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# LEADING WITH THE EAR: *UPSTREAM COLOR* AND THE CINEMA OF RESPIRATION

Joseph G. Kickasola

*Upstream Color* is an exploration of themes and abstractions rather than a concrete narrative, but it's also like a puzzle box with all the pieces laying [sic] at your feet. You may not be able to figure it out, but that's part of the point of this sensually-directed, sensory-laden experiential (and experimental) piece of art that washes over you like a sonorous bath of beguiling visuals, ambient sounds and corporeal textures . . . . *Upstream Color* could be an exhaled, ephemeral dream where time, space and madness intermingle. It's a picture that's not easy to process, and that's part of what makes it so breathtaking and brilliant . . . . It's fleeting, transcendental. Don't ask me what it all means."—Rodrigo Perez, *IndieWire* (2013)

Close your eyes . . . —*Upstream Color*, first line of dialogue

Whatever else *Upstream Color* might or might not be "about," an aesthetics of respiration drives it. What this might be, and how the sound design of the film helps to create it, forms the bulk of this essay, but the foundational argument here is that writer-director-actor-editor-cinematographer-composer Shane Carruth leads with the ear, and the rest of the body follows.

The film's story rolls out cryptically, but as the quote above suggests, the sensual register of the film is notably high. Before any stable sense of character, place, or trajectory solidifies, sensual thematic strands emerge: breathing, water, thirst, pulse, rhythm, and a general theme of unconscious activity or intuition privileged over conscious decision or comprehension. These themes provide a coherence, not initially given by the narrative, that tunes our bodily experience in very specific, powerful ways. As a focused corporeal experience, the film calls for multisensory analysis.

The aesthetics of respiration in *Upstream Color* consists of three important dimensions: themes of "breathing"

(and things associated with it) in the narrative, stylistic and experiential analogues to respiration, and perceptual prompts toward respiratory response in the viewer. Yet all this is the product of "leading with the ear" because Carruth's auditory strategy plays a dominant role in constituting its aesthetics of respiration. This essay primarily attends to film sound, but does so with a focus on its multisensory capacities.

Multisensory analysis has its root in the general turn to embodiment in both the humanities and cognitive neuroscience and can be seen as a phenomenological mode of embodied cognition theory, focused on perception. It begins with the sensual perceptive event and combines phenomenology with perceptual research and theory to understand the relationship between film form and perception.

The equation that interests us here—aural experience plus multisensory perception/analysis equals aesthetics of respiration—requires more unpacking, but let's suspend that for now. As Jean-Luc Nancy suggests in *Listening* (NY: Fordham UP, 2007), sometimes we need to listen before we theorize. The film's "puzzling" character encourages us to start with the experience, then move to the ideas. If we are to know what a cinema of respiration might be, we ought first to breathe with it.

## Opening Scenes: An Auditory Profile

Discussing multisensory perception through a focus on audition (hearing) risks confusion: Audition should be seen as a gateway to the full perceptual experience, not a hermetically sealed, unimodal perception. If one analyzes the sound as a solely aural event or even as a complement to the picture, the larger, embodied effect is overlooked. This is more than Michel Chion's wise admonition never to isolate picture and sound in film studies. To lead with the ear is to maximize the auditory dimension to engage the whole body through it.

The detailed analysis that follows is limited to the opening sequences, which should be viewed before you read on,

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if possible. All the major aural strategies are present here, and audition plays a critical role. The craft and formal inventiveness of the audio are worthy of attention, but my primary goal is to set the stage for a discussion of the auditory/multisensory and respiration.

For the first 20 minutes of the film, the sound is dominant and dialogue is minimal. These scenes feature mysterious characters doing curious, sometimes frightening things. A man harvests worms from plants and makes a type of tea from them. Some boys drink it and gain uncanny abilities to match each other's thoughts and movements. The harvester places a worm in a pill and abducts a woman, forcing her to ingest it. This woman, Kris (Amy Seimetz), falls under his mind control as a result, and he abuses this power over several days to steal all she has. After he departs, she incrementally awakens through a haze of hallucinations (or are they?). She finds long worms crawling under her skin, which she endeavors to remove with a kitchen knife, passing out in the attempt. A stranger sets up public address speakers face down in a field, where he broadcasts a loud, relentless, wavelike sound. Kris responds to the "call" and the man extracts her worms in a bizarre surgical procedure, implanting them into a pig, which he has brought along. He returns the pig to his farm, and Kris fully awakes in her car on the side of the highway, bewildered and unmoored: broke, fired from her job, struggling to understand what has happened.

The rest of the film stays with Kris, who stumbles into a romance with Jeff (Carruth), a man she has met. Jeff and Kris's relationship becomes an intense occasion for considering all things regarding identity and human connection, and he plays a pivotal role in her attempt to understand what has happened. Carruth significantly develops the pig-farmer character as well, and this strengthens the auditory themes, since the farmer also happens to be a *musique concrète* composer, not unlike Carruth himself. Kris and Jeff learn that there are others who have been similarly victimized, and they set out to discover the truth behind their experiences.

The largest temporal structures of these first twenty minutes are determined by the presence and absence of the score. There are seven auditory "movements," most of which alternate between musically undergirded sections and those with a more complicated auditory foundation. Even nonmusical sections show a "musical" approach to sounds and sound effects, and so may be generally aligned with *musique concrète*.

*First Movement—Music:* We hear a solitary major chord, played by strings and horns, swelling in volume

and intensity. This mixes with a sound of gradually intensifying airflow, similar to a jet engine as heard from inside the plane. The gradual crescendo of sound suggests something monumental, yet the screen is black for five seconds before any visuals emerge. Here at the very outset, we find Carruth leading with the ear and using sounds that evoke respiration (such as airflow).

The first image reveals that the airplane sound is actually that of a highway, heard from within a moving car. This strategy will often repeat, highlighting another dimension of "leading with the ear": Listen first, identify and categorize second, and the experience will be imaginatively expanded.

A garbage bag full of writing paper sits in the back of the vehicle. Light flares pulse and play as if exulting over the mysterious inscriptions. Having been primed by the audio (led by the ear), we perceive the light following the lead of the sounds.

The music provides a temporal frame within which many smaller temporal events unfold. This is particularly striking when we consider the pace of the visuals, which present a bewildering flurry of phenomena. The musical chords shift gracefully, about every seven to nine seconds initially, then every four to five seconds. The visual pace is much faster, with an image every two seconds or so. Our inability to process the visuals fully throws us on the music for emotional and temporal grounding. There is no dialogue until the next movement, at the 2:40 mark.

Music is not the only thing to hear. To return to the first image, just as the music peaks and begins to wane, we hear a loud, intense thud. Again we do not *see* the source, so we perceive the sound as a both a climax to the music and a rupture, an unexpectedly nonmusical climax. We gather (from memory) that this sound is a car door, and the next shot reveals a person (shown from the torso down) carrying the garbage bags away from the car. This type of sudden aural jump cut will be repeated numerous times throughout the film. Here, "leading with the ear" means not only emotional priming but also using sound as a narrative and temporal bridge.

Such audio linkage is common enough in cinema, but here it initiates a transition from music to musically treated natural sound, aligned with *musique concrète*. Importantly, it presages the farmer character, who records sounds and composes music in the *concrète* mode. This is a clue to Carruth's own sound aesthetic, and it emphasizes the importance of sound to the film in general. The opening mixes diegetic and nondiegetic "music" productively, leading to sequences that transition between these

two types of music seamlessly. As the chord decays, a series of new sounds leads us on, amounting to a musical phrase. The car door is followed, on beat, by the steady rhythm of the man walking, an aural theme that will often reappear. This steady walking (the pace of which suggests deliberation) climaxes in a striking series of percussive, grating sounds: The bag hits the ground, the door of the dumpster screeches open, and a visual jump cut of the door opening (again) from another angle creates an extension of the sound, an aural “swell” that climaxes in the resounding, hollow thud of the door hitting its metal terminus.

The first movement is also replete with some very deliberately amplified, delicate, high-fidelity sounds: the rub of a finger on a leaf, the snap of a pocketknife blade opening, the scraping sound of a knife on another leaf, fingers scraping through dirt, the dull roar of fire in a barrel, a rain of dirt from a sifter on a metal chair, the thud of a worm hitting the bottom of a container, the rush of a passing car, the clicking spin of a bike wheel.

In addition to their rhythmic, musical arrangement, the amplification of these elements pushes them to the fore of attention. We expect these sounds, but their amplitude is surprising, which reinforces their role as musical elements (each providing a bit of perceptual force, extending and then passing).

*Second Movement*—Musique Concrète: “Close your eyes,” one boy says to another, inaugurating the second movement. He then proceeds to join his friend in a duet of isomorphic hand gestures, perfectly in sync, without the aid of sight.

Indeed, we already have closed our eyes, in a manner of speaking. Carruth has positioned us to listen for aural grounding amid a flurry of sumptuous visuals and completely bewildering narrative fragments. The psychology of this, rooted in its temporal structure, chimes beautifully with a theme of the film soon to be revealed: that of unstable consciousness or being.

As the boys start their miraculous concert of movement, a resounding, echoing sound from the science-fiction idiom (it seems quasi-technological) accompanies their first movements and pulses regularly throughout the dance. It recalls sonar as its reverberations and echoes seem to emanate in a liquid or vacuous field, not air. It also initiates an important theme: that of “submersion.”

Brief dialogue carries us to the next scene, where a third boy tries the tea. We hear the amplified drop of the worm in a sieve, and an auditory waterfall of liquid as the water is poured. The water has the added value of a thematic

resonance with breathing, via our association with the deluged worm. Again the intensity, fidelity, and amplitude of the sound suggest great significance and feed into themes to come. The pulsing sci-fi sound effect continues over the extreme close-up of the worm writhing and continues through a remarkable sequence of extreme close-ups under water, in an oxygen-free space of microscopic wonder. The sequence has a musical quality in its dancing rhythm, and the sound of the water shifts to an underwater quality, gradually yielding completely to the sonar-like timbre.

We are suddenly yanked back to the natural world (complete with room tone) with a clinking sound, which the visuals reveal as the sieve knocking against the glass. But this return to the macroscopic world is brief: We are plunged back into the microscopic two brief shots later, with the sonar sounds, and then hurled again to the macroscopic with the plop of another worm in the sieve and the rush of more water pouring.

Is this violent shoving between macroscopic and microscopic a replication of drowning, as we experientially surge above and below the surface of an aurally defined liminal space? Or is it a ritual, as the tea drinking hints with its echo of a Japanese tea ceremony or perhaps a Christian communion? Or is this a baptism of sorts, where two worlds are miraculously conjoined? The next shots suggest the latter.

“Are you ready?” the experienced boy queries off screen, over the new boy’s look. Then comes a dramatic exhalation of breath on the soundtrack, followed by the first boy’s profile (again: sound first, picture second), his breath wisping in the cold evening air.

This prominent moment of respiration creates a musical sort of crescendo with the other boy’s response (“no”) and a climactic thrust of the first boy’s fist. The second boy, while looking away from his assailant, miraculously blocks the fist (a climactic *smack*) and the nondiegetic music returns, inaugurating a series of martial-arts-style blows and blocks (another marvel of intuition and motion) and the beginning of the third movement.

*Third Movement—Music*: The musical rhythm of the fight is familiar to fans of the martial-arts genre, which has long relied on the stylistic arrangement of force patterns, as David Bordwell has pointed out. But two important variations on this pattern become evident: The blows are generally very muted and muffled or softened in timbre, with an emphasis on brushing of clothing (that is, movement) rather than forceful contact. Carruth increases their rhythmic interest by intercutting them with shots of



Upstream Color (2013) – the deluged worm



Upstream Color (2013) – wisping breath

a man (later introduced as Jeff) jogging—and respirating, we note—at an intense pace.

Interestingly, Carruth chooses to ramp down the natural noises until the surging, respiring man is “noiselessly” floating on the screen, accompanied by the nondiegetic music, which has returned to the alternating chords, shifting every five seconds or so. Jeff’s running is then intercut with shots of Kris running.

Natural sound reemerges faintly amid the music through a cell-phone call that Kris receives. In keeping with the sensual focus of the opening sequences, the dialogue is at a low volume and does not drive the visuals or

significantly affect the characters; it’s a classic example of what Michel Chion calls “emanation” speech. This transitions us to a very unexpected image: a huge constructed creature, stumbling backward and forward, its uneven gait resounding. The thumps of its steps yield to the sound of clicks, as we realize we have subtly shifted to a computer image of the thing, which is an art project; we hear Kris scrutinizing the image at her art-gallery desk and keyboard.

After some brief shots advancing the narrative, wherein Kris discusses problems with the project and dialogues with the artist who has created the creature—interestingly,

Carruth developed the animations for an earlier (unproduced) film—a steady walking sound emerges, accompanied by a close-up of the back of a man's head moving down a hallway. He pauses to drop the needle on a record player, beginning the fourth movement.

*Fourth Movement*—Musique Concrète: Via the record's scratchy, low-frequency audio, a man speaks: "... making the yellow soil express its summer thought in bean leaves and blossoms rather than in wormwood and piper and millet grass, making the earth say *beans* instead of *grass*—this was my daily work."

The reading is from chapter seven ("The Bean-Field") of Henry David Thoreau's *Walden* (1854), which will become a narrative theme in the film. We should also recall, for the purposes of an aesthetics of respiration, that "Walden" refers to a pond, in which one could presumably dive for treasures or drown. (Indeed, a critical scene much later in the film—Kris's psychological turn in the swimming pool—suggests both.)

This quotation is accompanied by quick images of the Thief creating his worm pills and by amplified yet delicate natural sounds, as in the first movement. Natural sounds are key because music will not return for nearly seven minutes. As before, the sounds are deliberately paced and the timbres and durations carefully chosen, creating an adventurous *musique concrète*. These are far from the reassuring, predictable surges of sound in the first and third movements, and they are more aggressive than the natural sounds of the second movement. In addition, the bulk of the dialogue of the first 20 minutes occurs here.

Not that it's particularly illuminating. We still have very little idea of who these characters are, what they are doing, and what their motivations might be. Even after Kris is assaulted and forced to ingest the worm, making it clear that she is being controlled and robbed, the narrative remains disorienting, pushing us continually back to the soundtrack for stability.

The sequence before the assault is a fast-paced exposition of the Thief's failed attempt to sell his drug. The audio beats with a variety of rhythms, largely composed of footsteps, rushes of background noise (for example, traffic), and finally some diegetic music along with Kris's steady footsteps as she walks to the bathroom of the bar. We see the Thief take note of her and calculate while the music throbs. The throbbing music drops to silence, as if suggesting a cardiac arrest or arrhythmia, over a solid black screen. The silence is then ruptured by a very loud metallic sound and a deafening roar, and the black screen is replaced with what appears to be an overhead view of

the backdoor of the bar, opening onto a dark, rainy alley, where the Thief is dragging Kris's limp body. The audio serves to intensify this haptic evocation: Kris lies limp as the rain drenches her, and the close-ups of her being soaked, matched with the relentless intensity and unavailability of the rain, underscore her helplessness and vulnerability.

The overwhelming and oppressive roar of the rain prefigures a greater horror. In a very quick series of close-ups, the Thief attaches an apparatus that sends the worm, suspended in water, into Kris's lungs. The sound accompanying each squeeze of the bulb is literally thunderous as it mixes with the sound of the storm; on careful listening it sounds like an underwater recording of cannonballs being dropped into a pool. The combination of force and water is very disconcerting, in keeping with the aggression and crisis the film has led us to expect. Here the aesthetics of respiration hits its peak: Kris gasps and staggers to her feet, coughing, vomiting, sputtering, accompanied by overwhelming sounds of rain, thunder, and enormous volumes of water rushing in multiple directions.

A sequence then illustrates the thievery in process. The auditory dimension is most pronounced, with each image matching a particular beat. Credit-transfer checks are slapped rhythmically on a table, check-register pages are flipped, the thief taps his copy of *Walden* three times (a tempo-rhythmic motif that will recur). A longer sequence of images now initiates the mind-control subplot, and the Thief's dull, dispassionate instructions fill the soundtrack: "All the food is poisoned. Your throat is parched. Make a pitcher of ice water. Bring a small glass," and so on. While the recitation of bizarre instructions continues, an oppressive refrigerator hum fills the background, and then a delicate tinkling sound is heard—ice spinning in a pitcher, the camera slowly reveals.

The next sequence is less rhythmic, but very evocative of the respiration theme. As the bizarre mind-control script is spoken by the Thief, including the admonition for Kris to constantly drink water, we hear a water-ingestion song cycle: the sound of water poured, swallowed, pitcher and glass picked up, set down again. Repeat. This ushers in a sequence wherein the shots are nearly always of something moving and making noise at a regular pace: the click of checkers, the scratch of a pen as Kris copies out long passages from *Walden* by hand, the rustling of paper as she fashions paper chains from these pages, water pouring, swallowing.

Heightening the intensity, the Thief tells Kris that her mother is being held for ransom, using this lie to extort



Upstream Color (2013) – the roar of rain, before the ingestion



Upstream Color (2013) – the water cycle

from her a hidden coin collection and the monetary equity she has in her house. Again there is a sequence of shots (mostly close-ups) with rhythmic emphasis: a stash being uncovered, the coin box withdrawn and opened (with the sound of Kris urinating in the background), a printer printing (a home-equity credit application).

*Fifth Movement—Music:* The procession of images does not break stride, and nondiegetic music emerges to reinforce it as the Thief finishes his work. It is a different musical theme: mechanical and inexorable arpeggios with more ominous minor intervals than before and a heavier tempo. Timpani provide percussive regulation. The final checks

and documents are signed, the timpani and strings surge, the Thief's monotone commands drone on relentlessly. Kris copies *Walden*, plays with the checkers, robotically repeats conversations she has had in the equity-acquisition process, knits, and drinks more water.

*Sixth Movement—Musique Concrète:* The music ceases suddenly. Quiet, quotidian sounds indicate minimal movement around the house. The Thief quietly cleans up and gathers his loot. Kris cackles inexplicably at a painting on the wall while eating ice out of a stockpot, her eerie laugh interrupted only by periodic crushing of ice. The Thief declares to her that her fast is over, and unnerving sounds



Upstream Color (2013) – worm in the bloodstream

of aggressive swallowing fill the soundtrack. We see Kris camped before the refrigerator, guzzling and gorging on all the food she can cram into herself. The man exits amid this horrifying cacophony, bearing a garbage bag full of the paper chains Kris has made from her *Walden* transcriptions. We hear (do not see) the door open, suggesting he has finally departed. The visuals shift to silent tableaux of half-eaten food scattered around the kitchen floor. The only sound is the grinding, hollow, cycling hum of the open refrigerator.

Most of the room tones exhibit minute cyclical patterns that Carruth exploits for their temporal virtues. (Excessive, poorly balanced room tone is a common flaw in low-budget filmmaking, but whatever the circumstances of the recording here, Carruth transforms it aesthetically.) These patterns are prominent in the next sequence, creating a fascinating aural tapestry woven with Kris's deep, labored breathing and gentle movement on the sheets as she awakes.

Gradually the room tone builds to a rumble, like that of a distant aircraft approaching on a runway, until a climactic cut plunges us (as in the second movement) into the microscopic world—this time within Kris's bloodstream. The sound quickly fades to a quietness markedly different from the quiet of the macroscopic world where refrigerators hum and rooms have air movement. This vacuum-like space inside the body contains silent, horrifying worms writhing and swimming in the blood. Its awful silence continues for about 20 seconds.

Then we return to the macroscopic world with a beguiling sequence of hushed sounds and gentle, rhythmic close-

ups of Kris's hands, arms, legs, and feet sliding over the sheets as she awakens. It is the quiet before the storm, not unlike the rhythmic lapping of waves on a shore before thunder rolls in. After about 12 of these shots we again realize that the room tone has become slightly louder and ominous. This time it is not the sound of an airplane but the gradual rise of a low, ominous musical tone. Before long, a worm slithers into sight beneath Kris's skin.

After unbearable tension, the scene climaxes with a cut to a cry and a close-up of Kris sobbing while scratching at her skin. Her blood drips on the kitchen tile. She lurches to the dishwasher, rattles through its contents, and pulls out a knife. We listen to her panicked breathing for a few seconds as she contemplates the unthinkable. Then she takes and holds a determined breath. As we mimetically hold our breath with her, the tension finally breaks with the sickening thump of the knife pounding into flesh and a pathetic sob from the abused woman followed by heaving, gasping respirations amid enormous pain. Then comes sudden silence, except for the empty room tone and the ironic, cheerful chirp of distant birds over tableaux of blood and of Kris passed out on the floor.

*Seventh Movement—Auditory Multisensory Realized:* The next image shows PA speakers in a vehicle, amid the cyclical rumbling of highway noise. The Farmer places the speakers in the field with a now-familiar pattern of three thumps. A cassette is placed in a player, and the click of the play button (again, amplified) initiates an overwhelming cycle of wavelike rushing noises that will beckon to Kris. When she appears, the sound pattern continues at its

unflinching pace, but the timbre changes to a more muffled quality, perhaps to reflect her point of audition. (Point of audition refers to the sound qualities associated with Kris's auditory perspective, as she first sees the farmer from a distance. We lose her perspective a few shots later, holding a point of audition closer to the camera, viewing both characters from a distance.) She approaches the Farmer, her arms outstretched, bewildered and afraid. As the roar of the speakers proves deafening, from far away we hear her pathetically cry, "They won't come out . . ."

For all the suggestion of *musique concrète* in the sound design of sections two, four, and six, it is literally realized here through an actual *concrète* composition, solidifying the dialectic between musical and "natural" sound. And it is this union to which Kris responds, unable to resist the call.

### The Ear: From Audition to Multisensory Experience

The power of the film's sound design can be illuminated through a proper understanding of hearing as a multisensory experience. The core assumptions of a multisensory approach are

*Multi*—Human sensory systems are intermingled. There are connections between modalities, and there are multisensory neurons attuned to stimuli in all the sensory domains of the brain. The auditory system in particular is extensively multisensory. Research has revealed that multisensory perception is rich, common, and foundational to perception; our view of what perception *is* should therefore move away from unimodal "sense-to-sense correspondence" considerations. Older theories regarded "hearing" as employing the auditory system alone and speculated that in some unknown way the brain learned to make systems "talk" to each other, assembling an aggregate "picture" of the world somewhere in the brain. The actual situation is far more complex. Although there is an "auditory system" primarily dedicated to auditory work, that system is highly multisensorial.

*Sensory*—How many senses do we have? This is still debated, but Aristotle's enumeration of five senses is simplistic. At least nine senses are more or less agreed on in the scientific community: the Aristotelian five plus proprioception (bodily presence and integrity), nociception (pain and noxious stimuli), vestibular perception (spatial orientation and balance), and thermoception (temperature). Understanding of the latter four senses has resulted in part from

a more nuanced understanding of how the classic five senses work and combine.

*Perception*—In neurological and psychological terms, perception is more active in cinematic experience than has typically been thought. We often perceive one sense in terms of another, and an experience does not have to be ontologically unmediated or direct to be counted as perceived rather than imagined. When we watch Gabriel Axel's film *Babette's Feast* (1987), are we only "remembering" or "thinking about" indirect sense experiences such as taste? Is the effect of "remembering" or "imagining" food experiences while sitting in an empty room different from that of seeing *Babette's cailles en sarcophage* in a theater? Multisensory research suggests that there is a difference, due to "mirror mechanisms" and multisensory particulars of the given sensory systems. With respect to mirror neurons in the brain, Vittorio Gallese and Michele Guerra explain,

"Watching someone grasping a beer mug, biting an apple, or kicking a football activates the same cortical regions normally activated when actually executing the same actions. Further brain imaging studies showed that the [mirror mechanism] also applies to emotions and sensations. Witnessing someone else expressing a given emotion such as disgust or pain or undergoing a given sensation such as touch activates some of the visceromotor . . . and sensory-motor . . . brain areas activated when one experiences the same emotion or sensation, respectively. Such shared activations ground an apparently external stimulus (someone else's emotion or sensation) in our personal experiential acquaintance with the same emotion or sensation." (Embodying Movies: Embodied Simulation and Film Studies," *Cinema: Journal of Philosophy and the Moving Image* (2012), pp. 184-5)

Although we do not literally taste *Babette's* little quails in coffins, our memories and cognitive experiences are actively pulled toward the audiovisual stimulus, with results that are not merely imagination or memory because parts of our perceptual apparatus are engaged.

Returning to the relationship between hearing and breathing, these considerations help explain why multisensory analysis regards hearing as not only an isolated part of our response to breathing, but rather as a multisensory gateway to our entire embodied experience of respiration. There are several theories as to how these particular phenomena combine with memory and interact with the cognitive structures and operations that promote meaning, but Luis Rocha Antuñes sums up the most important concept: "The medium is audio-visual. The experience is

multisensory” (“Thermoception in the Films of Knut Erik Jensen,” Society for Cognitive Studies of the Moving Image, conference presentation, Berlin, 2013). In the case of *Upstream Color*, the audio invites and often triggers multisensory perceptions.

But how? To determine this we must first consider what sort of experience audition is and what it gives us beyond what we typically consider “aural” experience. Next we can consider its most general common uses, the perception of time and space and materiality. We then find that audition’s chief strengths are corporeality, intimacy, interiority, and relationality—characteristics that all have ramifications for multisensory perception.

### **Cross-modality: Some Ramifications for Auditory Immediacy**

We are cross-modal from the start. Infants, within hours of being born, start imitating facial gestures of their parents. There are also universal cross-modal associations that specifically pertain to the auditory system, and these have aesthetic consequences. Lawrence Marks has shown that there is a universal association between low notes on the musical scale and heaviness or darkness, for instance, and Peter Kivy has found that slow tempos, quietness, and complexity are associated with sadness in both Western and non-Western cultures, while fast tempo-loudness-simplicity is associated with happiness and fast tempo-loudness-complexity is associated with anger. His research suggests that some dimensions are hardwired from birth and that others are learned but remain universal because they are acquired through universal, not cultural, experiences such as the experience of gravity. This helps us understand how many of the low rumblings in *Upstream Color*, as both musical pitches and low-pitched sound effects, create a sense of foreboding. To say those moods are dark is to speak metaphorically about a sense of helplessness one feels in the dark, and to associate this cross-modally with low notes. Marks demonstrates that such a response is not *merely* cultural but has a strong universal, biological component.

All of our perceptual information—received and remembered—is situated within a body and “resonates” (J. J. Gibson’s term) with and within the perceiver. The resonance Gibson describes is the result of sensory registers, memory, and perceptual mechanisms working in concert to perceive, relate, and know the world in which we live. But since sound has a *literal* resonance within the body, it is multisensory in its very constitution. The sound

waves that emanate from the theater speakers and sympathetically vibrate in our bodies (as when we feel the intense rumble of the farmer’s recording in the seventh movement) vibrate the bones and membranes in our ears, creating the auditory signals that we call “sound.” Physiologically, audition is a haptic (touch) experience of vibration, as the deaf have always known. When the Thief feels the leaf in the second movement, the film offers us a cross-modal perception of texture predominantly triggered by audio (primary evidence of the texture), secondarily by vision (evidence not seen but consistent with situations that would yield this sort of texture), and associatively by touch (our memory of *what* that sound/vision situation feels like).

The auditory system works reciprocally with other senses. We know this already because we use auditory information to interpret visual phenomena, as when we interpret the emotions of a character by soundtrack cues or interpret emotional characteristics from aural clues such as the measured, determined walk of the Thief to the dumpster in the first movement. More surprising cross-modal interactions are also at play. For instance, the visual and somatosensory inputs in the auditory system can apparently control excitability in certain neurons that amplify or suppress auditory responses. Audition’s cross-modal influence on vision in temporal tasks has been well documented, and recent studies suggest that nontemporal visual tasks are also influenced by sound. These include an experiment where the number of beeps (two) heard by perceivers caused them to misapprehend how many light flashes they saw at the same time (two, when in fact there was only one). Other experiments reveal how left-to-right auditory motion suggestions influence how perceivers ascribe motion to random flashes of light in a field, and even to brief stationary visual stimuli. Something of this entrainment is at work when we see the opening image of *Upstream Color* and the light dances to the music we hear.

Such experiments show how sound not only guides but sometimes trumps what we visually perceive. These cross-modal principles are at work when we “see” Kris plunge the knife into her leg even though there is no such visual in the film. A literal image of the wounding is not necessary for the emotional (and perceptual) force of the moment to be retained, and some viewers will likely believe they saw the knife penetrate her skin. Here one recalls the famous stories about the shower scene in Alfred Hitchcock’s *Psycho* (1960) and the implied punches in Martin Scorsese’s *Raging Bull* (1980).

## Some Dimensions of the Auditory Experience of Time

In his seminal study *Orality and Literacy: The Technologizing of the Word* (Routledge, 1982), communication theorist Walter Ong notes that sound is evanescent, existing only when it is going out of existence. When one pronounces the word “permanence,” by the time one gets to the “-nence” the “perma-” is gone. All sensation takes place in time, but no other sensory field totally resists a holding action or stabilization in quite this way. In many respects audition is the sense for the existential “now.”

This points to the particularly embodied sense of time and succession in the auditory system. The body can process and assess time by other means, and cinema can temporalize images without sound—think of silent movies—but our most important sense marker of temporality is aural experience. Indeed, “the temporal precision of the auditory system is about two-and-a-half orders of magnitude greater than that of the visual system,” as R. D. Patterson, C. M. Hackney, and S. D. Iversen conclude (“Interdisciplinary Auditory Neuroscience,” *Trends in Cognitive Science* vol. 3 no. 7 (July 1999)).

As a result, there are ontological suggestions in sound: motion, a happening, “coming into being,” duration, “passing from being.” We associate sound with presumed animation, life, and movement precisely because, when we hear, we are hearing something lively, existent, and moving. The utterly static makes no sound. Sound can therefore animate images that would otherwise feel static; as Donald Ihde notes, anecdotes concerning the revolving spaceship in Stanley Kubrick’s *2001: A Space Odyssey* (1968) indicate that the ship failed to revolve for many perceivers until music was added (*Listening and Voice: Phenomenologies of Sound*, Albany: SUNY Press, 1997). This is surely the case in numerous images in the opening scenes of *Upstream Color*—for example, when the delicate, smaller sounds are amplified and given presence in the second movement. Conversely, when we see the worm in Kris’s bloodstream in the sixth movement, the absence of noise is surreal, setting the stage for expectation and suspense. The gradual roar of room tone suggests that the worms are really there, “becoming,” and this presages the eventual sight of worms crawling beneath Kris’s skin. This animating property is part of the way Carruth leads with the ear, giving images a sense of presence in the absence of dialogue or clear narrative cues.

Further along these lines, Michel Chion argues that audio endows images with a sense of timefulness. His book

*Audio-Vision: Sound on Screen* (NY: Columbia UP, 1994) catalogs the many ways sound does this: through temporal animation (sound in the image is rendered exact and concrete or—for effect—vague and broad), temporal linearization (synchronous sound imposes a definite sense of succession), and vectorization (sound dramatizes shots, orienting them toward a future, a goal, and creating a feeling of imminence and expectation). According to Ong, oral cultures demonstrate an extraordinary focus on the present tense, as well as a preference for situational, operational frames of reference, as opposed to abstract, categorical ones. In other words, those cultures that communicate most often through speaking and hearing (as opposed to writing and reading) demonstrate a preference for living in the moment, in close proximity to the temporal flow of the living human world. Although we do not live in anything close to an oral culture—indeed, very few purely oral cultures remain—this insight suggests something of the power and function of hearing as a temporal sense, embracing the flow of phenomena as event rather than as a series of higher-level concepts.

These observations are of great help in processing an opaque, difficult narrative like that of *Upstream Color*, which provides almost no expository information and very little that is familiar or predictable. Sound structures the progress from moment to moment, whether through music, sound effects, or careful selection and arrangement of diegetic sounds. As we have seen, Carruth often deliberately highlights the auditory dimension. A few of his techniques are amplitude manipulation; presenting the sound before the correlated picture is revealed; mixing natural background sounds with music; and arranging those background sounds in rhythmic patterns that suggest a type of temporal structure. The sound design gives us a sense of the present, animates the images, orients us toward the future, and encourages us to ride experientially with the largely bewildering narrative before us.

Recent studies suggest that the auditory system brings to the perceptual signal its own measure of time, marked by periods between neural-activity spikes, for instance. Hence, our “body time” meets world time—and cinematic time—most intensely through hearing, in ways we do not yet fully understand. This suggests how very deep, relational, and dynamic auditory time is. Given so many (sometimes competing) orders of time, it’s little wonder that we gravitate to the music track of *Upstream Color* for our foundational temporal structure. The generously spaced chords, gracefully gliding one to another, give us reassuring five-to-nine-second “respirations” amid a flurry

of information on the visual level. This provides a larger, more stable, and perceptually manageable pace and feel for the sequence.

Research also shows that music has the ability to entrain heart rate and breathing, and that simple rhythms work best. The dynamics of stability and rupture in a scene are often instantiated by sound; a sound effect, or a rhythmic arrangement of them, can prime the viewer for a future event that may or may not be realized. Interestingly, a marked drop in heart rate and breathing rate may occur when music stops in the middle of a passage, falling to a level below the baseline at the start of the experiment. This musically induced relaxation brings with it a loss of predictability, which in some narrative contexts can feel like a loss of control. When the music is gone, we look for other anchors of temporality in whatever sound remains and in visual cues.

In other words, when auditory temporal flow is cinematically manipulated or taken away, the viewer's internal time scale shifts, and this can be aesthetically exploited. That partly explains why, when we see Jeff running (in the third movement) without a natural accompanying sound, the feel of it is wondrous. Not only has a type of material solidity, presence, and timefulness been taken from him, but the sense of progression in his run is suddenly diminished and we have only the nondiegetic music to guide us, leading us to perceive him as almost floating in static space rather than pounding from point A to point B. As we get to know Jeff in the middle third of the film, it becomes clear that this is an apt metaphor for his entire life.

By contrast, the brief arrhythmia of the throbbing club music, presented over a black screen directly after the assault in the fourth movement, is startling, and the effect is compounded with the sudden rush of rain a second later. Conversely, the sense of floundering when the audio's strong temporal dimensions and protensions are withheld helps account for the fear that the worm engenders. Of course, the worm in Kris's blood is horrifying for a number of psychological and narrative reasons, but there is something particularly effective about that awful silence. Perhaps it is experienced as a lack of relation, prediction, and control, since we no longer have the audio to ground us existentially. The silent killers are the scariest by far.

### Some Dimensions of Auditory Space and Materiality

Ihde acknowledges that spatiality in sound is weak in comparison to the precision of sight, but he denies that it

is absent or insignificant. One can hear and focally attend to any sound in the environment without even turning one's head, and one of audition's greatest marvels is our cognitive capacity to focus on one scene or stream of sounds (through attention) amid a dizzying amalgam of copresent sounds that reach our ears as an undifferentiated mass. The experience of space in hearing is not merely one of perceiver location, although this does have some applicability to surround-sound theatrical presentations; spatial hearing extends and relates us in a uniquely aural way to the "reality" of the scene before us. As Walter Ong observes, "Sight isolates, sound incorporates. Whereas sight situates the observer outside what he views, at a distance, sound pours into the hearer. . . . Vision comes to a human being from one direction at a time: to look at a room or a landscape, I must move my eyes around from one part to another. When I hear, however, I gather sound simultaneously from every direction at once: I am at the center of my auditory world, which envelops me, establishing me at a kind of core of sensation and existence." (1982: 72)

One dimension of that reality is what Ihde identifies as the "invisible" realm of reality (1997: 70). To take a startling example, Claudia Carello, Jeffrey B. Wagman, and Michael T. Turvey have demonstrated that perception of geometric and material properties of objects (such as size and shape) is not exclusively the domain of vision, but is often experienced through audition with surprising accuracy. We can identify shapes by sound, which can also reveal the unseen interiors of objects through sounds of hollowness and solidity as well as various timbres. "The melon reveals its ripeness; the ice its thinness; the cup its half-full contents; the water reservoir, though enclosed, reveals exactly the level of the water inside the sounding of interiors" ("Acoustic Specification of Object Properties" in *Moving Image Theory: Ecological Considerations*, eds. Joseph D. Anderson and Barbara Fisher Anderson, Carbondale: Southern Illinois UP, 2005).

Thus the numerous diegetic sounds that are so carefully arranged in *Upstream Color* not only serve a structural, temporal role; they also provide a sense of what these objects are and how we ought to feel about them. When the Thief first approaches the dumpster in the first movement, we note how Carruth uses jump cuts to extend the length of time it takes for the dumpster's metal door to slide open, creating a swelling effect in the sound. Then too, this temporal manipulation is accompanied by a noise of screeching metal—indicating hardness and abrasiveness through what Chion calls a "materializing sound index"—and the resounding echo of the doors' final stop tells us that

the dumpster is empty. Without the information provided by sound, these moments would feel very flat and artificial and the jump-cutting effect would be lost and pointless. In addition, the hard, abrasive quality of the sound has metaphorical application to the character, as we will soon discover; and the gaping, tomblike quality of the empty dumpster's interior can suggest something dark and foreboding. The sounds endow these objects not only with presence but with significance as well. By contrast, when the boys are fighting at the beginning of the second movement, Carruth's manipulation of the sound, placing it in a softer register, helps support the miraculous feel of that moment: a surreal, soft, not quite material world.

At several points in this analysis we've noticed the delicacy of sounds, where its qualities are in high fidelity and amplified. Most often these are cues to the texture and constitution of an object. For instance, the Thief's leaves are slightly rough to the touch. It's not obvious, even when viewing *Upstream Color* on the large screen, that the leaves are rough; but the amplified sound of the Thief's thumb rubbing the leaf yields to us the invisible shape of the leaf's surface at the microscopic level. Here and elsewhere, Carruth doesn't simply make the sounds of the world sing and dance; he endows them with a material and sensual presence they would not otherwise have.

These observations suggest that audition can manifest an experience of perceptual intimacy, and perhaps the most obvious notion of intimacy is one of proxemics (via spatiality) in sound. When it comes to the quality of an experience, and particularly to the intimate dynamic sense of the relationship between the perceiver and the space perceived, sound is the most intimate dimension, and the skilled audio editor can give us a heightened sense of that intimacy. "For an oral culture learning or knowing means achieving close, empathetic, communal identification with the known," Ong states (1982: 45). It would seem that cinematic audio offers a similar intimacy, and that certainly applies to *Upstream Color* in the way that Kris's world feels present to us, bewilders and enchants us, and ultimately horrifies us.

## The Aesthetics of Respiration

The aggregate effect of a multisensory impact through audition is a kind of whole bodily sympathy with the auditory structure, which we naturally associate with and imitate by breathing. This is foundational for the aesthetics of respiration.

Respiration is not a sense but an essential bodily function that works like a concert of senses and functions. It is

universal, generally constant, precedes language and higher-order functions, and shapes all of those functions. Do we know time without breathing? Do we know anxiety without an increase or irregularity in breathing rate? Breathing signifies many things to us, but there is also a more immediate level of meaning at work here, where respiration directly undergirds life and meaning itself. Breathing is a touchstone to life, a metronome of our experience. Some films push it forward, for our attention.

Although it is so ubiquitous that we rarely think about it, respiration has been shown to be physiologically connected to the limbic system, the central emotion center of the brain. Since all sensory inputs and outputs of the body are *processed* through the limbic system for salience (primarily in the hippocampus), there is a natural connection between respiration, emotion, and the senses; in addition, studies have shown what yoga practitioners have known for centuries: emotion affects breathing, respiratory control affects emotion, and both operations can be triggered by sensory experiences.

Hearing and respiration are not the same, but consider the parallels between the auditory experience and the breathing experience. These connections are more than coincidental. Respiration and hearing both

- involve air, which is invisible
- have particularly strong temporal and rhythmic dimensions
- are internally felt (we hear through vibration)
- are connected through the hearing of our breathing, and so have a reciprocal informational relationship
- are multisensorially engaged, and so serve as symbolic and emotionally laden operations

In *Upstream Color* we have "a" cinema of respiration, not "the" cinema of respiration. Davina Quinlivan's recent book *The Place of Breath in Cinema* (Edinburgh: Edinburgh UP, 2012) details respiration as a theme in the cinema of Atom Egoyan, David Cronenberg, and Lars Von Trier, from an embodied culturalist perspective; although she takes a different approach and focus, it complements the embodied-cognition approach I employ here. My consideration of *Upstream Color* is not a historiographic survey, an attempt to define a genre, or a full catalog of the sensory and emotional trappings of respiration, although I certainly encourage those projects. Rather, I propose a fresh perspective: seeing how a basic bodily function affects the aesthetics of a filmmaker, and how this works on a phenomenological, physiological level. Multisensory analysis can be universally applied to any film, but some films are more conducive to

this approach than others, due to their enriched multisensory elicitations. *Upstream Color* is such a film.

Carruth's skilled use of audio, extending to the multi-sensory body, suggests respiration on a number of levels. Breathing (or the lack thereof) is a theme that recurs constantly through the film: implied breathing suggested by temporal strategies; symbolic and experiential evocations of respiratory scenarios such as drowning, submersion, and so on; and more literal evocations in the narrative and imagery. The aesthetics of respiration is not solely the domain of audition, but Carruth has strongly emphasized auditory dimensions, since audition is the temporal and relational sense *par excellence*.

As we have seen, numerous mimetic factors in *Upstream Color* suggest respiration, and these items are not merely "thematic" but exert a strong pull on our natural mimetic tendencies. The discovery of mirror neurons has greatly intensified the importance of mimesis for understanding all sorts of bodily responses, and it is particularly illuminating when consider the multisensory appeals of *Upstream Color*. The chief mimetic factors related to an aesthetics of respiration in the film are

- prominent breathing by characters, as with the boy at the end of the second movement and when Kris confronts the worm in the sixth movement
- running and walking characters, featured in long takes of rhythmic movement, always implying the temporal element shared by breathing and walking; they may not have exactly the same tempo, but they have strong physiological correlation and often influence each other
- Kris's gasping after the assault (the fourth movement) as well as her desperate breathing in the scene with the kitchen knife (the sixth movement)
- Water, evoked and used throughout, including drinking—we know that we cannot breathe while we drink, and so all the scenes of Kris guzzling water are at once haptic (wet) and gustatory (taste, hydration) events as well as a suspension of breathing, a respiratory interruption
- the prominence of airflow in numerous sound effects and deliberately amplified natural sounds
- Suggestions of plunging beneath a liquid surface in various scenes, implying a catching of breath

All of these elements contribute to the film's aesthetics of respiration. In addition to the respiratory dimensions of music, as when swelling chords mimic inhalation, the relation between music and breathing can be one of temporal regulation and expectation.

The auditory movements of *Upstream Color* function as alternations between regulated breathing, cued by musical structures, and less-regulated breathing in the absence of music, with *concrète* techniques used to suggest that regulation should be present and may return. When music and regulation do return, there is a sense of ease and homecoming as we anticipate and derive reassurance from ordered beats. "Reassurance" here does not mean the feeling is necessarily pleasant—rhythmic music can certainly promote anxiety, as Spielberg's *Jaws* (1975) amply shows—but only that it is *predictable* and *authoritative* to a degree. The music provides a sense that we are on emotionally solid ground, knowing how we ought to feel, at least in a general sense. (Many filmmakers are famous for their ironic play with this tendency—think of the infamous "Singin' in the Rain" rape scene in Kubrick's 1971 *A Clockwork Orange*—but the irony is necessarily contingent on the norm.)

*Upstream Color* is not concept-free, and the narrative is not quite as opaque (on subsequent viewings) as Perez's above-quoted assessment suggests. Perez was definitely on to something, though. He compares the film to "an exhaled, ephemeral dream where time, space and madness intermingle," and it is indeed "breathtaking" in every sense of the word. Plenty has been written about film as dream, and about film-time, film-space, and even film-madness, but little has been seriously written about film as exhalation or inhalation. Yet it is an extremely rich theme in *Upstream Color* and many other films, and it's hard to imagine a experience that is more universal and more formative. Breathing is not simply indicative of life; it serves as a register of existence, emotion, salience, and temporality. As we let Carruth lead with the ear, we find our bodies following, especially if we listen to our breathing.

## Conclusion

If something can be explored or illuminated that would have been difficult to verbalize, that to me is what a film should be. . . . It's like trying to explain what a piece of music is like. You can't do it.—Shane Carruth, 2013

My body is all sentient.—Henry David Thoreau, 1906

Is there such a thing as a cinema of breathing? This essay answers in the affirmative and articulates how such a cinema can work. Like every aesthetic, the aesthetics of respiration is a constellation of forces and ideas that create an overall effect. It is not the only aesthetic at play in

*Upstream Color*, of course, and there are many other routes by which one might approach the film interpretively, culturally, generically, and so on. Yet this film powerfully unites a wide array of experiences into something like a concert of sensations moving toward a particular goal. Most filmmakers worth their salt try to do something like this, but Carruth takes it one step farther, building experiential patterns that provide coherence in the absence of a clear-cut narrative. The film is productively aligned on three levels: themes of “breathing” and things associated with breathing; stylistic analogues to breathing in the visuals, editing, and soundtrack dynamics; and perceptual prompts aimed at audience respiratory response. This is the aesthetics of respiration, and this essay has sought to show how the auditory modality plays a critical role in constituting it. The visual aesthetics and narrative strategy also work to this end, but the auditory dimension is dominant and entirely suitable for the task with its strong ties to temporality, interiority, relationality, and corporeality.

Therefore this essay considers how our perceptions can help us understand a certain type of film, and how those perceptions are more embodied and multisensory than we may have thought. I have emphasized a kind of corporeal understanding: knowing more about how our bodies respond to this type of film, and how our bodily response is a type of experiential comprehension. I hope there will now be more productive discussions of knowledge that is wider than that contained in propositions, abstractions, and ideas bound by language.

I am not laying claim to a complete understanding of this type of film, of course, and my approach here has not broached the complex ways in which culture “tunes our neurons,” in David Howes’s phrase (*Empire of the Senses: The Sensual Culture Reader*, Berg, 2005, pp. 21–23). This important discussion has been happening in various circles over the last few years, largely as a means for cultural theorists to defend what they do in the face of an encroaching scientism that they deem ahistorical and apolitical. This seems unnecessarily adversarial, however. If there is one thing the last twenty years of cognitive neuroscientific research has taught us, nothing about the human body or person is simple. Howes’s statement that “just as human nature itself is a product of culture, so is the human sensorium” (3) would be considered over-reaching to most scientists, but culturalists and neuroscientists alike agree that our sensorium is built for culture and malfunctions without it. While culture does not create our neurons or overdetermine their functioning, it does influence and

modulate them. To know the degree and manner of tuning requires cooperation among culturalists and scientists.

Movies are shaped by our bodily processes and can “tune” them in turn, as the cinema of respiration shows. Due to complex physiological networking, nothing about this tuning is simple. The embodied experience of film emerges not just from higher-level functions but also from low, gut-level functions working symbiotically with them. It is both cognitive and precognitive. It is about not only “the senses” but all the faculties, systems, and experiences in dialogue and interdependency with them. If we focus on one dimension of this equation, such as the “auditory” domain, we must always understand that it is an aspect of a much broader dynamic.

Victor Carl Friesen writes convincingly of the central role of the senses in the work of another American artist, Henry David Thoreau. In passage after passage Friesen writes about how Thoreau sought deep, expansive sensory experience above all else, detailing the constant engagement and cooperation of all his perceptual faculties. (“A Tonic of Wildness: Sensuousness in Henry David Thoreau,” in Dawes, pp. 251–264.) Thoreau, like Carruth, intuits that the aggregate sensual picture is much larger than the sum of its parts. As noted earlier, Thoreau’s *Walden* is referred to throughout *Upstream Color*, and its experiential affinity with the film is clear: the senses are the ground floor of our understanding of existence.

Near the end of *Upstream Color*, Kris dives manically up and down in a pool, retrieving rocks. This is the climax of the film, and of the submersion theme, first broached through sound in the film’s opening scenes. Throughout her wild ritual, she and Jeff quote, engage, and piece together fragments of Thoreau’s book as a way of making sense of her bewildering experience. Making sense is not always what we think it means. We may not have read *Walden* or seen all the films that inform *Upstream Color* or understood what all those strange characters and meanings finally add up to. But there is a sensual coherence that satisfies on an important experiential level. As Kris inhales, plunges down, breaks back into the world, and gasps for air, we are reminded that we all, without exception, breathe.

*Many thanks to Shane Carruth and producer Casey Gooden for granting several personal interviews regarding their work and for permission to use the frame grabs in this essay. Much in this paper is inspired by the multisensory approach of Luis Rocha Antuñes in “The Vestibular in Film: Orientation and Balance in Gus Van Sant’s Cinema of Walking,” Essays in Philosophy vol. 13: no. 2 (2012).*

## Further Reading

A good summary of Embodied Cognition Theory (ECT) is found in Lawrence Shapiro's *Embodied Cognition* (New York: Routledge, 2011), and an impressive phenomenological version is Shaun Gallagher's *How the Body Shapes the Mind* (Oxford: Oxford UP, 2005). On the union of phenomenology with the sciences, see Shaun Gallagher and Dan Zahavi's *The Phenomenological Mind* (New York: Routledge, 2008). On multisensory research, see *The New Handbook of Multisensory Processing*, ed. Barry E. Stein (Cambridge, MA: MIT Press, 2012). On the nine senses, see John M. Henshaw's *A Tour of the Senses: How Your Brain Interprets the World* (Baltimore: Johns Hopkins UP,

2012). On interdisciplinary conversations about the multisensory, see *Art and the Senses* (Francesca Bacci and David Melcher, eds.) Oxford: Oxford UP, 2011. On the senses, memory, and meaning, see Mark Johnson's *The Body in the Mind: The Bodily Basis of Meaning, Imagination and Reason* (Chicago: U of Chicago P, 1987) and *The Meaning of the Body: The Aesthetics of Human Understanding*. (Chicago: U of Chicago P, 2007). For more culturally oriented yet embodied phenomenology of cinema that entails multisensoriality, see Vivian Sobchack (*Carnal Thoughts: Embodiment and Moving Image Culture* [Berkeley: University of California Press, 2004]) and Laura U. Marks (*The Skin of the Film*. Durham, NC: Duke U.P., 2000)