1

PROJECTIONS OF SOUND ON IMAGE

THE HOUSE lights go down, and the movie begins. Or at home or on a trip, we press PLAY. On the big or small screen, brutal and enigmatic images appear: a film projector running, a closeup of the film going through it, terrifying images of animal sacrifices, a nail being driven through a hand. Then, in more "normal" time, a mortuary. Here we see a young boy we take at first to be a corpse like the others, but who turns out to be alive—he moves, he reads a book, he reaches toward the screen surface, and under his hand there seems to form the face of a beautiful woman.

What we have seen so far is the prologue sequence of Bergman's *Persona* (1967), a film that has been analyzed in books, in university courses, on internet sites. And the film might go on this way.

Stop! Let's rewind Bergman's film to the beginning and simply cut out the sound, try to forget what we've seen before, and watch the film afresh. Now we see something quite different.

First, the shot of the nail impaling the hand: played silent, it turns out to have consisted of three separate shots where we had seen one, because they had been linked by sound (figure 1.1). What's more, the nailed hand in silence is abstract, whereas with sound, it is terrifying, real. As for the shots in the mortuary, without the sound of dripping water that connected them together we discover in them a series of

FIG. 1.1 *Persona* (1966). One of three shots of a nail hammered through a hand.

stills, parts of isolated human bodies, out of space and time. And the boy's right hand, without the vibrating tone that accompanies and structures its exploring gestures, no longer "forms" the face but just wanders aimlessly. The entire sequence has lost its rhythm and unity. Could Bergman be an overrated director? Did the sound merely conceal the images' emptiness?

Next let us consider a well-known sequence in Tati's *Mr. Hulot's Holiday* (1953), where we laugh at the subtle gags taking place on a small beach (figure 1.2). The vacationers are so amusing in their uptightness, their lack of fun, their anxiety! This time, let's cut out the visuals. Surprise: like the flipside of the image, another film appears that we now "see" with only our ears; there are shouts of children having fun, voices that resonate in an outdoor space, a whole world of play and vitality. It was all there in the sound, and at the same time it wasn't.

Now if we give Bergman back his sounds and Tati his images, everything returns to normal. The nailed hand makes you sick to look at, the boy traces the shapes of faces, the summer vacationers seem quaint and droll, and sounds we didn't especially hear when there was only sound emerge from the image like dialogue balloons in comics.

Only now we have read and heard differently.

Is the notion of cinema as the art of the image just an illusion? Of course: how, ultimately, can it be anything else? This book is about precisely this phenomenon of audiovisual illusion, an illusion located first and foremost in the heart of the most important of relations between sound and image, as I illustrated with Bergman: what I call *added value*.[1]

FIG. 1.2 *Les vacances de Monsieur Hulot* (1953). Suspicious looks onscreen, play and animated voices in the sound.

ADDED VALUE

By *added value* I mean the expressive and informative value with which a sound enriches a given image so as to create the definite impression, in the immediate or remembered experience one has of it, that this information or expression "naturally" comes from what is seen and is already contained in the image itself. Added value is what gives the (eminently incorrect) impression that sound is unnecessary, that sound merely duplicates a meaning that in reality it brings about, either all on its own or by discrepancies between it and the image.

The phenomenon of added value is especially at work in the case of sound/image synchronism, via the principle of *synchresis* (see chapter 3), the forging of an immediate and necessary relationship between something one sees and something one hears. Most falls, blows, and explosions on the screen, whether simulated or not, or created from the impact of nonresistant materials, only take on consistency and materiality through sound. But first, at the most basic level, added value is that of text, or language, on image.

Why speak of language so early on? Because the cinema is a vococentric, or, more precisely, a verbocentric phenomenon.

VALUE ADDED BY TEXT

Asserting that sound in the cinema is primarily vococentric is a reminder that it almost always privileges the voice, highlighting and

setting the latter off from other sounds. During filming it is the voice that is collected in sound recording—which therefore is almost always voice recording—and it is the voice that is isolated in the sound mix like a solo instrument—for which the other sounds (music and noise) are merely the accompaniment.

I call *vococentrism* the process through which the voice spontaneously attracts and centers our attention in a mixture of sounds, in the same way that the human face directs our eyes in a movie shot. (Vococentrism can be diverted or attenuated by certain devices, to be discussed in chapter 8.) This is not to say that in classically vococentric films other sounds—noise and music—aren't important, but they often act on a less conscious level.

By the same token, the historical development of synch sound-recording technology (for example, the invention of new kinds of microphones and sound systems) has concentrated essentially on speech, since of course we are not talking about the voice of shouts and moans but the voice as the medium of verbal expression. Thus what we mean by vococentrism is almost always *verbocentrism*.

Sound in film is voco- and verbocentric, above all, because human beings in their habitual behavior are as well. When in any given sound environment you hear voices, those voices capture and focus your attention before any other sound (wind blowing, music, traffic, a roomful of conversation). Only afterward, if you know very well who is speaking and what they're talking about, might you turn your attention from the voices to the rest of the sounds you hear. So if these voices speak in an accessible language, you will first seek the meaning of the words, moving on to interpret the other sounds only when your interest in meaning has been satisfied.

If you are reading subtitles (which, in an effort to be concise and readable in a short time, cannot hope to match the original dialogue in style or completeness), they structure your vision, or rather your "audio-logo-vision."

Subtitling plays an increasingly large part in film, for a variety of reasons. DVDs have menus that allow access to different languages, the internet circulates films throughout the world, and more and more films contain several languages that spectators need to distinguish in order to follow the story.

TEXT STRUCTURES VISION

An eloquent example that I used to use in teaching to demonstrate value added by text is a TV broadcast from 1984, a transmission of an air show in England, anchored from a French studio for French audiences by Léon Zitrone.[2] Visibly thrown by these images coming to him over the wire with no explanation and in no special order, the valiant anchor nevertheless does his job as well as he can. At a certain point, he affirms, "Here are three small airplanes," as we see an image with, yes, three little airplanes against a blue sky, and the outrageous redundancy never fails to provoke laughter in the classroom.

Zitrone could just as well have said, "The weather is magnificent today," and that's what we would have seen in the image, where there are in fact no clouds. Or: "The first two planes are ahead of the third," and then everyone would have seen *that*. Or else: "Where did the fourth plane go?" and the fourth airplane's absence, this plane pulled out of Zitrone's hat by the sheer power of the Word, would have jumped to our eyes. In short, the anchor could have made fifty other "redundant" comments, but their redundancy is illusory, since in each case these statements would have guided and structured our vision so that we would have seen them "naturally" in the image.

The weakness of Chris Marker's famous demonstration in his 1958 documentary *Letter from Siberia*, where he dubs voiceovers of different political persuasions (Stalinist, anticommunist, etc.) over the same sequence of innocuous images, is that through his exaggerated examples he leads us to believe that the issue is solely one of political ideology, and that otherwise there exists some neutral way of speaking. But the added value that words bring to the image goes far beyond the simple situation of a political opinion slapped onto images. Added value engages the very structuring of vision by rigorously framing it. In any case, the evanescent film image does not give us much time to look (until videocassettes and then DVDs and digital files did), unlike a painting on a wall or a photograph in a book, which we can explore at our own pace and more easily detach from their captions or their commentary.

Thus if the film or TV image seems to "speak" for itself, it is actually a ventriloquist's speech. When the shot of the three small airplanes in

a blue sky declares "three small airplanes," it is a puppet animated by the anchorman's voice.

VALUE ADDED BY MUSIC: EMPATHETIC AND ANEMPATHETIC EFFECTS

There are two primary ways for music in film to create a specific emotion in relation to the situation depicted on screen.[3] On one hand, music can directly express its participation in the feeling of the scene by taking on the scene's rhythm, tone, and phrasing; obviously such music participates in cultural codes for things like sadness, happiness, and movement. In this case we can speak of *empathetic music*, from the word "empathy," the ability to feel the feelings of others. This is the well-known effect created by a kind of music that is, or appears to be, in harmony with the tone of the scene—dramatic, tragic, melancholic. It may have nothing at all to do with the music taken in itself and only be produced in the particular relationship between the music and the situation onscreen, in which it then has added value. For this reason, music, too, is not "redundant" in any way.

On the other hand, music can also exhibit conspicuous indifference to the situation, by progressing in a steady, undaunted, and ineluctable manner, like a written text or a machine that's running: the scene takes place against this very backdrop of "indifference." This juxtaposition of scene with indifferent music has the effect not of freezing emotion but rather of intensifying it, by inscribing it on a cosmic background. I call this second kind of music *anempathetic* (with the privative *a-*). The anempathetic impulse in the cinema produces those countless musical bits from player pianos, merry-go-rounds, music boxes, and dance bands, whose studied frivolity and naiveté reinforce the individual emotion of the characters and of the spectator even as the music pretends not to notice them.

To be sure, this effect of cosmic indifference was already present in opera, for example at the end of Bizet's *Carmen*, when Don Jose stabs the heroine as we hear the joyous crowd cheering the toreador in the arena nearby. But on the screen, the anempathetic effect has taken on such prominence that it seems to bear an intimate relation to the essence of cinema, which is its (well-disguised) mechanical nature.
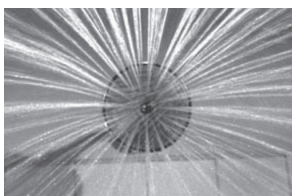
FIG. 1.3 *Psycho* (1960). *Anempathetic* sound of the shower, which continues after the murder.

For, indeed, all films proceed in the form of an indifferent and automatic unwinding, that of the projection, which on the screen and through the loudspeakers produces simulacra of movement and life—and this unwinding must hide itself and be forgotten. What does anempathetic music do, if not to unveil this reality of cinema, its robotic face?

There also exist cases of music that is neither empathetic nor anempathetic, which has either an abstract meaning or a simple function of presence, a value as a signpost: at any rate, no precise emotional resonance (here we can speak of *didactic counterpoint*).

The anempathetic effect is most often produced by music, but it can also occur with noise—when, for example, in a very violent scene or after the death of a character, some sonic process continues, such as the noise of a machine, the hum of a fan, a shower running, as if nothing had happened. Examples of these can be found in Hitchcock's *Psycho* (1960; figure 1.3) and Antonioni's *The Passenger* (1975) or in the ongoing noise of the world in "musicless" dramatic films such as the Coen brothers' *No Country for Old Men* (2007) or Bruno Dumont's *Flanders* (2006).

INFLUENCES OF SOUND ON PERCEPTIONS OF MOVEMENT AND SPEED

Visual perception and auditory perception have much more disparate natures than one might think. The reason we are only dimly aware of this is that these two perceptions mutually influence each other in the

audiovisual contract, lending each other their respective properties by contamination and projection.[4]

For one thing, each kind of perception bears a fundamentally different relationship to motion and stasis, since sound, contrary to sight, presupposes movement from the outset. In a film image that contains movement, many other things in the frame may remain fixed. But sound by its very nature necessarily implies a displacement or agitation, however minimal. Sound does have ways to suggest stasis, but only in limited cases.

One could say that "fixed sound" is sound that entails no variations whatever as it is heard. This characteristic is only found in certain sounds of artificial origin: a telephone dial tone, the hum of a speaker. Some natural sounds such as heavy rain or waterfalls can produce a rumbling close to white noise, too, but it is rare not to hear at least some trace of irregularity and motion. The effect of a fixed sound can also be created by taking a variation or evolution and infinitely repeating it in a loop.

DIFFERENCE IN SPEED OF PERCEPTION

Sound perception and visual perception have their own average pace by their very nature; basically, the ear analyzes, processes, and synthesizes faster than the eye. Take a rapid visual movement—a hand gesture—and compare it to an abrupt sound trajectory of the same duration. The fast visual movement will not form a distinct figure; its trajectory will not enter memory in a precise picture. But in the same length of time, the sound trajectory will succeed in outlining a clear and definite form, individuated, recognizable, distinguishable from others.

This is not a matter of attention. We might watch the shot of visual movement ten times attentively (say, a character making a complicated arm gesture) and still not be able to discern its line clearly. Listen ten times to the rapid sound sequence, and your perception of it will be confirmed with more and more precision.

There are several reasons for this. First, for hearing individuals, sound is the vehicle of language, and a spoken sentence makes the ear work very quickly; by comparison, reading with the eyes is notably

slower, except in specific cases of special training, as for the deaf. The eye perceives more slowly because it has more to do all at once; it must explore in space as well as follow along in time. The ear isolates a detail of its auditory field and follows this point or line in time. (If the sound at hand is a familiar piece of music, however, the listener's auditory attention strays more easily from the temporal thread to explore spatially among the layers of instruments.) So, overall, in a first contact with an audiovisual message, the eye is more spatially adept and the ear more temporally adept. This is not to say, however, that there is no temporal dimension to vision or no spatiality to listening.

SOUND FOR "SPOTTING" VISUAL MOVEMENTS

In the course of audio-viewing a sound film, the spectator does not note these differential speeds of cognition as such, because added value intervenes. Why, for example, don't the myriad rapid visual movements in action movies create a confusing impression? The answer is that they are "spotted" by rapid auditory punctuation, in the form of whistles, shouts, bangs, or pings that mark certain moments and leave a strong audiovisual memory.

Silent films already had a certain predilection, toward the late 1920s, for rapid montages of events. But in its montage sequences the silent cinema was careful to simplify the image to the maximum; that is, it limited exploratory perception in space so as to facilitate perception in time. This meant a highly stylized visual mode analogous to rough sketches. Eisenstein's *The General Line* (1929) provides an excellent example in the cream separator sequence, with its big closeups of skeptical, suspicious, or happy faces grouped around the butter-making machine. Michael Bay's action movies (*The Rock*, 2001) or those of Tony Scott (*Domino*, 2005), known for their high shot count, work in an entirely similar manner.

If the sound cinema often has complex and fleeting movements issuing from the heart of a frame teeming with characters and other visual details, this is because the sound superimposed onto the image can direct our attention to a particular visual trajectory.

Deaf people raised on sign language apparently develop a special capacity to read and structure rapid visual phenomena. This raises the

question whether the deaf mobilize the same regions at the center of the brain as hearing people do for sound—one of the many phenomena that lead us to question received wisdom about distinctions between the categories of sound and image.

THE EAR'S TEMPORAL THRESHOLD

Further, we need to add some nuance to the formulation that hearing occurs in continuity. The ear in fact listens in brief slices, and what it perceives and remembers *already* consists in short syntheses of two or three seconds of the sound as it evolves. However, within these two or three seconds, which are perceived as a gestalt, the ear, or rather the ear-brain system, has minutely and seriously done its investigation such that its overall report of the event, delivered periodically, is crammed with the precise and specific data that have been gathered.

Somewhat paradoxically, then, we don't hear sounds, in the sense of recognizing them, until shortly after we have perceived them. Clap your hands sharply and listen to the resulting sound. Hearing—in this case the synthesized apprehension of a small fragment of the auditory event, consigned to memory—will follow the event very closely, but it will not be totally simultaneous with it. On the other hand, when there is sound-image *synchresis*, we experience an instantaneous psychophysiological reaction.

INFLUENCE OF SOUND ON PERCEPTION OF TIME IN THE IMAGE

THREE ASPECTS OF TEMPORALIZATION

One of the most important effects of added value relates to the perception of time in the image, upon which sound can exert considerable influence. An extreme example, as we have seen, comes in the prologue sequence of *Persona*, where atemporal static shots are inscribed into a time continuum via the sounds of dripping water and footsteps. Similarly, at the beginning of Chris Marker's *La Jetée* (1962), still images of

the Orly airport take on temporality via the sounds of airplane engines, announcements over loudspeakers, and so forth. The same goes for lengthy contemplative shots sometimes seen in the work of Bela Tarr or Bruno Dumont (for example, in the latter's *L'humanité*, 1999).

Sound endows fixed images with temporality, or influences the felt duration of images with movements, in three ways.

The first is *temporal animation of the image*. To varying degrees, sound can render the perception of time in the image as exact, detailed, immediate, concrete—or as vague, fluctuating, broad.

Second, sound endows shots with *temporal linearization*. In the silent cinema, shots do not always indicate temporal succession—where what happens in shot B would necessarily follow what is shown in shot A. But synchronous sound does impose a sense of succession, which sometimes coexists with a sense of simultaneity, in what I call *temporal splitting*.[5]

Third, sound *vectorizes* or dramatizes shots, orienting them toward a future, a goal, and creation of a feeling of imminence and expectation. The shot is going somewhere, and it is oriented in time. We can see this effect highlighted in the prologue of *Persona*, where a light grows larger and takes over the whole frame while two tones slide upward into a high crescendo.

In order to work, these three effects depend on the nature of the sounds and images being put together.

In a first case, *the image has no temporal animation or vectorization in itself*. This is the case for a static shot, or one whose movement consists only of a general fluctuating, with no indication of possible resolution—for example, shimmering stagnant water or a landscape void of living beings or moving objects. Here, sound all by itself can introduce the image into a temporal continuum, although in the case of *La Jetée* the dissolves between static shots also bring a sense of temporality because of the speed of their execution.

Second case: *the image itself has temporal animation* (movement of characters or objects, movement of smoke or light, mobile framing). Here, sound's temporality combines with the temporality already present in the image. The two may move in concert or slightly at odds with each other, in the same manner as two instruments playing simultaneously.

Temporalization also depends on the type of sounds present. Depending on density, internal texture, tone quality, and progression, a sound can temporally animate an image to a greater or lesser degree and with a more or less driving or restrained rhythm.[6] Different factors come into play here:

1. *How a sound is sustained*. A smooth and continuous sound is less "animating" than an uneven or fluttering one. Try accompanying an image first with a prolonged steady note on the violin and then with the same note played with a tremolo made by rapidly moving the bow. The second sound will cause a more tense and immediate focusing of attention on the image.

2. *How predictable the sound is as it progresses*. A sound with a regular pulse (such as a basso continuo in music or a mechanical ticking) is more predictable and tends to create less temporal animation than a sound that is irregular and thus unpredictable; the latter puts the ear and the attention on constant alert. A good example would be the dripping water in *Persona* and in Tarkovsky's *Stalker* (1979): each unsettles our attention through its unequal rhythm.

However, a rhythm too regularly cyclical can also create tension because the listener lies in wait for the possibility of a fluctuation in such mechanical regularity.

3. *Tempo*. How the soundtrack temporally animates the image is not simply a mechanical issue of tempo. A fast piece of music will not necessarily accelerate the perception of the image. Temporalization actually depends more on the regularity or irregularity of the sonic flow than on tempo in the musical sense of the word. For example, if the flow of musical notes is unstable but moderate in speed, the temporal animation will be greater than if the speed is rapid but regular.

4. *Sound definition*. A sound rich in high frequencies will command perception more acutely; this explains why the spectator is on the alert when watching many recent films.

Temporalization also depends on the *model of sound-image linkage* and on the *distribution of synch points* (see chapter 3). Here too, the extent to which sound activates an image depends on how it introduces points of synchronization—predictably or not, in a varied way or monotonously. Control over expectations tends to play a powerful role in temporalization.

In summary, for sound to influence the image's temporality, a minimum number of conditions are necessary. First, the image must lend itself to it, either by being static and passively receptive (as with the static shots of *Persona*) or by having a particular movement of its own (microrhythms "temporalizable" by sound). In the second case, the image should contain a minimum of elements—either elements of structure, agreement, engagement, and sympathy (as we say of vibrations) or active antipathy—with the flow of sound.

By visual microrhythms I mean rapid movements on the image's surface caused by things such as curls of smoke, rain, snowflakes, undulations of the rippled surface of a lake, sand dunes, and so forth—even the swarming movement of the photographic grain, when visible. These phenomena create rapid and fluid rhythmic values, instilling a vibrating, tremulous temporality in the image. Kurosawa utilizes them systematically in his film *Dreams* (1990)—petals raining down from flowering trees, fog, snowflakes in a blizzard. Hans-Jürgen Syberberg, in his static and posed long takes, also loves to inject visual microrhythms—smoke machines in *Hitler* (1977), the flickering candle during Edith Clever's reading of Molly Bloom's monologue in *Edith Clever Reads Joyce* (1985). So do Manoel de Oliveira (*The Satin Slippers*, 1985) and Hou Hsiao-hsien (*The Assassin*, 2015). It is as if this technique affirms a kind of time specific to sound cinema, as the record of the microstructure of the present.

SOUND CINEMA IS CHRONOGRAPHY

One important historical point has tended to remain hidden: we are indebted to synchronous sound for having made cinema an art of time. The stabilization of projection speed at twenty-four frames per second, made necessary in the late 1920s by the coming of sound, did have consequences that far surpassed what anyone could have foreseen. Filmic time was no longer a flexible value, more or less transposable depending on the rhythm of projection. Time henceforth had a fixed value; sound cinema guaranteed that whatever lasted *x* seconds in the editing would still have this same exact duration in the screening. In the silent cinema a shot had no exact internal duration; leaves fluttering in the wind or ripples on the surface of the water had no absolute or fixed temporality. Each exhibitor or projectionist had a

certain margin of freedom in setting the rhythm of the projection speed. It is no accident that the motorized editing table, with its standardized film speed, did not appear until the sound era.

Note that I am speaking here of the rhythm of the whole finished film. A film may certainly include material shot at nonstandard speeds—accelerated or slow-motion—as seen at different points in sound film history in works of Michael Powell, Martin Scorsese, Sam Peckinpah, Federico Fellini, Lars von Trier, or Johnnie To and also in many westerns and action movies: chases on horseback, on Roman chariots, with cars or spaceships. But if the speed of these shots does not necessarily reproduce the real speed at which the actors moved during filming, it is fixed in any case at a precisely determined and controlled rate.

So sound temporalized the image not only through the effect of added value but also quite simply by normalizing and stabilizing film-projection speed. A silent film by Tarkovsky or Jia Zhangke would not be conceivable. The Russian director, who called cinema "the art of sculpting in time," wouldn't have been able to say that or above all practice it in the silent era. His long takes in *Stalker* and *The Mirror* (1975) are animated with rhythmic quiverings, convulsions, and fleeting apparitions that, in combination with vast controlled visual rhythms and movements, form a kind of hypersensitive temporal structure. The sound cinema can therefore be called *chronographic*: written in time as well as in movement.

TEMPORAL LINEARIZATION

When a sequence of images does not necessarily show temporal succession in the actions it depicts—that is, when we can read them equally as simultaneous or successive—the addition of realistic diegetic sound imposes on the sequence a sense of real time, like normal everyday experience, and, above all, a sense of time that is linear and sequential.

Let us take a scene that occurs frequently enough in silent films (say, *People on Sunday*, 1929): a crowd reacting, constructed as a montage of closeups of incensed, strained, or laughing faces. Without sound, the shots that follow one another on the screen need not designate actions that are temporally related. One can quite easily understand the reactions as being simultaneous, existing in a time analogous to the

perfect tense in grammar. But if we dub onto these images the sounds of collective booing or laughter, they seem magically to fall into a linear time continuum. Shot B shows someone who laughs or jeers *after* the character in shot A.

The awkwardness of some crowd scenes in the very earliest talkies derives from this uncertain linearity. For example, in the opening company dinner of Renoir's *La Chienne* (1931), the sound (laughter, various verbal exchanges among the partygoers) seems to be stuck onto images that are conceived as inscribed in a kind of time that was not yet linear.

The sound of the spoken voice, at least when it is diegetic and synched with the image, has the power to inscribe the image in a real and linearized time that no longer has elasticity, in part because of the sentence structure and word order dictated by different languages. This factor explains the dismay of many silent filmmakers upon experiencing the effect of "everyday time" at the coming of sound.

VECTORIZATION OF REAL TIME

Imagine a peaceful shot in a film set in the tropics: a woman is ensconced in a rocking chair on a veranda, dozing, her chest rising and falling regularly. The breeze stirs the curtains and the bamboo wind chimes that hang by the doorway. The leaves of the banana trees flutter in the wind. We could take this poetic shot and easily project it backward, from the last frame to the first, and essentially nothing would change; it would all look just as natural. We can say that the time this shot depicts is real, since it is full of microevents that reconstitute the texture of the present, but that it is not vectorized. Between the sense of moving from past to future and future to past we cannot confirm a single noticeable difference.

Now let us take some sounds to go with the shot—direct sound recorded during filming or a soundtrack mixed after the fact: the woman's breathing, the wind, the clinking of the bamboo chimes. If we now play the film in reverse, digitally or on tape, it no longer works at all, especially the wind chimes. Why? Because each one of these clinking sounds, consisting of an attack and then a slight fading resonance, is a finite story oriented in time in a precise and irreversible manner. Played in reverse, it can immediately be recognized as "backward." Sounds are vectorized more than are moving images.

The same is true for the dripping water in the prologue of *Persona*. The sound of the smallest droplet imposes a real and irreversible time on what we see, in that it presents a trajectory in time (small impact, then delicate resonance) in accordance with the logic of gravity and the return to inertia.

This is the difference, in the cinema, between the orders of sound and image: given a comparable time scale (say two to three seconds), sonic phenomena are much more characteristically vectorized in time, with an irreversible beginning, middle, and end, than are visual phenomena.

If this fact normally eludes us, it is because the cinema has derived great amusement from exceptions and paradoxes by playing on what's visually irreversible: a broken object whose parts all fly back together, a demolished wall that reconstructs, the inevitable gag of the swimmer coming out of the pool feet first and flying up to settle on the diving board. Of course, images showing actions that result from nonreversible forces (gravity causes an object to fall, an explosion disperses fragments) are clearly vectorized. But much more frequently in movies, images of a character who speaks, smiles, plays the piano, or whatever are reversible; they are not marked with a sense of past and future. Sound, on the other hand, quite often consists of a marking off of small phenomena oriented in time. Isn't piano music, for example, composed of thousands of little indices of vectorized real time, since each note begins to die as soon as it is born?

STRIDULATION AND TREMOLO: NATURALLY OR CULTURALLY BASED INFLUENCE

The temporal animation of the image by sound is not a purely physical or mechanical phenomenon: cinematic and cultural codes also play their part. A music cue or a voice or sound effect that is culturally perceived as not "in" the setting will not set the image to vibrating. Yet the phenomenon still has a noncultural basis.

Consider the example of the string tremolo, a device traditionally employed in opera and symphonic music to create a feeling of dramatic tension, suspense, or alarm. In film, we can get virtually the same result with sound effects: for example, the stridulation of

nocturnal insects in the final scene of Randa Haines's *Children of a Lesser God* (1987) or the rustling of animals in a forest in the Solomon Islands in Terrence Malick's *The Thin Red Line* (1998). This ambient sound, however, is not explicitly coded as a "tremolo": it is not in the official repertoire of standard devices of filmic writing. Nevertheless, it can have on the dramatic perception of time exactly the same effect of concentrating attention and making us sensitive to the smallest quivering on the screen, as does the tremolo in the orchestra. Sound editors and mixers frequently utilize such nocturnal ambient sounds, and they parcel out the effect like orchestra conductors, by their choices of sound-effects recordings and the ways they blend these to create an overall sound. Obviously the effect will vary according to the density of the stridulation, its regular or fluctuating quality, and its duration—just as for an orchestral effect.

But what exactly is there in common, for a movie spectator, between a string tremolo in a pit orchestra, which the viewer identifies as a cultural musical procedure, and the rustling of an animal, which the viewer perceives as a natural emanation from the setting (without dreaming that the latter have been recorded separately from the image and expertly recomposed)? Only an acoustic identity: that of a sharp, high, slightly uneven vibrating that both alarms and fascinates.

This also holds true for all effects of added value that have nothing of the mechanical: founded on a psychophysiological basis, they operate only under certain cultural, aesthetic, and affective conditions by means of a general interaction of all elements.

RECIPROCITY OF ADDED VALUE:
THE EXAMPLE OF SOUNDS OF HORROR

Added value works reciprocally. Sound shows us the image differently from what the image shows alone, and the image likewise makes us hear sound differently than if the sound were ringing out in the dark. However, for all this reciprocity the screen remains the principal support of filmic perception. Transformed by the image it influences, sound ultimately reprojects onto the image the product of their mutual influences. There's ample evidence of this reciprocity in the case of

horrible or upsetting sounds. The image projects onto them a meaning they do not have at all by themselves.

Everyone knows that the classical sound film avoided showing certain things by calling on sound to come to the rescue. Sound *suggested* the forbidden sight in a much more frightening way than if viewers were to see the spectacle with their own eyes. An archetypal example is found at the beginning of Robert Aldrich's masterpiece *Kiss Me Deadly* (1955), when the runaway hitchhiker whom Ralph Meeker picked up has been recaptured by her pursuers and is being tortured. We see nothing of this torture but two bare legs kicking and struggling, while we hear the unfortunate woman's screams. What makes the screams so terrifying is not their own acoustic properties but what the narrated situation, and what we're allowed to see, project onto them.

Another traumatic aural effect occurs in a scene in *The Skin*, by Liliana Cavani (1981), based on Malaparte's novel. An American tank accidentally runs over a citizen of Naples while he's celebrating the liberation of his city, and we hear a ghastly sound of his body being crushed. Although spectators are not likely to have heard the real sound of a human body in this circumstance, they may imagine that it has some of this humid, viscous quality. The sound has obviously been Foleyed in, perhaps by crushing fruit.

As we shall see, the figurative or narrative value of a sound in itself is usually quite nonspecific. Depending on the dramatic and visual context, a single sound can convey very diverse things. For the spectator, it is not acoustical realism so much as synchrony above all and, secondarily, the factor of verisimilitude (verisimilitude arising not from truth but from convention) that will lead him or her to connect a sound with an event or detail. The same noise can convincingly serve as the sound effect for a crushed watermelon in a comedy or for a head blown to smithereens in a war film—it can be joyful in one context, intolerable in another.

In Georges Franju's *Eyes Without a Face* (1960) we find one of the rare disturbing sounds that critics have actually remarked upon: the noise made by the body of a young woman—the hideous remains of an aborted skin-transplant experiment—when the surgeon Pierre Brasseur and his accomplice Alida Valli drop it into a family vault. What this flat thud (which never fails to send a shudder through the movie