Stereo, it was only in the digital period that the technology was refined and its potential fully actualised. Digital sound lent itself to a much superior dynamic range, frequency response, and significantly higher signal-to-noise ratio. This enabled filmmakers to use a wide range and quality of sounds in terms of tonality and loudness, and without distortion or noise. The effect of this was felt across the world, but for sound workers in India the impact was particularly deep. The analogue sound technologies used in India had not been regularly upgraded because of the cost involved. As a result, sound workers asserted that the audiences were 'starved of good sound'. Pankaj Seal, sound designer and film school professor, explains.

> **PANKAJ:** If there was a rumble happening or a low frequency distortion, it wouldn't be heard on the limited latitude of the optical track. But with digital the bandwidth increased …It became normal to have a huge bandwidth, because optical had its limitations. With optical sound, you could not always hear everything, with digital surround sound you could hear everything. All the elements of the soundtrack can be experienced clearly. Initially there was this perception that if it is not an action film,

> you do not need 5.1. Even if you have a romantic scene in a park, you would like to have certain sounds around you all the time. It could be discreet and all that, but it could make you feel that you are sitting in the park with all the sounds coming from behind you.

Digital sound, the majority of my respondents felt, not only equipped film sound technicians with the tools to achieve a much superior quality of sound, but also helped them to attain the deep silences in the soundtrack that the filmmakers demanded. This, Satheesh asserted, was something filmmakers have been aspiring to ever since sound was introduced in cinema. The noise on the analogue tape or film, sometimes described as the 'hiss', was a part of the materiality of celluloid-based film. The noise would also increase as the print of the film aged. Non-standardised projection and sound in Indian theatres often added further noise to that already generated by the film and the soundtrack itself. Digital surround sound, according to sound designer Satheesh, was a 'tectonic shift' for Indian sound workers in more ways than one. For Pankaj Seal too, digital sound was a big boon, as the analogue technologies and practices prevalent in India restricted his ability to deliver 'a clean and crisp' soundtrack for the films he worked on. Digital sound not only allowed filmmakers to make complex, layered sound, but also helped them overcome the limitations of analogue optical sound.

> **PANKAJ:** I remember having used the whistling sound of a pressure cooker in one of my films (during the analogue period). When I heard it in a theatre, it was an unrecognisable sound, or rather a noise. In those days, we usually did not have sounds over 8 Khz. Now with Dolby Digital the frequency range has gone up substantially. One can easily use sounds up to 14Khz, without problems. Similarly, because of better dynamic range, it has become easy to reproduce very soft sounds, as well, which was difficult to achieve with optical sound. Thus, our capacity to do justice to cinematic storytelling has been vastly improved.

While the capacity of digital technology to deliver superior sound applies to film production across the world, in India, the migration from older generation and jaded analogue technology, directly to digital, was a significant leap. More than the immersive and directional capacities of digital surround sound, the improved capacity to reproduce a wide variety of sonic elements – both in loudness and pitch – was an advantage that immediately endeared digital sound to Indian technicians. Most sound workers I

interviewed admitted that digital technology led to standardisation of techniques of recording, mixing and reproduction, previously impossible to achieve in the Indian context. In Hollywood and other major western industries, technical standardisation was rigorous even in the analogue era, as evident from the writings of early sound era technicians like Carl Dreher (Dreher, 1931, p756–765). In the Indian context, however, technical uniformity and standardisation were vexing issues, and were largely only addressed with the coming of digital. The so-called new attention to sound was also related to the way companies like Dolby operated in India. Trained sound engineers recruited from the industry started supervising the 'final mixes' or the 'mastering process' bringing in a much-desired uniformity in the end product. Dolby's supervision of the final mix-cum-mastering replicated the systemic control that Technicolor had had on the image-making process in the 1950s and 1960s, with their own technicians assisting the film's cinematographer during the filming process (Hoch, 1942, p96–108). The digital era introduced strict standardisation of technical parameters, the requirement for which was built into the technology itself. Almost half of my respondents working in film sound in India emphasized that it is this standardisation of specs and better control of noise and other sonic parameters that has been the digital era's crucial contribution. Nearly 25% of the respondents felt that the ability to move sound around theatrical space was more of a novelty and ended up being a commercial ploy to attract audiences to the theatre and was not what made digital technology such a significant innovation. For them, digital technology brought in a regime of improved sound quality and allowed them to achieve their aesthetic goals, most of which were not achievable before due to the nature of analogue film-based processes. However, sound designers like Satheesh and Bishwadeep felt that the impact of surround sound went beyond merely standardisation.[85]

Surround sound, especially in its 5.1 format, had become an industry standard in the 21st century. While, mainstream films have adopted surround sound, often as a ploy to attract audiences, art and independent filmmakers often faced a dilemma about whether to use surround sound or to stick to mono. But their dilemmas did not end with just making the choice. Even if they did use surround sound, how often should they use the surround

[85] While standardization was built into digital technology and the architecture of surround and immersive sound – some of the features of immersive sound have been used effectively by Indian designers. I address this later in this chapter.

space and to what extent and when should they 'move the sound'? According to Satheesh, surround sound is a template which gives you the choice to either put most sound elements on the screen channels, rather than the surround channels. By putting all the sound elements on the screen channels and keeping the surround channels unutilised or sparsely utilised one can almost use surround sound like mono. Thus, many Indian films, while using surround sound integrated by default within the Digital Cinema Package (DCP), use it almost like mono. To understand the use of surround sound in an independent Indian film directed by a young Indian filmmaker, I started with an analytical case study of the soundtrack of *Chauthi Koot*, a critically acclaimed film from 2015 directed by Gurvinder Singh. The film *Chauthi Koot* (Fourth Direction), set in the western Indian province of Punjab, combines a realist theme with a formalist design, especially of its soundtrack. The narrative unfolds against the violent backdrop of the Khalistani separatist movement in India in the 1980s. *Chauthi Koot* is not a documentary chronicle of a violent struggle – it attempts to capture the unseen, 'hidden' part of the political turmoil. It delves into the fear, the anxieties, the mistrust and the indignity suffered by the ordinary citizen in the context of political violence. The film's two parallel narratives remain disjointed till the end and are only connected, indirectly, by the socio-political background of the violence. The narrative focusses on the plight of the Punjabi families caught between the might of the Indian state on one hand and the violence inflicted by the separatist armed militia on the other. A central theme in *Chauthi Koot* is the threat of violence and its traumatic impact on the human psyche. Director Gurvinder Singh conveys this threat through an array of filmic techniques – temporal distensions achieved through lingering frames, delayed cuts, use of off-screen voices, use of silences, as well as on-screen and off-screen sound effects. Gurvinder, in an interview, has invoked Robert Bresson's idea of the relationship between the sound and the image – especially the Bressonian idea that sound is more 'inward' with respect to the human sensorium, as well as Bresson's advice that the subconscious power of sound should be effectively harnessed by filmmakers (Bhatia, 2015). Gurvinder also refers to Bresson's prescription that sound and image should be used in a 'relay' so that they complement, rather than duplicate, each other (Bresson et al., 1986, p28-29). Gurvinder adds that he starts thinking and working on sound even while scripting the film. He observed that sound is too important to be ignored by a serious filmmaker. "Sound is a carrier of time. It is also a carrier of memory. You can have multiple sounds in a shot. Sound is multi-layered" (Bhatia, 2015). Gurvinder is referring here to the fact that, unlike visuals which are edited horizontally

across time, sounds can be layered in many different strands, vertically, with one visual combining with multiple sound elements. This layering of sound alluded to by Gurvinder has become easier to achieve because of digital technology, especially software such as Pro Tools and surround/immersive sound. Digital surround technology not only enables multiple layering and blending of sounds but allows film makers and sound designers to push sound from different directions towards the audience. The arrival of surround technology required audiences to reorient themselves to sounds coming from all directions, especially those from behind them (Smith, 2013, p331–356).[86] *Chauthi Koot*, although technically a surround sound film, avoids the over saturation of the soundtrack one associates with surround sound, while weaving a complex pattern of sounds and silence. The aural world of *Chauthi Koot* is replete with sounds that do not immerse but instead engages the spectator with their distinct presence. Instead of background music, Gurvinder chooses to use sound effects to create a kind of a symphonic effect that pulls the viewer into the narrative. In fact, the declared intention of the director was to avoid music and use effects sounds to create a sense of musicality (interview of Gurvinder Singh, 2018). The horn of an approaching locomotive, the boots of paramilitary men, the rumbling and the chugging of the old train, the howling of the wind blowing across the meadows, a dog panting, the croaking of frogs, the buzzing of flies, the whirring sound of a table fan, the howling afternoon storm, crackling of the old radio, or a single gun-shot ringing out at night – all are used in combination with silence and soft atmospheric sounds. Instead of placing these sounds in the surround channels to orchestrate three-dimensionality, the filmmakers have placed them along the screen. This strategy helped to emphasize and individuate these sounds and make them stand out with respect to the visual, rather than blend them with the enveloping soundscape, usually associated with surround/ immersive sound. The film's recordist-cum-sound designer Susmit confirmed this to me. He explained that the surround channels were deployed minimally and were used only for ambient sounds like thunder and strong winds. Diegetic sounds in *Chauthi Koot* are not entirely functional, but sometimes convey important feelings or emphasise the dominant emotion of a scene. The whirring sound of the old table fan in Joginder's room is not only an incidental diegetic sound, its persistent mechanical whirr evokes a sense of anxiety in the viewer, mirroring the terror in Joginder's mind. Unlike

[86] In the early days of 5.1 surround, sounds from rear channels were infamously identified as a distracting novelty – something that took the spectator's attention away from the screen as he/she looked backward trying to identify the source of the sound. Described as 'exit door effect', this distracting aspect of surround sound has been discussed extensively, both by practitioners and theorists (Holman, 2008).

conventional surround sound, *Chauthi Koot* does not overwhelm us sensorially, but guides our attention in a controlled way, alternating between image and sounds. The soundtrack of this film, thus, makes us reflexively aware of the filmmaker's formalist agenda, eliciting intellectual responses rather than sensory absorption. Gurvinder's use of sound, especially diegetic effects sounds, recalls Ritwik Ghatak's use of diegetic sound comment on the narrative as seen in *Ajantrik* (1958) and *Meghe Dhaka Tara* (1960) which was examined in chapter two.

5.4.The Shift from 'Surround' to 'Immersive' Sound – Auro 3D and Dolby Atmos

Immersive sound, also referred to as 3D sound or spatial sound, I argue here, is the next stage in the development of surround sound – a technology which allows sound to be precisely placed within the three-dimensional space of a theatre. While immersive audio forms are characterised by a considerably greater number of tracks than surround sound, the key difference is that, unlike conventional surround sound formats, sound can be placed not only along different horizontal planes in the theatre, but also along different vertical planes. This endows the sound not only with horizontal depth, but also the dimension of height to form a full 360-degree soundfield. When the height aspect of immersive sound is effectively mobilised, it produces the sensation that sound is not only coming from all around, but also from above. This creates an effect of being embraced or enveloped by the sound. From an audio engineering point of view, immersive sound formats can be either "channel-based" (like Auro 3D) or "object-based" (like Dolby Atmos). Auro 3D, released by Barco, and Atmos, released by Dolby Inc., are the two 'true immersive sound' formats dominating the cinema sound market. These two formats, competing with each other, represent two different approaches to 3D or spatial audio. While differing in architecture, both the formats include the third dimension of height along with the two dimensions of length and breadth offered by conventional surround sound. So, in addition to sounds coming from front and rear directions in conventional surround, immersive audio has sounds coming from the top or the roof of the theatrical space. This additional top channels in the immersive format are also collectively referred to as the 'voice of god' channels.

5.5. Surround/Immersive Sound in India: Contesting Views, Conflicting Discourses

Unlike sound designers such as P M Satheesh and Madhu Apsara, both whom started working in film sound from 1991, Indrajit Neogi, who began his career in 1981, encountered surround sound only in the late 1990s. He articulated why he is cynical about surround and multichannel sound.

> **INDRAJIT**: For me 5.1 does not work because of one simple thing – in cinema, the way the shots are taken, we follow an axis – the imaginary line. The moment we jump this line it creates a jarring effect. Visually we have got used to the change of angle, but with sound, if you start to keep on changing the angles and in a dialogue-scene keep moving the sound between left and right speakers, it will be a disaster.
>
> The effect of surround sound can be quite jarring. For example, in an over-the-shoulder (OTS) shot, if the answer is from the rear speaker it is quite jarring – although in terms of spatial logic it should come from the rear. However, such spatial placement of dialogue disorients the spectators.

Neogi's position reflects the 'screen-centric approach' that both contemporary film scholars and film sound workers have spoken about (Kerins, 2010, p5). For Indian sound professionals like Neogi and British re-recording mixer Dean Humphreys, whom I interviewed in London, the screen still remains the nodal point with respect to the soundtrack. A.M. Padmanabhan also observed that, while the audience is used to changing angles and perspectives with reference to editing and camera movements, they are uneasy if the sounds change direction to match the spatial logic of the scene. Neogi ascribed this curious relationship between image and sound to the fact that the screen is still the determinant of meaning in the cinematic experience, and that sound is still a 'slave to the image.' This example does tell us that the screen centric approach to sound design still remains a powerful factor shaping sound design principles adopted by most Indian filmmakers – both from mainstream as well as art cinemas.

In the same vein, Anup Mukherjee, a veteran sound designer and mixing engineer, asserted that sounds placed in the surround or rear space can potentially distract the viewer from the screen. According to Anup, surround sound elements, if not suitably

selected, can mislead the viewer and make him or her turn away from the screen and look behind to locate the source of the sound. This turning back or away from the screen violates the idea of visual continuity and realism derived from the 'classical continuity' of Hollywood.[87] Satheesh PM, who has designed a number of films in surround sound, also admitted that he uses surround elements carefully in order not to radically disrupt normative image-sound relationship.

5.6. Immersive Sound and Sonic Details

There was also considerable divergence of view among practitioners when it came to the notion of 'sonic details' in immersive sound. The interviews also threw light on their understanding of Hollywood practices and the relevance of these practices to Indian conventions and styles of filmmaking. Hollywood filmmakers, much before digital sound was introduced, deployed detailed and intricate sounds both in large studio-based productions and independent authorial cinema. From Robert Altman *Nashville* (1975) to Francis Ford Coppola (*The Conversation*, 1974; A*pocalypse Now*, 1979), from David Lynch (*Blue Velvet*, 1986) to the Coen Brothers (*Barton Fink*, 1991), filmmakers did not hesitate to use multi-layered sound, despite the huge amount of labour such work entailed. In the digital age that tendency has been exacerbated in Hollywood, with sound designers and mixers using anywhere between ten and twenty times more tracks during editing, compared to the analogue period. In a published interview in the *Movie Sound Newsletter*, supervising sound editor Richard Anderson refers to this aspect of the contemporary Hollywood film as having soundtracks which are much 'denser and busier', with every visual detail and movement backed up by sound (Stone, 2016, p111).

Most of the Indian film sound workers I interviewed admired the dogged quest for visual and aural detail in Hollywood films, irrespective of genre or even the overall scale of production. But while budgets and resources in Hindi film productions in the analogue era mostly precluded such detailed soundtracks, the aesthetic and practice cultures of this industry privileged music and dialogue. Some of the Indian film-workers I interviewed, especially from the analogue film era, felt that scrupulous attention to

[87] I have explained this issue, sometimes referred to by theorists as the 'exit door effect', later in this chapter.

naturalistic constructions of sound and fidelity to the real world was not something they aimed for, and resources were not the only factor that discouraged Indian sound editors from using excessive details. Sound designer Padmanabhan referred to the Hollywood approach as the 'what you see, is what you hear' method of doing sound. His contention was that we do not need to hear everything we see on the screen and, as a sound designer, he felt that it was often unnecessary. Kuldip Sood, who has mixed over three hundred Mumbai films in his three-decade long career as a re-recording engineer in the analogue era, echoed similar views, explaining his position in detail:

> **KULDIP**: In Hollywood films if there are ten things happening on the screen, you will have at least ten equivalent sounds. They keep on adding sounds till the soundtrack is saturated. In our films, emotion plays a very important role. We are emotional people and for us music is important.

Thus, the analogue era Indian soundtrack, both due to technical reasons and lack of time, were much less dense compared to Hollywood. Sood is referring to the fact that, while detailed effects and ambience tracks were often prepared at the editing stage in the analogue era, the mixing process might ignore or suppress some of these sounds and they might be either softened or completely taken out while simultaneously music levels were increased. According to Hitendra Ghosh, the final mix in most analogue era mainstream Indian films emphasized dialogue and music as being central to the essential mood, given the dominance of the melodramatic style. Ghosh added that letting dialogue and music dominate the soundtrack was both a practical necessity as well as an aesthetic choice. The acoustics of the theatres in India were often poor and inadequate. External sound invaded the auditorium, interfering with the film's soundtrack. It was important for the sound person to ensure that the dialogue is heard properly and is not drowned either by noise from outside, or cumulatively through the effects sounds in the film. Apart from dialogue, music was the most important component, especially in the melodrama-dominated mainstream films. Mixing engineers had to be sensitive to this stylistic bias. The approach of emphasising music in the final mix, which was popularised by re-recording mixer Mangesh Desai in the analogue period, still remains a defining aspect of Indian mainstream films and marks a key difference with Hollywood. This mixing style has endured despite better sound-proofing of theatres and digital technology. Most sound artists from that analogue era

subscribe to the idea that naturalistic aural details should be considered secondary to the requirements of a scene.

> **KULDIP**: Imagine an outdoor love scene in a railway station where a boy is talking intently with a girl. There are various ambient sounds in the station which is a very potent soundspace. But will the characters be noticing or hearing those sounds? What is the point of using so many sounds, when the purpose is to underline the romantic mood of the scene?

Sound is a subjective experience and unlike microphones, the human ear is capable of picking up only the sounds it wants to hear, rather than perceiving all the sounds that are in the soundfield. Sood, here, is arguing in favour of a perceptual realism, as opposed to spatial naturalism. He feels that this naturalistic approach of including every possible sound in the final soundtrack is the trademark of the Hollywood style; and even European cinema, usually avoids such dense tracks. During the course of the interview, Sood claimed that during his career he always approached sound 'through the brain and heart, rather than merely ears.'

> **KULDIP**: It's not that we did not do detailed work, but such details will only be heard when really necessary for dramatic reasons. The mind has the capacity to switch off certain sounds that are not required – for example if I am in an intense conversation with you, I might not be paying attention to the sounds happening in the immediate environment. These may be car honking, birds, factory siren – there may be four different things happening, but I do not want to hear them. Our mind has this unique capacity and I feel film sound should reflect that. Otherwise, sometimes, we would miss out on the drama by trying to stick to the details.

Padmanabhan and Kuldip, possibly because of their analogue era training and work culture, believe in minimal and precise of sound, using assertion that the human ear cannot experience the detailed sound, to support their view. On the other hand, Satheesh observed that, just as in orchestral symphonies there are hundreds of musicians that add depth and richness to the sound, detailed and multi-layered effects, dialogue and music have a powerful effect on listeners. "It is not the individual sound, but the cumulative effect of all the different instruments, each played by dozens of musicians, that matter," Satheesh added.

The component of the soundtrack that Hollywood filmmakers paid relatively more attention to, in the analogue era, were the sound effects tracks (Stone, 2016). This practice continues even now, with big Hollywood films often using a phenomenal range of incidental sounds, Foley and atmospheric sounds, adding up to 400 or 500 tracks in postproduction (interview of Kunal Rajan, 2017). In films from Mumbai, Chennai or Kolkata the average number of tracks is usually much lower – about 100 to 150 tracks. As underlined by Sood, the effects sound in Indian films is much less complex and the emphasis is on dialogue and music. For Indrajit Neogi, a sound recordist and designer active between the 1980s and 2010, the supremacy of dialogue and music has been a problem, rather than a strength, for the motion picture soundtrack in India. He also felt that the Indian or Mumbai approach to the soundtrack is, and always was, different from that in Hollywood.

> **INDRAJIT**: Yes, we were using technologies differently, it is to do with the ways we use dialogue and music. Even now, in most of the films, dialogue has to be 80 percent of the overall elements of the soundtrack, music has to be 50 percent of the rest and then if there are gaps – then we have the effects, and then if there are further gaps left, we bring in the ambient sounds.
>
> In Hollywood the ratio is different – to begin with, dialogue is never 80 percent of the overall sound elements, it is 60 percent, then ambience and effects will be introduced. So, there is a nice blending of dialogue and ambience. And the music is background music in the true sense, but in India, the background music is actually 'foreground' music. That is how mainstream films are – both in North and South India. Karan Johar or Aditya Chopra are doing the same thing. Aditya Chopra's films are full of music. The moment you are filling up the soundtrack with so much music, your need for ambience sound, effects etc. goes down. One great thing about Aditya was that he was spending a lot of money to get the right ambience track. The version prepared for the international/dubbed M&E prints, if you check, will have M only and hardly any E. There is a nervousness that without music the scene will not make sense to the audience.

Neogi's reference to music being overstated in Indian film as opposed to Hollywood films is a characteristic generalisation that filmmakers in India often make based on second-hand information or on their own personal taste in Hollywood films. Music and

sound design in Hollywood cinema are linked to genre and style: – action, comedy, melodrama and realistic films do not use music in the same way as each other. While mainstream Indian films do over-emphasize background music in relation to other non-verbal sounds, there are Hollywood films – especially action-based films, period dramas and other genres – where music and dialogue are both dominant. From *Mission Impossible* series (1998-2018) to *Dunkirk* (Christopher Nolan, 2017) music is always pronounced and dramatic. Tejaswini Ganti, in her study of film production cultures of Hindi Cinema, refers to this as an 'imagined Hollywood'' – a construct that Indian filmmakers use to either align themselves with or isolate themselves from Hollywood. Neogi's view of music and sound in mainstream films differs radically from that of Kuldip Sood, who felt that their music-centeredness makes Mumbai films distinct and special and is not an aspect of Hindi cinema that makes it inferior as Neogi had hinted. This divergence of views is primarily linked to the fact that Neogi has dominantly worked for art and independent productions, while Sood was in the centre of mainstream industry and worked for all the major filmmakers of commercial cinema. Non-mainstream films, especially from the Parallel/New Cinema Movement had mostly attempted to move away from music-dominated soundtracks towards one where natural sound is privileged.

Because of the dominance of music, effects – especially atmospheric or ambient sounds – were largely ignored or underplayed in the analogue era in India. Sound scholar Buddhaditya Chattopadhyay calls this a 'deliberate neglect of ambience' in favour of an affective style of sonic design, in which background music, as well as songs, played a dominant role" (Chattopadhyay, 2015, p55–68). Pankaj Seal felt that such a neglect of ambience is both stylistic as well as technical. Stylistically, it showed the dominance of melodrama as I argued earlier in this chapter; technically it was because of the limitations of analogue technology and the inability of Indian technicians to reproduce certain sounds within the restrictive technological tools available to them in the analogue era, as argued below by Pankaj Seal.

> **PANKAJ:** The ambient noise levels in the theatres were exceptionally high because of traffic sounds, exhaust fans, kids crying, which are self-determining natural sounds, unlike background music – the level of which can be changed. You could not raise the level of footsteps to the level of explosion sounds – these sound levels are self-

> determined. There was no way to play with their levels. Moreover, if one tried to tinker with them, they would have been drowned out by the ambient noise of the theatre. Other than screams, sirens or train sounds which are loud, you couldn't play with sounds which are not loud. Murmurs, soft traffic sounds, etc. will be drowned. So along with the dialogue, you could use non-diegetic sounds/music and use them at a level that can dominate the noise, in this case music. There is no optimum level for non-diegetic music. The level at which you could play a violin in the background does not have any real-world reference. You could raise the levels of these sounds, without any issues. These gave the licence to the analogue era mixers to increase the level of music.

Hitendra Ghosh, whose career as a re-recording mixer in Mumbai spans four decades, also supported the view that the limitations of analogue sound were responsible for the domination of music in Indian cinema of that period and the corresponding neglect of diegetic effects sounds. This approach was not restricted to popular and melodramatic forms only. The dominant background music in the films of art cinema masters like Satyajit Ray points to a bias towards music. While the popularity of melodrama and recorded music in India is often taken as the reason for this, the testimony of sound workers above points to the fact that technological factors may have aggravated this tendency (interview of Ghosh, 2016). The adoption of digital surround sound made it possible for a sound designer to use intricate and multi-layered atmospheric sounds to create drama and affect. According to sound designers Boby John and P M Satheesh, the digital tools enabled them to use atmospheric and other diegetic sounds more effectively compared to the analogue era and reduced the extreme dependence on music in Indian films.

Digital Surround Sound brought in the convention of creating a 'soundbed', a continuous distinct, sonic foundation of ambient sound, for the entire film. The other important and discrete sound effects are added later on. This practice of integrating ambient sounds into the bed channels has now been carried into the era of so-called 'true immersive sound' - a phrase used by Dolby Atmos and Auro 3D to promote their technologies. Bed channels now provide a dedicated conduit for ambient sounds and are a useful tool for Indian sound designers, which can be deployed for the construction of elaborate, noiseless, background soundscapes, technologically unattainable in the analogue era.

Satheesh further stressed that the limitations of mono sound had prevented Indian sound designers of the analogue era from creating the 'detailed' sound design one hears in Hollywood even in the celluloid era (interview of Satheesh, 2016). In the Anglo-US industries, the soundtrack's profuse details would often be created through the rigorous process of premixing. The teams working on the soundtrack were bigger and had a longer time to work on the tracks. According to Bishwadeep Chatterjee, detailed work, even when done in India, was not reproduced adequately in the theatres. This was the case both with *Sholay* (Ramesh Sippy, 1975) and *The Burning Train* (Ravi Chopra, 1980), the mono versions of which were shown across India. The details were often lost in the mono version due to technical issues like loss during the 'optical transfer'.[88] According to Satheesh, the arrival of digital surround sound (DSS) in the 1990s, and immersive formats since 2012, equipped sound workers in India with the necessary resources, not only to work on aural details but also to have the confidence that the fruits of their labour would actually reach the viewers.

Satheesh's view, accepted by most of my other respondents, implied that the adoption of digital surround sound opened up new dimensions in Indian film sound. Intricate, dense sounds, almost akin to Hollywood's, have started keeping sound editors busy like never before. Sound editors I spoke to mentioned that Indian sound editors have in recent years started using the 'what you see is what you hear' approach, one associates with Hollywood sound. The approach now is to create elaborate tracks, with sounds for every possible 'sources' on screen, so that the re-recordist has the choice of whether to use it or not during the final mix. The so-called 'true immersive sounds' like Dolby Atmos and Auro, that emerged in the second decade of the 21st century, expanded the capabilities of surround sound and helped Indian sound designers to go for elaborate sounds if and when required.

5.7.Working with Atmos and Auro 3D in India

The first Indian film to use Atmos was the south Indian film *Shivaji 3D* (S. Shankar), released in 2012, which also happened to be the year the format was launched by Dolby

[88] 'Optical transfer' refers to the conversion of the magnetic mixed final sound track to optical sound. This transfer was necessary for generating the final prints which married celluloid film-based images with optical sound.

(Times News Network, 2012). This was a major film production from the Tamil film industry in Chennai, featuring the Tamil 'megastar' Rajanikanth, and was produced to celebrate the centenary of AVM studios in Chennai. The Atmos sound was part of this remastered 3D version of the film, the 2D version having been released in 2007. As opposed to Atmos which was launched amidst a lot of fanfare, Auro 3D was launched quietly around the same time but was deployed in a number of films.

One of the independent films to deploy Auro 3D in India as early as 2013 was the film *Swapanaam* (The Voiding Soul, Shaji Karun, 2013) made in the Malayalam language. As the second case study in this chapter I analyse the sound design of *Swapanaam* to understand how the aesthetics of immersion was used by the filmmaker. While *Chauthi Koot* (2017) tends towards a Bressonian minimalist sound aesthetic, *Swapaanam* celebrates the expressive power of sound through a selective and careful mobilisation of the capacities of immersion. *Swapaanam* is the sixth film directed by cinematographer-turned-director Shaji Karun. Shaji's debut film *Piravi* (The Birth, 1989) won the Golden Camera in Cannes film festival in 1989. Compared to the restrained and contemplative realism of *Piravi, Swapaanam* is stylistically expressionistic and flamboyant, despite being a moderate budget non-mainstream production. At the heart of the film is a musical instrument – a traditional drum called *Chenda,* played in Southern Indian rituals and festivals. The film's melodramatic narrative reminds us of the tragic operas of Verdi or Puccini. Unni, a young drummer in a family of *Chenda* players, is trapped in an unhappy marriage. Spurned by his wife and repelled by her hatred of drums, Unni gets into an intense relationship with the classical dancer Kadambari. He finds this relationship with the dancer joyous and creatively fulfilling, but social disapproval tears the lovers apart. Meanwhile, Unni's fame as a master drummer threatens his elder brother, who conspires to destroy him. Thwarted love and the cruelty of the family destroy Unni's spirit and he descends into insanity.

Shaji, the director and the writer of the film, deploys the formal elements of melodrama – songs, elaborate choreographed *Chenda* performances, a web of characters and a Greek tragedy-like plot. To design and mix the soundtrack Shaji decided to use Auro 3D – to make use of the 11.1 channel-based architecture. According to Barco Technologies, the inventors of Auro 3D, *Swapaanam* was the first Malayalam language film to use this format (Barco, 2014). We encounter an imaginative use of immersive sound in the very

first scene of the film, – where a devastating fire breaks out in the mental hospital where Unni is incarcerated. Death and destruction are evoked through the sounds of fire crackling harshly and filling the 3D soundspace as Unni lies chained to a post. Apart from this scene, it is music, rather than effects, that dominates the immersive mix of the film. Music drives the narrative of *Swapaanam*. Music is not only the theme and the subject here, but a formal element around which the film is designed. According to the film's music composer Sreevalsan Menon, the centrality of music in *Swapaanam* prompted Shaji to opt for an immersive sound format for his film (K.Pradeep, 2014). The films recordist Krishnan Unni advised the director that recording the performances with a surround microphone and reproducing it in surround sound would be the only way of ensuring that the sound does not distort (Press Information Bureau interview of Shaji Karun, 2014).

The *Chenda* drum is usually played in large ensembles and the performances are often ritualistic and aesthetically coded with the rhythmic discourses of classical music. According to Shaji, a hundred drummers performing together is like a 'drum symphony' and he had to capture the sound of it (ibid). The immersive capabilities of Auro 3D allowed the designer and mixer to effectively reproduce the sound of the *Chenda Melam* (large drum ensembles) recorded by Shaji and his team. It also gave the sound mixer the ability to manipulate and control the tonal quality of the music so as to convey the mental state of the film's protagonist. As the sounds and the music of the film continuously moved between the indoor and the outdoor, the surround sound became a vehicle for expressivity, conveying rapid shifts in the soundscape and emotions. We are not subject to a deluge of sounds but exposed to powerful emotions by way of the rich musical soundscape constructed by the filmmakers with the help of Auro 3D.

5.8.Auro vs Atmos

While the use of Auro grew steadily, the use of Atmos took a rapid leap due to aggressive marketing by Dolby. In 2015, the release of the South Indian spectacle *Bahubali – The Beginning* (S S Rajamouli) with Atmos sound was widely hailed as one of the major achievements of Dolby in India (IANS, 2015). According to Dolby's then regional head, Pankaj Kedia, the company was aiming to release *Bahubali – The Beginning* in all one hundred Atmos-enabled theatres in India. Kedia described the

growth of Atmos "from a single theatre two years ago to a hundred theatres" as an encouraging development. When I interviewed Dolby engineer Dwarak Warrier in September 2017, he placed the number of Dolby Atmos-enabled screens in India by then at 314. The figures prove that Atmos has proliferated and films should embrace Atmos to be able to respond to this market. While the film exhibition market is propelling the growth of Atmos, sound editors, designers and mixing engineers have to adapt to it. How are Indian filmmakers using Atmos and its spatial capabilities? Do Indian genre films, given their stylistic priorities, gain anything from immersive sound? As part of the process of analysing the use of Atmos in Indian films, I will examine two period films – *Bajirao Mastani* (Sanjay Bhansali, 2015) and *Bahubali 2: The Conclusion* (S S Rajamouli, 2017) – to analyse how the immersive capacities of Atmos have been put to use in these two films and what kind of shifts they indicate.

Bajirao Mastani was a period film, ostensibly based on a historical novel *Raau (*1972) in the Marathi language by Nagnath S Inamadar. The novel depicts the quasi-historical account of the romance of the 18th-century Hindu warrior leader Peshwa Baji Rao and the Muslim warrior princess Mastani. The film was mounted on a huge scale, reinventing the form of historical melodrama in Indian cinema. The film, curiously, combined a richly expressionistic style with realistic details of time, place and event. The visual design was extremely detailed compared to the average Indian historical dramas, with elaborate props and costumes, reminiscent of the historical films of Sohrab Modi (*Mirza Ghalib*,1954) and K. Asif (*Mughal-e-Azam*,1960). High Definition digital video imagery combined live action with digital compositing to construct elaborate action and war scenes. Elaborate studio sets and spectacular landscapes were combined with digitally rendered hybrid backdrops, drawing comparison with the Chinese martial art dramas of Zhang Yimou and Ang Lee. The film's sound designer, Bishwadeep Chatterjee, felt that the visual details provided the right backdrop against which to do detailed work on the soundtrack.

> **BISHWADEEP**: As far as the soundscape of *Bajirao Mastani* is concerned I wanted to make it a little more interesting … the starting scene, where Bajirao is proving himself … the creak of the bow, the anticipation of whether he will do it or not, so in that moment of silence, even a small drop of water can create a certain tension. All

> these things add to the design, there is so much you can do in a period film by way of design with immersive audio.

According to a short video produced by Dolby India, extremely detailed Foley work was done on *Bajirao*, often using original material and instruments, keeping in mind the need to retain authentic sounds.[89] Sounds from wooden doors, original footwear, swords and armour from the medieval period were recorded and blended with Foley effects to simulate the sonic backdrop of medieval India. Chatterjee described his approach as below

> **BISHWADEEP**: I wanted the rustling of the silk, the clinking of the jewellery, the sounds of the *payal* (Indian anklet), horses' hooves: all these are layered Foley sounds which define the character of the film, give it texture…With Dolby Atmos there was a lot of detailing that went into the sound. Of course, the obvious examples were the war scenes, where the arrows were flying from the top, the cannonballs were flying from the top of the castles, the swoosh of Bajirao's weapon which was supposed to be the *Dandpatta* (the flexible sword). Every time he rotated the weapon the sound went all over the heads of the audience. While we did successfully work on the sounds of war earlier, Dolby Atmos has made that a little more cohesive.

The flying arrows, the swoosh of the sword, the rumble of cannonballs etc were instances in which the 'voice of god' or the overhead channels of Atmos could be effectively mobilised, intensifying the war scenes and thus giving this period drama a huge sense of scale. The construction of a dense sonic space, achieved through the placement of 'sound objects' that correspond to the different points on the screen, helped to create a richly affective experience. Having control over hundreds of individual sound elements allowed the sound designers and mixers the ability to make sounds come from all directions and to move them around in the theatrical space. Both Bishwadeep and Satheesh, the sound designers who worked on these two major films that used Atmos, testify to the capacity of this immersive form to perfectly blend with the generic requirements of historical and mythological spectacles, and probably contribute to the reinvention of these genres in Indian cinema. The fact that a major filmmaker like Sanjay Bhansali followed up *Bajirao Mastani* with another big historical drama, *Padmavati* (2017), testifies to the new-found significance of the genre and the

[89] The video on the sound of *Bajirao Mastani* is available on YouTube (https://www.youtube.com/watch?v=XFF_4c41IMg)

ability of the sound technicians to create drama and affect with the immersive sound format.

The film *Bahubali 2: The Conclusion* (S. S. Rajamouli, 2017) is the sequel to the equally popular *Bahubali 1: The Beginning* (S. S. Rajamouli, 2015) a generic spectacle produced as a Telugu-Hindi bilingual. A BBC report describes the film as having "thrilling royal hunts, roaring elephants, strapping heroes and dazzling heroines, complete with the Indian staple of song and dance. Set in the fictional kingdom of Mahishmati, *Bahubali 2* has two swashbuckling cousins in a dynastic war over the kingdom" (Rashid, 2017). The film's mixing engineer, Justin Jose, described the use of immersive sound capability in an interview he gave to an online technical journal.

> Film was natively mixed in Dolby Atmos with 9.1 bed and 110 objects on the maximum side. We averaged around 60 objects per reel. The mix setup involved three Pro Tools HD workstations running simultaneously handling total average of 700 voices in every reel (Jose, 2015).

The listing of the sound elements by Jose gives an idea of the sheer scale and the amount of sound elements used in the film. It indicates a massive aural canvas that matches the equally audacious visual ambition of the film. The film's action-oriented screenplay and visual look gave the sound team ample opportunity to explore the versatility of Dolby Atmos. Being set in a quasi-mythological, historical space, the action-driven narrative and the visual effects-based design provided an appropriate template for using immersive audio. According to Satheesh, who designed the sound for the film, described the challenges of working with the effects-based generic films.

> **SATHEESH**: *Bahubali 2* was a massively challenging process, given its immensity and the fact everything had to be scaled up to match the film's requirements. The film had tonnes of CG, that proved hugely challenging. Everything is visually possible now – what the camera can't cover can be generated through graphics. When one is working on a CG based film in India, one does not see the full visuals, you only see some layers, sometimes till the last day of the design. One would have to imagine the visuals and work accordingly, so in our imagination we multiply things.

> Often sound work is not what you flash around. Our purpose is to keep people glued to the story. So, when we are designing sound the moment you overdo it or the moment you say "I am here, this is my sound" . . . people might be taken out of the story, which you don't want. The idea is to pin them down to the story, by creating an effective soundtrack. I don't use sound that is gimmicky, that comes from all over the place and can take you out of the narrative. I don't do that kind of thing" (Mayan Brothers, 2017).

One of the features that became evident during my field-interviews was the trademark styles of sound designers and mixers. The way they use sound is supposed to leave a signature and can be identified, especially by their peers, as being of a certain provenance. Satheesh, in the interview quoted above, is arguing against a signature style. He is more concerned about using sound so as to 'pin the audience to the story'. According to him, if the design is identified as 'good', then it cannot be effective. Despite the complexity of stitching together image and sound effectively in digital cinema, sound designers do not have the scope to work with the complete visuals. Both Satheesh and Bishwadeep were candid about the fact that with CG-based spectacular films sound workers do not have the finished visuals to work with. They often depend on the storyboard and some basic layers provided by the visual team. Given this limitation, it is particularly challenging for the sound team to build the soundtrack. The sound team has to work with whatever little has been supplied, making it up with their own imagination. This is an aspect of sound design that is peculiar to the digital era and analogue sound editors were at an advantage as far as dealing with complete visuals was concerned.

5.9. Immersion and its Discontents

Sound editors and sound designers working with surround and immersive formats have often been accused of putting sound unthinkingly all over the theatrical space – especially in the rear of the theatre or behind the audience. The term 'exit door' effect has come into being to describe the sensory disruption experienced by the audiences when they turn back or look behind them as a result of an unexpected sound from the surround speakers. This, as indicated earlier, is seen as being disruptive and is an issue with surround sound that has not been fully resolved even after three decades of existence. The researcher could recall examples of early films from India deploying surround sound where viewers were distracted by sounds coming from behind them and

were unable to momentarily connect these sounds to the narrative or the diegesis. *Chokher Bali*: *A Passion Play* (2003) a film made by the late Rituparno Ghosh, a well-known filmmaker from Bengal, had atleast two strong instances of exit door effect. Editor Sumit Ghosh also asserted that in those particular instances from *Chokher Bali* the use of surround was problematic. The intention of the sound editors was to denote the space outside the screen and towards the 'audience space'. Mary Ann Doane's contention that the space behind the audience is a 'taboo space' indicates the discomfort felt by a lot of sound workers when mobilising that space in their design (2016).

While Atmos by Dolby has become the dominant industry standard for immersive sound and used in hundreds of films across the world, it has been subject to critical scrutiny both within the film fraternity and academia. Gianluca Sergi, a historian of Dolby sound, wrote one of the earliest critical surveys of Atmos in 2013, a year after Atmos' official release in 2012. While acknowledging Atmos as a significant new way of approaching the soundtrack and technology, Sergi examined the claims made by the corporation and its attempt to market this as the 'future of film sound'. Sergi also raised some crucial questions about the long-term impact of Atmos on filmmaking, on practice cultures and on cultures of viewing. The primary strength of the technology, he feels, is Atmos' break with the architecture of the 'channel based' formats like surround 5.1 and 7.1.

Sergi adds that the rear speakers in Atmos have the same timbre and frequency reproduction capacity as the front speakers. This was not so in classical surround systems. This ensures that the quality of sound from the screen-centred speakers will be same as the sound from the speakers placed around the auditorium. The technology allows the filmmakers to move the sound around within the auditorium with a freedom and relative ease unknown in conventional surround. In a way, claims Sergi, Atmos justifies the claim by Dolby chief Ioan Allen that the multiplicity of sources of sound in the auditorium is "sufficient […] to give a good illusion of an infinite number" (Dolby, 2012). Dolby engineers describe it this way: "in everyday life many sounds originate from randomly placed point sources". In the natural world sound comes from all directions, from multiple trajectories and theoretically plays out as an infinite number of 'aural objects'. Atmos tries to incorporate this logic of the soundspace by opening up a route towards 'infinite' sources of sound in the theatre in its attempt to

replicate a natural soundfield. The design of Atmos thus represents a sophisticated version of spatial audio, where sounds in the soundtrack correspond to specific locations or points on the screen or the visuals. If one examines this statement in the context of claims to 'surprisingly lifelike' sound, – the sonic nature of Atmos forces us to confront one of the central questions of filmic representation. Like most new cinema technologies, Atmos attempts to narrow the perceived gap between reality and its representation, facilitating a seamless correspondence between the two.

The other important feature of Atmos that Sergi underlines is that the technology is targeted towards an exhibition market where theatres are still equipped with diverse kinds of systems ranging from Dolby 5.1, 7.1, and Sony Digital to DTS and others. Because of this diversity, theatres have various kinds of speaker configurations, depending on the system installed in the theatre. To solve this problem, Dolby engineers have devised one integrated Cloud Delivery Platform (CDP) in Atmos, rather than multiple prints and delivery formats. Once mixed and mastered in the Dolby Atmos format, the format's 'intuitive design' can read different speaker configurations, irrespective of whether they have a 5.1 or 9.1 configuration. The sound plays out, according to Dolby, as the best possible sound in that scenario, with metadata reading the playback milieu and directing the sound to the best possible speaker, even if the theatre lacks the Atmos speaker system. The 'intuitive design' that Dolby talks about actually refers to Atmos' inherent design and aural logic "which uses a digital rendering algorithm that is responsive to variations in theatre room size and loudspeaker configuration". According to Dolby, this represents the central motto of Dolby "Author Once, Optimize Everywhere". The intention is to make the post-production and mixing process simpler, as the mix engineers do not need to author radically different versions for different viewing contexts, but tweaks are done within the system itself.

> … we're taking and controlling the true intent of the mixer and now allowing that single, distributable package, our file, to play out in multiple different environments. So, they'll be able to play the 7.1 on the main screen, and as the movie plays down in size, they may have to provide another version of the movie in 5.1. So now the same version can play out during its lifespan inside that movie theatre (Dolby, 2012).

Sergi, however, is apprehensive about what this intriguing feature of Atmos means for the filmmakers and sound mixers and is concerned whether "filmmakers (will) feel

confident that their Atmos' uber-mixes play as coherently, from a narrative standpoint, in simpler 5.1/6.1/7.1 configurations, in spite of Dolby's reassurances" (Sergi, 2013, p107–121). Benjamin Wright, commenting on the 'ideology' of Atmos mixing, describes this Dolby promoted 'intuitive' quality of Atmos as a feature that marks "a shift in creative workflow that requires mixers to adapt their professional style to the nuances of the Atmos system". He sees it as an attempt to 'remap' practice cultures in major film industries and align them with the dominant practices of Hollywood (Wright, 2015, p227). Wright reiterates the importance of sound mixing by quoting the filmmaker Robert Zemeckis, who famously described the mixing process as 'baking the cake.' Despite all the ingredients or sound elements being there, the baking process is critical to the soundtrack. Wright goes on to argue that Atmos can potentially undermine the sound mixing process by "leaving the final word to be rewritten by a computer algorithm that approximates the location of individual sound elements". For him this is equivalent to the 'unbaking of the cake' – a metaphor he uses to argue that the algorithms designed by Dolby can undo the integrity of the mix and hence the sound mixer's and designer's work. According to this interpretation, the Atmos mix playing on a 5.1 system is an algorithmic approximation of the original track and not a human version. This, he adds, was not possible in the channel-based formats, where "mixers prepare sound and music 'stems' that 'bake' all the sounds and their positional data into 5.1 or 7.1 channel arrays." (Wright, 2015, p227). Wright asserts that these restrictions imposed by Atmos, combined with the promotional material, manuals, and workshops for sound professionals carried out by Dolby that also introduce technical and artistic conventions aligned to their technology, can disrupt the practice cultures of the 'creative community' of re-recording mixers.

Satheesh PM, one of the foremost Indian sound designers to embrace Atmos, disagrees with Wright's interpretation of Atmos and its limitations. During my interview with him Satheesh explained that the automatic 'down-mixing' feature that makes Atmos compatible with any exhibition space is not foisted on sound designers or mixers. He maintained that he always did separate 'down-mixed masters' for non-Atmos formats like 5.1 and 7.1 and did not allow the digital capabilities of Atmos to decide whether and how it will play back in other formats. He added that Atmos' 'intuitiveness' is a strength, rather than a weakness, as the Atmos sound, on detecting non-ideal speaker positions, always seeks out the next best speaker positions and gives the best possible

result under ‘non-ideal theatrical circumstances’ (interview of Satheesh, 2016). Academy award-wining sound designer Resul Pookutty also emphasised that Dolby Atmos is a new tool and sound designers and mixing engineers can tweak it to suit their own specific requirements and are not dictated to by it (interview of Pookutty, 2017).

5.10. Conclusion

Sound in Indian cinema, which was largely monaural in the 20th century, has adopted multichannel sounds to its own advantage, and largely in accordance with the aesthetic needs of Indian films. The dialogue and music-centric aesthetic of monaural audio in Indian cinema was displaced by the complex, layered surround sound-based sonic designs which mobilised effects and ambient sounds. Sound designers found in the expanded capabilities of digital technology a tool which allowed better reproduction of sounds of varying loudness and pitch. It also brought easier ways to achieve and maintain technical standardisations, which eluded sound workers in the analogue period.

Surround and immersive sound forms have evolved out of the persistent demand for cinema to embrace visual and aural technologies to create a world that creates a sensory envelope around the viewer. In effect, the immersive technologies strive to blur the boundary between the corporeal, natural world and the world of the diegesis. They claim to pull the spectator into the fictional world and to narrow the perceived gap between reality and representation. Immersive technologies like Atmos and Auro have also contributed to the reinvention of certain genre forms like historical melodrama – forms whose dramatic effects are reinforced by the spatial capabilities of Auro and Atmos. Apart from mainstream genre films, surround and immersive forms have also enabled Indian art and independent filmmakers to use effects and ambient sound strategically, and reduce their dependence on music.

But the emergence of immersive sound has also given rise to debates within the industry about the nature and purpose of film sound, the relationship between image and sound, and the primacy of the screen as the determinant of meaning and diegesis. These debates, we have observed in the case of Atmos and Auro, have been mirrored in academic discourses which see these technologies as impinging on the agency of the sound creators. But while a few practitioners, especially those who began working in

the 20th century, find these changes too radical and disruptive, the technology has found acceptance among influential sound professionals. Thus, scepticism about 'immersion' co-exists with a belief in the potential of sound technologies to transform the cinematic experience. Sound professionals in India, from both the analogue and digital eras, feel that playing around with sound direction indiscriminately has the potential of distracting the viewer and taking his or her attention away from the screen. My field research found that, – depending on the generic nature of the film and its specific narrative requirements, sound designers using immersive sound usually adopt a conservative approach, putting most sounds 'on the screen' (the industry term for front speakers). They do not want to radically disrupt the normative relationship between visual and sound, giving viewers the scope to adapt to the idea of immersion. On the contrary, their approach is calibrated to get the audience to gradually adapt to the experience, instead of taking one dramatic leap towards sonic immersion.

CHAPTER 6: Digital Futures

6.1. Uncertain Utopias

While digital technology has transformed filmmaking across the world, my research has indicated that the impact of digitalisation on the Indian film industry is substantially more complex and multi-dimensional compared to other major film industries from around the world. My survey of the practice conventions shows that film sound gained more attention from Indian filmmakers following the adoption of digital technology in the early-21st century than it had received in the analogue film era. There has been an increased awareness that cinema was equally aural, or even more aural, than it was visual. The possibilities offered by digital technology, especially when it comes to film sound, seemed enormous. Thanks to the dissemination of consumer digital sound technology and audiophile discourses, issues pertaining to sound quality have come in for particular attention in India, as in the rest of the world.[90] The perception that the film audiences in India deserve better sound – both in terms of technical quality and aesthetics – have started to dominate practitioner ideologies. Sound workers I spoke to underlined that the latent potential of sound in Indian cinema could only be actualised after the perceived weaknesses of analogue technology were addressed in the digital era. Technological change does bring about shifts, as the arrival of talkie films and colour had shown us. But sound and colour did not bring in such a wide range of issues, especially those related to quality, standardisation, aesthetics, material and practice cultures, as did the adoption of digital technologies.

Noise generated by the apparatus (primarily magnetic tape and film) and noise from the soundscape were seen as major impediments in the analogue age. Sound practitioners felt that the aural potential inherent in the film medium was never actualised in the 20th century, not only because analogue film and its elaborate processes prevented quick and precise work, but more importantly the 'culture of neglect' associated with the analogue sound in India in the 20th century, was seen as a hurdle in achieving a creative and technically faultless soundtrack. The practitioners referred to the fact that digital technology has freed them from the limitations of film era and enabled them to creatively

[90] The ease of handling and sharing digital audio files, the explosion of mp3 music, considered inferior to Audio CDs, were some of the key issues. But the debate finally turned to a comparison between digital versus analogue sound, especially with relation to magnetic tape and Vinyl discs. Issues like signal to noise ratio, compression or the lack of it, became more central to the digital vs analogue debate.

play with the sound, especially during editing. It has given them a broader latitude in terms of creating affective soundtracks, with less noise and more naturalism. Thus, the digitalisation of film sound technologies, gradually over the past two decades has given birth to a new aesthetic regime distinctly different from the processed dialogue-and-music-dominated soundtracks that dominated Indian mainstream cinema in the analogue era. There is relatively more importance given to sync and non-sync effect sounds and atmospheric elements in the soundtrack now compared to the film era. This had always been one of the key features of the sound design in Anglo-American cinema, which, Indian practitioners admired, but were not able to achieve until they started using digital technology.

Given this history, analogue technology became linked to aesthetic backwardness, while digital became the new torchbearer of Indian cinema's new-found sonic potential. However, this progressivist approach to digitalisation which emerged during my research needs to be critically scrutinised. In fact, some key senior practitioners I interviewed like Kuldip Sood and Anup Dev, differed from the idealist view of the digital technology. They observed that digital technology has led to both overdependence on and overuse of technology, often at the cost of creativity. According to them analogue technology, while being restrictive in certain ways, encouraged sound workers to be more rigorous, and pushed them to find innovative solutions when faced with a dearth of resources in India. This view of analogue technology is borne out by filmmakers I analysed – Ghatak, Ray, Kaul and Sen – who stand shoulder to shoulder with international masters like Bresson, Tarkovsky, Tati or Coppola, in their capacity to create exquisite sound design while using the 'primitive' resources of the analogue era. The continued influence of their work, particularly their sound design, was not linked to their clarity, naturalism or noiselessness as measured by the digital yardstick, but on the uniqueness and complexity of the relationship between the sound and the image in their films. The aural design philosophies of the films in the analogue era depended on the rupturing of normative relationships between sound and source and the creative manipulation of dialogue, effects and music to the extent that the traditional distinction between these categories blurred, resulting in uncanny effects. It also depended on using unconventional recording techniques, as well as using sounds symbolically, rather than literally, as we have seen in the case of the films of Ritwik Ghatak and Mani Kaul in chapter two.

Understandably, digital technology has given a larger palette and much more flexibility to the sound person in India. Viewed from a 21st-century filmmaker's perspective this appears to be a quantum leap, also because limited budgets and timeframes in the 20th century did not allow the Indian sound workers to utilise the full potential of analogue era techniques that were used in UK and US. While their colleagues in Hollywood were deploying more elaborate techniques such as premixing effects tracks, sophisticated Foley sounds or stereo mixes, key analogue era practitioners in India felt that the professional milieu of the Indian film industry discouraged any innovation in sound usage. There is a general consensus that digital technology has had a liberating influence on their practice. The aggressive defence and idealisation of the digital era can be understood within this historical context. However, the versatility ascribed to digital technology by a majority of the practitioners and its projected status as the final destination, the 'be all and end all' of sound recording and reproduction, is inherently teleological and deeply problematic. Well-known analogue era sound practitioners like Arun Bose and Kuldip Sood, while describing their experience of working with big productions like *Sholay* (Ramesh Sippy, 1975) and *Dayavan* (Firoz Khan,1988), proudly recounted how progressive their approach in these films was and stressed that they were using the best possible technology available in India in those days. They do not see their analogue era work as being backward. The assessment of analogue-based processes of film sound work in India from the vantage point of the digital era, can lead us to false conclusions. A parallel can be drawn to other representational technologies like colour film in the mid 20th century and High Definition (HD) imaging in the recent past. These interventions allowed filmmakers a broader canvas, but not necessarily more creative image production. The stylistic import of black-and-white cinema has remained relevant and for some contemporary filmmakers, black-and-white cinematic images have become a part of their representational style and radical aesthetics.[91]

In terms of sound technologies, the current resurgence in the audiophile preference for Vinyl disc-based analogue sound as a more embodied and materially accurate form of sound experience also contests the fundamental claims made by the proponents of the digital discourse. Despite this retracing of steps in music recording, a similar return to analogue sound in cinema would require a return to celluloid film or magnetic tape or

[91] Recent major films made in black-and-white are Roma (Alfonso Cuarón, 2018) and Cold War (Pawel Pawlikowski, 2018).

disc-based sound, which cannot be achieved without also going back to film-based imaging, as opposed to the prevailing convention of High Definition video for cinematic work. But to do so would be absurd and is akin to quitting word processors and going back to manual typewriters because of the 'material' experience these typewriters offer. At the same time, film sound's deep and growing dependence on digital technology, its pursuit of aural clarity and infinite manipulability has taken it further and further away from film sound's ontological link with both the nature and the human body. Thus, while sync sound recording is valourised by most sound recordists I interviewed in India, the fact that live voices on location are algorithmically manipulated to remove noises or to add 'life-like qualities' conflates a representational logic of 'clean sound' with the logic of accurate and natural reproduction. So, while live recording does add traces of the location to the sound, these traces or artefacts are often heavily processed in order to remove noise. This removal of noise may strip away other essential elements from this sound, only to be re-inscribed digitally later on.

A few sound engineers of the analogue era I spoke to describe sync sound recording as a fashion or a technical fetish. While this view may lack nuance, it is true that sync sound is not a one-stop solution applicable to all films across the board. Mega-budget genre films based on action, sci-fiction, animation and others still have to adhere to dubbing. One cannot record acceptable location sound in films under difficult conditions as faced during the filming of action-based films, as most sound recordists I interviewed observed. Remakes of Hollywood blockbusters produced in Mumbai have emerged as a current trend, with films like *Thugs of Hindostan* (V K Acharya, 2018) being 'adapted' from *The Pirates of the Caribbean* series (2003 to 2017). If a film like *Gravity* (Alfonso Cuaron, 2013) were to be remade in Mumbai as an Indian film, the concept of live or location sound would automatically have to be discarded and substituted by dubbing. Which is the real location in a film like *Gravity* – the diegetic 'outer space' or the space of the studio where the actor is dangling on a harness against a green screen, talking to an absent co-actor? It is true that for many films live or sync sound might be the best option in the current milieu, as it can preserve the integrity of the profilmic event. But dubbing/ADR/post-synchronisation will still remain as an equally important tool in the hands of the filmmakers. Thus, the marginalisation of dubbing as being of primitive import and the positioning of sync sound as the reigning technique of the digital era is essentially flawed. Dubbing will continue to be used as a key technique by filmmakers.

An analysis of practitioner accounts, especially those shared by sound workers who are involved in sound editing and sound design, points to the fact that Digital Audio Workstations (DAWs) have given them the technical potential to control the soundscape of a film to an extent impossible with film-based analogue sound editing. As opposed to Hollywood's stratification and segregation of every aspect of sound editing, that fact that sound editing is done by a smaller team and supervised by a 'sound designer' points to the fact that western models and conventions still do not fit easily in the context of the Indian film industry. While sound design is a title used by various categories and statuses of sound workers in India ranging from field recordists, to sound editors and re-recording mixers, the rapid adoption of this term across the film industries of India has been seen as a digital era development enabled by the spread of digital editing workstations. Sound designer is a useful category in India and refers to a sound person who can put together a team of sound editors to do sound editing and also supervise the final mix. Directors prefer to have a 'sound designer' as they prefer to talk to only one person, ('a single point contact' as per industry jargon) rather than multiple people within the sound team. Sound designer, in other words, is the director's link to the sound team. Thus, in India, the word sound designer is rarely used in the sense Walter Murch, Skip Lievsay or Randy Thom used it in the US or UK. As P M Satheesh observed, the time and resources to do detailed work, as done in Hollywood, are still rare in India. Only those sound engineers working with specific filmmakers like Sanjay Bhansali, Kamala Hasan and Sriram Raghavan are usually allowed the creative latitude and resources which can elevate them to the level of legitimate sound designers in the 'auteurist' sense of the term.

But, to what extent could this notion of authorship of the soundtrack be stretched in the digital era? The rapid adoption of immersive forms like Dolby Atmos raises questions around whether the design of the soundtrack and distribution of sounds in a theatre are regulated by humans or Artificial Intelligence (AI)? The sound engineers I interviewed deny that machines and algorithms could take away human agency, as seen in final mixing platforms in Atmos. Yet it is true that Artificial Intelligence today is a dominant technological paradigm mediating the relationship between humans and machines. AI and machine learning are conceptually integrated in the software we use to type or edit documents; they regulate our interaction with our smartphone and household appliances, as well as regulating the flight of aircrafts, and numerous other functions. Thus, it is

inevitable that the creators of sound editing softwares would integrate AI in their latest products in an attempt to make them more intuitive. If Artificial Intelligence is 'trained' to send sound of a particular frequency to a certain channel, bypassing other frequencies, it could potentially reduce the human signature and lead to a situation in which all film soundtracks might start to sound the same. So, the degree to which AI is integrated within editing and mixing systems in the future will also reflect to what extent sound designs of films will resemble each other.

6.2. Conclusion

My project, which touches on multiple issues and trajectories, can be seen as a template for an in-depth of study of ground level practices and conventions in the Indian film industry. While studies of sound, photography and editing have been done with respect to Hollywood, British, French and Italian cinema, the heterogenous, multilingual and multicultural nature of Indian cinema made this study a distinctive form of scholarly contribution. The history of sound practices against the backdrop of the digital turn that I set out to write is largely drawn from oral accounts and thus qualifies as a form of oral history. But as opposed to traditional oral history, my approach can be defined as a critical oral history where the accounts/verbal testimonies are sometimes included in the spirit of a historical testimony. Thus, along with interviews which form the backbone of this thesis, I have used textual and archival sources, media reports and technical literature as secondary material to connect and in some cases verify oral sources. In my research one of the measures of authenticity was my own experiences as a practitioner, which helped me fill gaps, correct timelines and process anecdotal experience into a formal historical narrative. But like most oral-based historical approaches, there were still issues, facts and events gathered from interviews which had to be accepted and respected as a living history. There were a few practitioner testimonies, from celebrated sound workers that could not be cross-verified. Sometimes the practitioners I interviewed were among the only living witnesses to these events such as K Sampath, former head of sound at AVM Studio in Chennai, and Kuldip Sood, retired mixing engineer and one of the associates of Mangesh Desai.

As borne out both by the testimonies and existing archival material, the role of sound in Indian cinema has been significantly shaped by technological imperatives and production

conventions. In the analogue era, the role of sound was decided by the visual editors in consultation with the directors. The re-recording engineers also played a strong role in this and, as discussed in chapter two, they were the sound designers from a true 'authorial' point of view. While my work gives an overview of the analogue era practices, detailed studies on editing and mixing conventions of the analogue period require further investigation. A detailed inquiry of analogue era sound in India, along the line of Rick Altman (2004) and Charles O'Brien (2005), was outside the scope of this present dissertation as my focus has been on the transitional period when digital tools are replacing film-based processes. My research also does not take into account film audience perspectives on sound, both in the analogue and digital era. This would have required a completely different philosophy, methodology and probably calls for another elaborate doctoral level study. Moreover, as image and sound aesthetics are inextricably linked it will also be interesting to see further research on cinematographic and directorial practices in both mainstream and independent films. In addition to these, production practices pertaining to specific regional film industries need to be studied. A huge uncharted, unmapped territory beckons the researcher of Indian cinema. As a scholar and teacher of film history, I look forward to new interventions. I hope that my journey as a historian of sound practice as shared through this doctoral dissertation becomes a useful methodological resource for scholars studying and theorising the history of film production, as well as aesthetic history.

References

Abel, R. and Altman, R. (2001). *The sounds of early cinema*. Bloomington, Indiana: Indiana University Press.

Altman, R. (1985). The evolution of sound technology. In: E. Weis and J. Belton, ed., *Film sound: Theory and Practice*. New York: Columbia University Press.

Altman, R. (1987). *The American film musical*. 1st ed. Bloomington: Indiana University Press.

Altman, R. (1992). Introduction: four and a half film fallacies. In: R. Altman, ed., *Sound Theory, Sound Practice*. New York: Routledge, pp.35-45.

Altman, R. (1992). *Sound theory, sound practice*. 1st ed. New York: Routledge.

Altman, R. (1999). Film sound: all of it. *Iris*, [online] 27, pp.31-48. Available at: https://is.muni.cz/el/1421/jaro2006/FAVD002/um/Altman_Film_Sound_All_of_It.pdf [Accessed 7 Feb. 2019].

Altman, R. (2004). *Silent film sound*. New York: Columbia University Press.

Andriano-Moore, S. (2018). The rise of the sound designer: Northern California film sound in the 1960s and 1970s. *Historical Journal of Film, Radio and Television*, [online] 38(3), pp.536-554. Available at: https://www.tandfonline.com/doi/full/10.1080/01439685.2017.1357256 [Accessed 10 Jan. 2019].

Arnold, A. (1988). Popular film song in India: a case of mass-market musical eclecticism. *Popular Music*, [online] 7(2), pp.177-188. Available at: https://www.cambridge.org/core/journals/popular-music/article/popular-film-song-in-india-a-case-of-massmarket-musical eclecticism1/EA027B81BA6E7934887DB0234F7798BF [Accessed 17 Jan. 2017].

Balazs, B. (1985). Theory of the film: sound. In: E. Weis and J. Belton, ed., *Film Sound; Theory and Practice*. New York: Columbia University Press, pp.116-125.

Barco (2014). *Auro-3D® film Swapaanam receives Indian Film Award for sound mix*. [online] Auro-3D. Available at: https://www.auro-3d.com/press/2014/04/auro-3d-film-swapaanam-receives-indian-film-award-for-sound-mix/ [Accessed 10 Apr. 2018].

Barnes, R. (2005). *Collaboration and integration: a method of advancing film sound based on the Coen Brothers' use of sound and their mode of production. Volume 2.* Phd. University of Bournemouth.

Beaster-Jones, J. (2014). *Bollywood sounds*. New York (N.Y.): Oxford University Press.

Beck, J. (2010). The evolution of sound in cinema. In: W. Guynn, ed., *The Routledge Companion to Film History*. [online] New York: Routledge Publishers, pp.78-90. Available at: https://doi.org/10.4324/9780203841532 [Accessed 18 Feb. 2018].

Beck, J. and Ament, V. (2015). The New Hollywood. In: K. Kalinak, ed., Sound: dialogue, music and effects. New Brunswick: Rutgers University Press, pp.107-132.

Bellour, R. (2003). Battle of the images. In: J. Shaw and P. Weibel, ed., *Future cinema: the cinematic imaginary after film*. Massachusetts: MIT Press, p.58.

Belton (2012). Digital 3D Cinema: digital cinema's missing novelty phase. *Film History*, [online] 24(2), p.187. Available at: https://www.jstor.org/stable/10.2979/filmhistory.24.2.187 [Accessed 9 Dec. 2016].

Belton, J. (1992). Magnetic sound: The frozen revolution. In: R. Altman, ed., *Sound Theory, Sound Practice*. London: Routledge, pp.154-167.

Belton, J. (2010). Digital cinema: A false revolution. *October*, [online] 100, pp.98-114. Available at: https://www.mitpressjournals.org/doi/abs/10.1162/016228702320218411 [Accessed 25 Dec. 2016].

Belton, J. (2014). If film is dead, what is cinema?. *Screen*, [online] 55(4), pp.460-470. Available at: https://academic.oup.com/screen/article-abstract/55/4/460/1728611 [Accessed 20 Nov. 2015].

Belton, J. and Weis, E. (1985). *Film sound*. New York: Columbia University Press.

Bhaskar, I. (2019). The Indian New Wave. In: K. Gokulsing and W. Dissanayake, ed., *Routledge Handbook of Indian Cinemas*. [online] London: Routledge, pp.35-50. Available at: https://doi.org/10.4324/9780203556054 [Accessed 17 Apr. 2016].

Bhatia, U. (2015). *Sound and fury*. [online] https://www.livemint.com. Available at: https://www.livemint.com/Leisure/l7hAo5dVo6Ap2YXmKhLmZI/Sound-and-fury.html [Accessed 25 May 2018].

Bhole, K. (1964). *Mazhe sangit: rachana ani digdarshan*. 1st ed. Mumbai: Raviraj Prakashan.

Biancorosso, G. (2008). Sound. In: P. Livingston and C. Plantinga, ed., *The Routledge Companion to Philosophy and Film*. Abingdon: Routledge.

Biswas, M. (2007). Speaking through troubled times. [online] *Journal of Moving Images*. Available at: http://jmionline.org/articles/2007/speaking_through_troubled_times.pdf [Accessed 8 Mar. 2019].

Booth, G. (2008). *Behind the curtain*. 1st ed. New York: Oxford University Press.

Bresson, R., Griffin, J. and Le Clézio, J. (1986). *Notes on the cinematograph*. London: Quartet Books.

Caldwell, J. (2008). *Production culture*. Durham: Duke University Press.

Camilleri, L. (2010). Shaping sounds, shaping spaces. *Popular Music*, [online] 29(2), pp.199-211. Available at: https://www.cambridge.org/core/journals/popular-

music/article/shaping-sounds-shaping-spaces/2FFA8544E3E4C2478D07015B58550C1A [Accessed 30 Jun. 2018].

Cavell, S. (1979). *The world viewed: Reflections on the ontology of film*. Cambridge, Mass.: Harvard Univ. Press.

Chabria, S. (1994). Before our eyes: A short history of India's silent cinema. In: S. Chabria and P. Usai, ed., *Light of Asia: Indian Silent Film (1912-1934)*. New Delhi: Wiley Eastern, pp.3-24.

Chatterji, S. (2007). Silence juxtaposed against sound in contemporary Indian cinema. In: L. Sider, D. Freeman and J. Sider, ed., *Soundscape: The School of Sound Lectures, 1998-2001*. London: Wallflower Press, pp.103-111.

Chattopadhyay, B. (2012). The cinematic soundscape: conceptualising the use of sound in Indian films. *SoundEffects - An Interdisciplinary Journal of Sound and Sound Experience*, [online] 2(2), pp.65-78. Available at: https://www.soundeffects.dk/article/view/6398 [Accessed 12 Jan. 2017].

Chattopadhyay, B. (2015). The auditory spectacle: designing sound for the 'dubbing era' of Indian cinema. *The New Soundtrack*, [online] 5(1), pp.55-68. Available at: https://www.euppublishing.com/doi/citedby/10.3366/sound.2015.0068 [Accessed 10 Dec. 2015].

Chion, M. (2009). *Film, a sound art*. 1st ed. New York: Columbia University Press.

Chion, M. and Gorbman, C. (1994). *Audio-Vision*. New York: Columbia University Press.

Conway, K. (2008). Small media, global media: kino and the microcinema movement. *Journal of Film and Video*, 60(3-4), pp.60-71.

Creekmur, C. and Mokdad, L. (2013). *The international film musical*. Edinburgh: Edinburgh University Press.

Dasgupta, A. (2007). Musical contests: reflections on musical values in popular film. [online] *Journal of Moving Images*. Available at: http://www.jmionline.org/articles/2007/musical_contests_reflections_on_musical_values_in_popular_film.pdf [Accessed 17 Feb. 2019].

Dass, M. (2004). *Outside the lettered city*. Ann Arbor, MI: UMI Dissertation Services.

Dass, M. (2010). The cloud-capped star: Ritwik Ghatak on the horizon. In: K. Schoonover and R. Galt, ed., *Global art cinema: New theories and histories*. New York: Oxford University Press, pp.238-251.

Dass, M. (2016). *Outside the lettered city: cinema, modernity, and the public sphere in late colonial India*. New York: Oxford University Press.

Doane, M. (1980). The voice in the cinema: the articulation of body and space. *Yale French Studies*, [online] (60), p.33. Available at: https://www.jstor.org/stable/2930003 [Accessed 14 Nov. 2015].

Doane, M. (2016). *The trope of the turn and the production of sound space*. [video] Available at: https://www.ici-berlin.org/events/mary-ann-doane/ [Accessed 14 Mar. 2018].

Dolby Inc (2012). Dolby Atmos - a revolutionary approach to sound. [online] Available at: https://pascalsijen.com/post/21944932838/dolby-atmos-a-revolutionary-approach-to [Accessed 15 Apr. 2018].

Dreher, C. (1931). Recording, re-recording, and editing of sound. *Journal of the Society of Motion Picture Engineers*, [online] 16(6), pp.756-765. Available at: https://ieeexplore.ieee.org/abstract/document/7243065 [Accessed 27 Mar. 2018].

https://ieeexplore.ieee.org/abstract/document/7243065 [Accessed 27 Mar. 2018].

Elsaesser, T. (2013). Digital cinema: convergence or contradiction?. In: C. Vernallis, A. Herzog and J. Richardson, ed., *The Oxford Handbook of Sound and Image in Digital*

Media. [online] Oxford: Oxford University Press, pp.13-44. Available at: http://10.1093/oxfordhb/9780199757640.001.0001 [Accessed 27 Jun. 2019].

Elsaesser, T. (2013). The “return” of 3-D: on some of the logics and genealogies of the image in the twenty-first century. *Critical Inquiry*, [online] 39(2), pp.217-246. Available at: https://www.journals.uchicago.edu/doi/pdfplus/10.1086/668523 [Accessed 20 Oct. 2018].

Elsaesser, T. (2004). The New Film History as Media Archaeology. Cinémas: Revue d'études cinématographiques, [online] 14(2-3), p.75. Available at: https://id.erudit.org/iderudit/026005ar [Accessed 9 Feb. 2019].

Foucault, M. (1970). *The archaeology of knowledge*. Thousand Oaks: Sage Publications.

Foucault, M. (1977). *Discipline and punish*. New York: Random House.

Ganguly, S. (2000). A cinema on Red Alert: Mrinal Sen’s interview and In Search of Famine. *The Journal of Commonwealth Literature*, 35(1), pp.55-70.

Ganti, T. (2012). *Producing Bollywood*. Durham: Duke University Press.

Ganti, T. (2012). Sentiments of disdain and practices of distinction: boundary-work, subjectivity, and value in the Hindi film industry." *Anthropological Quarterly*, 85(1), pp.5-43.

Ganti, T. (2014). The value of ethnography. *Media Industries Journal*, [online] 1(1), pp.16-20. Available at: https://quod.lib.umich.edu/m/mij/15031809.0001.104?view=text;rgn=main [Accessed 11 Mar. 2018].

Garland, D. (2014). What is a “history of the present”? On Foucault’s genealogies and their critical preconditions. *Punishment & Society*, [online] 16(4), pp.365-384. Available at: https://journals.sagepub.com/doi/abs/10.1177/1462474514541711 [Accessed 3 Mar. 2018].

Gaudreault, A. and Marion, P. (2015). *The end of cinema?*. New York: Columbia University Press.

Gopal, S. (2011). *Conjugations: marriage and form in new Bollywood cinema*. Chicago: University of Chicago Press.

Gopal, S. (2015). Some brief reflections on technology, cinema, and the postcolonial uncanny. *Pacific Coast Philology*, [online] 50(2), p.198. Available at: https://www.jstor.org/stable/10.5325/pacicoasphil.50.2.0198 [Accessed 17 Mar. 2016].

Gopalan, L. (2003). *Cinema of interruptions*. London: A BFI Book published by Palgrave Macmillan.

Gopalan, L. (2003). Indian Cinema. In: J. Nelmes, ed., *An introduction to Film Studies*. London: Taylor & Francis Ltd, pp.259-388.

Gorbman, C. (1980). Narrative film music. *Yale French Studies*, [online] (60), p.183. Available at: https://www.jstor.org/stable/2930011 [Accessed 11 May 2018].

Gorbman, C. (1987). *Unheard melodies*. London: BFI.

Hak Kyung Cha, T. (1980). *Apparatus, Cinematographic Apparatus: Selected Writings*. New York: Tanam Press.

Handy, B. (2009). Jeffrey Katzenberg on 3-D: depth becomes him. [online] Available at: https://www.vanityfair.com/hollywood/2009/03/jeffrey-katzenberg-on-3d-depth-becomes-him [Accessed 8 Mar. 2018].

Hilton, K. (2017). How David Lynch collaborator and creative technician Alan Splet turned the sound effect into an art form. [online] PSNEurope. Available at: https://www.psneurope.com/psn-genius/david-lynch-sound-effects-alan-splet [Accessed 13 Mar. 2018].

Hoch, W. (1942). Technicolor Cinematography. *Journal of the Society of Motion Picture Engineers*, [online] 39(8), pp.96-108. Available at: https://ieeexplore.ieee.org/abstract/document/7252626 [Accessed 16 Oct. 2018].

Holman, T. (2008). *5.1 surround sound*. Boston: Focal.

HomeToys. (2016). Your guide to immersive sound: Atmos, Auro-3D, and DTS:X - *HomeToys*. [online] Available at: https://www.hometoys.com/guide-to-immersive-sound-atmos-auro-3d-and-dtsx/ [Accessed 10 Mar. 2018].

India Today (2015). After OK Kanmani, Mani Ratnam to use sync sound technology again in his next. [online] India Today. Available at: https://www.indiatoday.in/movies/regional-cinema/story/after-ok-kanmani-mani-ratnam-to-use-sync-sound-technology-again-in-his-next-262019-2015-09-09 [Accessed 27 Feb. 2019].

Indian Express (2015). *'Bahubali' to open new doors for Dolby Atmos in Indian cinema*. [online] The Indian Express. Available at: https://indianexpress.com/article/entertainment/regional/bahubali-to-open-new-doors-for-dolby-atmos-in-indian-cinema/ [Accessed 18 Apr. 2018].

Jaikumar, P. (2017). Out of sync: gendered location sound work in Bollywood. *Sound Studies Blog*. Available at: https://soundstudiesblog.com/tag/narendra-baruah/ [Accessed 15 Feb. 2019].

Jarret, M. (2000). Sound doctrine: An interview with Walter Murch. *Film Quarterly (Archive)*, 53(3), pp.2-11.

Jose, J. (2015). Behind the Dolby Atmos mix of Baahubali. [online] *Film Mixing and Sound design*. Available at: https://film-mixing.com/2015/08/05/behind-the-dolby-atmos-mix-of-baahubali/ [Accessed 12 Apr. 2018].

Jovanovic, S. (2003). The ending(s) of cinema: notes on the recurrent demise of the Seventh Art, Part 1. [online] *Offscreen.com*. Available at: https://offscreen.com/view/seventh_art1 [Accessed 25 Feb. 2016].

Kathryn, K. ed., (2015). *Sound: dialogue, music, and effects*. New Brunswick: Rutgers University Press.

Kaul, M. (1991). Seen from nowhere. In: K. Vatsyayan, ed., *Concepts of Space: Ancient and Modern*. [online] New Delhi: Indira Gandhi National Centre of Arts, pp.415-428. Available at: http://sacredrealism.org/catlamb/tuninginformation/articles/seen-from-nowhere_mk.pdf [Accessed 13 Feb. 2019].

Kaur, P. (2012). Slumdog story: Pookutty and the art of sound, cinema and life. The Sunday Guardian. [online] Available at: http://www.sunday-guardian.com/artbeat/slumdog-story-pookutty-and-the-art-of-sound-cinema-and-life [Accessed 13 Apr. 2017].

Kerins, M. (2010). *Beyond Dolby (stereo)*. Bloomington: Indiana University Press.

Kerins, M. (2015). The modern entertainment marketplace 2000-present. In: K. Kalinak, ed., Sound: dialogue, music and effects. New Brunswick: Rutgers University Press, pp.134-156.

Kirby, R. (2008). Phenomenology and the problems of oral history. *Oral History Review*, [online] 35(1), pp.22-28. Available at: https://academic.oup.com/ohr/article-abstract/35/1/22/1429173 [Accessed 24 Nov. 2018].

Klinger, B. (2013). Three-dimensional cinema. *Convergence: The International Journal of Research into New Media Technologies*, [online] 19(4), pp.423-431. Available at: https://journals.sagepub.com/doi/abs/10.1177/1354856513494177 [Accessed 5 Mar. 2018].

Lastra, J. (2000). *Sound technology and the American cinema*. New York: Columbia University Press.

Lastra, J. (1992). Reading, writing, and representing sound. In: R. Altman, ed., *Sound Theory, Sound Practice*. New York: Routledge, pp.65-86.

Levin, T. (1984). The acoustic dimension. *Screen*, [online] 25(3), pp.55-68. Available at: https://academic.oup.com/screen/article-abstract/25/3/55/1642472 [Accessed 25 Jun. 2018].

Levinson, J. (1996). Film music and narrative agency. In: D. Bordwell and N. Carroll, ed., *Post-Theory: Reconstructing Film Studies (Wisconsin Studies in Film)*, 1st ed. Madison: University of Wisconsin Press, pp.182-249.

Lewis, J. (2001). *The end of cinema as we know it: American film in the nineties*. [ebook] New York: NYU Press. Available at: https://muse.jhu.edu/book/7721 [Accessed 14 Mar. 2017].

Lipscomb, S. (1995). Cognition of musical and visual accent structure alignment in film and animation. PhD. University of California, Los Angeles.

Lissa, Z. (1965). Functions of film music (Zofia Lissa) plus miscellaneous terminology (teaching materials). [online] Tagg.org. Available at: http://tagg.org/teaching/mmi/filmfunx.html [Accessed 20 Mar. 2017].

MacDonald, S. (1998). *A critical cinema 3*. Berkeley: University of California Press.

Majumdar, N. (2009). Beyond the song sequence: theorizing sound in Indian cinema. In: G. Harper, R. Doughty and J. Eisentraut, ed., Sound and Music in Film and Visual Media. New York: Bloomsbury Publishing, USA, pp.303-324.

Majumdar, N. (2009). The embodied voice: song sequences and stardom in Bombay Cinema. In: N. Majumdar, ed., *Wanted Cultured Ladies Only! Female Stardom and Cinema in India, 1930s–1950s*. Urbana and Chicago: University of Illinois Press, pp.173-202.

Mancini, M. (1985). The sound designer. In: E. Weis and J. Belton, ed., *Film Sound: Theory and Practice*. New York: Columbia University.

Manovich, L. (1996). What is digital cinema?. [online] *Manovich.net*. Available at: http://manovich.net/index.php/projects/what-is-digital-cinema [Accessed 7 Nov. 2015].

Marks, L. and Polan, D. (2000). *The skin of the film*. Durham: Duke University Press.

Mayan Brother's Tech Talk (2017). Interview of PM Satheesh Part 2. [video] Available at: https://www.youtube.com/watch?v=SBBgI8DRFrA [Accessed 15 Feb. 2018].

Mazumder, P. (2013). Music in mainstream Indian cinema. In: K. Moti Gokulsing and W. Dissanayake, ed., *Routledge handbook of Indian cinema*. Abingdon, Oxon: Routledge, pp.257-268.

McClean, S. (2007). *Digital storytelling*. Cambridge, Mass.: MIT.

Metz, C. and Gurrieri, G. (1980). Aural objects. *Yale French Studies*, [online] (60), p.24. Available at: https://www.jstor.org/stable/pdf/2930002.pdf?refreqid=excelsior%3Ab1588370e62e778aae615fd5fd71fc15 [Accessed 27 Jun. 2018].

Morcom, A. (2001). An understanding between Bollywood and Hollywood? The meaning of Hollywood-style music in Hindi films. *British Journal of Ethnomusicology*, [online] 10(1), pp.63-84. Available at: https://www.tandfonline.com/doi/abs/10.1080/09681220108567310 [Accessed 26 Mar. 2018].

Morcom, A. (2017). *Hindi film songs and the cinema*. [ebook] London: Routledge. Available at: https://www.taylorfrancis.com/books/9781315092980 [Accessed 19 May 2017].

Mukherjee, M. (2007). Early Indian talkies: voice, performance and aura: *Journal of the Moving Image (JMI):* [online] Jmionline.org. Available at: http://jmionline.org/article/early_indian_talkies_voice_performance_and_aura [Accessed 16 Feb. 2019].

Murch, W. (2000). Stretching sound to help the mind see. [online] *FilmSound.org*. Available at: http://markmangini.com/Mark_Mangini/Reading_Room_files/Stretching%20Sound%2

0to%20Help%20the%20Mind%20See%20by%20Walter%20Murch%20copy.pdf [Accessed 14 Nov. 2016].

Neumeyer, D. (2009). Diegetic/nondiegetic: a theoretical model. *Music and the Moving Image*, 2(1), pp.26-39.

O'Brien, C. (2005). *Cinema's conversion to sound: technology and film style in France and the US*. Bloomington: Indiana University Press.

Ortner, S. (2009). Studying sideways: ethnographic access in Hollywood. In: V. Mayer, M. Banks and J. Caldwell, ed., *Production Studies Cultural Studies of Media Industries*, 1st ed. [online] New York: Routledge, pp.183-197. Available at: https://www.taylorfrancis.com/books/e/9780203879597/chapters/10.4324/9780203879597-21 [Accessed 18 Oct. 2018].

Pemaraju, G. (2013). *Soundbaazi: The sound of more than music*. [ebook] Mumbai: India Foundation for Arts. Available at: https://www.academia.edu/26584707/Soundbaazi_The_Sound_of_More_than_Music [Accessed 27 Mar. 2018].

Powdermaker, H. (1979). *Hollywood the dream factory*. New York: Ayer Company

Pradeep, K. (2014). Sound of a musical. [online] Available at: https://www.thehindu.com/features/friday-review/music/sound-of-a-musical/article5530115.ece [Accessed 9 Apr. 2019].

Prasad, M. (2007). Communication and signification: voice in the cinema. *Journal of the Moving Image (JMI):* [online] *Jmionline.org*. Available at: http://www.jmionline.org/articles/2007/Communication_and_Si.pdf [Accessed 3 Mar. 2019].

Press Information Bureau, India (2014). Interview of Shaji Karun. [image] Available at: https://www.youtube.com/watch?v=sF5edhSuua8&list=PLnlEfDKvzS7gNR1d5h12WV0m2q0d8aR61&index=10 [Accessed 26 Feb. 2018].

Rajadhyaksha, A. (2007). An aesthetic for film sound in India?. *Journal of the Moving Image (JMI):* [online] *Jmionline.org*. Available at: http://jmionline.org/articles/2007/An_Aesthetic_for_Fil.pdf [Accessed 7 Mar. 2018].

Rajadhyaksha, A. (2012). Duvidha - Film (Movie) Plot and Review - Publications. [online] *Filmreference.com*. Available at: http://www.filmreference.com/Films-Dr-Ex/Duvidha.html [Accessed 20 Apr. 2017].

Rajadhyaksha, A. and Willemen, P. (2014). *Encyclopaedia of Indian cinema*. Hoboken: Taylor and Francis.

Ranade, A. (2006). *Hindi film song*. New Delhi: Promilla & Co., Publishers, in association with Bibliophile South Asia.

Rashid, H. (2017). South Indian epic sees fans troll Bollywood. [online] *BBC News*. Available at: https://www.bbc.com/news/world-asia-india-39777539 [Accessed 5 Feb. 2018].

Ray, S. (1976). *Our films their films*. New Delhi: Orient Longman.

Recuber, T. (2007). Immersion Cinema: The rationalization and reenchantment of cinematic space. *Space and Culture*, [online] 10(3), pp.315-330. Available at: https://journals.sagepub.com/doi/pdf/10.1177/1206331207304352 [Accessed 10 Feb. 2018].

Richards, T. (1993). *The imperial archive*. London: Verso.

Rodowick, D. (2009t). *The virtual life of film*. Cambridge, Mass: Harvard University Press.

Rosenbaum, J. (2007). Ritwik Ghatak: reinventing the Cinema. [online] *Jonathanrosenbaum.net*. Available at: https://www.jonathanrosenbaum.net/2019/03/ritwik-ghatak-reinventing-the-cinema/ [Accessed 12 May 2018].

Ross, M. (2012). The 3-D aesthetic: Avatar and hyperhaptic visuality. *Screen*, [online] 53(4), pp.381-397. Available at: https://academic.oup.com/screen/article-abstract/53/4/381/1644161 [Accessed 22 Mar. 2018].

Sarrazin, N. (2006). India's music: Popular film songs in the classroom. *Music Educators Journal*, 93(1), pp.26-32.

Schaeffer, P. (1967). *Musique concrète*. Stuttgart: E. Klett.

Sengupta, A. (2007). Seeing through the sound: certain tendencies of the soundtrack in Satyajit Ray's Films of the 1970s. *Journal of the Moving Image (JMI)* [online] *Jmionline.org*. Available at: http://www.jmionline.org/articles/2007/seeing_through_the_sound_certain_tendencies_of_the_soundtrack_in_satyajit.pdf [Accessed 11 Nov. 2016].

Sergi, G. (2004). *The Dolby era: Film sound in contemporary Hollywood*. Manchester: Manchester University Press.

Sergi, G. (2013). Knocking at the door of cinematic artifice: Dolby Atmos, challenges and opportunities. *The New Soundtrack*, [online] 3(2), pp.107-121. Available at: https://www.euppublishing.com/doi/pdfplus/10.3366/sound.2013.0041 [Accessed 17 Feb. 2018].

Sexton-Finck, L. (2009). Be(com)ing reel independent woman: an autoethnographic journey through female subjectivity and agency in contemporary cinema with particular reference to independent scriptwriting practice - *Murdoch University Research Repository*. [online] Researchrepository.murdoch.edu.au. Available at: http://researchrepository.murdoch.edu.au/id/eprint/1688 [Accessed 18 Mar. 2018].

Sisto, A. (2014). *Film Sound in Italy*. Basingstoke: Palgrave Macmillan.

Smith, J. (2015). The auteur renaissance. In: K. Kalinak, ed., *Sound: dialogue, music and effects.* New Brunswick: Rutgers University Press, pp.83-106.

Smith, J. (2013). The sound of intensified continuity. In: J. Richardson, C. Gorbman and C. Vernallis, ed., *The Oxford handbook of new audiovisual aesthetics*. New York: Oxford University Press, pp.331-356.

Sonnenschein, D. (2001). *Sound design*. Studio City, Calif: Michael Wiese Productions.

Sontag, S. (1996). The decay of cinema. *New York Times*. [online] Available at: http://pagefarm.net/ap/PDFs/decay.pdf [Accessed 16 Feb. 2016].

Stone, D. (2016). *The Hollywood sound design and Moviesound Newsletter. A case study of the end of the analog age*. Basingstoke: Taylor & Francis Ltd.

Stubblefield, T. (2006). Ritwik Ghatak and the role of round in representing post-partition Bengal. *Post Script*, 25(3).

Suchenski, R. (2017). Mythic and modern: the aesthetics of space in the films of Mani Kaul and Kumar Shahani. *Positions*, [online] 25(1), pp.29-50. Available at: https://read.dukeupress.edu/positions/article-abstract/25/1/29/21812/Mythic-and-Modern-The-Aesthetics-of-Space-in-the?redirectedFrom=fulltext [Accessed 18 Jul. 2017].

Tamboukou, M. (1999). Writing genealogies: an exploration of Foucault's strategies for doing research. *Discourse: Studies in the Cultural Politics of Education*, [online] 20(2), pp.201-217. Available at: https://www.tandfonline.com/doi/pdf/10.1080/0159630990200202?needAccess=true&instName=University+of+Westminster [Accessed 26 Feb. 2019].

Tashiro, C. (1998). *Pretty pictures*. Austin: University of Texas Press.

Taylor, A. ed., (2012). *Theorizing film acting*. New York: Routledge.

Thom, R. (1999). Designing a movie for sound. [online] *Filmsound.org*. Available at: http://filmsound.org/articles/designing_for_sound.htm [Accessed 26 Nov. 2015].

Thomas, R. (2011). Distant voices, magic knives: Lal-e-Yaman and the transition to sound in Bombay cinema. In: R. Dwyer and J. Pinto, ed., *Beyond the boundaries of Bollywood: the many forms of Hindi cinema*. Oxford: Oxford University Press, pp.53-76

Usai, P. and Scorsese, M. (2001). *The death of cinema*. London: BFI.

Vasudevan, R. (1995). Addressing the spectator of a 'third world' national cinema: the Bombay 'social' film of the 1940s and 1950s. *Screen*, [online] 36(4), pp.305-324. Available at: https://academic.oup.com/screen/article-abstract/36/4/305/1723303 [Accessed 4 Feb. 2019].

Vitali, V. and Willemen, P. (2006). *Theorising national cinema*. London: BFI Publications.

Whittington, W. (2009). Sound design in New Hollywood cinema. In: G. Harper, R. Doughty and J. Eisentraut, ed., *Sound and Music in Film and Visual Media.* New York: Bloomsbury Publishing, USA, pp.555-568.

Whittington, W. (2007). *Sound design & science fiction*. Austin, TX: University of Texas Press.

Williams, A. (1980). Is sound recording like a language?. *Yale French Studies*, [online] (60), p.51. Available at: https://www.jstor.org/stable/2930004 [Accessed 8 Nov. 2015].

Winters, B. (2010). The non-diegetic fallacy: film, music, and narrative space. *Music and Letters*, [online] 91(2), pp.224-244. Available at: http://ml.oxfordjournals.org/content/91/2/224.full [Accessed 27 Oct. 2017].

Wright, B. (2015). Atmos now: Dolby Laboratories, mixing ideology and Hollywood sound production. In: P. Théberge, K. Devine and T. Everrett, ed., *Living Stereo: Histories and Cultures of Multichannel Sound*. New York: Bloomsbury Academic, pp.227-246.

References (Interviews)

Name	Specialisation	Location	Date
Amala Popuri	Sound Recordist/Sound	Mumbai	**August 3, 2017**
Andy Walker	Sound Editor	London	**February 23,2018**
Anita Kushwaha	Sound Recordist	Mumbai	**August 5, 2017**
Anup Dev	Re-recording	Mumbai	**August 5, 2017**
Anup Mukherjee	Sound Designer and Mixing	Kolkata	**February 8, 2017**
Arghya K Mitra	Film Editor	Pune	**September 19,**
Arun Bose	Mixing engineer and teacher at	Chennai	**March 7, 2017**
Ashwin Balsaver	Sound Recordist	Mumbai	**August 3, 2017**
Bishwadeep	Sound Designer	Mumbai	**January 15, 2016**
Boby John	Sound Editor	Mumbai	**January 11, 2017**
Dean Humphreys	Re-recording Mixer/Sound Designer	London	**February 16, 2018**
Debashish Ghosal	Film Editor	Kolkata	**January 19, 2016**
Debashish Guha	Film Editor	Kolkata	**August 18, 2017**
Dwarak Warrier	Sound-Engineer	Email	**November 8,2017**
Gurvinder Singh	Film Director	Pune	**July 13, 2016**
Hitendra Ghosh	Sound Designer and Mixing	Mumbai	**January 16, 2016**
Indrajit Neogi	Sound recordist	Pune	**March 2, 2017**
Kuldip Sood	Sound Designer and Mixing	Mumbai	**January13, 2017**
Kunal Rajan	Sound Editor	Phone	**March 12,2017**
Madhu Apsara	Sound Designer	Pune	**July19, 2017**
Mateen Ahmad	Sound Recordist	Pune	**August 2, 2016**
Milind Bapat	Sound Editor	Pune	**August 18, 2016**
Malay Bhattacaharya	Film Director	Kolkata	**February 13, 2017**
Narinder Singh	Sound Recordist	Mumbai	**January10, 2017**
Padmanabhan A M	Mixing engineer and sound	Mumbai	**August 3, 2017**
Rajakrishnan M R	Mixing Engineer	Chennai	**March 7, 2017**
Rakesh Ranjan	Sound Recordist	Mumbai	**January 12, 2017**
Resul Pookutty	Sound-Recordist/Sound Designer	Mumbai	**August 6, 2017**
Sampath K	Recordist and Mixing Engineer	Chennai	**March 8, 2017**
Satheesh P M	Sound Designer (also location recordist)	Mumbai	**January 11, 2017**
Shalini Agarwal	Sound Recordist	Mumbai	**August 5, 2017**
Shyam Benegal	Film Director	Mumbai	**January13, 2017**
Subhadeep Sengupta	Sound Designer Sound recordist	Kolkata	**February 11, 2017**
Subhahish Roy	Sound Recordist	Pune	**July 23, 2016**
Subhas Sahoo	Sound Recordist	Mumbai	**August 7, 2017**

Sukanta Majumdar	Sound Designer and Sound Recordist	Kolkata	**February 11, 2017**
Sumit Ghosh	Film Editor	Pune	**May17, 2018**
Vinod Subramaniam	Sound Recordist	Mumbai	**January 22, 2016**
Zane Hayward	**Sound Editor**	**London**	**March 8, 2018**

Appendix

Profile of Interviewees

Amala Popuri

A graduate in sociology, Amala Popuri studied audiography at Film Television Institute of India (FTII), Pune. She is an established production mixer based in Mumbai and has been associated with major mainstream films like *Ghajini* (2008), *Saawariya* (2007) and also critically acclaimed films like *Amu* (2005*)* and *Siddhartha* – the *Prisoner* (2008) and *Bombay Talkies* (2013). She also works as a sound design and sound editing and have worked on short films such as *Chakrawak*, *Solitary Sandpiper* and *Dukandaar*. She specialises in documentary sound and has been involved with films like *From Gulf to Gulf to Gulf* (2013*)* and *Tana Bana* (2015*)*.

Andy Walker

Andy Walker is a London based sound designer and sound editor. He was trained at The Arts Institute Bournemouth between 1995-1997. Among his notable projects is the crime drama film *London Road* (Rufus Norris, 2015) in which he worked with the famous supervising sound editor John Warhurst and re-recording mixer Paul Massey. Warhurst and Massey have won Oscar nominations for their work on the film *Bohemian Rhapsody* (Bryan Singer, 2018). Andy is currently working on a huge, 'cultish' film Dau directed by Ilya Khrzhanovsky. This is a project going on many years and is likely to get released in 2019. Andy also worked on the 2015 version of the film *Macbeth* directed by Justin Kurzel.

Anita Kushwaha

An alumnus of Film and Television institute of India, Pune, Anita Kushwaha is an Indian sound recordist and designer who works mainly in Mumbai film industry. She has been primarily involved with independent films in Mumbai. Anita is best known for her work in films like *Ghanchakkar* (2013), *Court* (2014), *Bioscopewallah* (2018) and *Bombairiya* (2019). She has also worked as a recordist and designer in a number of documentaries and short films. These include both Indian and International productions *The World Before Her* (2012) *Terror in Mumbai* (2009*), Bloody Moustache* (2015*) and American Terrorist* (2015).

Anup Mukherjee

Anup Mukhopadhyay, a FTII graduate in Sound Engineering is a celebrated Sound Designer of Indian Film Industry. He is a five times National Award winner for best sound design, he is known for his prolific career of having been associated with nearly 500 feature films. He worked with filmmaking stalwarts of India such as Satyajit Ray, Mrinal Sen, Buddhadeb Dasgupta, Goutam Ghose, Aparna Sen and many more in the art house section. He has also mixed a huge number of mainstream Bengali films by leading names in commercial cinema.

Mukherjee started his career in 1974 and till 1982 worked as a recordist in television. He went to Malaysia as an Indian representative to Asian Institute for Broadcasting Development (AIBD), which opened his eyes towards technological revolution in sound for audio-visual medium which was happening across the world and had started to shape Asian countries, as well. In the 1980s Mukherjee joined the state owned NFDC as a recording engineer. He retired from NFDC in the 1990s and started working independently. In the recent past Mukherjee has stopped working as a re-recording engineer and has started working as a sound designer in feature films.

Arghyakamal Mitra

Arghakamal Mitra is a National Award-winning Indian film editor who is primarily known for his work in the Bengali film industry. He has edited over 70 feature films in the course of a career spanning over two decades, winning the National Film Award for Best Editing for his work in the 2009 Bengali film *Abohoman*. Significant editorial credits include *Malaise* (1999), *Choker Bali: A Passion Play* (2003), *Antarmahal: Views of the Inner Chamber* (2005), *Antaheen* (2009), *Byomkesh Bakshi* (2010), *Satyanweshi* (2013), *Open Tee Bioscope* (2015) and *Meghnad Badh Rahasya* (2017).

A favourite editor of art house filmmakers from Bengal, Arghya has worked with Rituparno Ghosh, Aparna Sen, Anup Singh, Raja Sen, E.K. Nirjhar, Tauquir Ahmed, Anjan Dutt, Malay Bhattacharya, Aniruddha Roy Chowdhury, Suman Mukherjee, Anik Dutta, Bouddhayan Mukherjee and others.

Arghya has also directed the first vignette of six-part Bengali feature film *Ek Mutho Chhobi*, and he has worked as an Associate Director in the internationally acclaimed feature film *The Violin Player*. He is also a visiting lecturer at Film & Television Institute of India (Pune), Satyajit Ray Film & Television Institute (Kolkata), Roopkala Kendro (Kolkata) and State University of Performing & Visual Arts (Rohtak).

Arun Bose

Arun Bose, a graduate from FTII, Pune, heads the film sound department of Prasad Film Academy in Chennai. He also heads Prasad Group's Audio Division. Bose has worked in Tamil, Telugu, Hindi, Bangla, Malayalam and Kannada films, while working as a rerecording engineer in Prasad Studios. He holds the distinction of introducing stereophonic mixing systems for 70mm productions in India. As a sound mixer and engineer for over four hundred films, he has won several awards for excellence in sound recording including the Nandi Award for the film Mayuri from the Government of Andhra Pradesh in the year 1985; for Yodha from the Government of Kerala in 1992; for Ponthan Mada in 1993; and the Sri Lanka State film award for the film Sihina Desayen in 1997. Among his important Hindi film work are the films Dayavan (Feroze Khan, 1988), Rangeela (Ram Gopal Verma ,1995) Machis (Gulzar, 1996) and others.

Ashwyn Balsaver

Ashwyn is one of the most experienced sound recordists currently working in television industry in Mumbai. He has an important body of work in feature films, especially with

director Shyam Benegal. His feature film work includes Mr Benegal 's films like *Welcome to Sajjanpur* (2005) *Netaji Subhas Chandra Bose: The Forgotten Hero* (2001) *Zubeidaa* (2000) *Hari-Bhari* (1996) *Sardari Begum* (1996) *The Making of the Mahatma* (1995) and films by other directors like Saeed Mirza - *Mammo* (1993) Rudaali (Kalpana Lajmi,1991) and Prahaar: The Final Attack (Nana Patekar, 1992).

Bishwadeep Chatterjee

A two-time National Award winner – for the films Madras Café in 2014 and Bajirao Mastani in 2016 – and a Member of The Oscar Academy's Class of 2018, Bishwadeep Dipak Chatterjee is a graduate of the Film and Television Institute of India, Pune, in Sound Recording and Sound Engineering. Bishwadeep started as a music recording engineer and then moved on to film sound design and mixing later in his career.

Bishwadeep has designed and mixed the sound for films like *Chokher Bali* by the late Rituparno Ghosh, *Lage Raho Munnabhai*, and *3 Idiots* and *Sanju* by Rajkumar Hirani, *Parineeta* by Pradeep Sarkar, *Madras Café* and *Piku* by Shoojit Sarkar and *Bajirao Mastani* and Padmavat by Sanjay Leela Bhansali. Bishwadeep's other accolades include two Film fare, five IIFA, three Screen, two Producers' Guild, two Zee Cine and one GIMA award. He has also been awarded the West Bengal State Award for contribution to Cinema and the Goa State Award for sound design of the Konkani film K Sera Sera.

With a career spanning over three decades, Bishwadeep has virtually worked in every department of sound for feature films, short films, documentaries, television serials, advertising films and music albums. Bishwadeep has designed, installed and or been an consultant to several recording studio installation projects including six of his own. He has also lectured and conducted workshops for students at FTII, Pune, SRFTI Kolkata and several private institutions.

Boby John

Boby John is an Indian film sound designer and mixing engineer. He has worked in various Hindi, Marathi, Malayalam and Assamese feature films, documentary films, short films and television advertisements. He is one of India's best sync sound cleaning editors. He owns a mixing studio, *Prathibha*, at Mumbai, where he designs and edits the sound for feature films and documentaries. Boby has worked variously as a location recordist, dialogue editor, sound editor, supervising sound editor and sound designer. He has been associated with important Hindi film productions since 1990s which include Black (2005), Mangal Pandey (2005), Welcome to Sajjanpur (2008), Love, Sex Aur Dhoka (2010), The Dirty Picture (2011), Shanghai (2012), Killa (2014), Force 2 (2016) , Gurgaon (2016), Raazi (2018) and many other films.

Dean Humphreys

Dean Humphreys is a leading re-recording mixer associated with Twickenham Studios, UK. He has worked in the film and TV industry in the UK for over 40 years, having been credited as a re-recording mixer and sound designer for over 170 movies, numerous TV dramas, 100 documentaries and commercials. He has received 2 BAFTA nominations and won the César Award for *The Pianist* (2002) directed by Roman Polanski. Over his four-decade long career Dean has worked with Ridley Scott, Luc Besson, Oliver Stone,

Richard Attenborough and Roman Polanski. Recently he worked for the Liam Neeson movie 'Taken 2. Dean is currently associated with the University of Gloucestershire and "teaches sound across script development, pre-production, production and post-production".

Debashish Ghoshal

Debashish Ghoshal is a Professor of Sound Engineering at Satyajit Ray Film and Television Institute of India, Kolkata. Debashish holds an M.Sc (Engineering) in Sound and Vibration from Chalmers University of Technology, Sweden; and a post-graduate diploma with specialization in Sound Recording and Sound Engineering from FTII, Pune. He has worked as a music recording engineer for song albums and film soundtrack for six years. He also worked as freelance sound recordist for documentary films on 16 mm and television programmes. Debashish has briefly worked as a research fellow under Marie Curie Research Fellowship Programme in Miskolc University, Hungary. He has also delivered extensive guest lectures on moving image sound at St. Xavier's College, Kolkata, RoopKala Kendra, Kolkata and other institutions.

Debashish Guha

After graduating as an editing student from FTII, Pune, Debashish began working for Plus Channel, Mumbai as a Senior Video Editor. He eventually became an independent film and video editor and worked with renowned directors like Shyam Benegal, Mani Kaul and many others. In the late 1990s he returned to his home town Kolkata and started working for a state-owned production house called WEBEL MEDIATRONICS. In 1999 he worked as a Chief Editor for an Indo-Hollywood production called Night Fall, in association with Rojer Corman & Ramoji Rao Production.

He worked as an editor for many award-winning feature films and documentaries, as well as well-known television programmes. He has co directed two documentary films - one along with the noted director Gautam Ghosh and another called *Shadows of Forgotten Melodies* in 2008, in which he collaborated with his colleague from the same film school Sudipta Bhowmik.

Dwarak Warrier

Hareendranath Dwarak Warrier, better known as Dwarak Warrier is an Indian sound designer and sound mixer. He has worked in Hindi, Malayalam, and French cinemas. He is currently working with Dolby Corporations content services in India. He has worked with the well-known directors Ram Gopal Verma and Sriram Raghavan for films such as *Bhoot* (2002), *Company*(2003), *Ek Hasina Thi* (2004) and *Johnny Gaddar* (2007). He has also worked on the blockbuster action films Dhoom 1 and Dhoom 2 and also quirky low budget films like *Delhi Belly* and *Stanley Ka Dabba*, both produced in 2011.

Dwarak has won a number of film industry awards including two Filmfare Awards, two Screen Awards, Zee Cine Awards and one award from Indian Documentary Producers Association (IDPA).

Hitendra Ghosh

An alumnus of the famous Scindia School in Gwalior, Hitendra completed his Diploma in Cinema from the Film & Television Institute of India, Pune in 1974 with specialisations in sound recording and sound engineering. He worked extensively with director Shyam Benegal as his main sound person, innovating methods of sync sound recording in a period where Indian films largely deployed dubbed sound. He joined Rajkamal Studios as an associate of Mangesh Desai in the year 1984. He was associated with Rajkamal Studios as its main recording engineer for over 300 films, as well as being associated with 3000 films.

Mr Ghosh won the National Film Award for Best Audiography on three occasions – in 1979 for *Junoon* , in 1986 for *Ek Pal* and in 2013 for Game. He has also received various other prestigious awards like the Filmfare Award, IIFA Award and Zee Cine Award. He has won accolades are: *Kalyug* (1981), *Vijeta* (1982), *Jungle* (2000), *Rang De Basanti* (2006), *Swadesh* (2004) and *Jodhaa Akbar* (2008).

Indrajit Neogi

Indrajit Neogi completed his schooling in Science with distinction, from Ramakrishna Mission Vidyapeeth, Purulia, a prestigious academic institution in West Bengal in 1974. He graduated from IIT Kharagpur with honours in Physics. He was involved in theatre during this formative phase of his life, which inspired him to join Film & Television Institute of India, Pune. He graduated from FTII in 1980 with specialization in Sound. His professional career began in 1980 with the film *36, Chowringhee Lane* directed by Aparna Sen. He was associated with path-breaking films like *Aarth, Vijeta*, *Ardh-satya*, *Khamosh*, *Yeh Woh Manzil To Nahin* in early 1980s and in *In Which Annie Gives it Those Ones* in late 1980s. *Maya Memsaab*, *Parinda* are other award-winning films.

He has also worked in *Matir Moyna* (2002), an international joint production, which has received many international awards, including an award at Cannes Film Festival. His recent works include *Rab Ne Bana Di Jodi* (2008) and *Band Baaja Baarat* (2010) which are part of mainstream Mumbai cinema. Indrajit Neogi has also been a key person in re-inventing the practice of sync sound recording, or live sound recording in films in India.

He has also been part of many other genres of cinema, like social and educational documentaries, travel documentaries, wild-life documentaries, advertising films. He has won a National Award in Sound Recording in two consecutive years, 1993 and 1994, for his work in *Maihaar Raga,* and *Another Way of Learning*.

Kuldip Sood

Kuldip Sood is one of the senior-most and perhaps the most prolific sound persons from the Hindi film industry. An alumnus of FTII, Pune, Sood worked with the legendary re-recording engineer Mangesh Desai as his main associate. Active between 1970 and 2012, Sood had worked as a re-recording engineer in close to 300 films. He is known to have refined the music and dialogue based mixing style developed by Mangesh Desai in line with the melodramatic requirements of Hindi cinema. He has worked with major emblematic mainstream Hindi filmmakers who defined Bollywood, such as Manmohan Desai, Ramesh Sippy, Gulzar as well as art filmmakers like Shyam Benegal, Satyajit

Ray, Tapan Sinha and Aparna Sen. He is associated with well-known hindi films like *Sholay* (1976), *Mr India* (1987) *Om Shanti Om* (2007) and *Kal Ho Na Ho* (2003). He is also credited to having established the Foley stage at Anand Recording studio in Mumbai – an organisation that still remains a key studio for hindi film sound post-production.

Kunal Rajan

Kunal Rajan is a Hollywood-based Indian sound designer and sound editor. He was educated in visual communication at Loyolas College, Chennai and School of Audio Engineering (SAE), Singapore. As of 2016 Kunal Rajan has been involved with over a hundred films as a Supervising Sound Editor. He was involved in big Indian mainstream films from south India which include *'Thoongavanam,'* *'Enthirian,'* and '*Vishwaroppam.'* He worked with **Sound Dogs**, one of the world's largest sound effect companies.

Some of the major films Kunal was associated with includes '*Fantastic 4: Rise of the Silver Surfer*', '*Blades of Glory*,' '*The Spiderwick Chronicles*,' '*Emerald City*,' '*The Umbrella*,' '*Huntsville*,' and '*For the Love of Mone.*' He has been awarded for his sound design work in films like *Fear Clinic*, *Vishwaroopam*, and *Blue*.

Leonardo Paoletti

Leonardo Paoletti is an Italian sound designer. He was boorn in Trieste in 1986, and lives in Rome. He has worked as a sound editor, sound designer and dialogue editor for Cinema and TV, and have also done some field recording. He has worked for feature films, shorts, documentaries and corporate videos.

Leonardo believes that sound editing is not a mere technical phase, where images are given corresponding sound. Instead it is the fulfillment of a vision, an opportunity to tell the story effectively and convey the emotional arc of the characters.

He believes his job is, therefore, not only to give voice to what is framed, but to broaden the narrative horizon, describe emotions and the subtext, highlight the subjective perspective of narration, by means of the creation of a soundscape. His most recent work is for the Italian comedy film *Daitona* (2019).

Madhu Apsara

A leading sound designer based in Mumbai and Pune, Madhu has a BSc in Physics from Calicut University and Postgraduate Diploma in Sound Recording and Sound Engineering from, FTII, Pune in 1991. He had begun his career with Indian director Mani Kaul as his Chief Assistant Director in the films '*The Cloud Door*, *The Servant's Shirt*, *Light Apparel* and *Bhoj d*uring the the years 1992 to 1999.

His important sound assignments include films like Dharavi, 1991 and *Hazarom Kwaish Aise*, 2002 by Sudhir Mishra, *Throne of Death* (1999). Throne of Death won the Camera d'Or at Cannes 1999. He also worked for the films Wart 2003 (Co-Writer of the film), The Dogs Day (2001), *Unni* (2006) and *Virgin Goat* (2010) by Murali Nair. His work also includes major films such as *Johnny Gaddar*, *Badlapur* and *Agent Vinod*, all directed by Sriram Raghavan, and also the number of critically acclaimed documentaries including films by Sanjay Kak, Nandan Khudiyadi and Avijit Mukul Kishore. He is

currently also heading the film sound department of his Alma Mater – FTII, Pune.

Malay Bhattacharya

Malay Bhattacharya is a production designer and actor, known for *Kahini* (1997), *Teenkahon* (2014) and *Afterglow* (2012). He is based in Kolkata. Originally a graphic designer and an ad man, KAHINI is a dream come true. Even as a teenager, he hoped to make his own films one day, though it was a rather unrealistic goal for a boy who came from an average middle-class family in Bengal.

His life took a critical turn after he opted for the specialisation for Applied Art at Government College of Arts, Kolkata, and specialised in graphic design. This gave him a skill and enabled him to go to West Germany where he not only earned money but also learned film making.

In 1977, he returned to Kolkata, India and spent all his savings (around Rs 700,000) ona graphic design unit, Message Creative Consultants, which he launched along with his wife **Chandramala**, who is also a graphic designer. He later added an ad agency division to his company. After successfully making four documentaries, he launched a TV film making unit, Movie Mill: The much-acclaimed Galpa Salpa, a tele-serial featuring 13 short stories by eminent writers, was produced in this unit. His film first feature film *Kahini* (1997) won him a national film award in India.

Mateen Ahmad

Mateen Ahmad, a sound designer and film maker by profession, is currently teaching sound recording and sound designing for films at Jamia Milia Islamia in Delhi. An M.Sc. in Physics, Mateen obtained a Post Graduate Diploma in Cinema with a specialization in Sound Recording from the Film and Television Institute of India (FTII) Pune. Till date he has scripted, directed, shot and edited 25 fiction and non-fiction films on both video and celluloid and also designed sound of those films.

So far three of the films made by him have been screened at the Indian Panorama Section of the International Film Festival of India. Before embarking on a career as a sound person Mateen taught Physics for a decade. He is equally at ease with teaching film appreciation and script writing. Mateen's sound design for the film "*Children of Pyre"* won him the national award for sound design.

Milind Bapat

Milind Bapat is a Professor of sound recording and sound design at Film and Television Institute of India, Pune. He has lectured on film sound for nearly three decades and also designed sound for a number of short films and documentaries.

Narinder Singh

Narinder Singh is among the senior most sound recordists currently working in Mumbai. He graduated from Film & Television Institute of India in 1964, as a part of its first batch. Narinder has worked with renowned Film makers like Satyajit Ray, Pamela Rookes, Gulzaar, Mani Kaul among others. His work as a recordist for defining works of Indian

art cinema like, *Uski Roti* (1969), *Ashad Ke Ek Deen* (1971), *27 Down* (1974), *The Chess-players* (1977), Tarang (1984) makes him the most revered sound person in Indian cinema.

Padmanabhan A M

Padmanabhan known in the film industry as 'Paddy' is one of the pioneers of sync sound recording in India before its formal reintroduction in the 21st century. Paddy has worked with some of the leading art filmmakers in the 1970s and 1980s in Mumbai. His work for filmmakers like Mani Kaul, Rajinder Singh Bedi, Govind Nihalani and others won him appreciation from his peers. Paddy is one of those few engineers who have worked as location sound recordist, sound designer and a re-recording mixer for feature films. His significant work includes the *Jaane Bhi Do Yaaron* (Kundan Shah, 1983) and *Before My Eyes* (Mani Kaul,1989). He has also done substantial work as sound person in Indian television – including the well-known series called *Idiots* directed by Mani Kaul.

Pankaj Seal

Pankaj Seal is a sound engineer and a teacher and is a member of the core faculty in Sound Recording and Sound Design in Satyajit Ray Film and Television Institute of India, Kolkata.

He has worked as music recordist, location sound recordist and re-recording engineer since he graduated from FTII since late the 1990s. He has worked with eminent filmmakers like: Shyam Benegal, Govind Nihalani, Mahesh Bhatt, and Anup Singh. Pankaj has worked with a huge range other films and TV programmes from various genres.

Pankaj has been deeply involved in film education pedagogy and philosophy and have been associated with other educational institutions in eastern India. He has won a National Award (Rajat Kamal) in 1998 for **Best Audiography** for the short film *Matir Bhar* (1997).

Rajakrishnan M R

A Chennai based audiographer M R Rajakrishnan is the son of the late Carnatic musician and music director from Kerala M G Radhakrishan. At the age of 23, Rajakrishnan started working with late sound engineer Deepan Chatterji as his assistant sound engineer. He had assisted him in around 70 films, which includes *Bhalo Theko (Bengali*), which secured National Award in the year 2004. He later joined Four Frames Sound Company, Chennai as an assistant sound engineer and now works as the chief sound engineer in the same studio. He has worked with most of the directors in Malayalam and has done sound designing and mixing for over 200 films in various languages which includes Malayalam, Hindi, Tamil, Kannada, Marathi, Telugu and Bengali.

Among the filmmakers Rajakrishnan worked with are S. Priyadarshan, Santosh Sivan, Lal Jose, Major Ravi, V.K Prakash, A.L Vijay, Selvaraghavan, Anjali Menon and others. M R has won multiple awards, including multiple Kerala State Film Awards, as well as privately instituted awards like Pearl Award and Surya TV Award.

Rakesh Ranjan

Rakesh Ranjan is one of the senior-most sound recordists from Mumbai film industry and has worked on nearly 170 feature films so far. He started as a production sound mixer, and finally built a career as a sound artist and as a 'director of audiography'.

Rakesh's early fascination with technology, especially microelectronics led him to study sound recording and sound engineering in FTII, Pune. While at Pune he got interested in sound and music. He joined the industry as a music recordist for Hindi film songs and later went onto become a location sound recordist. Rakesh has a formidable body of work including films by veterans like Raj Kumar Santoshi, Subhash Ghai, Abbas Mastan and younger filmmakers like Rohit Shetty and Tigmanshu Dhulia. Rakesh has won the prestigious **Filmfare Awards** twice, once in 1999 and then 2001 for the films *Aks* and *Taal* respectively.

He is currently part of the core faculty in the sound department in the private film school Whistling Woods International founded by the filmmaker Subhash Ghai in the city of Mumbai.

Resul Pookutty

Resul Pookutty is an Indian film sound designer, sound editor and mixer. He won the Academy Award for Best Sound Mixing, along with Richard Pryke and Ian Tapp, for *Slumdog Millionaire* (Danny Boyle, 2008). He is known as a vocal proponent live or location sound recording in the Indian film industry – a film culture known for its dependence on dubbing or post-synchronised recording of dialogue. He has worked in Hollywood, Hindi cinema, Tamil cinema and Malayalam Cinema. He has worked with Indian film directors like Sanjay Bhansali, Shankar, and Madhur Bhandarkar, apart from a lot of work for television. Resul's memoirs **"Sounding Off: The Memoirs of an Oscar-winning Sound Designer"** was published in the year 2012 and is a best seller in India.

His journey in cinema has coincided with the journey of cinema from analogue to the digital. He is not just a witness, but an active participant in this process of change. For Resul it is not just a change in technology, but the change in the way we perceive cinema, perceive its form and content. Now, he has joined part-time teaching to share his experience with the next generation.

Sampath K

Sampath is possibly the senior-most living sound person in India. His career spanned between 1955 and 2005 and within this period he has been associated with 1000 films and 6000 songs. Sampath has been an engineer with AVM studios in Chennai. Sampath learnt his craft under the guidance of AVM sound person Atul Chatterjee and later under Mukul Bose. Bose is known to have introduced playback system of sound picturisation while he was with New Theatres Studio in Kolkata.

Sampath has won the State award three times (1989, 1991 and 1993) and national

recognition came for his Malayalam movie, '*Ennu Swantham Janakikutty'* (Hariharan,1998) when he received the National Award for Best Audiography. He has worked with almost all the singers, composers, film directors and producers of three generations in the Tamil film industry, spanning the second half of the 20th century.

Satheesh P M

P.M Satheesh is a renowned Indian Film Sound Designer with 20 years of experience in location sound and sound design. He is a graduate of the FTII, Pune. He has worked as a sound recordist and sound designer on numerous documentaries for BBC, Channel 4, National Geographic, National Film Board of Canada and the CBC and feature films like *15Park Avenue*, *Dreaming Lhasa*, *Mangal Pande* and *Fakir of Venice*. For six years he held exclusive contract with MTV India for doing sound on live music events and broadcasts.

PM Satheesh established Scuba Location Sound and painstakingly putting together high-end location sound equipment and a dozen freelance sound recordists working under his guidance. This set-up allowed scuba divers to record location sound for documentaries and television where there was hardly any time for post dubbing.

In 1999 he received the National Award for Best Sound Recording and Design for his work on Kumar Talkies. Soon after he launched Fireflys post sound in its present location in Mumbai which grew in repute as a sound design and sound editing facility used by eminent Mumbai filmmakers.

Shalini Agarwal

Shalini Agarwal describes herself as a production sound mixer and sound designer and is based in Mumbai. She has worked with some of the biggest names in Hindi cinema, as well as worked with Hollywood film crews filming in Asia. Over the years she has emerged as the preferred sound person of overseas film crews coming to film in India. Her filmography as an sound recording associate includes titles such as *Slumdog Millionaire* (2008) where she assisted Oscar winning recording engineer Resul Pookutty, *Ghajini* (2008), *The Best Exotic Marigold Hotel* (2011), *Ra.One* (2011), Mission: Impossible – *Ghost Protocol* (2011), *Life Of Pi* (2012), *Jobs* (2013), and *First They Killed My Father* (2017).

Apart from feature films, Shalini has also worked on commercials, documentary films, music videos, corporate films and television. Her major independent work includes the 2014 film *Highway* by Imtiaz Ali.

Subhadeep Sengupta

An alumnus from the first batch of Satyajit Ray Film and Television Institute of India (SRFTI) Subhadeep Sengupta is a sound editor and sound designers based in Kolkata. His professional work ranges from feature films, documentaries, and television shows to ads and promotional AVs. Subhadeep began his career as a freelance TV shows across all the major Bengali channels. Gradually, in the following years' film projects started coming to him, both fictions and documentaries.

Some of his acclaimed works include the National Award-winning films by Amlan Dutta such as *Dot In For Motion* (2008), *Chronicle of an Amnesiac* (2007*)*, *One Day Ahead of Democracy* as well as the film *Troyodashi* directed by Buddhadeb Dasgupta. He was also involved in the post-production of films like *Chalo Let's Go* (2008), *The Bong Connection* (2006), *The Last Lear* (2007), *Shob Choritro Kalponik* (2009), *Antoheen* (2009*)*, *Arekti Premer Galpo* (2010*)* and *Kahaani* (2012) among several others. He won the National Award for Best Sound Design in a Feature Film and the Kerala State Award for Best Audiography for the feature film *Chitasutram* (2011). He has also been associated with many academic institutions (including St Xavier's College, Kolkata and Roopkala Kendro, Kolkata) and also served as a subject expert in the UGC Countrywide Classroom.

Subhash Sahoo

Subhash Sahoo is a National Award-winning sounder designer who has worked in films such as *Tumhari Sulu* (2017), *Neerja* (2016), *NH10* (2015), among notable others. An Electronics engineer and a graduate from the Film and Television Institute of India, Subhas has worked in the Mumbai film industry over the last 24 years. Starting out in 1994, after graduating from FTII, Sahoo arrived in Mumbai with Rs185 in his pocket. His first role was in the Marathi film *Doghi,* a 45-day job that earned him Rs2,800.

Subhas's the first national award in sound recording was for the film *Omkara*, where his work made him popular in Mumbai production circles. His work in *Kaminey* won him a National Award for Best Sync Sound Recording. Subhas has also been producing and directing documentaries over the past few years. Recently he made a documentary on the legendary sound engineer Mangesh Desai. This film called called *The Soundman Mangesh Desai* (2017) was shown in a number of national and international film festivals.

Subhahish Roy

An Assistant Professor of Sound Recording & Design in MIT film school in Pune, India, Subhahish holds a post graduate diploma in cinema – specializing in Sound Recording and Sound Engineering, from FTII. He has also worked as an Assistant Professor in the film sound department at FTII for 6 years. During his professional stint in the industry he has assisted in Sound Design for Hindi Feature Films – *Sarfarosh* (1999), *Dreaming Lhasa* (2005) *Radio Comes to Rampur* (1999), *Rice Plate* (2007), *Gandhi of the Month* (2014), and documentaries for BBC Channel Four, Discovery Atlas and PBS (US and Canada).

Sukanta Majumdar

Sukanta Majumdar is an award-winning sound designer of films and theatre, based in Kolkata, India. He studied audiography at SRFTI, Kolkata, and has worked with many renowned directors, including Siddiq Barmak of Afghanistan (Opium War, 2008). Sukanta also creates works in sound art and in 2010, he went on a visiting fellowship to the London College of Communication, where he did a work of sound installation. In his public profile he is described as a person who "collects sounds like some people collect stamps or coins. He also has a very good ability to explore the unknown. Sound recording doesn't come to the foreground while he works."

Moreover, he is the field recordist of the ethnomusicological project The Traveling Archive. Sukanta also teaches and writes on sound. Recently, his work for the award-winning feature film '*Lady of the Lake'* won him appreciation from the Indian film sound fraternity for its unusual sound design.

Sumit Ghosh

Sumit Ghosh is considered to be among the most seasoned editors in eastern India, working both in the fiction as well as nonfiction formats. He graduated from FTII, Pune in 1990. Even during his stint as a student, he had started assisting in Mumbai but decided to shift to Kolkata after his graduation. In the following years he had worked on a considerable body of films, working with acclaimed filmmakers like Supriyo Sen (film *Way Back Home*), Sourav Sarangi (film *Tushu Katha*), Joshy Joseph (film *Walking Dead*) and Arvind Sinha (film *Between the Devil and the Deep Blue Sea*).

He has also edited acclaimed fiction films such as Gautam Haldar's *Bhalo Theko* (2003) and Indranil Roy Chowdhury's *Phoring* (2013) among others. Besides being an extremely busy film editor, Sumit Ghosh has also been the visiting faculty at Roopkala Kendro, Kolkata, and regularly conducts film editing workshops at Films Division and at his alma mater FTII, Pune.

Vinod Subramaniam

Vinod Subramanian has been an audio professional for two decades. His work spans feature film, documentary, music. He has worked as location sound recordist and sound editor for filmmakers as diverse as Ram Gopal Verma and Abhishek Kapoor and have won a national award for his work on the films *Fire* (1996) and *Rock on* (2008). Vinod also has a parallel career as a maintenance engineer and has experience conducting repairs on professional equipment, making custom designed cables, DC powering and more for sound workers in India.

He has trained in repair and maintenance at **Lectrosonics** and **Zaxcom** in 2015 and at **Schoeps** in 2016. In the recent past Vinod has reinvented himself as a sound technology entrepreneur and have founded a sound technology company called Overtone Audio which is registered in Mumbai India.

Zane Hayward

Zane Hayward is BAFTA nominated Supervising Sound Editor and Sound Designer based in London. His company Zane Hayward Ltd Sound Design specialises "in putting excellent sound teams together both in the UK and worldwide to produce the best quality soundtracks for feature films and television." Zane's credits include *Hell Boy Two*, *24 Hour Party People*, Billy Elliot and Birth. He has also lectured on Sound Post Production at Southampton University and have taught students joining the film industry, on behalf on Skillset.