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FLUID DYNAMICS: REPRESENTATIONS OF WATER IN MUSIC

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Fine Arts
at the University of Kentucky

by
James E. Evans

Cincinnati, Ohio

Director: Dr. Kevin Holm-Hudson, Professor of Music Theory

Lexington, Kentucky

2021

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ABSTRACT OF DISSERTATION

FLUID DYNAMICS: REPRESENTATIONS OF WATER IN MUSIC

Water has remained a subject of all kinds of musical works since at least the middle ages. These musical works lack the concrete representational capacity of paintings, photographs, and films, relying instead on more abstract metaphorical constructs to convey water imagery. Current scholarship on water music typically centers on Romantic and Impressionist works and does not examine the process of signification by which musical signs portray water. The principal goal of this study is to determine how musical devices convey specific aspects of bodies of water and how such devices interact and contribute to musical depictions of streams, rivers, lakes, and oceans. I find that evocations of motion in the form of waves and flow are especially important to portrayals of water; furthermore, music depicting motion can combine with devices evoking water's other characteristics to create detailed, multifarious depictions. I give special attention to John Luther Adams's water compositions, which are notable for their thorough depictions of bodies of water and represent a relatively new phenomenon: the focused musical depiction.

KEYWORDS: musical signification, metaphor, anaphones, water, John Luther Adams

James E. Evans

February 5, 2021

FLUID DYNAMICS: REPRESENTATIONS OF WATER IN MUSIC

by

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Director of Dissertation

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February 5, 2021

For Claire—who gave up a lot of time with her dad
so that this dissertation could see daylight and
who continually reminds him that living is beautiful.

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I owe many thanks to Ben Arnold, Joe McGillis, and Ruth Adams, whose insightful questions and comments helped this dissertation find its way. Katie Caton and Whitney Myers—fellow members of the Qual Squad—helped me more than they know. When my confidence wavered, they lent me some of theirs during long study sessions at parks, apartments, and coffee shops across the city. I have enormous gratitude for all who have given me couches to crash on, shoulders to lean on, and an endless supply of friendship.

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INTRODUCTION

Water is archetypal in historical modes of expression. It occupies a significant position in many historic and present world philosophies, cosmologies, and religions. Empedocles (c. 495-435 BC), a Greek philosopher, made water a central component of his cosmogony when he proposed four Classical elements of which he believed all matter and energy to be constructed: fire, air, earth, and water.[1] This conception of four essential elements remained a cornerstone of Western philosophy for centuries and continues to influence popular culture in the twenty-first century. Systems of four or five elements, each including water, also appear in the *Vedas* (a set of the earliest surviving Hindu writings), Buddhist teachings, and within fields of study from medicine to cosmology in historical China.[2] For the Kogi, an indigenous people of Colombia, water is "the primordial 'stuff' of the universe" and is the material that maintains the structure of the world.[3] Water plays an important role in Jewish writings and teachings, particularly the story of creation and its many appearances

[1] Bertrand Russell, *History of Western Philosophy*, Routledge Classics (London, UK: Routledge, 2004), 62.
[2] Madan Gopal, *India Through the Ages*, ed. K. S. Gautam, 1st ed. (Publication Division, Ministry of Information and Broadcasting, Government of India, 1990), 79; Lan Zhang, "Iconographic Representations of the Five Elements," *The Tibet Journal* 38, no. 3–4 (Autumn-Winter 2013): 21; Shigeru Nakayama and Nathan Sivin, eds., *Chinese Science: Explorations of an Ancient Tradition*, 1st ed. (The MIT Press, 1973), 76.
[3] Gary Chamberlain, *Troubled Waters: Religion, Ethics, and the Global Water Crisis* (Lanham: Rowman & Littlefield Publishers, 2007), 11.

and significant role in the Exodus story.[4] Christians share many of these teachings, although water takes on additional significance in Christianity: water is a symbol for "purification, healing, and sanctification," a component of various rituals (particularly in Catholicism), and is central to the sacrament of baptism.[5]

In each of these philosophies and belief systems water is a symbol for creation, purity and purification, and change. Robert Baldwin points out that, in Western culture, bodies of water have been sites for "spiritual journeys, catastrophes, and self-discovery," as well as symbols for "birth, death, transcendence, renewal, metamorphosis, artistic creation, time, and indeterminacy."[6] Water's status as a symbol of life is supported by modern scientific understanding. Life on Earth is believed to have originated in the water, most likely in either deep-ocean vents or terrestrial volcanic springs.[7] Water remains an important constituent of living organisms and its continual replenishment is integral to the continuation of life. Given the importance of water to human life and its significant role in various cultures,

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[4] Chamberlain, *Troubled Waters*, 40–41.
[5] Chamberlain, 46–47; Matt. 3:16-17 English Standard Version.
[6] Robert Baldwin, "A Bibliography of the Sea, Shipwreck, and Water in Western Literature and Art," *Bulletin of Bibliography* 48, no. 3 (1991): 153.
[7] Rachel Brazil, "Life's Origins by Land or Sea? Debate Gets Hot: Volcanic Springs and Deep-Ocean Vents Get New Evidence," *Chemistry World* (blog), May 15, 2017, https://www.scientificamerican.com/article/lifes-origins-by-land-or-sea-debate-gets-hot/; William Martin and Michael J. Russell, "On the Origins of Cells: A Hypothesis for the Evolutionary Transitions from Abiotic Geochemistry to Chemoautotrophic Prokaryotes, and from Prokaryotes to Nucleated Cells," *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences* 358, no. 1429 (2003): 59–85; Armen Y. Mulkidjanian et al., "Origin of First Cells at Terrestrial, Anoxic Geothermal Fields," ed. Norman H. Sleep, *Proceedings of the National Academy of Sciences of the United States of America* 109, no. 14 (April 2012): E821–30.

philosophies, religions, and belief systems, it seems inevitable that water would also play a significant role in art and music.

Artistic depictions of water are constrained by their media. The traditional visual arts (painting, photography, sculpture) can depict only fixed images of bodies of water. An image portrayed in these artistic media may bear similarity to what a viewer would see when observing that body of water in person, even suggesting or creating illusions of movement, but lacking the temporal experience of water viewed in motion. Film gives the impression of motion via a series of still images displayed in rapid succession but, like other visual media, it is unable to represent the tactile experience of water. Nevertheless, it is usually apparent that water is being depicted. Music depicts with even less representational precision, relying on the listener's use of metaphor or analogy to generate imagery or convey the notion of water.

Preliminaries and Purpose

A great many programmatic musical works reference water yet, with some rare exceptions, neither water itself nor sounds associated with water tend to be incorporated into such compositions.[8] Instead, musical devices represent features of water, such as its movement patterns and sonic properties.

There does not seem to be a compelling singular definition for the phrase "musical device" nor its synonyms (e.g., "compositional device"). In *What to Listen for*

[8] Some musical instruments rely on water to function. It could be said that water is part of any performance using a hydraulophone or glass harmonica, although pieces performed on those instruments do not necessarily concern water (thematically and programmatically speaking) any more than a piece for wind band must concern air.

in Music, Aaron Copland shows the phrase's broad scope in characterizing jazz-inspired polyrhythms by George Gershwin, arpeggiated chords, variation, ground bass, changes in the mode of a musical passage, "the so-called cyclic form of the symphony," and an effect from Copland's score for the film *The Red Pony* (1949) in which one piece of music transforms into another through overlap as "devices."[9] A functional definition is required. Merriam-Webster defines a "device" as a thing made or adapted for a function or, in literary scholarship, a word or phrase intended to produce a particular artistic effect. A "musical device," then, can be broadly defined as a musical passage, fragment, or idea (e.g., tonal, rhythmic, melodic, harmonic, dynamic, timbral, structural, instrumentational) that produces some artistic musical or extramusical effect. Whether or not a composer crafted a musical device to have a particular function, its effect can be observed by those taking the role of the "listener," whether that be an audience member (or the audience as a collective whole), a performer, or the composer theirself.[10] "Musical device" is a sufficiently broad term to encompass all kinds of musical sounds, but its focus on the effect(s) achieved by music facilitates classification of devices according to how they achieve effects and what those effects convey to a listener. The musical devices studied herein are those that evoke extramusical objects or phenomena, especially characteristics of bodies of

[9] Aaron Copland, *What to Listen for in Music* (New York, NY; London, UK: Signet Classics, 2011), 38, 88, 119, 121, 162. Copland distinguishes these seven devices from seven *contrapuntal* devices listed on pg. 136: imitation, canon, inversion, augmentation, diminution, cancrizans ("crab motion"), and inverse cancrizans.
[10] The phrase *musical device* suggests some utility (evocative utility in this case) and is sufficiently broad to encompass tonal, rhythmic, melodic, harmonic, dynamic, timbral, structural, etc. musical ideas and events.

water (e.g., motion, depth, and reflectivity). The term does not include metadata and other extramusical information.

One of music's strengths as a depictive artistic medium lies in its capacity to convey a sense of movement to listeners. It is a temporal art. As such, music can aurally suggest the process of change through time on which a depiction of movement relies. After all, motion is a change in the position or orientation of a body through time.[11] Musical depictions of water tend to involve evocations of motion, such as the gentle but insistent flow of a river, the choppiness of the surface of a lake on a windy day, the surging of a stream in the mountains, and so on.

Musical devices possessing traits that evoke characteristics of extra-musical objects, bodies, or actions can achieve signification. Depictive musical devices range from the onomatopoeic, such as successive crescendos that mimic the crashing of waves on the shore, to the more abstract, as in the case of ascending and descending scales that mimic the rise and fall of wavelets on the ocean's surface. Even with apparently strong associations between the musical and extramusical, however, meaning is not fixed. Crescendos could be taken instead to indicate something approaching; if crescendos and diminuendos were used in conjunction with alternating notes—as well as pitch bending to imitate the doppler effect—one could convincingly evoke a siren. Rapid scalar patterns might be thought to mimic the movement of a small animal. This lack of fixed meaning is a key factor that

[11] Joe Rosen, "Motion," in *Encyclopedia of Physics* (New York, NY: Facts on File, Inc., 2009), 224.

distinguishes music from spoken and written language.[12] When the meaning of a word is in question, other words may be used to provide clarification and verify meaning. Music, on the other hand, is not self-descriptive. A musical passage cannot clarify the meaning of another musical passage. Musical works are therefore open to diverse—even conflicting—interpretations. Even in musical works with linguistically conveyed meanings (via lyrical text and/or metadata), the text will likely not account for every musical sound, extramusical concepts may not map convincingly onto the music, or the text may have little or nothing to do with musical content.

This study explores musical devices that depict water within and across representative compositions. The main goal of this exploration is to determine what aspects of bodies of water are commonly depicted in music, how musical devices convey specific aspects of bodies of water, and how the depiction of these aspects contributes to an overall portrayal of a body of water. I emphasize the importance of musically evoked motion in musical depictions of bodies of water since motion is the element on which many depictions most rely. I also highlight the use the same or similar musical devices across works, demonstrating consistencies in how bodies of water are portrayed.

Restricting the Sample for Study

The substantial quantity of music that portrays water makes it impractical to discretely address each work in the repertoire. This dissertation focuses on musical

[12] Marcus Pearce and Martin Rohrmeier, "Music Cognition and the Cognitive Sciences," *Topics in Cognitive Science* 4, no. 4 (2012): 473. Music and language also differ in the role of dialogue and communication.

works that meet three chief criteria: they must (1) evoke sizeable bodies of water in a liquid state (brook, river, lake, sea, and ocean rather than glass of water or puddle) through the use of identifiable depictive musical devices, (2) explicitly reference water in their metadata, and (3) not rely on water or the sound of water in performance to achieve depiction.

Bodies of water share identifiable features—such as currents, tides, waves, colors, and acoustic properties—that become salient at a large scale and are not readily discernible in water's other states and forms (e.g., ice and rain). Musical representations of water that evoke these phenomena benefit from their strong associations with bodies of water and, by extension, the ease with which such associations might be understood as depictive in an artistic work. Furthermore, many water-themed musical works exist that feature the kinds of bodies of water described previously.[13] The musical depiction of bodies of water has a long history in the western classical tradition. This is in part due to the well-documented Romantic-era obsession with the natural world in the arts that has, in many ways, continued to persist today. The accumulated corpus contains a variety of musical devices for depicting bodies of water, some of which are especially common and have achieved something akin to standardization as musical sounds evoking water. Works that

[13] A less substantial quantity of musical works depict water in other forms. Eric Whitacre's *Cloudburst* (1991), for example, features finger-snapping which is intended to simulate the sound of rainfall. *Noye's Fludde* (1958), a one-act opera by Benjamin Britten, and Edvard Grieg's "Foraarsregn" ("Spring Rain") from 6 Songs, Op. 49 (1886-89) also contain musical devices meant to depict rainfall. However, relative to the number of compositions that depict large bodies of water, there are few that depict water as rain, mist, fog, dew, etc.

depict bodies of water also provides a sample of significant size, within which we can find works that share depictive targets and musical devices in order to investigate consistent norms and practices through music analysis.

Explicit references to water in a work's metadata also serve to create associations between the musical and the extramusical. Metadata concerning a composition may give insight into the music's intended subject matter as well as influence the listener's perception of a musical work by setting up expectations for musical content. Musicologist Hans Heinrich Eggebrecht writes,

> The term "program music" can only properly be used if you "hold it to its word." The Latin word *programma* means "written public announcement" (Greek: *prographe*); we should therefore only talk about program music in cases where the composer has made the subject (the intended meaning) of his instrumental composition publicly known.[14]

Musicologist Carl Dahlhaus similarly asserts that there is no justification for ignoring a composer's decision to assign programmatic meaning to a work through the use of linguistic programmatic indicators.[15] While composer intent is not the determinant of any musical interpretation's validity, a composer's expressed intent might give insight into the design of a composition or the composer's feelings and thoughts regarding the work post-composition.[16] Certainly, explicit programmatic metadata has the

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[14] Hans Heinrich Eggebrecht, "Symphonische Dichtung," *Archiv Für Musikwissenschaft* 39, no. 4 (1982): 227–28, https://doi.org/10.2307/930609. My translation.

[15] Carl Dahlhaus, "Schoenberg and Programme Music," in *Schoenberg and the New Music: Essays by Carl Dahlhaus*, trans. Derrick Puffett and Alfred Clayton, New Edition (Cambridge, United Kingdom: Cambridge University Press, 1989), 95.

[16] I address the issue of titles assigned by someone other than the composer in chapter three in reference to Frédéric Chopin's Étude Op. 25, No. 12 in C minor, which was called the "Ocean" étude by Chopin's publisher. Alternatively, a composer may select a title intended to misdirect or mislead. One particular misleading title, *Songs for the End of the World* by Warren Benson, is described in Ben Arnold, "Music,

potential to impact a listener's musical perception. Musicologist Ben Arnold, in a paper on the titles of musical works relating to war, writes that, "the listener weaves the idea conveyed by the title into the musical experience itself. The title is often a direct indication of the composer's intentions; as well, it, in more cases than not, sets up certain expectations in the listeners."[17] As such, musical works with programmatic titles and descriptors provide fruitful avenues for exploring the perception of music through extramusical lenses.

Numerous songs and compositions reference rivers, lakes, and oceans in their lyrical text or metadata, but they do not necessarily generate water imagery through evocative musical devices. Although a work's title may make mention of water, the musical content itself may not be depictive. One well-known example is George Frederic Handel's *Water Music* (1717). According to Christopher Hogwood, the version of the piece published by Walsh in 1733 brings together "three distinct suites," one of

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Meaning, and War: The Titles of War Compositions," *International Review of the Aesthetics and Sociology of Music* 22, no. 1 (1991): 21–22, https://doi.org/10.2307/837033. Unless it becomes apparent that a title and other compositional metadata are misleading or unassociated with musical content through analysis or contextual research (such as a composer's writings about a work apart from its published score or historical records describing the circumstances of a work's composition or publishing), I take a composer's titles and metadata as indicators of a composition's subject.

[17] Arnold, "Music, Meaning, and War," 20. Later in the paper, Arnold describes the title of a composition as a "ladder" that leads to an understanding of symbols and techniques of war music. These symbols and techniques arise through the development of a musical tradition. He suggests that once a listener has developed familiarity with war-themed music that listener may not need titles to detect the symbols and techniques in a piece of music. Although Arnold's paper is concerned only with war music, this descriptor is useful in conceptualizing the role of titles and metadata in a listener's perception of any kind of music with established practices for conveying extramusical meaning, such as water-themed music.

which was written to be performed aboard a barge in 1717.[18] The title under which it was published, *Celebrated Water Musick*, seems to refer only to the location at which one of the suites was performed rather than to any programmatic musical content.[19] Although such music is not central to my analysis, a brief examination of the potential origins and functions of programmatic titles assigned by persons other than a work's composer merits consideration in a discussion of how a musical work is perceived, and so is addressed in chapter three.

Furthermore, only briefly discuss works that make use of water itself or recorded sounds of water as part of the whole composition. Like the paintings and photographs I described earlier in this chapter, such musical works incorporate a part of the actual experience of observing water. Visual artistic works can replicate some portion of the optical experience of being near or on an ocean, lake, or river, while sonic artistic works can replicate some portion of the aural experience. These include, for example, aural assemblages by Annea Lockwood in her river sound map series, which includes A *Sound Map of the Hudson River* (1982), A *Sound Map of the Danube* (2005), and A *Sound Map of the Housatonic River* (2010).[20] John Cage's *Water Music* (1952) and *Water Walk* (1959) do not use recorded sounds of bodies of water, but instead incorporate water into the performance. *Water Walk*, which was written

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[18] Christopher Hogwood, *Handel* (New York, NY: Thames and Hudson Inc., 1985), 72; Paul Henry Lang, *George Frideric Handel* (Mineola, NY: Dover Publications, Inc., 1996), 142.
[19] Hogwood, *Handel*, 72. The suite premiered on July 17, 1717 on a barge on the River Thames in a performance for King George I and an assortment of aristocrats.
[20] The dates provided beside each work are the dates given in the composer's bibliography of works. The CDs, which were made commercially available later, have different publication dates.

for television and premiered on the show *Lascia o Raddoppia* in Milan, calls for a collection of items that includes a bathtub, ice cubes, and a rubber duck. This dissertation analyzes compositions that utilize musical instruments to imitate or evoke water's myriad material and acoustic qualities. That is, I am interested in water represented through musical metaphor rather than actual bodies of water and their sounds.

Foundational Literature: On Music and Semiotics

The study of symbolic representations, such as musical representations of water, is the domain of *semiotics*. More precisely, the field of semiotics is tasked with the "study of signs," with *sign* at its most basic referring to "anything that 'stands for' something else."[21] The study of the role of signs in human interaction with the world and one another is documented as early as ancient Greece. Hippocrates and Galen were primarily concerned with signs as medical symptoms.[22] Plato and Aristotle, in their respective treatises *Cratylus* and *On Interpretation*, address signs in the context of language.[23] Aristotle's conception of a sign was composed of three parts: (1) the physical, such as the spoken word that represents a thing, (2) the thing being referenced, called the *referent*, and (3) the psychological and social meaning the referent. [24] The study of signs was further advanced by St. Augustine, who

[21] Daniel Chandler, *Semiotics: The Basics*, 2nd ed. (New York, NY: Routledge, 2007), 2.
[22] Chandler, *Semiotics*, 2.
[23] Daniel Chandler, *Semiotics: The Basics*, 3rd ed. (New York, NY: Routledge, 2017), 2.
[24] Thomas Sebeok, *Signs: An Introduction to Semiotics*, 2nd ed. (Toronto, Ontario: University of Toronto Press, 2001), 4.

differentiated naturally occurring signs—such as medical symptoms—and artificial, man-made signs.[25] Nearly four centuries later, John Locke was the first to name the field of *semiotics* and observed the sometimes arbitrary nature of signification.[26] He asserts in his *Essay Concerning Human Understanding* (1690) that the study of semiotics would "allow philosophers to study the relation between concepts and reality much more precisely."[27] However, the field stagnated for roughly another two centuries.

It was in the late nineteenth and early twentieth centuries that Swiss linguist Ferdinand de Saussure and (slightly later) American philosopher Charles Sanders Peirce began their pioneering work in the field of semiotics. A number of other philosophers and linguists, including Charles W. Morris and Louis Hjemsley, made foundational contributions to the field as well.[28] However, their writings are not typically considered as essential to modern semiotic studies as those of Saussure and Peirce.[29]

The formulations of Peirce's and Saussure's semiotic traditions are distinguished by their backgrounds and their individual goals in studying signs. As a

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[25] Sebeok, *Signs*, 4.
[26] Chandler, *Semiotics*, 2017, 24.
[27] John Locke, *An Essay Concerning Human Understanding*, 1st ed., Oxford World's Classics (New York, NY: Oxford University Press, 2008); Marcel Danesi, ed., *Messages, Signs, and Meanings: A Basic Textbook in Semiotics and Communication*, 3rd ed., Studies in Linguistic and Cultural Anthropology 1 (Toronto, Ontario: Canadian Scholars' Press, 2004), 8.
[28] Jean-Jacques Nattiez, "Reflections on the Development of Semiology in Music," trans. Katharine Ellis, *Music Analysis* 8, no. 1/2 (March/July 1989): 26, https://doi.org/10.2307/854326.
[29] Chandler, *Semiotics*, 2007, 2.

linguist, Saussure tied his conception of the sign to communication. He asserted that, "linguistics serves as a model for the whole of semiology, even though languages represent only one type of semiological system."[30] For him, a sign occurs in the mind and is delivered to another person for a particular purpose. Nothing is a sign that is not intended to be. Nothing is a sign that is not interpreted as such.[31] A sign is thus inherently social.[32] The Saussurean sign is also made up of two parts: the *signifier*—a word that points to something else—and the *signified*—the thing indicated by the signifier.

Like Saussure, Peirce was concerned with defining the sign and its parts; both men wrote prolifically about its definition and implications. Peirce's conception of the sign differs from Saussure's in that it is informed by his background in logic and philosophy and it extends beyond intentional communicative processes to include all that is representational within an individual's thoughts.[33] For him, a sign exists when one has interpreted something as a sign, whether or not it has been explicitly communicated as such. The Peircean sign is triadic, composed of the *sign* itself, the *object*, and the *interpretant*.[34] Peirce explains it thus:

> A sign, or *representamen*, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates

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[30] Ferdinand de Saussure, *Course in General Linguistics*, trans. Roy Harris (London, UK: Bloomsbury, 2016), 162.
[31] Halina Sendera Mohd. Yakin and Andreas Totu, "The Semiotic Perspectives of Peirce and Saussure: A Brief Comparative Study," *Procedia - Social and Behavioral Sciences*, The International Conference on Communication and Media 2014 (i-COME'14) - Communication, Empowerment and Governance: The 21st Century Enigma, 155 (November 6, 2014): 7, https://doi.org/10.1016/j.sbspro.2014.10.247.
[32] Chandler, *Semiotics*, 2007, 3.
[33] Yakin and Totu, "The Semiotic Perspectives of Peirce and Saussure," 7.
[34] Note that Peirce also refers to the sign as the *representamen*.

> in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the interpretant of the first sign. The sign stands for something, its object. It stands for that object, not in all respects, but in reference to a sort of idea, which I have sometimes called the ground of the representamen.[35]

Music theorist Raymond Monelle summarizes this process of the sign-function as, "S means O by virtue of I," where "S" is the sign, "O" is the object, and "I" is the interpretant.[36] For example, the word "couch" (S) refers to the physical piece of furniture (O) by virtue of the human conception of that furniture item as a cushioned, textile-covered bench for sitting (I). Taken together, these parts form a process of signification, or *semiosis*, in which the sign is understood as referring to its object by way of the interpretant.

Between the two perspectives of Saussure and Peirce, it is the Peircean semiotic model that is most frequently applied to the study of semiotics in music (although scholarship in the application of Saussure's work to music continues). It eschews the close association of Saussurean semiotics—or, as Saussure called it, "semiology"—to language. Peirce's broader conception of the sign as a cognitive process is more suitable for the analysis and discussion of symbolic representation in non-linguistic forms of communication.

The usefulness of the Peircean semiotic tradition to the study of musical signs is further enhanced by Saussure's codification of sign types and his allowing of levels

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[35] Charles Sanders Peirce, *Collected Papers of Charles Sanders Peirce*, ed. Charles Hartshorne, Paul Weiss, and Arthur W. Burks, vol. 2 (Cambridge, MA: Belknap, 1931), 228.

[36] Raymond Monelle, "Music and the Peircean Trichotomies," *International Review of the Aesthetics and Sociology of Music* 22, no. 1 (June 1991): 100.

of arbitrariness in signification. In his book *Course in General Linguistics*, Saussure says,

> The fundamental principle of the arbitrary nature of the linguistic sign does not prevent us from distinguishing in any language between what is intrinsically arbitrary—that is, unmotivated—and what is only relatively arbitrary. Not all signs are absolutely arbitrary. In some cases, there are factors which allow us to recognise different degrees of arbitrariness, although never to discard the notion entirely. *The sign may be motivated to a certain extent*.[37]

Peirce identifies three categories of sign according to how a sign's observable qualities convey meaning. In other words, Peirce categorizes signs, loosely speaking, according to their arbitrariness within a second trichotomy (the first being the subdivision of the sign). This second trichotomy is composed of the *icon*, *index*, and *symbol*. The *icon* is a sign in which the signifier has qualities resembling material traits (looks, sounds, tastes) of the signified. Take, for example, a car-mounted GPS navigation unit. Some units use a small, cartoonish aerial image of a car to represent the location of your vehicle on a map. The cartoon car is an iconic sign because the image (the signifier) bears a physical resemblance to a real car (the signified) and thereby communicates the presence of your car in a particular location on a map. Due to this material resemblance, one learns the relationship between a real car and the cartoon car by observing its visual similarity to the object it represents. The *index* is a sign in which the signifier has observable qualities correlating with or causally connected to the signified. If, while driving, you hear a car horn honk (the signifier) behind you, you know that a car (the signified) is present. You have learned that cars produce a honking sound so, logically, the sound of the horn indicates the presence

[37] Saussure, *Course in General Linguistics*, 181. Emphasis original.

of a car. The horn is the index of the car via logical connection. Lastly, the *symbol* has no material relation to the signified but is a sign because it refers to something by dint of social convention (that is, the symbolic relationship must be taught and learned). Words are some of the most explicit symbols. The word "car" itself does not resemble an automobile, nor does it necessarily indicate the presence of a car or otherwise naturally correlate with a car. It is an agreed-upon word used to refer to a kind of machine used for travel. The symbol lacks the natural association of the icon and index. Instead, its connotations are learned and become habitual. Although Peirce's substantial body of writings deal exhaustively with his sign typology and its role in the process of semiosis, he did not systematically apply it to studies of the arts.[38] It has fallen to musical semiotic scholars, including Monelle, Jean-Jacques Nattiez, Eero Tarasti, Robert Hatten, Michael Klein, David Lidov, and others to adapt and apply Saussure's and Peirce's ideas to the study of music.

Nattiez's writings advance both the Saussurean and Peircean traditions, but his landmark book, *Fondements d'une sémiologie de la musique* (1975), concerns his sophisticated inquiry into a technique of a decidedly Saussurean heritage: the application of principles of structural linguistics to musical analysis.[39] Of vital importance to his work is the notional tripartition of "artistic phenomena" into analytical levels, following the writings of Jean Molino. Figure 1.1 shows a graphical representation of Nattiez's analytical levels. For Nattiez, a musical work exists as a

[38] Monelle, "Music and the Peircean Trichotomies," 100.
[39] Jean-Jacques Nattiez, *Fondements d'une Sémiologie de La Musique* (Paris, France: Union Générale d'Éditons, 1975).

created thing (from the perspective of the composer and/or performer) and as a perceived thing (from the perspective of the listener and, naturally, the performer).[40] Two analytical levels reflect those modes of existence: the *poietic* (*creative*, referring to the perspective of a work's creator) and the *esthesic* (*perceptual*, referring to the perspective of a work's audience).[41] A musical work can also be thought of as "arbitrarily isolated," existing as an artifact apart from the creative and perceptual processes and requiring a third level of analysis: the *neutral* level.[42] The neutral analytical level is the core of Nattiez's strategy for musical analysis, as detailed in his "description of the neutral level." It equates roughly to the "signified" in Saussurean semiotics. Analyses at this neutral level can be further divided into descriptions of acoustic qualities (an "exercise in physical science," says Monelle) and score analysis (focusing on the score as a document rather than on the music it represents).[43] Nattiez conceptualizes the neutral level as one governed entirely by verifiable, rational criteria, relegating considerations of human behavior to the poietic and esthesic levels of analysis.

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[40] Jean Molino, J. A. Underwood, and Craig Ayrey, "Musical Fact and the Semiology of Music," *Music Analysis* 9, no. 2 (1990): 129, https://doi.org/10.2307/854225.
[41] Jonathan M. Dunsby, review of *Fondements d'une sémiologie de la musique*, by Jean-Jacques Nattiez, *Perspectives of New Music* 15, no. 2 (1977): 227, https://doi.org/10.2307/832821.
[42] Molino, Underwood, and Ayrey, "Musical Fact and the Semiology of Music," 114, 130.
[43] Raymond Monelle, *The Sense of Music: Semiotic Essays* (Princeton, NJ: Princeton University Press, 2000), 5; Nattiez, *Fondements d'une Sémiologie de La Musique*, 60.

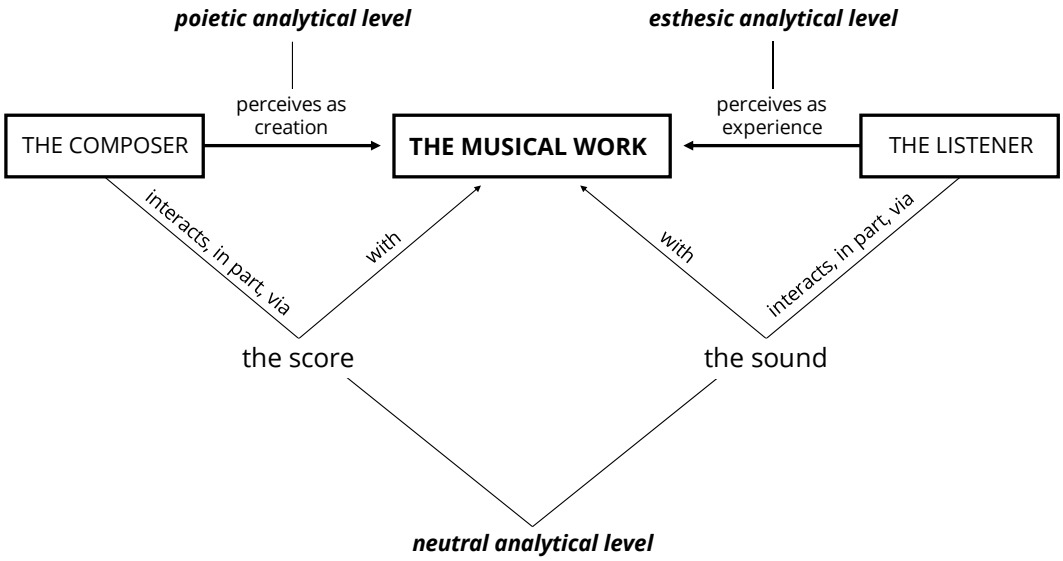

FIGURE 1.1. Nattiez's three analytical levels and their relationships to the musical work, its physical manifestations, the composer, and the listener.

Nattiez has since published a wealth of research in musicology focused on semiotics, including a paper titled "Reflections on the Development of Semiology in Music" (1989) that outlines the emergence of the field of musical semiotics by highlighting significant contributions of other authors and thinkers and affirms his commitment to the analytical model he put forward in *Fondements*.[44]

Nattiez's work laid the groundwork for future efforts in the field. In Hatten's foreword to Monelle's *The Sense of Music: Semiotic Essays* (2000), he posits a development of formalist music semiotics in three stages. Hatten names Nattiez's 1975 book *Fondements d'une Sémiologie de La Musique* as the introduction to the first stage, which is characterized by viewing the analysis of musical meaning through a structuralist lens (focusing on relations and networks of relations between elements

[44] Nattiez, "Reflections on the Development of Semiology in Music."

of a thing—music, in this case—rather than on the elements as isolated artifacts).[45] While Saussure didn't describe his work as "structuralism," structuralist approaches to meaning have historical roots in Saussurean linguistics.[46] Hatten goes on to say that Nattiez laid the foundation for what he terms the "second stage" of formalist music semiotics, which united the structuralist perspective of the first stage and hermeneutic perspectives on musical meaning in the writings of Tarasti, Hatten, and Lidov.[47] The third stage began to take form in the essays of Monelle and includes scholarship that continues music semiotic studies following in the tradition established by Monelle and his precursors.[48]

Although undoubtedly foundational, Nattiez's *Fondements* is not without its critics. It sparked controversy in France in the 1970s and critical responses questioned various elements of his study. Monelle's insights regarding *Fondements* are most telling in terms of the strengths and weaknesses of Nattiez's approach to meaning and his impact on future scholarship. Early in *The Sense of Music*, Monelle discusses general disparities between modernist and postmodernist thought

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[45] Robert Hatten, "Foreword," in *The Sense of Music: Semiotic Essays*, by Raymond Monelle (Princeton, NJ: Princeton University Press, 2000), xi. In literary theory, formalism is a critical approach that emphasizes a text's immanent features for analysis and interpretation and de-emphasizes its contextual features (historical, cultural, and biographical). Formalist music semiotics, then, focuses on the immanent features of musical works.
[46] Elizabeth Struthers Malbon, "Structuralism, Hermeneutics, and Contextual Meaning," *Journal of the American Academy of Religion* 51, no. 2 (June 1983): 208.
[47] Eero Tarasti, *A Theory of Musical Semiotics* (Bloomington, IN: Indiana University Press, 1994); Robert Hatten, *Musical Meaning in Beethoven: Markedness, Correlation, and Interpretation* (Bloomington, IN: Indiana University Press, 1994); David Lidov, *Elements of Semiotics* (Basingstoke, United Kingdom: Palgrave Macmillan, 1999).
[48] Monelle, *The Sense of Music*, 5.

followed by a focused critique of Nattiez's endeavor to approach musical semiotic analysis from a rationalist perspective (in that he seeks only verifiable data, omitting considerations of human behavior in his score analyses).[49] The "neutral level" Nattiez describes is a central focus of Monelle's writings and analyses. Nattiez's conception of the neutral level—as governed by rationalism and subject to taxonomic analysis—reveals his dedication to forming a cohesive and scientific method of music semiotic analysis that conforms to a modernist ideal. Monelle's critique, then, is of Nattiez's adherence to strict rationalism in his approach to studying music, saying, "we must seek, not a science of music, but a theory of music."[50] Monelle's comments provide not only an interesting lens through which to view Nattiez's work, but insight into his own postmodernist perspective and goals in writing on music, which I will discuss presently. First, I move on to Tarasti, another significant contributor to what Hatten describes as a second stage of formalist music semiotics.

Tarasti has had a particularly profound influence on the field of music semiotics. Not only has he appreciably advanced the field through his research and writings, Tarasti is also known as "an institution builder, organizer, and dedicated disseminator of the intellectual capital we call semiotics."[51] His 1994 book *Signs of Music: A Guide to Musical Semiotics* addresses problems associated with musical signification, such as the ever-present problem of a consistent language for discussing its intricacies. Tarasti begins with an introduction to the wider field of

[49] Monelle, 5.
[50] Monelle, 5.
[51] Kofi Agawu, review of *Signs of Music: A Guide to Musical Semiotics*, by Eero Tarasti, *Music & Letters* 85, no. 1 (2004): 146.

semiotics, then uses its theories and vernacular to begin exploring the topic of musical semiotics. He isolates those ideas and terms that most suit his semiotic perspective and utilizes them in formulating his theory. One of his goals is the introduction of a more "dynamic" approach to musical analysis by creating analytical procedures that go beyond the "'simple generative models of rules for linear configuration" he finds in earlier non-musical semiotic work.[52]

Monelle's *The Sense of Music* also seeks to move beyond older frameworks of semiotic analysis (like the ever-present Peircean model). Like Tarasti, he prioritizes awareness of cultural sensibilities and artistic/musical norms prevalent around the time of a musical work's creation, using that awareness as a basis for his music-analytical essays. Monelle asserts that "the theorist of music must examine the culture and society in which it is embedded. There she will find literary and iconographic traditions; it would be most surprising if these were not reflected in music."[53] Practically speaking, the cultural and societal awareness Monelle advocates allows the theorist/analyst to undertake an analysis examining both iconic signs (representing the material) and more elusive indexical signs that point to realities of contemporary culture (such as the bichronic temporality of the eighteenth century as reflected in the prevalence of musical binary forms).[54] While these are the most

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[52] Eero Tarasti, *Signs of Music: A Guide to Musical Semiotics*, Approaches to Applied Semiotics 3 (Berlin, Germany: Walter de Gruyter, 2002), 63.
[53] Monelle, *The Sense of Music*, 228.
[54] Ways of perceiving time are informed by one's culture. In a culture with binary perceptions of time we might distinguish between temporal conceptions that are non-linear/cyclical, as in ecological phenomena like changing seasons, and linear/progressive, such as aging. This is referred to as "bichronic temporality" by anthropologists.

readily accessible concerns of his work, they do not represent Monelle's only objective in writing *The Sense of Music*. In these collected essays, he explores changed and changing attitudes toward the creation, criticism, and analysis of artistic works in the context of cultural temporality. His concluding statements advocate a move away from the merely morphological study in music theory (study of form and structure; he puts Schenkerian and pitch-class theories in this category) toward an encompassing practice that engages with the semiotic.[55] He advocates the diversified (including societal and cultural contexts) over the monolithic (e.g., structural) approach and emphasizes the importance of musical-semiotic study within such a practice.

Due in large part to the writings and intellectual contributions of Tarasti and Monelle, the field of musical semiotics has gradually evolved and incorporated more specialized practices for modeling musical meaning beyond the broadly applicable linguistics-based semiotic models proposed by Peirce and Saussure. Practices emerged to study music's ongoing interactions with other models of thought, cultural and sociological concerns, and scientific studies. The study of musical meaning has expanded to include studies of metaphor (e.g., Zbikowski), the intersection of music and disability studies (e.g., Straus), music's capacity to function as narrative (e.g., Maus, Almén, Kramer), and understanding music in terms of embodiment (e.g., Saslaw, Cox) and in terms of gesture (e.g., Lidov).[56]

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[55] Monelle, *The Sense of Music*, 231.

[56] Lawrence M. Zbikowski, "Metaphor and Music," in *The Cambridge Handbook of Metaphor and Thought*, ed. Raymond W. Gibbs, Jr. (Cambridge, United Kingdom: Cambridge University Press, 2008), 502–24; Joseph N. Straus, *Extraordinary*

Philip Tagg's work has helped enable a further expansion of the study of musical meaning into the realm of musics frequently neglected in academic study. In *Towards a Sign Typology of Music* (1991), he describes a need for a re-evaluation of music-analytical practices, "along the lines of pragmatic semiotics and of intersubjective perception or phenomenology," to enable semiotic analysis of popular music.[57] One of Tagg's contributions to his proposed re-evaluation of music analysis is a basic sign typology which he expands and greatly refines in his book *Music's Meanings: A Modern Musicology for Non-Musos* (2013).[58] In its final form, Tagg's sign typology divides musical signs into three types: *diataxemes*, *style flags*, and *anaphones*.[59] The first two types are concerned with musical style and structure. By contrast, anaphones are sign types that relate musical sounds to perceptions of extramusical phenomena (e.g., rivers, lakes, oceans). Although it was developed, at least in part, to address the under-representation of certain musics (esp. popular

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Measures: Disability in Music, 1st ed. (New York, NY: Oxford University Press, 2011); Fred Everett Maus, "Music As Narrative," *Indiana Theory Review* 12 (Spring and Fall 1991): 1–34; Byron Almén, *A Theory of Musical Narrative* (Bloomington, IN: Indiana University Press, 2008); Lawrence Kramer, "Musical Narratology: A Theoretical Outline," *Indiana Theory Review* 12 (1991): 141–62; Janna Saslaw, "Forces, Containers, and Paths: The Role of Body-Derived Image Schemas in the Conceptualization of Music," *Journal of Music Theory* 40, no. 2 (1996): 217–43, https://doi.org/10.2307/843889; Arnie Cox, *Music and Embodied Cognition: Listening, Moving, Feeling, and Thinking* (Bloomington, IN: Indiana University Press, 2016); David Lidov, "Emotive Gesture and Its Contraries," in *Music and Gesture*, ed. Anthony Gritten and Elaine King (Farnham, United Kingdom: Ashgate Publishing, 2006), 24–44.

[57] Philip Tagg, "Towards a Sign Typology in Music," in *Secondo Convegno Europeo Di Analisi Musicale*, ed. Rossana Dalmonte and Mario Baroni, vol. 1 (Trento, Italy: Università degli studi di Trento, 1992), 369.

[58] Philip Tagg, *Music's Meanings: A Modern Musicology for Non-Musos* (Larchmont, NY: New York & Huddersfield: The Mass Media Music Scholars' Press, 2013).

[59] Tagg, 486.

music) in systematic musical analysis, Tagg's system of anaphones is useful for semiotic analysis in all kinds of music. Musical depictions of bodies of water rely on perceived relationships between musical phenomena and aspects of bodies of water, such as movement patterns. As such, Tagg's anaphones are especially useful for describing and understanding such musical depictions.

The field of musical semiotics is vast and there is a great deal of literature concerning the representation of natural phenomena in music. The works of Impressionist composers have been particularly the subject of much study regarding their references to and depictions of the natural world. These studies tend to maintain a broad focus on natural and pastoral imagery in music rather than representations of individual phenomena, although several scholars have addressed imagery of the sea and, occasionally, other bodies of water. Tarasti discusses water and nature motifs in Wagner's *Siegfried* (1876), Simon Trezise explores Debussy's relationship with the sea and its expression through music, and Keith Spence focuses on Debussy's life circumstances surrounding the composition of *La mer*.[60] Karen Leistra-Jones takes a more focused look at musical water imagery by examining the intersection of text and musical gesture in Elgar's *Sea Pictures* (1899) song cycle.[61] She draws a connection between Elgar's unconventional (for the time) approach to

[60] Eero Tarasti, *Semiotics of Classical Music: How Mozart, Brahms and Wagner Talk to Us*, Semiotics, Communication and Cognition 10 (Berlin, Germany: De Gruyter Mouton, 2017), 222–35; Simon Trezise, *Debussy: La mer* (Cambridge, UK: Cambridge University Press, 1994); Keith Spence, "Debussy at Sea," *The Musical Times* 120, no. 1638 (1979): 640–42.

[61] Karen Leistra-Jones, "'The Deeps Have Music Soft and Low': Sounding the Ocean in Elgar's Sea Pictures," *Music & Letters* 97, no. 1 (2016): 61–99.

portraying the ocean and the developing Victorian attitudes toward science, exploration, and the danger of the sea.[62] She asserts that the unconventionality of his approach is at least partly a result of his focus on the vertical (depth) rather than distance element of the ocean.[63]

Two dissertations are particularly informative in highlighting similarities between depictive musical devices within piano works: Alexandra Lewis's *Evocations of Water at the Piano: From Schubert to Liszt and Ravel* (2005) and Sun Hye Park's *Elements of Impressionism Evoked in Debussy and Ravel's 'Reflets Dans l'eau' and 'Jeux d'eau': The Theme of Water* (2012) examine similar practices in other compositions, however they limit the scope of their inquiries to music that features the piano.[64] For Lewis, "evocations of water" are inextricably linked to the piano and its technological developments through time, so her dissertation focuses on solo piano pieces and song accompaniments. [65] Lewis's analysis of the development of a musical language concerning water centers of the contributions of Schubert, Liszt, and Ravel—composers whose reach and reputation stem largely from their contributions to the piano repertoire.

Lewis identifies several devices that came to be associated with water in music, including "descriptive figuration, characteristic harmonies and scales, and a

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[62] Leistra-Jones, "The Deeps Have Music," 99.
[63] Leistra-Jones, 63.
[64] Alexandra M. Lewis, "Evocations of Water at the Piano: From Schubert to Liszt and Ravel" (PhD diss., Ann Arbor, MI, City University of New York, 2005), ProQuest/UMI (3187399); Sun Hye Park, "Elements of Impressionism Evoked in Debussy and Ravel's 'Reflets Dans l'eau' and 'Jeux d'eau': The Theme of Water" (PhD diss., Seattle, WA, University of Washington, 2012).
[65] Monelle, *The Sense of Music*, xi.

flexible treatment of rhythm and meter."[66] She describes arpeggios, extended tertian harmonies, and pentatonic scales as building blocks of musical water imagery. As new depictive creations (particularly those by Schubert, Liszt, and Ravel) entered the canon, a "clear line of development of these techniques" can be observed.[67] Since Lewis focuses her study on these three composers and their individual contributions to this distinct compositional vocabulary, her conception of musical water imagery is limited to depictive musical devices in the piano repertoire. Because she posits that the contributions of Schubert, Liszt, and Ravel would not have occurred "without the emergence of the piano as a primary expressive vehicle," her examination of water imagery is necessarily limited to pianistic effects.[68]

Park's study focuses on the use of impressionistic elements in portraying water at the piano. She examines Debussy's "Reflets dans l'eau" (1905) from *Images, 1ere série* (1904-1905) and Ravel's *Jeux d'eau* (1901), noting "their similarities and differences in the usage of technical applications (e.g., arpeggio, pedal-point, staccato, pedals) and compositional skills (e.g., forms, modes, harmonies)."[69] In her discussions of the origins of Impressionism, she draws a connection between impressionist painting and music that supports further discussion of references to the inaudible (that which is seen, felt, or thought) in music.[70]

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[66] Lewis, "Evocations of Water," 1.
[67] Lewis, 30.
[68] Lewis, 30.
[69] Park, "Elements of Impressionism," 2.
[70] Park, 11.

Like Lewis, Park describes musical water imagery primarily in terms of arpeggiation, harmony, and scalar patterns. She compares the aforementioned works by Debussy and Ravel to effects in other water-focused compositions, such as *Les jeux d'eaux à la Villa d'Este* from the third suite (*Troisième année*) of Liszt's *Années de pèlerinage* (1867-1882), noting the effect of extended tertian harmony and other impressionistic structures on existing compositional devices.[71]

Given the sheer quantity of piano pieces that depict water and the importance of major water-focused works like *Reflets dans l'eau* and *Jeux d'eau* in the canon, Lewis's and Park's focus on water imagery at the piano is justified. However, it ignores the depictive potential of other instruments and instrumental combinations as well as contributions by composers beyond the early twentieth century. Lewis and Park also describe numerous musical effects that frequently point to water, such as arpeggios and pentatonic scales, but do not extensively examine the process of signification by which such musical signs portray water.

Methodology

This dissertation examines musical portrayals of bodies of water by analyzing the role of depictive devices in creating water imagery. Many compositions that portray bodies of water are part of a rich canon of works in the European classical tradition that feature the same or similar depictive musical devices. I discuss these representational relationships in terms of Tagg's work on anaphones by analyzing the

[71] Park, 35.

qualities of musical sounds and relating them to the sonic, tactile, and kinetic aspects of rivers, lakes, and oceans. The portrayal of movement is especially vital to musical representations of water. As such, kinetic anaphones are of particular interest in this study. I identify two distinct perceivable forms of motion in bodies of water and the ways musical devices relate to them.

I also emphasize the role of combined and interacting musical devices in generating more detailed depictions of water than are possible without those interactions. For example, a musical work may contain devices that suggest not only a single feature of a body of water, such as its motion, but multiple features, such as its tactile qualities, scale, depth, and even diverse qualities of that motion. Compositions can even become *focused musical depictions* that are detailed in their portrayals and are completely (or nearly completely) engaged in generating extramusical imagery. The interactions of multiple depictive musical devices serve to reinforce the perceived relationship between each device and bodies of water. Musical devices, such as Tagg's anaphones, may be layered, nested, or otherwise combined to generate a greater depiction. Two further goals of my analysis, then, are (1) to explore the interactions of layered, nested, and/or parallel musical depictive devices within compositions and (2) to discuss their roles in creating a complex depiction of the many aspects of any body of water.

Synopsis

As any research project is built on existing scholarship, chapter two is devoted to an examination of scholarly thought on music semiotics. Although many studies of

music and meaning rely on scholarship in linguistics, differences between music and language have necessitated the development of subdisciplines that examine musical meaning apart from language. These subdisciplines include empirical music cognition (driven by David Huron's writings), topic theory (scholars include Leonard Ratner and Robert Hatten), Leonard B. Meyer's theory on completion, emotion, and musical meaning, and metaphor theory (built on the work of Lawrence Zbikowski). I outline the primary concerns, key developments, and influential scholars in each of these subdisciplines and discuss the way each addresses extramusical meaning and issues of composer intent.

I also further discuss Philip Tagg's anaphonic model of musical meaning, as it is a practical and broadly accessible model that facilitates examinations of the kinds of musical signs that point to bodies of water. Anaphones are useful analytical tools because they relate musical sounds to extramusical bodies, objects, or concepts. Tagg's system of anaphones mainly concerns the study of metaphor and focuses on music's cultural and semantic content rather than its bio-acoustic qualities. My examination of Tagg facilitates my analyses of evocative musical devices suggestive of water's sonic, kinetic, and tactile properties and the works that incorporate them in successive chapters.

I begin chapter three with a discussion of the roots of the musical depiction in text painting. Sung text necessarily brings explicit extramusical content into musical works, and a composer can use that subject matter to shape the composition. Text painting creates a close relationship between a work's musical and extramusical content. My examination of Palestrina's *Sicut cervus* shows a medieval approach to

depicting water in music by evoking a body of water's motion. I further examine music's capacity to portray bodies of water in works that convey an extramusical narrative through music. Romantic-era art song accompaniments free depictive music from the moment-to-moment meaning of a text, allowing it to express the meanings of specific words, the broad meaning of the entire text, or degrees of both. Franz Schubert's songs constitute a significant development in water depiction, owing to his imaginative use of accompanimental piano writing which both reinforces and expands the extramusical narratives of song texts. Schubert's compositions had a pronounced effect on the songs of Franz Liszt, such as his *Die Loreley* (1841, first version [1843-1844, arr. for solo piano]; 1856, second version [1861, arr. for solo piano]). *Die Loreley* exhibits a great deal of depictive variety in a brief work with clear extramusical meaning expressed in text. The song's presentation of the river and the events that transpire over its course set up my examination of water's movement patterns and the musical structures that evoke them. Chapter three concludes with some comments on the intersection of metadata and musical meaning and the issues that intersection poses for musical interpretation.

Chapter four concerns water, human interactions with it, and our perceptions of bodies of water. The examples in chapter three demonstrated the capacity of music to convey the observable motional properties of a body of water. This chapter expands on chapter three by further exploring water's motion and its possible representations. I refine my discussion of movement by categorizing water's movement patterns in two types: *unidirectional motion* and *polydirectional motion*. This differentiation allows me to examine the depictive targets of specific musical

devices and the musical similarities to extramusical subject matter on which those depictions rely. Other aspects of bodies of water, such as its tactile properties, impact on light, clarity, scale, and depth also contribute to our conceptions. I discuss the way these features may be represented in music.

One of the central analyses of this study concerns Bedřich Smetana's *Vltava* (ca. 1874). As with Liszt's narrative-driven *Die Loreley*, *Vltava*'s form and the variety of its constituent devices devices are shaped by an extramusical narrative. Smetana's portrayal of the river Vltava consists of a musical journey which makes use of evocative musical devices to reflect changes in the river and its surroundings as it flows toward the river Elbe. This journey down the river allows a listener to experience its source in a pair of small wandering streams, the larger, steadily flowing river after the streams converge, the turbulent rapids, and the river's most expansive form just before it flows into the river Elbe (as well as a few subjects peripheral to the water, such as events on its banks). Unlike *Die Loreley*, *Vltava* features an orchestra, allowing for a great deal of instrumentational and timbral variety divorced from the close, even restrictive extramusical associations of a sung text. *Vltava* provides an opportunity to analyze a single composer's depiction of a river as it changes along its course and the ways depictive musical devices suit the river's various size and motion states. It is this variation in musical devices that makes *Vltava* an effective example for distinguishing two kinds of musically depicted motion. *Vltava*'s portrayal of unidirectional and polydirectional motion conveys information about the river and its changes along its course.

Chapter five expands my discussion of evocative musical devices even further, demonstrating the ways varied devices can shape listeners' perceptions of a work's extramusical subject matter through analyses. The first movements of Claude Debussy's *La mer* (c. 1903-1905) and Ralph Vaughan Williams's *A Sea Symphony* (c. 1903-1909) exhibit a variety of motional patterns similar to those seen in *Vltava*, but both works create more complex depictions by layering musical devices that evoke motion, introducing polyrhythms, and combining depictions of motion with other aspects of bodies of water. Camille Saint-Saëns's "Aquarium" from *Le carnaval des animaux* (1886) allows us to examine the interaction of polyrhythms and their impact on musical portrayals of motion at a smaller scale than the orchestra of the Debussy and Vaughan Williams works and with a greater density of the musical device in question.

Water's other properties are often depicted along with motion to create a more detailed and multifarious sense of a body of water. Debussy's *La mer*, Alphonse Hasselmans's *La Source*, Op. 44 (1898; *The Wellspring*) and Xian Xinghai's *Huánghé Dàhéchàng* (1939; *Yellow River Cantata*) are works in which the harp—an instrument that has come to be especially associated with water imagery—portrays water's tactile properties. Effects unique to the piano have also proven especially capable of evoking water's tactile properties. Amy Beach's *By the Still Waters*, Op. 114 (1925) effectively portrays a smeared, fluid quality which is achieved through pedaling, owing to the piano's natural extended decay. The fourth movement of Benjamin Britten's *Four Sea Interludes from Peter Grimes*, Op. 33a (1945) demonstrates the sea's potential for a

more violent tactile experience in the work's prominent use of timpani alongside the harp.

Evocations of water's scale and depth are best demonstrated in works for which changes in scale and depth are key to the works' extramusical narratives. The Goethe poem on which Paul Dukas's *L'apprenti sorcier* (1896-1897) is based describes a workshop that is becoming flooded as the narrative continues. It is an excellent example of increasing quantities of water. Debussy's "La Cathédrale engloutie" from *Préludes, Livre 1* (1909-1910) is likewise based on an extramusical narrative that involves changing depth. These analyses provide a foundation for my examination of John Luther Adams's water compositions in chapter six.

Adams's water compositions do not conform to historical expectations for music in the European classical tradition regarding form, melody, and harmony. Portrayals of water in "solitary and time-breaking waves" [sic] from *Strange and Sacred Noise* (1997), the orchestral and two-piano versions of *Dark Waves* (2007), and *Become Ocean* (2013) show Adams's approach to what I call the "focused musical depiction" of bodies of water.[72] "Focused depictions" forego musical content that does not contribute to a depiction of some extramusical subject matter. Adams's water compositions rely on water-evoking musical devices to determine their musical contents. My analyses of these works show the impact of layered and interacting musical devices—especially those that convey a sense of water's motion—on a listener's sense of the works' extramusical subject matter. I conclude chapter six by

[72] The lack of capitalization in the title "solitary and time-breakings waves" is Adams's.

summarizing key points in this dissertation and suggesting further study in the areas of musically depicted water, weather phenomena, light and dark, and the possibility of eventually expanding Tagg's system of anaphones. A brief epilogue contains closing thoughts humanity's current and future relationship with water and with music.

CHAPTER 2

SURVEY OF MUSIC AND MEANING

Music theorist Steve Larson and philosopher Mark Johnson write that "there is a strong tendency among philosophers and music theorists to think that our 'primary' experience of meaning is in language, so that whatever meaning music has must be measured against linguistic meaning."[73] As such, studies of musical meaning have often been rooted in the field of linguistics. This chapter examines the emergence of musical meaning as an independent discipline with four primary subdisciplines: music cognition, topic theory, musical completion, and metaphor theory. I discuss the main research concerns, key developments, and influential scholars in each subdiscipline and they ways they address extramusical meaning and issues of composer intent. Metaphor studies are the most relevant to an examination of representations of water, so I examine that subdiscipline in the most depth. Among approaches to the study of musical metaphor, Philip Tagg's work on anaphones functions as an especially practical and broadly accessible analytical tool for examining musical evocations of the extramusical. As such, it is the analytical framework that I utilize most for my examination of musical water imagery. This chapter's survey of subdisciplines in musical meaning serves as a foundation for my analyses in later chapters.

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[73] Steven Larson and Mark Johnson, "Something in the Way She Moves: The Metaphor of Musical Motion," in *Musical Forces: Motion, Metaphor, and Meaning in Music* (Bloomington, IN: Indiana University Press, 2012), 80.

Musical Meaning as an Emergent Discipline

"Music is the universal language of mankind," says Longfellow.[74] Such hyperbole points to music's capacity to refer to something apart from itself (to act as a sign). To classify music as a "universal language," however, is to make assumptions about the nature and universality of music's communicative potential. In a 1976 discussion of scholarship in the search for "universals" in music from the perspective of cognitive psychology, ethnomusicologist Dane Harwood notes a number of universals in perceptual processing of pitch, octave generalization, discrete pitches within scales, melodic fission, and melodic contour.[75] Despite cultural variations in the functions and structures of music, the process of perceiving music is similar cross-culturally and relies on identifying musical relationships.[76] Harwood claims it is by identifying relationships, constructing patterns, and contextualizing those relationships and patterns that humans extrapolate symbolic functions in music. This musical symbolism bears some similarity to the conveyance of meaning in language. Harwood writes, "the information processing approach suggests that some important perceptual and cognitive processes may underlie the use of all symbolic systems by human beings."[77] Yet music is not a language in any practical sense.

There is significant overlap between the domains of music (as it is performed and processed) and spoken language; both are communicated temporally, are

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[74] Henry Wadsworth Longfellow, *Outre-Mer: A Pilgrimage Beyond the Sea*, vol. 2 (New York, NY: Harper & Brothers, 1835), 4.
[75] Dane L. Harwood, "Universals in Music: A Perspective from Cognitive Psychology," *Ethnomusicology* 20, no. 3 (1976): 525–27.
[76] Harwood, "Universals in Music," 527.
[77] Harwood, 528.

transmitted via vibrations through a physical medium, and both are formed within discrete cultural contexts. Furthermore, research in music cognition has shown parallels between language and music processing and acquisition in early human development.[78] For these reasons, as well as the wealth of scholarship dedicated to studying language, it has been useful for scholars studying musical meaning to draw on the field of linguistics. Thus, early research in music meaning built on and adapted the works of Charles Sanders Peirce, Ferdinand de Saussure, and those in their scholarly lineages.

While it remains useful to study musical meaning in the context of linguistic meaning, psychologists Erin McMullen and Jenny Saffran claim that music and language differ vastly in the kinds of information they communicate.[79] Moreover, case studies with neuro-compromised individuals (especially patients that have suffered damage to one or more regions of the brain) and brain-imaging studies using positron emission topography (PET) and functional magnetic resonance imaging (fMRI) have found cortical separation of musical and linguistic function in the brains of adults.[80] These findings indicate differences in processing and, by extension, differences in perception and understanding of music and language. It is reasonable, then, that inquiry into musical meaning would further diverge from research into linguistic meaning.

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[78] Erin McMullen and Jenny Saffran, "Music and Language: A Developmental Comparison," *Music Perception* 21, no. 3 (2004): 303.
[79] McMullen and Saffran, "Music and Language," 290.
[80] McMullen and Saffran, 304.

What, then, can music express if it is separated from language? Igor Stravinsky famously asserted in his autobiography that "music is, by its very nature, essentially powerless to express anything at all,"[81] although music theorist Lawrence Zbikowski calls the honesty of this assertion into question when he notes that Stravinsky was motivated to distance his music from the programmatic, evocative works of the nineteenth century.[82] Stravinsky goes on to claim that if "music appears to express something, this is only an illusion and not a reality."[83] Even amidst his posturing, he follows these pronouncements with an admission that music's expression of things extra-musical is an attribute human beings have imposed on music.[84] Although Stravinsky minimizes attributing meaning to music by calling it an unthinking, agreed-upon habit, habitual agreement is a perfectly legitimate source of meaning. Similarly, words in language do not have inherent meaning apart from that encoded by a speaker and interpreted by a listener. Words are given meaning through perception and processing within agreed-upon convention.[85] Meaning is thus a product of thought and understanding. Music, too, is only meaningless sound unless

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[81] Igor Stravinsky, *Stravinsky: An Autobiography* (New York, NY: Simon and Schuster, Inc., 1936), 83.
[82] Lawrence M. Zbikowski, "Words, Music, and Meaning," *Signata*, no. 9 (2015): 144.
[83] Stravinsky, *Stravinsky: An Autobiography*, 83.
[84] Stravinsky, 83-84.
[85] This is the perspective of philosopher David Lewis, given in *Convention: A Philosophical Study* (Oxford: Blackwell, 2002). Though Lewis's assertions about conventions have been challenged by a number of scholars (e.g., Margaret Gilbert, Dale Jamieson), philosopher Donald Davidson at least acknowledges that "knowledge of the conventions of language is . . . a practical crutch to interpretation, a crutch we cannot in practice afford to do without," in his paper "Communication and Convention," in *Synthese: Institut International De Philosophie Entretiens*, vol. 59 (Philosophy of Language, Oslo, Norway, 1984), 16.

someone hears and interprets it. Nonetheless, music generally lacks the specificity of language; musical sounds do not typically have explicit, intersubjective meanings.

We may reasonably contend that music can express *something*, but we are left to ponder *what* music may express as well as *how* it achieves expression when not acting as a mere analogue to language. Zbikowski comments on the post-Enlightenment assumption that thought is only truly thought if it takes linguistic form. As he explains, this assumption relegates non-linguistic modes of human communication, including music, dance, and gesture, to non-conceptual status, only to ascend to conceptual status when translated into language.[86] He also challenges the assumption that communication relies on the conduit metaphor (in which information is packaged, sent down a conduit, and unpackaged to reveal information), noting that music requires an engaged listening for which the conduit metaphor is inadequate.[87] The conduit metaphor, when applied to music, defines the role of composers and performers as packagers of information, music as the conduit, and listeners as those who unpackage and receive information. According to Zbikowski, this metaphor is inadequate due, in part, to differences in the communicative goals, grammars, and the natures of symbols in music and language.

Music's status as a form of communication distinct from, but in some ways related to language, suggests a need for research that independently examines musical communication and meaning. Several subdisciplines seek to fill this need, including (1) music cognition, which focuses on mental processes associated with

[86] Zbikowski, "Words, Music, and Meaning," 144.
[87] Zbikowski, 144.

music; (2) research into musical completion, which centers on the work of Leonard B. Meyer and deals with the emotional impact of music; (3) topic theory, which explores musical signs based on genre and style conventions; and (4) theories of musical metaphor built on Zbikowski's work on sonic analogs in musical grammar and blending theory. The following four sections outline the evolution of these subdisciplines, examine the ways they approach interpretation of musical meaning, and investigate issues of the composer's intent.

Music Cognition

Cognition, according to music educators Rudolf Radocy and David Boyle, is defined as "the internal processes of assimilating, organizing, remembering, and recalling information."[88] *Music cognition*, then, is the process by which frequency, amplitude, form, and duration of a vibration are interpreted as pitch, volume, timbre, and time, respectively, as well as the brain's subsequent responses to the perceived sound. Music cognition is also the name of the subdiscipline of music semiotics and cognitive science that is concerned with perception and mental processing of musical sounds. Music cognition has developed into a distinct field of study with its own conventions and practices but is historically grounded in developments in the field of cognitive science.

The roots of the field of cognitive science extend into antiquity. In ancient Greece philosophers sought to understand the nature of human thought and

[88] Rudolf E. Radocy and J. David Boyle, *Psychological Foundations of Musical Behavior*, 4th ed. (Springfield, IL: Charles C. Thomas Publisher, Ltd., 2003), 4.

knowledge. Cognitive scientist Margaret Boden, in her two-volume treatise *Mind as Machine: A History of Cognitive Science* (2006), notes that Plato initiated a move toward formalism in accounting for human knowledge.[89] Boden goes on to state that the models of thought and knowledge advanced by ancient philosophers were not backed by any kind of empirical research, and thus could not guide future research.[90] Philosophers and thinkers through the seventeenth and eighteenth centuries, including Renè Descartes, Immanuel Kant, Johann von Goethe, and Wilhelm von Humboldt, began to revisit and seriously confront questions about human thought and consciousness.[91]

It was not until the nineteenth century that the study of the mind expanded out of the domain of philosophy and entered the domain of scientific research.[92] Researchers began to think of the mind in terms of mechanistic processes following certain rules. In the early twentieth century, American experimental psychology became dominated by behaviorism (a research trend largely ignored in Europe), which is concerned with analyzing behavior in terms of observable stimuli and related responses (such as in the work and writings of John B. Watson).[93]

The 1950s saw significant change in the study of the mind, driven in part by rapid technological progress. New breakthroughs in computers led to the

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[89] Margaret Boden, *Mind as Machine: A History of Cognitive Science*, vol. 1 (Oxford, England: Clarendon Press, 2006), 51.
[90] Boden, 1:51.
[91] Boden, 1:3.
[92] Boden, 1:123.
[93] Boden, 1:242; Beth Preston, "Behaviorism and Mentalism: Is There a Third Alternative?," *Synthese* 100, no. 2 (1994): 169.

development of the field of artificial intelligence, which had ramifications for the study of intelligence beyond computer technologies. Scholars whose work either brought together human and technological conceptions of thought and intelligence or enabled such studies are credited as founders and/or major contributors to the field of cognitive science. These include computer scientist and cognitive scientist John McCarthy and Marvin Minsky, cognitive psychologists Allen Newell and Herbert Simon, psychologist George Miller, and the polymath Noam Chomsky, who has been called "the father of modern linguistics."

Modern cognitive science draws from diverse disciplines, including anthropology, artificial intelligence, linguistics, neuroscience, psychology, and philosophy.[94] The field's interdisciplinary nature has also fostered the growth of a few closely related subdisciplines, including music cognition. In a book chapter titled, "The Psychology of Music," Robert Gjerdingen writes,

> Cognitive science has as its object the study of the human mind, as does psychology. But what distinguishes cognitive science is its interdisciplinary approach and its focus on a confluence of new technologies. In relation to studies of music, these technologies are: (1) computational models of dynamical systems, neural networks, cellular automata, and other nonlinear systems not amenable to succinct verbal description; (2) *in vivo* recordings of neuronal firing patterns in the auditory systems of animals; and (3) computer-assisted imaging of the working human brain.[95]

Marcus Pearce and Martin Rohrmeier note that "music appears . . . early in the history of cognitive science."[96] Musical examples appear in two of Donald Norman's issues in

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[94] Barbara Von Eckardt, "Multidisciplinarity and Cognitive Science," *Cognitive Science* 25, no. 3 (2001): 459, 463.
[95] Robert O. Gjerdingen, "The Psychology of Music," in *The Cambridge History of Western Music Theory* (Cambridge, United Kingdom: Cambridge University Press, 2006), 988.
[96] Pearce and Rohrmeier, "Music Cognition," 469.

his article *Twelve Issues for Cognitive Science* (1980), but articles focused on music cognition would not appear in that journal for some time.[97] Meanwhile, scholars were publishing groundbreaking work in the areas of computational models of music cognition (e.g., Longuet-Higgins), listeners' recognition of pitch relationship patterns within tonal systems (e.g., Krumhansl), cognitive representations of pitch sequences in tonal music (e.g., Deutsch and Feroe), and the application of neural-network algorithms to music psychology (e.g., Bharucha, Gjerdingen).[98] More influential work appeared in Leonard Bernstein's Harvard lecture series, in which he proposed a link between music and Chomsky's ideas of language.[99] A crucial breakthrough in music cognition came with the publication of the celebrated 1983 book A *Generative Theory of Tonal Music* by music theorist Fred Lerdahl and linguist Ray Jackendoff, which draws heavily from linguistics in an attempt to construct a focused model of the cognitive processing of tonal music.[100] These works and the period in which they were published (roughly 1976-1983) mark the establishment of the field of music cognition

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[97] Donald Norman, "Twelve Issues for Cognitive Science," *Cognitive Science* 4, no. 1 (1980): 1–32.
[98] H. C. Longuet-Higgins, "Perception of Melodies," *Nature* 263, no. 5579 (1976): 646–53; Carol L. Krumhansl, "The Psychological Representation of Musical Pitch in a Tonal Context," *Cognitive Psychology* 11, no. 3 (1979): 346–74; Carol L. Krumhansl, *Cognitive Foundations of Musical Pitch* (New York, NY: Oxford University Press, 1990); Diana Deutsch and John Feroe, "The Internal Representation of Pitch Sequences in Tonal Music," *Psychological Review* 88, no. 6 (1981): 503–22; Jamshed J. Bharucha, "Music Cognition and Perceptual Facilitation: A Connectionist Framework," *Music Perception* 5, no. 1 (October 1987): 1–30; Robert O. Gjerdingen, "Categorization of Musical Patterns by Self-Organizing Neuronlike Networks," *Music Perception* 7, no. 4 (July 1990): 339–69.
[99] Leonard Bernstein, *The Unanswered Question: Six Talks at Harvard* (Cambridge, MA: Harvard University Press, 1976).
[100] Fred Lerdahl and Ray Jackendoff, A *Generative Theory of Tonal Music* (Cambridge, MA: The MIT Press, 1983).

as related to, yet distinct from, other subdisciplines in cognitive science (including earlier psychological and psycho-physical research in music predating the formal establishment of the field) and music theory.[101]

The intervening years have seen music cognition studies diversify into "all branches of cognitive science, including developmental psychology, linguistics, neuroscience, education, computer science, and experimental psychology."[102] Music cognition studies have addressed a wide range of topics, including music as a cognitive system (e.g., Koelsch, Zatorre), temporal and pitch perception (e.g., Cross, London, Shepard), and melodic and harmonic hierarchy and syntax (e.g., Rohrmeier, Lerdahl and Jackendoff).[103] In the more than forty years since the field of music cognition emerged, music's relationship to all aspects of human cognition has helped to establish the discipline as a vibrant and dynamic field of study.

Music cognition, taken as a whole, is unconcerned with extramusical subject matter, much less imagery specific to bodies of water. The field is also largely unconcerned with issues of creative intent. Rather, it is primarily concerned with the

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[101] Pearce and Rohrmeier, "Music Cognition," 469.
[102] Pearce and Rohrmeier, 469–70.
[103] Stefan Koelsch, "Towards a Neural Basis of Music-Evoked Emotions," *Trends in Cognitive Science* 14, no. 3 (2010): 133–37; Stefan Koelsch, *Brain and Music* (Oxford, England: Wiley-Blackwell, 2012); Robert Zatorre, "Music, the Food of Neuroscience?," *Nature* 434, no. 7031 (2005): 312–15; Ian Cross, "Pitch Schemata," in *Perception and Cognition of Music*, ed. John Sloboda and Irène Deliège (East Sussex, UK: Psychology Press Ltd., 1997), 353–86; Justin London, *Hearing in Time: Psychological Aspects of Musical Meter*, 1st ed. (New York, NY: Oxford University Press, 2004); Roger N. Shepard, "Geometrical Approximations to the Structure of Musical Pitch," *Psychological Review* 89, no. 4 (1982): 305–33; Martin Rohrmeier, "Towards a Generative Syntax of Tonal Harmony," *Journal of Mathematics and Music* 5, no. 1 (2011): 35–53; Lerdahl and Jackendoff, *A Generative Theory of Tonal Music*.

perspectives of listeners. In a 2006 article, Lerdahl and Jackendoff pose five central questions that seek to address musical structure, grammar, acquisition, and cognitive capacity as it relates to music. All of them are listener-centric and, according to Pearce and Rohrmeier, reflect Western perspectives on music.[104] The composer, in the context of music cognition, is treated as another listener and is subject to the same sets of expectations and understandings about music as listeners in the same cultural contexts.

A sense of listener-centrism is something I seek to emulate in this dissertation. For example, I treat the metadata of musical works that refer to water primarily as an element that shapes the listening experience rather than an unambiguous declaration of the composer's intent. This is an especially useful perspective in cases where only a title or brief program note refers to water without any further reinforcement, as titles have sometimes been added to works by composers and publishers following the completion of the music. Takin the perspective of a listener allows us to examine such works as Arnold would, acknowledging that "the listener weaves the idea conveyed by the title into the musical experience itself."[105] In other cases, a composer might seem to explicitly state their intentions in writing a piece of music through a program note or through media apart from the musical work and its published score. Even in these instances, a listener-centric perspective is beneficial, since a composer might not be fully cognizant of the influences that shape their music or be forthright

[104] Ray Jackendoff and Fred Lerdahl, "The Capacity for Music: What Is It, and What's Special about It?," *Cognition* 100 (2006): 34–36; Pearce and Rohrmeier, "Music Cognition," 477.
[105] Arnold, "Music, Meaning, and War," 20.

in the expression of their intentions. Furthermore, the intent to convey meaning is largely immaterial to the actual perception of meaning. An attempt to convey some idea or image through music might fail to impart that same meaning to a listener or a listener might perceive meaning in music where none was intentionally encoded. My analyses treat the composer first as a listener—as one who is influenced by the music they hear (consciously or subconsciously; intentionally or unintentionally) and whose act of creation is based on hearing and listening.

Music cognition studies are focused on how the mind interprets musical stimuli, but the field has little to say about the compositional process and the experience of finding or deriving meaning from a musical work. Since this dissertation deals with representations of water—an extramusical subject matter—music cognition provides a useful grounding in how the mind interprets musical stimuli but provides little in the way of usable analytical tools. The following three subdisciplines create more opportunities for musical analysis and interpretation of musical meaning.

Emotional Meaning Through Completion and Incompletion

For philosopher and composer Leonard B. Meyer, "meaning in music consists of recognition and expectation."[106] His examinations of musical meaning are primarily concerned with the satisfaction or denial of expectation and its impact on the

[106] Julius Portnoy, review of *Emotion and Meaning in Music*, by Leonard B. Meyer, *The Journal of Aesthetics and Art Criticism* 16, no. 2 (1957): 285, https://doi.org/10.2307/427625.

listener. Meyer is not alone in his preoccupation with the notions of completion and closure. "The abstract notion of completion is a basic concern for many theories of music, especially Schenkerian analysis and other linear approaches to music coherence," writes music theorist Michael Baker.[107] These theories rely upon an acquired sense of the typical processes and organizational models of tonal music such that alterations (such as interruptions) to that structure in individual works cause a musical idea to be understood as "incomplete."

Meyer calls his theory "embodied musical meaning": a product of expectation which Meyer likens to a dim eastern light that precipitates the dawn.[108] He distinguishes embodied musical meaning from "designative meaning," in which some stimulus (what Saussure would refer to as a *signifier*) points to a thing (the *signified*) that is different from the stimulus "in kind."[109] Words tend to have designative meaning because, excepting onomatopoeias, they are a different kind of thing from what they represent. The word "accordion" is either a set of spoken sounds or an arrangement of letters, both of which represent something entirely different from the sounds or letters themselves. Embodied meaning requires a stimulus and its consequence (or consequences) to be the same kind of thing.

In Meyer's embodied musical meaning, "what a musical stimulus or a series of stimuli indicate and point to are not extramusical concepts and objects but other

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[107] Michael Baker, "Completion and Incompletion in the Solo Songs of Felix Mendelssohn," *Indiana Theory Review* 29, no. 2 (2011): 1.
[108] Leonard B. Meyer, *Emotion and Meaning in Music* (Chicago, IL: University of Chicago Press, 1991), 35.
[109] Meyer, *Emotion and Meaning*, 35.

musical events which are about to happen."[110] For this "pointing" to occur and be considered meaningful the listener must recognize, consciously or subconsciously, musical tendencies present within a work and the stylistically similar body of works it occupies. A composition creates musical expectations in a listener as they internalize the musical work's tendencies and patterns. When tendencies and patterns persist (i.e., they are reinforced) within a composition and across stylistically similar works, a listener may anticipate future musical events that fir the pattern within a work.[111] Furthermore, stylistic markers in a composition bridge the gap between expectations due to stylistic awareness and expectations generated by a work itself; a stylistic marker in a composition indicates continued adherence to that style within the work.

In theories of completion, musically generated tendencies and patterns give music meaning. A musical stimulus that suggests to a listener (particularly an experienced, stylistically fluent listener) that it is antecedent to another definite musical event may be said to have meaning. According to Meyer, a musical stimulus that suggests to a listener no consequent musical event (e.g., a musical stimulus that derives from or occurs within music of an unfamiliar style) may be said to have no meaning.[112]

Meyer outlines three stages of experiencing and interpreting the unfolding meaning of a musical work. In the first stage, the listener experiences "hypothetical

[110] Meyer, 35.
[111] Meyer, 36.
[112] Meyer, 35.

meanings"—those which are the product of expectation.[113] There are infinite possibilities for what might follow a musical gesture, but stylistic tendencies limit likely outcomes. Those that are most probable, given a general adherence to established stylistic tendencies, are those that a stylistically aware listener is most likely to expect. This listener is aware of any number of less likely possible outcomes but is prepared for the most probable one or one of a set of equally likely, or nearly equally likely outcomes. In the first case—if a single outcome is likely—the *hypothetical meaning* is unambiguous. In the second case—if several outcomes are nearly as likely as one another—meaning is ambiguous. This state of ambiguity is transient, since a consequent event is forthcoming and, due to temporal expectations for the consequent event, will likely occur within a brief time span. The consequent event will either align with the listener's expectations or it will not. If the style of a musical work is unfamiliar, a listener is potentially faced with a great deal of ambiguous hypothetical meaning. As that work is experienced, however, a listener generates a new stylistic model from observed antecedent-consequent relationships in the second stage. This second stage is reached when the event is experienced and the event itself and the expectations associated with it moves from the hypothetical to the actual.[114]

Once the relationship between an antecedent and a consequent musical event becomes a perceived reality (a "physico-psychic fact"), "evident meanings" are applied

[113] Meyer, 37.
[114] Meyer, 37.

to the antecedent gesture.[115] Consequent events take on new roles as stimuli that are antecedents to further events in a causal chain.[116] As such, the first musical event in any work prompts all subsequent events. It is also important to note that the movement from an antecedent to a consequent musical event may itself be regarded as a single event that suggests future events, meaning that "both evident and hypothetical meanings come into being and exist on several architectonic levels."[117]

The third and final stage is only achieved when the conclusion of a musical work is reached and its component stimuli, hypothetical meanings, and evident meanings have been realized in a listening experience. When a listener comprehends the relationships of musical stimuli to one another to the greatest possible extent, "determinant meanings" arise out of those relationships.[118]

Interpretation of meaning may occur through simple "awareness of the tendencies, resistances, tensions, and fulfillments embodied in a work" or a more self-aware perspective in which understanding involves "objectification of that meaning in the mind of the individual listener."[119] The processes involved do not necessarily

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[115] Meyer, 37.
[116] Meyer, 37.
[117] Meyer, 38. Meyer and co-author Grosvenor Cooper write in their book *The Rhythmic Structure of Music* that music may be architectonic in its construction: "just as letters are combined into words, words into sentences, sentences into paragraphs, and so on, so in music individual tones become grouped into motives, motives into phrases, phrases into periods, etc. This is a familiar concept in the analysis of harmonic and melodic structure. It is equally important in the analysis of rhythm and meter" (page 2). Since the analyses of musical meaning Meyer is suggesting rely on the expectations generated by harmonic, melodic, and rhythmic/metrical structure, their layered architectonic structure is relevant to the notion of similarly layered antecedent-consequent gestures.
[118] Meyer, 38.
[119] Meyer, 38.

involve self-conscious analyses of the listening and interpretive experiences. A comparison to linguistic interpretation here is apt: we need not examine our encounter with words, our acquisition of a language, or the nature of a language being spoken to derive meaning. In this state of passive awareness, musical meaning is experienced but not fully understood and objectified. Alternatively, one may examine the experience of music and meaning with greater self-consciousness.[120] Meyer believes that such self-consciousness is stimulated by surprise. When disruptions to the expected result of a musical stimulus upset a listener's sense of normalcy, that listener's habitual responses are insufficient to derive meaning from an unexpected musical reality (such as an antecedent-consequent relationship that is particularly novel or unheard-of within stylistic constraints).[121] If a composition is more-or-less unsurprising, due to the expectations generated by musical stimuli in the listener being satisfied in a manner that is probable within stylistic constraints, the listener is given no reason to transition from a passive to an active mode musical interpretation. Disruptions in the form of less-probable musical consequents trigger a change in mode to the self-conscious, resulting in objectified meaning through a more intentional and self-aware examination of musical content that considers the possible intent of a passage.[122] A listener's "default" state, then, is one of habitual acceptance with a passive awareness of meaning and intent. Objectification of embodied meaning occurs when that default state is disrupted by the unexpected.

[120] Meyer, 39.
[121] Meyer, 39.
[122] Meyer, 39.

Meyer goes on to point out that music may convey meaning and affect without actual *communication* taking place.[123] He draws on the work of philosopher and social theorist George Herbert Mead to examine what is required for communication to occur:

> Individual A observes another individual B wink and interprets the wink as a friendly gesture. It has meaning for A who observes it. But if the wink was not intentional—if, for instance, B simply has a nervous tic—then no communication has taken place, for to B the act had no meaning. Communication, as Mead has pointed out, takes place only where the gesture made has the same meaning for the individual who makes it that it has for the individual who responds to it.[124]

A composer, then, can communicate with listeners by making use of internalized musical expectations. They may consider those expectations in order to craft a work that engages with them. Essentially, the composer "takes on the attitude" of their intended audience.[125] A performer may do the same. The composer and performer share with the audience the identity of "listener" alongside their other roles, enabling them to recognize and manipulate common expectations to achieve communication. In fact, Meyer maintains it is due to the composer's and performer's listenership that they are able to recognize their senses of self in their creative processes.[126] A listener participates in the process of musical communication because the composer and performer, in their awareness of the listener, facilitate that participation. Meyer

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[123] Meyer, 40.
[124] Meyer, 40; George Herbert Mead, *Mind, Self, and Society: From the Standpoint of a Social Behaviorist* (University of Chicago Press, 1934), 42–75.
[125] Meyer, *Emotion and Meaning in Music*, 40. This is only referring to what a composer must do to achieve communication under Mead's and Meyer's definition of the word. It is not necessary for a composer to consider the audience's perspective to create music, but it is necessary to do so for communication to occur.
[126] Meyer, 41.

postulates that, for communication to occur, the listener must experience music and respond as the composer and performer intended.[127] John Cage famously recalled his failure to communicate through his student works in an interview with Gerald Larner of the Guardian: "I found that when I wrote a very sad piece people were as apt to laugh as they were to be moved. So I gave up the notion of communication as impractical in my case."[128] Cage's definition of "communicate" would seem to match Mead's and Meyer's. Charles Ives, on the other hand, was notoriously indifferent—even hostile—to audiences, critics, and other composers. Ives's music cannot strictly be classified as communication under Meyer's definition; if Ives was truly indifferent to other listeners, not intending for them to experience his music in any particular way, communication between Ives and the listener is absent. Mead, however, merely requires that a musical gesture mean the same thing for the individual that makes it and the individual that responds to it for communication to occur. Under that definition, Ives's music can be perceived as communicative (if perhaps unintentionally on the part of the composer) due to his stylistic fluency and sense of musical awareness.

I suggested earlier that my work would "treat the composer first as a listener." Meyer's work, too, emphasizes the composer in the role of listener so that they may understand and communicate with the listener. However, as Mead and Meyer understand it, a listener may infer meaning without meaning being communicated by the composer. Meyer's description of the friendly wink that was, in fact, a nervous tic

[127] Meyer, 41.
[128] Gerald Larner, "Settling Scores," *Guardian*, November 16, 1989, 26.

suggests that a listener may find meaning in a musical gesture that the composer did not intend to imbue with meaning. Such a gesture may instead be a product of the composer's internalized familiarity with their chosen style of music or a chance occurrence rather than a conscious, methodical manipulation of stylistic expectations. In such a case, it is important to acknowledge the listener's interpretation of the gesture. That a listener interprets a gesture as meaningful may convey information about the style of the work and the set of expectations being engaged.

In scholarship on completion, musical meaning arises from expectations and is tied to the emotional impact of those expectations. Meaning is achieved within musical compositions rather than by association with anything extramusical. The following subdisciplines deal more directly with meaning apart from music itself and have more utility in the study of extramusical meaning.

Topic Theory

In his groundbreaking treatise *Classic Music: Expression, Form, and Style* (1980), musicologist Leonard Ratner attempts "a full-scale explication of the stylistic premises of [eighteenth-century] classic music" by systematizing the components he views as common to all such music.[129] He examines melody, harmony, rhythm, texture, form and periodicity, topics (types or styles), expression, performance practice, international stylistic differences, and comedic and serious musical styles,

[129] Leonard Ratner, *Classic Music: Expression, Form, and Style* (New York, NY: Schirmer Books, 1980), xiv.

but he mostly ignores changes in these components through the course of the eighteenth century.[130] Ratner laudably attempts to prioritize period perspectives on the music he studies. In *Classic Music* he uses extensive quotations from eighteenth-century music theory writings (which reviewer John Hill considered the book's principal value at the time of his review) and bases many of his observations on his understanding of period treatises and practices rather than more contemporary notions.[131] This historicist approach enables Ratner to make convincing observations regarding the perspectives and experiences of the eighteenth-century listener.

Ratner's most lasting contribution to musical scholarship is his establishment of a theory of musical *topoi* (*topics*) that has been expanded to a substantial and influential area of musicological inquiry since its first appearance in *Classic Music*. This *topic theory* builds on the works of historical theorists such as Heinrich Koch, Augustus Kolmann, Joseph Riepel, Johann Sulzer, and twentieth-century theorists such as Donald Tovey and Charles Rose).[132] Ratner defines topics thus:

> From its contacts with worship, poetry, drama, entertainment, dance, ceremony, the military, the hunt, and the life of the lower classes, music in the early 18th century developed a thesaurus of characteristic figures, which formed a rich legacy for classic composers. Some of these figures were associated with various feelings and affections; others had a picturesque flavor. They are designated here as topics—subjects for musical discourse. Topics appear as fully worked-out pieces, i.e., types, or as figures and progressions within a piece, i.e. styles. The distinction between types and

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[130] John Walter Hill, review of *Classic Music: Expression, Form, and Style*, by Leonard G. Ratner, *Eighteenth-Century Studies* 17, no. 1 (1983): 78, https://doi.org/10.2307/2738265.
[131] Hill, review of *Classic Music*, 79–80.
[132] George R. Hill, review of *Classic Music: Expression, Form, and Style*, by Leonard G. Ratner, *Notes*, Second Series, 38, no. 1 (1981): 64; Nicholas McKay, "On Topics Today," *Zeitschrift Der Gesellschaft Für Musiktheorie* 4, no. 1–2 (2007): 161.

> styles is flexible; minuets and marches represent complete types of composition, but they also furnish styles for other pieces.[133]

In brief, musical *topoi* are "familiar, expressive, rhetorical gestures encoded in referential musical patterns."[134] The referencing of styles within musical works and their mixture with other styles in those pieces is what makes a style a topic. Topic theory, then, involves the analytical/interpretive process by which musical topoi are observed within a piece of music and the examination of their effects and interactions with other topoi.[135]

According to Robert Hatten, a principal goal for topic theorists is to help musical scholarship recover from "the repression of expressive discourse fostered by a formalist aesthetics."[136] He notes that musical scholarship has been subjected to a kind of scientism that encourages a preference for provable theories and facts.[137] For scholars that have found such formalism limiting, topic theory has offered a way to examine the aesthetics of musical expression, particularly in music of the eighteenth century.

Yet topic theory has not been without criticism. Despite Ratner's use of historical documents, musicologist Danuta Mirka notes that topics have not been accepted as historically informed music theory. The concept of topics was nonexistent in the eighteenth century and Monelle asserts that topic theory had no

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[133] Ratner, *Classic Music*, 9.
[134] McKay, "On Topics Today," 160.
[135] Nicholas McKay notes that whether one considers the work of topic theory to be that of "grafting" musical signs onto a piece of music or "distilling" them from a piece depends on one's "critical stance."
[136] Hatten, *Musical Meaning in Beethoven*, 228.
[137] Hatten, 228–29.

basis in eighteenth-century sources, somewhat damaging its credibility.[138] Mirka responds to Monelle's criticisms with a brief overview of theories and conceptions of style and genre in the late seventeenth and early eighteenth centuries. Several notable period critics and theorists contributed to systems of categorization for music based on venue and, by extension, affective musical qualities, dividing music according to use in the church, the theater, and the chamber.[139] With these affective distinctions in place, the notion of musical character took on new relevance in late seventeenth-century and early eighteenth-century German music criticism and composition. Mirka says that, following this theoretical division of music into styles, German critics and composers became convinced that the affect of large instrumental works must be unified in character.[140] The compositional practices of Italian and South-German writers of instrumental music were not similarly constrained. They created concerti, symphonies, and sonatas that alternated affective states and shifted between styles. Mirka notes that these works "received no adequate critical appraisal" in their time.[141] Topic theory, useful for examining stylistic contrasts and their affective qualities, can now assist in overcoming this deficiency.

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[138] Danuta Mirka, *The Oxford Handbook of Topic Theory* (New York, NY: Oxford University Press, 2014), 2.
[139] Mirka, *Oxford Handbook*, 3–6.
[140] Mirka, 8–9.
[141] Mirka, 9.

William Caplin says that topic theory "may well be considered one of the success stories of modern musicology."[142] This is due in large part to the work of Ratner's immediate successors, Kofi Agawu and Wyy Allanbrook. These three scholars constitute the "first generation" of topic theorists: those who established it as an analytical/interpretive branch of music semiotics. It was Agawu that both brought topic theory to a wider audience and expanded its utility for expressive musical analysis.

Agawu's *Playing with Signs* (1991) uses the taxonomical classification of topics in Ratner's *Classic Music* to construct an analytical method centered around musical-topical narratives.[143] One of the shortcomings of topics made clear in his examination of Ratner's work was the lack of a clear purpose for topical referencing and interplay in a piece of music. Ratner indexed topics but failed to create a theory that explored and scrutinized their interactions. By synthesizing the theories and observations of Ratner and Heinrich Schenker, Agawu builds a system for examining topical interactions.[144] He begins by presenting his twenty-seven-part "universe of topics" (acknowledging that further research would expand it) and their function in what he calls "extroversive semiosis."[145] These twenty-seven parts fall into two categories: *musical types*, such as the minuet, sarabande, march, etc., and *musical styles*, which are references to military and hunt music, singing style, French Overture, etc., any of

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[142] William E. Caplin, "On the Relation of Musical Topoi to Formal Function," *Eighteenth-Century Music* 2, no. 1 (2005): 113.
[143] Kofi Agawu, *Playing with Signs* (Princeton, NJ: Princeton University Press, 1991).
[144] McKay, "On Topics Today," 165.
[145] Agawu, *Playing with Signs*, 30.

which may be incorporated into a piece of music.[146] An analyst with a strong grasp of the musical vocabulary suggested by these topics (which are *referential* signs) may graft a narrative structure onto the interplay of topics within a musical work, giving insight into its potential meaning. Agawu goes on to suggest an "introversive semiosis," in which Schenker's conception of the I-V-I Ursatz is co-opted as a "beginning-middle-end paradigm."[147] The tonics and dominants in this paradigm are themselves signifiers of expectations for the beginning, middle, and end of a musical work (which are *pure* signs) and provide syntactical structure over which topics may interact. Agawu's narrative structure is reliant, then, on the interaction of extroversive and introversive semiosis—of referential signs at a stylistic foreground level and pure signs at a syntactical background level.[148] For Agawu and his successors, the interaction of signs generates greater meaning than a collection of discrete signs.

Robert Hatten and Raymond Monelle can be considered members of the second generation of topic theorists (a "loose" categorization by Nicholas McKay).[149] Their works and writings greatly expand on the range of expressive gestures contained in the "universe of topics" theorized by Agawu (following after Ratner) and address some of topic theory's shortcomings. To Hatten and Monelle, these shortcomings significantly hampered the analytic and hermeneutic potential of topic theory.

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[146] McKay, "On Topics Today," 166.
[147] Agawu, *Playing with Signs*, 51.
[148] McKay, "On Topics Today," 167.
[149] McKay, 172.

Robert Hatten's *Musical Meaning in Beethoven: Markedness, Correlation, and Interpretation* (1994), his first significant contribution to the field of topic theory, builds on Agawu's work with the concepts of *troped topics*, which are formed where a sign is used to alter another sign; *emergent meaning*, which involves this same synthesis of topical signs through troping and incorporates meaning interpreted from musical gestures; and *markedness theory*, which takes elements from writings on linguistic markedness by Michael Shapiro.[150] Hatten's conception of markedness sets up musical parameters as paired opposites, one of which is more "marked" than the other.[151] This is an inherently asymmetrical relationship, as the "marked" items have a greater range of meaning than those that are "unmarked." For example, a modulation is marked because it contains less depth of meaning than the home key of a piece.[152] Therefore the modulation is marked. This principle extends to the relationship of major (unmarked) and minor (marked) keys, "middle" (unmarked) and "high" or "low" styles (marked), and so on.[153]

Markedness is also generated by non-adherence to stylistic and formal conventions. Hatten divides a work into *material types*: "thematic/presentational,

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[150] Hatten, *Musical Meaning in Beethoven*, x–xi; Robert Hatten, "Four Semiotic Approaches to Musical Meaning: Markedness, Topics, Tropes, and Gesture," *Muzikološki Zbornik* 41, no. 1 (2005): 14; Michael Shapiro, *Asymmetry: An Inquiry Into the Linguistic Structures of Poetry* (Amsterdam, Netherlands: North-Holland Publishing Co., 1976); Michael Shapiro, *The Sense of Grammar: Language as Semiotic* (Bloomington, IN: Indiana University Press, 1983).
[151] McKay, "On Topics Today," 171.
[152] Hatten, *Musical Meaning in Beethoven*, 43–44.
[153] Naomi Cumming, review of *Musical Meaning in Beethoven: Markedness, Correlation and Interpretation*, by Robert Hatten, *The Semiotic Review of Books* 5, no. 3 (1994): 2–4.

developmental/transitional, and cadential/closural," [154] each with its own conventions. Thus, Hatten distinguishes between two categories of markedness: *stylistic markedness*, which is intertextual and relies upon a listener's awareness of stylistic tendencies (which Hatten refers to as *stylistic competency* and is akin to Meyer's assertion that familiarity with a style enables one to interpret meaning), and *strategic markedness*, which is work-specific and relies on a listener's recognition of thematic material and patterns within a composition (which Hatten refers to, unsurprisingly, as *strategic competency*).

Hatten further expands the study of topic theory in a book published a decade after his first influential text. *Interpreting Musical Gestures, Topics, and Tropes: Mozart, Beethoven, Schubert* (2004) revisits the idea that hermeneutics involves examining historical expectations and modes of thought, expands the notion of *troping* to include occurrences at the level of a work's genre, and enhances the study of topics by endeavoring to account for expressive "gestures" that affect one's interpretation of a piece's expressive landscape.[155] His conception of musical gesture is subtle and complex but can be reduced to a core definition: "musical gesture is *movement* (*implied*, *virtual*, *actualized*) *interpretable as a sign*."[156] By incorporating gestures into the examination of tropes, Hatten's theory allows for conflicting meanings at different levels of "musical discourse" (Hatten's term; he says in *Musical Meaning in Beethoven* that levels of musical discourse are created when music shifts,

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[154] Hatten, *Musical Meaning in Beethoven*, 115.
[155] Robert Hatten, *Interpreting Musical Gestures, Topics, and Tropes: Mozart, Beethoven, Schubert* (Bloomington, IN: Indiana University Press, 2004).
[156] Hatten, 125.

successively or with interruptions, between "extreme contrasts of style or stylistic register").[157] He suggests that certain gestures retain individual agency rather than combining to convey a single expressive meaning. These gestures, each with their own meanings, do not fuse to express a third blended meaning but instead interact dialogically to synthesize a kind of higher-level trope. In the case of his discussion of the twenty-second variation of Charles-Valentin Alkan's "Le Festin d'Ésope" (1857; the twelfth of his *Douze Études dans tous les tons mineurs*, Op. 39), Hatten notes that the combination of a hunting fanfare and a chromatic "barking" riff does not generate a third meaning but instead achieves a kind of ironic wit reliant on the inability of these gestures to integrate.[158] This dialogical approach creates opportunities for topic theory to not only examine the blending of two topics to generate a single overriding meaning but the intersection of apparently incompatible topics that convey higher meaning through conflict. Additionally, it grants opportunities in musical interpretation for the elevation of topics that might not seem to align with a broader narrative. The foregrounding of gestural inquiry in combination with topics, then, is Hatten's lasting gift to the future of topic theory, giving it direction for further development.

Monelle makes a similarly impactful contribution to the field in chapters two and three of *The Sense of Music*. His thorough examination of the historical and cultural groundings of the *noble horse* topic serves to challenge a tenet of topic theory espoused by Ratner—that contemporaneous documents are key to understanding

[157] Hatten, *Musical Meaning in Beethoven*, 174.
[158] Hatten, *Interpreting Musical Gestures*, 225.

topics—and thus point toward topic theory's potential future.[159] Though he untethers topic theory from its hitherto blinkered focus on contemporary documents, Monelle asserts the relevance of topic theory and points out that Ratner's essential musical instincts regarding topics are true.[160]

Monelle finds that some topics important to Ratner's arguments in *Classic Music*, like *Empfindsamkeit* and *Sturm und Drang*, "find no support at all" among the documents Ratner references.[161] Furthermore, "the theoretical idea itself—the notion musical styles and figures were understood to signify particular cultural units, wherever they occurred—is almost specifically denied by the authors of Ratner's referenced documents."[162] The "full cultural study" Monelle advocates is an antidote to this flawed idea. It does not negate topic theory as a discipline but refocuses it on what McKay calls "cultural criticism grounded in a great deal of historical foraging."[163] Monelle's dispenses with Ratnerian topic theory's sole reliance on historical writers about music in favor of broader cultural study (including, for example, studies of

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[159] Monelle, *The Sense of Music*, 33. Monelle distinguishes two forms of the horse topic: (1) the "euphoric" and "heroic destrier," which are associated with medieval masculine ideals, and (2) the "dysphoric" horse ridden by witches and Valkyries. The latter is founded in the horse's association with death and is separate from the aforementioned "Death as warrior" image, although both remain part of the noble horse topic. The galloping rhythms are the same or similar across musical works, yet those found in Wagner's "Walkürenritt" in the third act of *Die Walküre* (1870), the fifth movement of Berlioz's *Symphonie Fantastique* (1830), and a number of other (esp. nineteenth-century) works imply a kind of horse that is distinct from that found, for example, in Schubert's "Erlkönig" (1815), and Brahms's "Keinen hat es noch gereut" (1861).
[160] Monelle, 33.
[161] Monelle, 27.
[162] Monelle, 28.
[163] Monelle, 33; McKay, "On Topics Today," 179.

contemporary literature). This move away from what was a key element of topic theory serves to strengthen the discipline and give it a future through a wider variety of musical expression both in the topics themselves and in their interactions, creating new opportunities for study.

Topic theory contains wisdom regarding the role of intent in constructing and interpreting musical meaning. When there is a perceivable and straightforward connection between a topic, such as the horse topic, and the apparent programmatic intent of a musical work, such as that of Wagner's "Walkürenritt," it seems reasonable to assume that the composer is aware of the connection and that the topic was intentionally evoked. Nevertheless, topic theory does not require intent. A composer could reference a topic without conscious understanding, particularly if the markers of that topic have become, through convention, closely associated with particular programmatic ideas. Yet, whether the evocation of a topic is intentional, a listener may experience its presence. Matters of interpretation are of greater concern to topic theory than matters of intent. I approach music much the same way in this study, focusing on the possibilities of a listener's experience of a musical work rather than on details of the act of its creation. Yet topic theory's focus on meaning embedded in musical styles leaves it ill-equipped to deal effectively with water imagery. Depictive musical devices are instead the domain of studies related to musical metaphor.

Musical Metaphor Through Sonic Analogs and Conceptual Blending

Roger Scruton's *Aesthetics of Music* (1999) is an attempt by the author to take on all aspects of musical aesthetics, including, as philosopher Sarah Worth writes,

"the difficult topics of metaphor, ontology, representation, expression, language, and understanding."[164] He states that metaphor is central to our understanding of music:

> In our most basic apprehension of music there lies a complex system of metaphor, which is the true description of no material fact, not even a fact about sounds, judged as secondary objects. The metaphor cannot be eliminated from the description of music, because it defines the intentional object of the musical experience. Take the metaphor away, and you cease to describe the experience of music.[165]

For Scruton, an intellectual and conversational understanding of music relies on the shared metaphorical thought regarding music. The primary example given is that of the *spatial metaphor* for musical pitch: the terms "high" and "low" are used to describe sounds according to the vibrational frequencies of sound waves.

Scruton points out that although this spatial conception of musical pitch is a metaphor rather than a description of a physical reality, we cannot easily dispense with spatial metaphors for musical phenomena.[166] To do away with it would be to "cease to hear orientation in music; tones would no longer move towards or away from each other; no phrase would mirror another, no leaps be bolder or larger than others, and so on. In short, the experience of music would involve neither melody nor counterpoint as we know them."[167]

Music theorist Richard Ashley observes that all Western European languages relate verticality to musical pitch.[168] Lawrence Zbikowski justifies the spatial

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[164] Roger Scruton, *The Aesthetics of Music* (Oxford: Clarendon Press, 1999); Sarah Worth, review of *The Aesthetics of Music*, by Roger Scruton, *The Review of Metaphysics* 52, no. 4 (1999): 982.
[165] Scruton, *The Aesthetics of Music*, 92.
[166] Scruton, 92.
[167] Scruton, 93.
[168] Richard Ashley, "Musical Pitch Space Across Modalities: Spatial and Other Mappings Through Language and Culture," in *Proceedings of the 8th International*

metaphor based on the placement of low (in the chest) and high (in the head) resonances in the body when singing.[169] Yet this is but one way to conceive of pitch. Ashley presents evidence of a number of systems through which African cultures reference pitch using at least three key elements: "continuous attributes of objects of persons (such as size or age); categorical attributes of persons (such as gender); kinship or family relationships between persons."[170] Given these alternative systems, Ashley supposes that the seeming innateness of the vertical system for conceptualizing pitch space is due to Westerners' immersion in thought and languages that rely on that metaphor (e.g., high/low in English, German, Italian, and French).[171] This should not be taken to mean that spatial metaphors for music, like the "up and down" metaphor for pitches of greater or lesser frequency, are unimportant due to their cultural specificity. That this spatial metaphor has become so ingrained in Western thought points both to its usefulness in thinking and talking about music and its impact on the creation, production, and consumption of music.

Building on Scruton's work, Nicholas Cook (1990) submits that musical analysis itself is essentially metaphorical.[172] Cook writes, concerning Heinrich Schenker's analytical methodology, that "a Schenkerian analysis is not a scientific explanation,

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Conference on Music Perception and Cognition, ed. Scott D. Lipscomb et al. (International Conference on Music Perception and Cognition, Adelaide, Australia: Causal Productions, 2004), 64.

[169] Lawrence M. Zbikowski, "Metaphor and Music Theory: Reflections from Cognitive Science," *Music Theory Online* 4, no. 1 (1998): sec. 3.9.

[170] Ashley, "Musical Pitch Space Across Modalities," 65.

[171] Ashley, 67.

[172] Nicholas Cook, *Music, Imagination, and Culture* (Oxford, England: Clarendon Press, 1990).

but a metaphorical one; it is not an account of how people actually hear pieces of music, but a way of imagining them."[173] He extends the theory further by pointing out that the metaphors by which we imagine and discuss music are connected with the foundation of musical cultures.[174] By explicitly connecting musical cultures and Western analytical and interpretive practices to Scruton's proclamation of the inherent and inescapable metaphoricity of musical experience, Cook has further cemented the importance of metaphor in musical discourse.

Zbikowski has contributed a great deal to the study of musical metaphor through his work in cognitive linguistics and blending theory. His *Foundations of Musical Grammar* (2017) is the result of an effort to draw on the field of cognitive linguistics and apply it to musical grammar.[175] Since "one of the foundations of cognitive linguistics is the notion that the basic elements of language consist of stored pairings of form and function"—that is, syntax and semantics—this is the concept he applies to music.[176]

The notion of musical syntax is hardly new. Hugo Riemann, in an effort to describe a chord progression, was the first to extensively apply the term "syntax" to music.[177] The phrase "musical syntax" is now used to represent the abstracted

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[173] Cook, *Music*, 4.
[174] Cook, 4.
[175] Lawrence M. Zbikowski, *Foundations of Musical Grammar*, ed. Steven Rings, 1st ed., Oxford Studies in Music Theory (New York, NY: Oxford University Press, 2017), ix.
[176] Zbikowski, ix.
[177] Hugo Riemann, *Musikalische Syntaxis: Grundriss einer harmonischen Satzbildungslehre* (Wiesbaden, Germany: Breitkopf & Härtel, 1877); Joseph P. Swain, "The Concept of Musical Syntax," *The Musical Quarterly* 79, no. 2 (1995): 281.

relationships of the musical phenomena within a musical work.[178] Joseph Swain remarks that "musical syntax" often means much the same as "musical structure," but that the concept of musical syntax "marshals the central concerns of listener comprehension, musical tension, syntactic technique, and the idea of musical community into a single framework."[179] At its most basic, we may define musical syntax as the arrangement of musical elements in a controlled and deliberate manner. Musical meaning, according to Zbikowski, is generally regarded as distinct from musical syntax (although the work of Leonard Meyer and others who study the emotional impact of musical completion would seem to posit otherwise). His work to uncover a musical grammar analogous to the tenets of cognitive linguistics is an effort to examine similarities and differences in the construction of language and music and how they convey meaning. Zbikowski also studies how music's construction might express meaning.[180]

This second point places Zbikowski's efforts under the category of *construction grammar*, a term that encompasses the cognitive linguistic approach to syntax. The concept arose from a need to incorporate idiomatic expressions into knowledge of the grammar of one's own language.[181] Paul Kay defines construction grammar as "a non-modular, generative, non-derivational, monostratal, unification-

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[178] Swain, "The Concept of Musical Syntax," 281.
[179] Swain, 303.
[180] Zbikowski, *Foundations of Musical Grammar*, x.
[181] A thorough account of the nature, history, development, necessity, and proponents of the notion of construction grammars can be found in William Croft and D. Alan Cruse, *Cognitive Linguistics*, Cambridge Textbooks in Linguistics (Cambridge, UK; New York, NY: Cambridge University Press, 2004), 225.

based grammatical approach, which aims at full coverage of the facts of any language under study without loss of linguistic generalizations, within and across languages."[182] Essentially, construction grammar assumes no strict division between lexicon and syntax (the two have basic commonalities) or between semantics and pragmatics (the former may be crudely defined as "what is said" and the latter defined as "what is meant").[183] The question is a useful example for examining the intersection of form and function. A person arranges words in an ordering allowed for the interrogative—rather than declarative, imperative, or exclamatory—in a language's syntax to achieve a particular goal: the acquisition of information.[184] In such a case, the form (syntax) of a sentence is key to its function. By evoking construction grammar in reference to music, Zbikowski indicates that an arrangement of musical elements may suggest meaning in the same way that the form of a question suggests its meaning.

Zbikowski's model of musical grammar treats musical gestures as individual grammatical elements which "provide sonic analogs for dynamic processes."[185] His notion of sonic analogues is not dissimilar to the work of other scholars interested in

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[182] Paul Kay, "Construction Grammar," in *Handbook of Pragmatics: Manual*, ed. Jef Verschueren, Jan-Ola Östman, and Jan Blommaert (Amsterdam, Netherlands: John Benjamins Publishing Company, 1995), 171. Kay explains each term he uses in his definition in this chapter, but a complete breakdown is beyond the scope of this project.

[183] Adele E. Goldberg, *Constructions: A Construction Grammar Approach to Argument Structure*, ed. Gilles Fauconnier, George Lakoff, and Eve Sweetser, Cognitive Theory of Language and Culture (Chicago, IL; London, UK: The University of Chicago Press, 1995), 7.

[184] Lawrence M. Zbikowski, "Reflections on Words and Music," *Dansk Musikforskning Online/Særnummer 2016, Danish Musicology Online/Special Edition 2016*, no. Word and Music Studies—New Paths, New Methods (2016): 5.

[185] Zbikowski, *Foundations of Musical Grammar*, 16.

musical meaning and communication in the 1990s and 2000s. Zbikowski cites the writings of Richard Middleton, Philip Tagg, and John A. Sloboda, each of which posit that musical content resembles or is comparable to some extramusical gesture or idea (this is also the principle on which Zbikowski's "sonic analogs" function).[186] The "dynamic processes" he refers to are most often "those associated with expressive gestures, with the emotions, and with the patterned movements of dance."[187] Zbikowski proposes as his core thesis in *Foundations of Musical Grammar* that music's function in human cultures is to represent said dynamic processes through sonic analogs which are central to musical grammar.[188]

The musical grammar presented in *Foundations*, built on theoretical work and evidence from cognitive psychology as well as work on musical metaphor, bridges the gap between the two subdisciplines. As it is closely relates to the systems suggested by Peirce's semiotic theories and the musically-specific works of Middleton, Tagg, and Sloboda, Zbikowski's musical grammar is useful to the study of music and meaning for much the same reasons.

Zbikowski has also contributed heavily to the study of music and meaning in related work on blending theory. Conceptual metaphor and conceptual blending were central concepts in his first book, *Conceptualizing Music: Cognitive Structure*,

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[186] Zbikowski, 18–19; Richard Middleton, *Studying Popular Music*, 1st ed. (Milton Keynes, England; Philadelphia, PA: Open University Press, 1990); Tagg, "Towards a Sign Typology in Music"; Philip Tagg, "Gestural Interconversion and Connotative Practice," *Film International* 3, no. 1 (2005): 20–31; John A. Sloboda, *Exploring the Musical Mind: Cognition, Emotion, Ability, Function* (Oxford, England: Oxford University Press, 2005). Tagg's system of anaphones was outlined in chapter two.
[187] Zbikowski, "Reflections on Words and Music," 6.
[188] Zbikowski, *Foundations of Musical Grammar*, 15.

Theory, and Analysis (2002), and are referenced in chapters four and six of *Foundations* as well.[189] Blending theory (BT), also referred to as "conceptual blending" and "conceptual integration," is a framework proposed by Gilles Fauconnier and Mark Turner, both of whom are linguists and cognitive scientists.[190] Zbikowski introduces the concept of blending by first exploring *conceptual metaphor theory* (CMT) and its form of *cross-domain mapping*, in which one thing is characterized in terms of another thing. Lakoff and Johnson and others have argued the importance of cross-domain mapping as not only a feature of language, but as a crucial aspect of how we perceive and structure our understanding of the world.[191] The two domains involved are the *source domain* and the *target domain*; the latter is understood unidirectionally in terms of the former, so any mapping is understood and described using the terminology of "target-domain is source-domain" or "target-domain as source-domain." Johnson suggests that much of our "source domain" knowledge comes from our experiences of our own bodies within our environment, leading to *image schema*.[192] The verticality schema, for example, relies on a perceived axis of physical orientation that allows for the perception of the relative "up" and "down" directions. We often conceive and speak of pitch in terms of this verticality schema, with the axis

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[189] Lawrence M. Zbikowski, *Conceptualizing Music: Cognitive Structure, Theory, and Analysis* (New York, NY: Oxford University Press, 2002).
[190] Gilles Fauconnier and Mark Turner, "Blending as a Central Process of Grammar," in *Conceptual Structure, Discourse, and Language*, ed. Adele Goldberg (Stanford, CA: CSLI Publications, 1996); Gilles Fauconnier and Mark Turner, "Conceptual Integration Networks," *Cognitive Science* 22, no. 2 (1998): 133–87.
[191] George Lakoff and Mark Johnson, *Metaphors We Live By*, 2nd ed. (Chicago, IL: The University of Chicago Press, 1980), 4.
[192] Mark Johnson, *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason* (Chicago, IL: University of Chicago Press, 1987).

of orientation existing in an imaginary pitch space. There is no literal "higher" or "lower" pitch, only varying frequencies of vibration through a physical medium. The credibility of this proposed structure for metaphorical understanding is supported by a good deal of research and empirical evidence.[193] Zbikowski and Gibbs also each note that the field of cognitive linguistics is indebted to this research.[194]

Blending theory (also called "conceptual blending" and "conceptual integration") is like conceptual metaphor theory in that they both approach metaphor as conceptual (rather than purely linguistic) and involve the projection of language, imagery, and inferential structure between conceptual domains. However, conceptual metaphor theory's cross-domain mappings allow projection between only two mental representations, while blending theory allows for more.[195] Furthermore, conceptual metaphor theory regards metaphor as strictly directional, while blending theory does not.[196] Under blending theory, cross-domain mapping takes place within a *conceptual integration network*. A conceptual integration network combines concepts from two mental input spaces to create a third blended space. This form of blending plays an important role in understanding songs and program music, which Zbikowski illustrates with an excerpt from the Credo of Palestrina's *Missa Papae*

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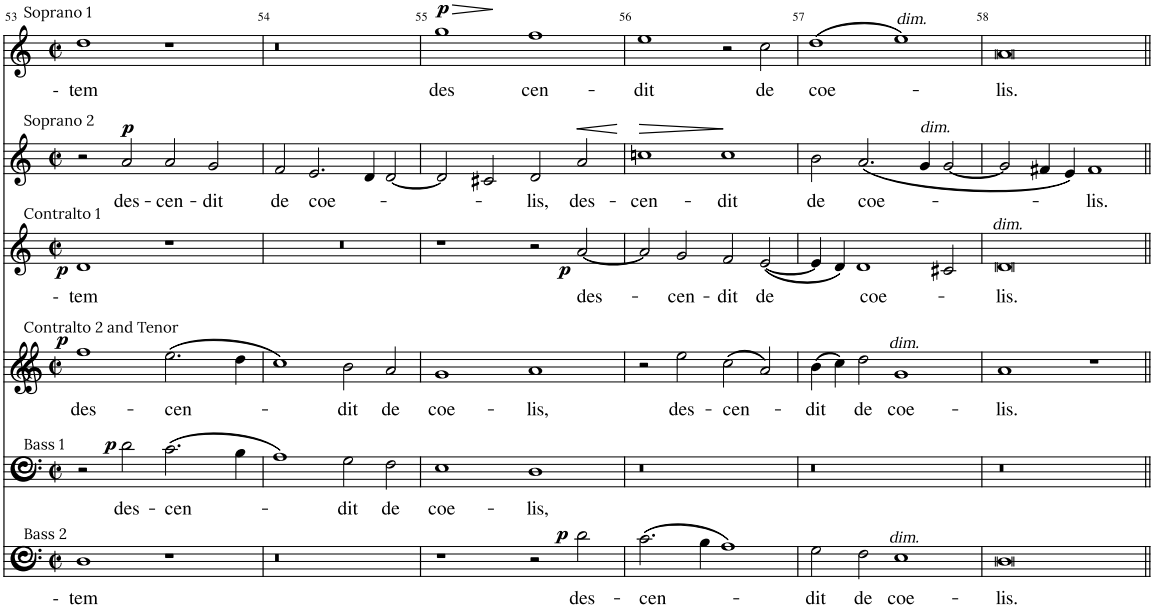
[193] Raymond W. Gibbs Jr., *The Poetics of Mind: Figurative Thought, Language, and Understanding*, 1st ed. (Cambridge, UK; New York, NY: Cambridge University Press, 1994).
[194] Zbikowski, "Metaphor and Music Theory," sec. 3.2; Gibbs Jr., *The Poetics of Mind*, 447.
[195] Joseph E. Grady, Todd Oakley, and Seana Coulson, "Blending and Metaphor," in *Metaphor in Cognitive Linguistics: Selected Papers from the Fifth International Cognitive Linguistics Conference, Amsterdam, July 1997*, ed. Gerard J. Steen and Raymond W. Gibbs (Philadelphia, PA: John Benjamins Publishing, 1999), 101.
[196] Grady, Oakley, and Coulson, "Blending and Metaphor," 101.

Marcelli (1562). He advances that without the blending of two input spaces—melodic descent and the linguistic meaning of the text—a listener may achieve no understanding beyond a conception of the music as "sad" and "losing energy."[197] The descending passage shown in Example 2.1 is instead painting the text, which describes Christ coming down from heaven to earth.

EXAMPLE 2.1. Giovanni Pierluigi da Palestrina, *Missa Papae Marcelli*, mvt. 3 "Credo," mm. 53-58: the text describing Christ's descent to earth is painted by descending melodic lines



The analytical function of the conceptual integration network is best represented in chapter six of Zbikowski's *Conceptualizing Music*. In it, he presents and diagrams conceptual integration networks for two musical settings of the same text ("Trockne Blumen" set by both Bernhard Klein [in 1822] and Franz Schubert [in 1824];

[197] Zbikowski, *Conceptualizing Music*, 64, 89.

"In der Fremde" set by both Robert Schumann [in 1840] and Johannes Brahms [in 1853]) and Heine's "Im Rhein" set by Robert Schumann (in 1840), which Zbikowski regards as a particularly profound blend of text and music. The pairs of settings by Klein/Schubert and Schumann/Brahms allow Zbikowski to examine the blending of musical and textual content with the text acting as a kind of "control group." A single text with two different musical settings, when diagrammed with a conceptual integration network, results in two different blended spaces and, by extension, two different musical works with varying emphasis on textual ideas, different implications for those textual ideas, and alternative suggested roles for the listener. The value of the conceptual integration network, then, lies in its utility for visualizing the process of conceptual blending.

Blending theory, being less concerned with issues of communication than Zbikowski's later work on musical grammar, does not examine meaning in terms of composer intent. For example, a listener may perceive a relationship between a song's musical space and its text whether the song's composer intentionally or conscientiously created the perceived relationship. Conceptual blending occurs with or without creative intent. Such a listener-centric perspective on musical meaning for music analysis. Not only might a listener perceive meaning where none was intended, many composers are unable to comment on the intended meanings of their compositions. Since the lack of clear intended meaning in works negates communication but does not negate meaning, an analyst can approach a musical work to understand its perceived meaning rather than its intended communication.

Musical Metaphor: Practical Applications

These four subdisciplines diverge in their conceptions of musical meaning and the kinds of meaning with which they are concerned. For the purpose of examining musical depictions of bodies of water, models of meaning derived from scholarship in music cognition are the least relevant to this study. Scholarship in emotional meaning in music and topic theory, too, are ill-suited for this work. Studies in music metaphor are the most relevant to exploring water imagery in musical works. Whereas much of music-semiotic study engages with the processes involved in semiosis, Philip Tagg's work in developing a practical and approachable semiotic model is especially useful for identifying and examining musical signs which evoke water.

Tagg's book *Music's Meanings* is meant to make the examination of musical meaning accessible to those not formally trained in music. It exceeds this intended function, as Tagg's thoughtful exploration of musical meaning and cognition has much to offer musicians and scholars.[198] In the book's early chapters, Tagg touches upon some of the pre-existing models for the interpretation of signs and their significance to musical study, such as the icon, index, and symbol of Peircean semiotics. He later formulates a "simple sign typology" which is partly concerned with the notion of the *anaphone* as a means of relating musical phenomena to extramusical phenomena. [199] Tagg also identifies two sign types apart from the anaphone:

[198] The subtitle "A Modern Musicology for Non-Musos" identifies Tagg's target audience. On page 5, he further clarifies that the book is intended to be more broadly accessible than a musicological or music-theoretical text in its use of minimal music notation and non-specialist language. On the title page, Tagg cheerfully adds below the subtitle, "good for musos, too."
[199] Tagg, *Music's Meanings*, 485.

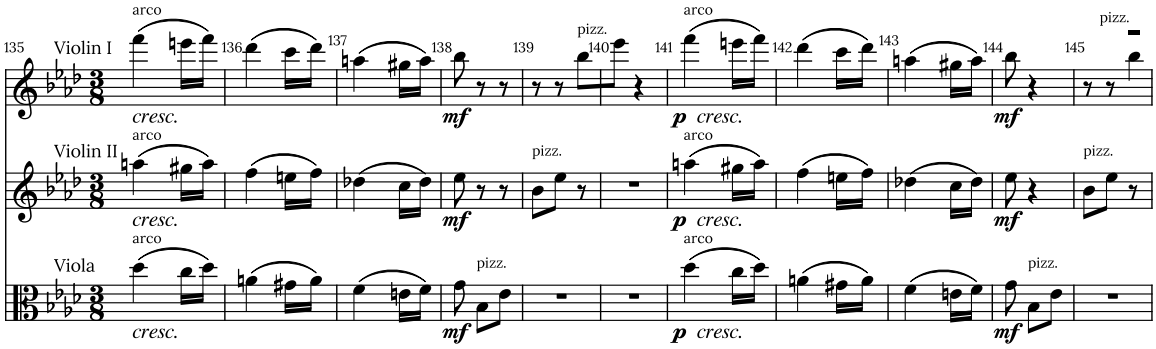
diataxemes (which are elements related to a musical work's sequencing of episodic events) and *style flags* (which indicate musical style and, typically, the cultural genre to which it belongs).

Tagg defines the *anaphone* as "the use of existing models in the formation of (meaningful musical) sounds" to create a "musical sign type bearing iconic resemblance to what it can be heard to represent."[200] He goes on to identify three main categories of anaphone. The *sonic anaphone* relates a musical sound or structure to an extra-musical sound through perceived similarity between the two sounds.[201] Consider, for example, the representation of thunder using rolled timpani and bass drum in Paul Dukas's famed *L'apprenti sorcier*. The sound of drums is like the thunder these pieces are referencing. Both are unpitched sounds with sonic characteristics ranging from sharp, brief, and loud to long, quiet, and rumbling. The *tactile anaphone* relates a musical sound or structure to the sense of touch.[202] The slurred passage performed by the strings at several points in *L'apprenti sorcier* (e.g., mm. 135-145, shown in Example 2.2) seem to depict the dense, enveloping flow of water and could be understood as having a significant tactile component, since the representation of flowing water's *contour* would seem to be a major part of that gesture. The passage loses any sense of relationship to the tonic as it descends in register, outlining the augmented triad. The density of the water seems reflected in the close voicing of the violins and viola. Meanwhile, the dynamics ebb and flow,

[200] Tagg, 487, 582.
[201] Tagg, 487.
[202] Tagg, 494.

surging from *p* to *mf*, then dropping back to *p* for another surge. Another part of this falling gesture is the *movement* of the water as it is poured into what is eventually an overflowing basin. This illustrates an issue addressed by Tagg in his writings: that there is no touch without movement (that is, there is no tactile experience without the kinetic).[203] The falling string gesture doubles as a *kinetic anaphone*, relating a musical sound or structure to perceived movement.[204] A clear example can be found in the march of the magical broom, which Dukas initially assigns to the bassoons. The pronounced and consistent pulse on which a march relies is closely associated with the physical act of marching. Dukas references this using an unusual triple-time march to indicate the regular (if perhaps unbalanced) movement of the enchanted broom at appropriate points in the piece that coincide with moments in Goethe's poem "Der Zauberlehrling," on which the composition is based.[205]

EXAMPLE 2.2. Paul Dukas, *L'apprenti sorcier*, mm. 135-145: slurred descending string passage



[203] Tagg, 498.
[204] Tagg, 499.
[205] Johann Wolfgang Goethe, *Sämtliche Werke, Briefe, Tagebücher und Gespräche*, ed. Karl Eibl, vol. 2 (Berlin: Deutscher Klassiker-Verlag, 1987), 141–44.

The differences that distinguish these three anaphone types are ultimately somewhat artificial. The example above shows how a single musical gesture could be read as either tactile or kinetic. In actuality, it is both. Attributes of the falling musical gesture relate to the senses of touch and motion. The notion of the *composite anaphone* resolves the friction between the two possible readings. A composite anaphone is not precisely a fourth type (although the diagram on page 486 of *Music's Meanings* labels it as though it were a distinct type), but is a combination of two or more of the other types. It may be sonic-tactile, tactile-kinetic, sonic-kinetic, or sonic-tactile-kinetic. Tagg illustrates the composite anaphone using, among other musical works, the representation of a galloping horse in Rossini's *Guillaume Tell* overture and the theme for the television show *Bonanza*. The sonic relationship between the musical sound and the gallop of the horse is immediately apparent; the rhythm performed in musical settings is an anaphone for the rhythm heard as the horse's hooves impact the ground. Since the sound is generated as a result of the horse's motion, the musical sound is undeniably a kinetic anaphone for the galloping motion as well. The roughness of that motion and the percussiveness of the musical sound implies a certain roughness in riding a horse at a gallop, making it also a tactile anaphone.[206] This illustration highlights overlap between the tactile and kinetic domains and between the sonic and kinetic domains. In fact, all three of Tagg's anaphone types could conceivably be classified as "kinetic," since sound and touch are products of motion. The purpose of maintaining a distinction between the

[206] Tagg, *Music's Meanings*, 509.

anaphone categories despite movement being the source of their associated sensations is at least partly pedagogical. Tagg's students have found it "easier to distinguish types of musical semiosis on the basis of different modes of sensory perception than by considering different combinations of different quantities of mass, energy, and space."[207] Humans tend to classify sensory experiences according to the organ systems involved in perceiving them and the psychophysical impressions they engender. Classifying sensory inputs in terms of the sonic, tactile, and kinetic allows greater specificity for describing sensory experiences (which we perceive as distinct) rather than merely acknowledging movement as the source of sensation.

In studying musical representations of water, we will find that many anaphonic musical sounds and structures are composite, although they may correlate more strongly with one sense than the other two. In any case, it is far more important to this study that we examine the nature of music's relationship to water by revealing similarities between elements of both than to exhaustively classify musical sounds in discrete categories. Tagg's work on developing a sign typology driven by anaphones provides an analytical vocabulary that helps this sort of examination. His anaphonic model will be a primary means by which I will relate musical devices to features of water.

[207] Tagg, 499.

CHAPTER 3

THE ROOTS OF THE MUSICAL WATER DEPICTION

Musical works with texts performed by a vocalist or vocalists are uniquely positioned to express extramusical meaning, since the meanings of a text can be interpreted musically in real time during performance. In fact, the artistic realization of a text's meaning is considered by some to be the *raison d'être* of a musical text setting. It is in text painting that we find the roots of the musical depiction. This chapter begins with an examination of these roots in Gregorian chant text painting. This examination sets up analyses of later songs with water-associated texts in which I identify musical devices that point to specific aspects of bodies of water. Identifying these musical devices allows me to categorize them according to which aspects of bodies of water they represent and describe how these aspects contribute to our senses of entire bodies of water portrayed in musical works.

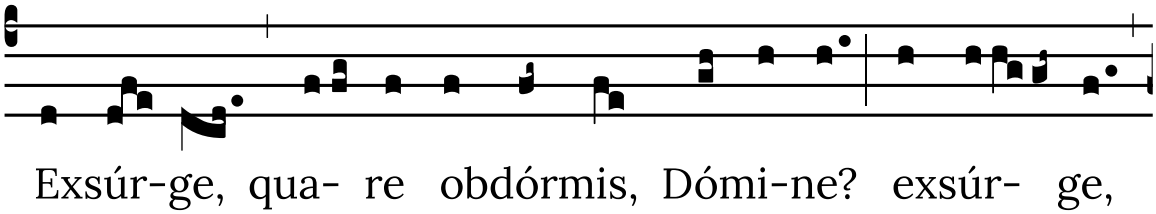
In preparation for a shift in focus to musical devices in instrumental works, I also examine issues associated with relying on metadata to form interpretations of musical meaning in the section that closes this chapter.

Meaning via Text Painting

Music that points to extramusical phenomena is at least as old as Gregorian chant. A notable example is found in the chant *Exsúrge Quare*, which the Roman Catholic Church uses as an introit for a service of the mass proper on Sexagesima Sunday (the second Sunday before the beginning of the Lenten season). It contains a

pattern of notes that, in the tradition of chant, signify the death and resurrection of Jesus Christ. The *fa-mi-sol-la* pattern occurs on the text "obdórmis, Dómine" in Example 3.1. The descent from *fa* to *mi* represents the suffering and death of Christ while the ascent from *sol* to *la* represents his resurrection. Since Christ's death and resurrection is key to many Christians' understandings of "deliverance," referencing those events in music reflects the chant's cry for God's help. Such symbolism is not readily apparent to those unfamiliar with historic practices in sacred music.

EXAMPLE 3.1. *Exsúrge Quare* from the *Graduale Romanum*: *fa-mi-sol-la* pattern on the text "obdórmis, Dómine" signifies the death and resurrection of Jesus Christ



Text painting was such an important and easily recognized feature of sixteenth-century madrigals that such illustrative gestures and devices came to be known as *madrigalisms*. In his 1605 *Dichiaratione*, Giulio Cesare Monteverdi defends his brother, Claudio, from attacks by Giovanni Maria Artusi on Claudio's musical style and advocacy of the *seconda prattica*.[208] This more modern style of madrigal composition primarily deviated from the *prima prattica* codified and taught by Zarlino in its freer treatment of dissonance. James Haar calls Monteverdi's *seconda*

[208] Karen Atkins, "The Illusion of the Prima Pratica and Seconda Pratica in the Music of Willaert and Rore" (PhD diss., Chapel Hill, NC, University of North Carolina, 2012), 1.

prattica "a word-centered musical language the origins of which [Claudio Monteverdi] saw in the madrigals of Cipriano de Rore."[209] The evolution of the *seconda prattica* marks a shift toward a more text-centric compositional approach in Western music.

Since textual meaning creates opportunities for both artistic expression and cohesion between textual and musical meaning, the practice of text painting has persisted in songs and in choral works. Composer David Conte writes:

> In great choral music, every decision of the composer regarding melody, harmony, rhythm and tempo, texture, and color grows organically out of the text. When this is the case, the meaning of the words as an expression of the experience of the speaker of the text is intensified by the music and is more alive and vivid than the words alone. For me, this is the only reason to set any text to music: to illuminate the emotional qualities of the text through music.[210]

Targeting a text's emotive characteristics for portrayal through music offers composers a vast range of expressive compositional possibilities. As described in chapter two, scholarship in musical completion and incompletion has examined the emotional impact of adherence or non-adherence to stylistic tropes in musical works.[211] The meaning of a particular text might also be reflected in a composer's choice of key and placement of modulations, tempo and variations thereof, timbral selections, and so on. Thousands of musical works could serve as effective examples of music driven by the emotional landscape of a text, but David Lang's haunting and

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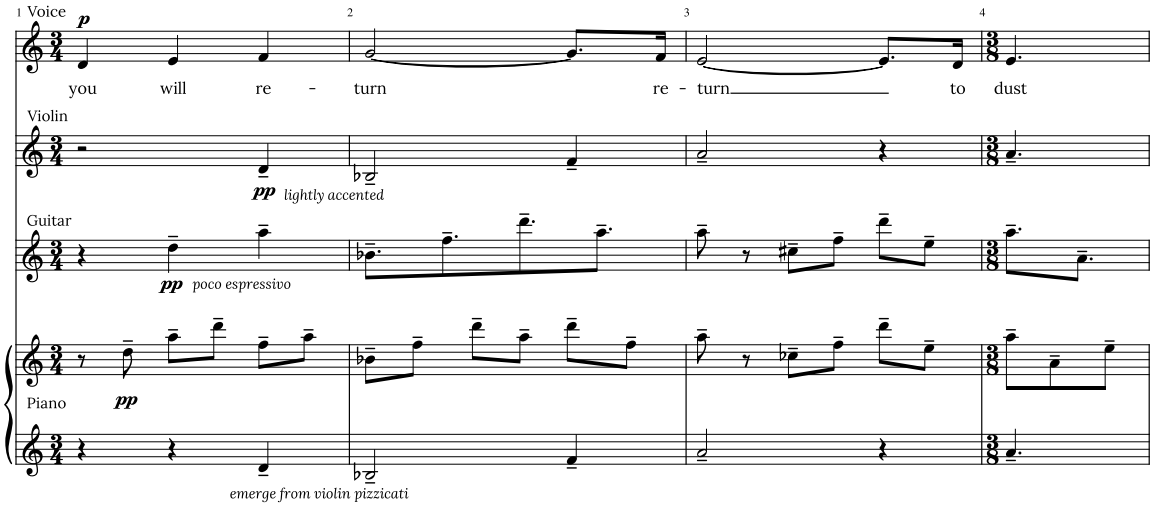
[209] James Haar, *Essays on Italian Poetry and Music in the Renaissance, 1350-1600* (Berkeley, CA: University of California Press, 1986), 127.
[210] David Conte, Steven Sametz, and Robert Kyr, "Toward a Choral Pedagogy for Composers," *Choral Journal* 55, no. 1 (August 2014): 18.
[211] For more details concerning theories on emotion in music, refer to the section in chapter two titled, "Emotional Meaning Through Completion and Incompletion."

achingly mournful “you will return” [sic] from *death speaks* (2012) is a particularly striking example of emotional text painting from the past decade. Death is personified in the album’s first five songs and given voice. In “you will return” the character Death is inviting, but their welcome has a bleak undertone. The tension this creates in the text is reflected in the unbalanced quality lent by the piece’s shifts between 3/4 and 3/8 time and its polyrhythms seen in Example 3.2. The music-box-like accompaniment softly evokes an eerie lullaby. The vocalist for the work’s first performance and the 2013 album recording, Shara Worden, performs the song with a fast vibrato that suggests she is on the brink of crying. Although her performance is clear and full voiced, her vibrato is more restrained than is typical of opera and art song singing.

EXAMPLE 3.2. David Lang, *death speaks*, mvt. 1 “you will return,” mm. 1-4: music-box-like accompaniment beneath a somber vocal line (transcription from recording)



Yet a composer need not limit theirself to expressing a text's emotional content. A composer may target a particular word or concept for illustration through musical devices. George Frideric Handel is a well-known adept at realizing textual meaning in music. His 1741 *Messiah* oratorio exhibits Handel's mastery: the word "crooked" is set with alternating notes whereas the word "straight" is set on a single long note; "glory to God on high" is contrasted with "and peace on Earth" by placing the former high in the women's voices and the latter low in the men's voices.

The targeted illustration of textual meaning at the level of the phrase or word, rather than at the level of the emotional content of a work (or section of a work) facilitates the depiction of water in song. Emotional states do not correlate directly with other extramusical concepts and objects, so purely affective text painting is unable to musically illustrate bodies of water. David Conte writes that the meaning of words can be intensified by music. Although he is referring explicitly to the text's emotional qualities, the text's references to other extramusical concepts and objects may be similarly enhanced. A sense of a body of water's motion, its weight, its breadth, and its depth conveyed through music can similarly support textual meaning in water-themed songs.

Water became an increasingly common subject for text painting in Renaissance-era music. Consider, for example, the opening of part one of the four-voice motet *Sicut cervus* (1604) by Giovanni Pierluigi da Palestrina. Its text is taken from the 42nd psalm in the Latin version of the *Psalterium Romanum*. The King James Version of the Christian Bible translates the first sentence of the Latin text thus:

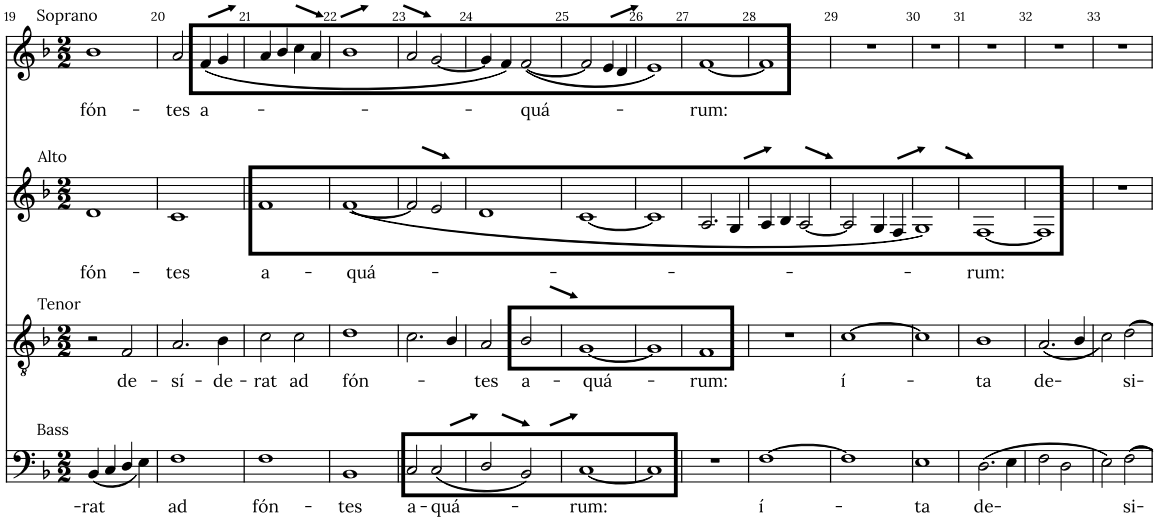
Sícut cérvus desíderat ad fóntes aquárum: íta desíderat ánima méa ad te, Déus.	As a deer pants for flowing streams, so pants my soul for you, O God.

This translation of the word "aquárum" (the genitive plural of aqua) is an interpretation of a word that translates more generally as "water." Palestrina sets the word with melismas of up to seventeen notes.

The word "aquárum" is present in all four voices in the excerpt from *Sicut cervus* (Example 3.3). The tenor and bass voices in mm. 19-25 contain a mostly placid setting of "aquárum." In contrast, the melismas on "aquárum" in the upper voices set the word apart from the rest of the text; the soprano has melismas of ten and four notes on the first two syllables, respectively, and the alto has a twelve-note melisma on the word's second syllable. Although melismatic writing is present throughout the work, melismas on syllables in the word "aquárum" are some of the longest. The word is the first example of melismatic writing in the piece and the most frequently appearing.[212]

[212] Two instances of the most open and unrounded vowel on the IPA chart, the vowel "a" (IPA number 304), are contained in the word "aquárum." This vowel, often used for vocalizes and warm-ups, can be produced by singers with relative ease. As such, the placement melismas on "a" can be attributed not only to the meaning of "aquárum," but to the ease with which the word can be sung melismatically.

EXAMPLE 3.3. Giovanni Pierluigi da Palestrina, *Sicut cervus*, mm. 19-33: instances of the word “aquárum” in all voices, direction changes indicated



Palestrina’s melismas on “aquárum” often contain at least two direction changes. In Example 3.3, the aquárum melismas in the soprano and alto voices change direction several times. This distinguishes the word, as melismas within other words in the first twenty-four measures of *Sicut cervus* are unidirectional (the final syllable of the word “desíderat” is performed on an ascending melisma in the bass voice in m. 19).

Had Palestrina set the entirety of the *Sicut cervus* text with melismas from the start, his treatment of “aquárum” would not be notable. The direction changes in the melismas subtly emphasize the word as well as illustrate its meaning. Church music scholar David W. Music posits that this emphasis on water is the purpose of Palestrina’s melismas, which serve to highlight the text’s liturgical function as a

baptismal tract through the relationship of water and baptism.[213] According to Music, Palestrina draws attention to individual words for a "larger purpose" than illustrating them through text painting.[214] Nevertheless, increased emphasis is not the only consequence of the melismas in *Sicut cervus*. Text painting was a common Renaissance compositional practice. While the liturgical significance of "aquárum" may have prompted Palestrina to musically accentuate the word, this does not necessarily negate the presence of text painting. Palestrina's setting both draws attention to the word and musically depicts its extramusical meaning. It is a sense of motion achieved through melisma that conveys this meaning. On the word "aquárum," the voices rise and fall in pitch over time, suggesting the rippling surface of a body of water.

Palestrina's *Sicut cervus* demonstrates that musical illustrations of water in the European classical tradition extend back at least to the Renaissance. Yet it is in the Romantic era that the practice of crafting illustrative musical works encounters some of its most exciting developments. The expression of Romanticist preoccupations

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[213] David W. Music, "Chapter 8: Giovanni Pierluigi da Palestrina: Polyphonic Music as Devotional Expression," in *Hymns and Hymnody: Historical and Theological Introductions*, ed. Mark A. Lamport, Benjamin K. Forrest, and Vernon M. Whaley, vol. 2 (Eugene, OR: Wipf and Stock Publishers, 2019), 116. Baptism is a rite of entrance into the Christian church, the mode of which varies between denominations (subgroups). It may involve sprinkling water over a person's head or immersing a person in water. Music's point is that, by emphasizing a Latinate word meaning "water," Palestrina elevates a word within the piece that is central to the baptismal rite. Water's association to baptism within the church means that emphasis on that word generates a link between *Sicut cervus* and the baptismal rite.
[214] Music, "Giovanni Pierluigi da Palestrina," 116.

with the natural world and with human nature led to a growth in expressing those ideals through visual art, poetry, and music.

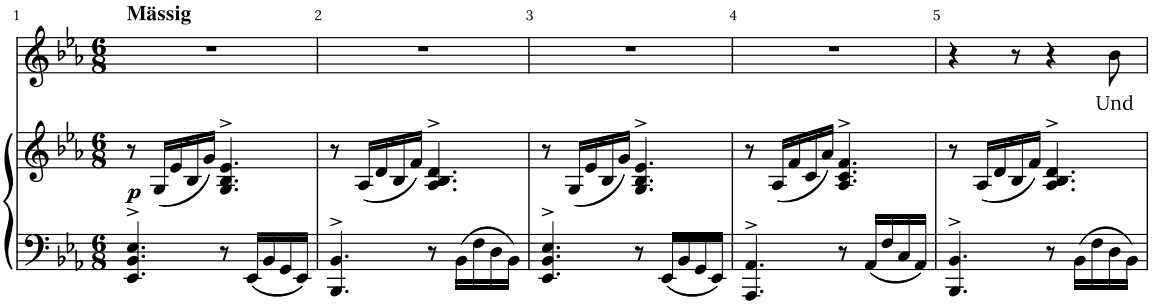
Water Realized in Musical Narrative

Music that depicts water has flourished in the past 200 years. Water-evoking musical devices that were established in Renaissance-era compositions have continued to appear in programmatic concert music alongside newer depictive devices. Accompanied songs have contributed greatly to the burgeoning set of water-depicting musical devices, driven by a growing interest in music's expression of extra-musical meaning, innovations in piano construction that allowed longer sustain and greater expressivity, and the depictive potential of accompaniment writing. The development of the art song brought new opportunities for musical depictions that are tied to a textual extramusical narrative but not dependent exclusively on the human voice. The result is a decoupling of the text's changing meaning from the music's portrayal. In *Sicut cervus*, the music depicts water only on the word "aquárum." In accompanied songs, the accompaniment part is able to take a broader view of the subject matter and express the extramusical with considerable independence from individual words and phrases.

Schubert's song accompaniments represent a breakthrough in water depiction. His Lieder containing references to water sometimes employ text painting, but he accomplishes more with his accompaniments. A large number of his works, such as his setting of Goethe's poem "Auf dem See" (1817; "On the Lake"), utilize the

piano to achieve a more substantial illustration of water.[215] The poem references water in stanzas 2, 4, and 5 in the lines, "The waves cradle our boat / To the rhythm of the oars," "Stars in their thousands / Drift and glitter on the waves," and "And the ripening fruit / Is reflected in the lake."[216] In the opening measures of the song, seen in Example 3.4, Schubert establishes a continuous pattern of broken chords that alternates between the pianist's hands.

EXAMPLE 3.4. Franz Schubert, "Auf dem See," mm. 1-5: rowing pattern and resulting rippling motion in the piano



In these repetitive sixteenth note patterns the right-hand gesture trends upward while the left-hand gesture trends downward in pitch. Given the prevalence of the spatial metaphor for pitch in both describing and perceiving music and a listener's predisposition to interpret musical content through the lens of the piece's title, one might interpret this interaction of gestures as representative of small

[215] There are two versions of Schubert's "Auf dem See." One is catalogued as D. 543, marked *Mässig*, *ruhig*, and set in E major. The second is catalogued as Op. 92, No. 2, marked only *Mässig*, and set in E♭ major. The E♭ version is twelve measures longer, due to an extended prelude and an extended postlude, and has an overhauled vocal line. This dissertation exclusively refers to the second version.

[216] Translation © Richard Stokes, author of The Book of Lieder, published by Faber, provided courtesy of Oxford Lieder (www.oxfordlieder.co.uk).

polydirectional waves or the type of ripples that are often encountered on the surface of a lake.

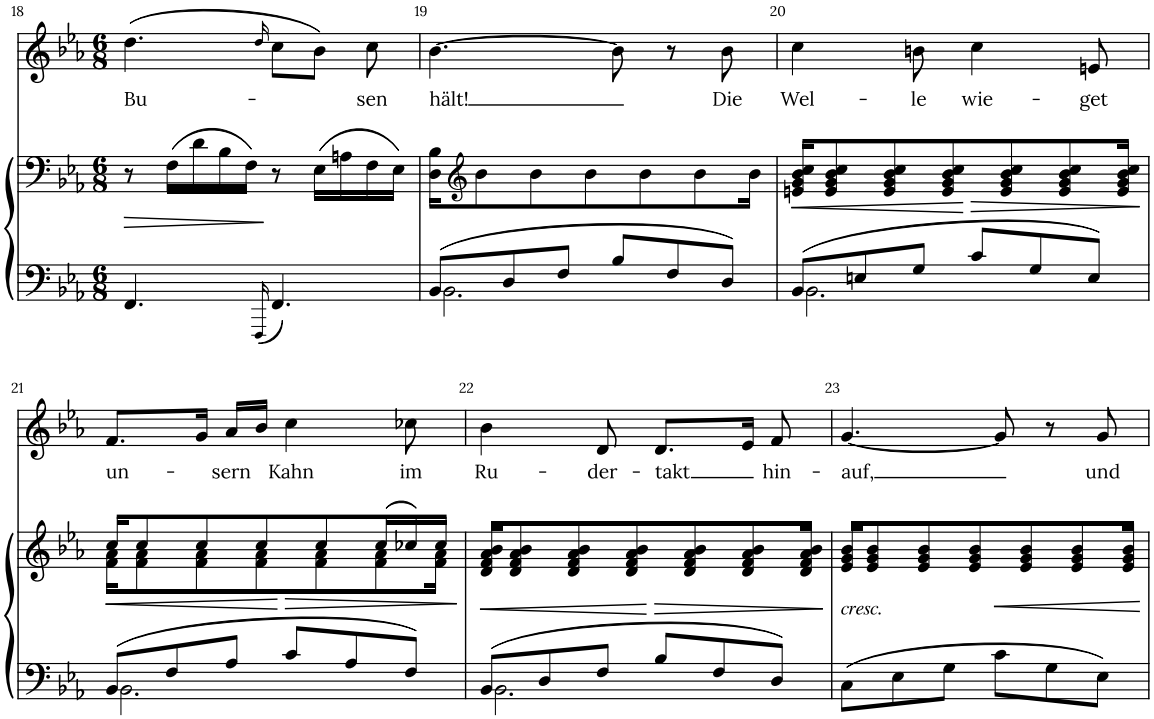
In Lewis's analysis of the song, she interprets more than lapping, rippling waves in this accompaniment. She suggests that the dotted quarter notes are a musical illustration of a boat's oars entering the water and driving a boat forward.[217] In Lewis's interpretation, the dotted quarter notes are representative of the regular motion of the oars, which cause the rippling motion as they disrupt the lake's surface.[218] In addition, the left- and right-hand dotted quarter notes and arpeggiated gestures are offset in pitch space (the left-hand gesture being lower than the right-hand gesture), suggesting the oars entering the water on either side of the boat. Schubert's division of the pianist's hands to represent the motion of the two oars causes the pianist to physically manifest the narrative by mimicking the two-handed actions of a rower (in much the way Schubert's "Gretchen am Spinnrade" requires the pianist to mime the physical motions described in the song's text). The effort at the start of each oar stroke is also embodied in the increased effort of the pianist to perform the accents on beats 1 and 4. These alternating high and low chords are abandoned in m. 17, but they contribute to a strongly evocative first sixth of the piece and generate imagery through which the remainder of the piece may be interpreted.

The pattern of arpeggiated chords in "Auf dem See" shifts with changes in the text's character; however, they persist through most of the song. Example 3.5 shows m. 19, the moment of the song's first significant shift in texture. The broken chord is

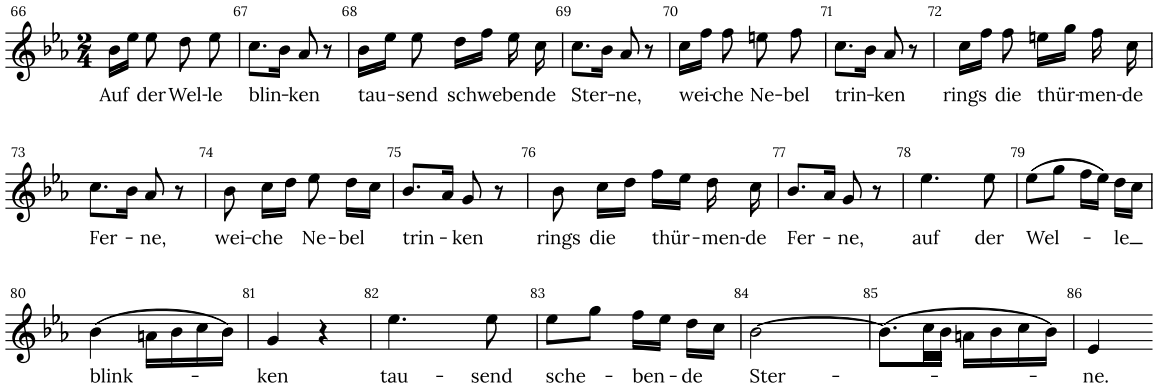
[217] Lewis, "Evocations of Water," 47.
[218] Lewis, 47.

placed in the left hand and choppy, repeated chords in the right. The regular, periodic wave motion in the left hand begins only slightly before the text's first mention of waves ("Die Welle") in m. 20. Rowing is first mentioned in m. 22, retroactively lending further context to the rowing motion in the song's opening measures. The voice, too, evokes water in expansive arpeggiated approximations of waves through "Auf dem See," such as in the small, quick waves near the song's end (Example 3.6).

EXAMPLE 3.5. Franz Schubert, "Auf dem See," mm. 18-23: change to rising and falling arpeggios in the left hand with choppy repeated chords in the right hand



EXAMPLE 3.6. Franz Schubert, “Auf dem See,” mm. 66-86: quick wave patterns in the voice part



Schubert’s faithfulness to this accompanimental approach through the song suggests continuous activity; the accompaniment rarely pauses and there are few moments lacking a broken-chord gestural pattern. This may initially seem unremarkable, yet in the context of a musical representation of the extramusical the unchanging texture might suggest some additional meaning. Since the title and text of the song suggest to the listener the idea of a lake, the implication of continuous motion connects readily to the waves the piano illustrates. The result of this combination of effects is a more complete and more convincing depiction of a boat on a lake than could be achieved through mere text painting or an accompaniment that shifted at the whims of the text.

Neither Schubert nor his publisher labels “Auf dem See” a “barcarolle.” Nevertheless, it fits the definition given in the *New Harvard Dictionary of Music*.[219] The *barcarolle* is a boatman’s song (or a piece resembling one) characterized by a

[219] Don Randel, ed., “Barcarolle,” in *The New Harvard Dictionary of Music* (Cambridge, MA: Harvard University Press, 1986).

rhythm which suggests the rowing of a Venetian gondolier, typically utilizing 6/8 meter. Since the first barcarolles are songs that accompanied rowing, a musical work that imitates the barcarolle inherits an implied rowing rhythm. The barcarolle, then, is an inherently evocative musical style.

Another of Schubert's barcarolles, "Auf dem Wasser zu singen," D 774 (1823; "To Be Sung on the Water") evokes rowing through musical imagery quite unlike "Auf dem See." It trades the alternating left-hand and right-hand chords on each beat for low notes on the downbeat of each measure and repeating left-hand chords on each eighth-note subdivision of the beats that follow. The alternating left- and right-hand chords in "Auf dem See" suggest not only the motion of oars but their affect on the water with unaccented sixteenth-note wave patterns. "Auf dem Wasser zu singen" retains low notes on the downbeat of each measure, but the remainder of its chordal accompaniment is more static.

The piece's right-hand material has greater depictive potential than that of the pianist's left hand. Example 3.7 shows the right hand leaping upward and performing descending sixteenth-note scales, repeating each note (except the first note in m. 1). The mainly unidirectional scalar pattern is far more suggestive of motion than the bass material.[220] Maureen Schafer suggests that "the constant running sixteenth notes in the piano accompaniment create the motion of light waves lapping at the side of the boat."[221] This certainly aligns with the song's opening text:

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[220] In Lewis, "Evocations of Water," 65., the author points out that this descending repeated-note figuration was unusual for its time and was likely made possible by the Viennese action on Schubert's piano.

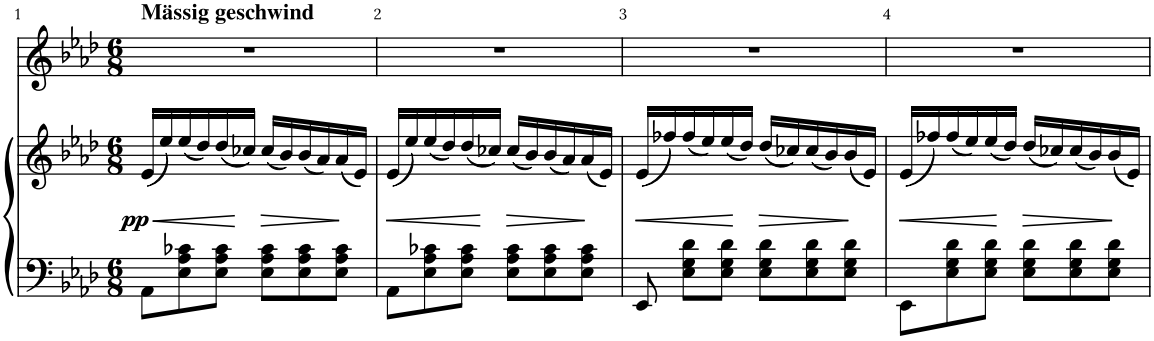
[221] Maureen Schafer, "Illuminating Text: A Macro Analysis of Franz Schubert's 'Auf dem Wasser zu singen,'" *Musical Insights* 2 (2002): 97.

Mitten im Schimmer der spiegelnden Wellen
Gleitet, wie Schwäne, der wankende Kahn;
Ach, auf der Freude sanft schimmernden Wellen

Amid the shimmer of the mirroring waves
the rocking boat glides, swan-like,
on gently shimmering waves of joy[222]

Yet this interpretation does not account for the initial upward leaps that initiate each sixteenth-note pattern. These abrupt slurred ascents—usually an octave or more—have a propulsive effect that launches the subsequent descending scales.

EXAMPLE 3.7. Franz Schubert, "Auf dem Wasser zu singen," mm. 1-4: surges of energy in the right hand on measure downbeats



One possible interpretation of "Auf dem Wasser zu singen" is that the surging and descending sixteenth notes portray the motion of the boat resulting from rowing ("the rocking boat glides"). Each oar stroke drives a boat forward. When the rower extracts an oar from the water, the boat continues moving but gradually loses speed until the next stroke propels it again. The leap that begins each measure, then, is the

[222] Translation © Richard Wigmore, author of Schubert: The Complete Song Texts, published by Schirmer Books, provided courtesy of Oxford Lieder (www.oxfordlieder.co.uk).

stroke of an oar that induces unidirectional motion of a boat through the rest of the measure. The boat glides across mostly still water, as is musically suggested by the repeated chords in the left hand. Lewis writes that another Schubert song, "Am See," D 124 (1814) similarly evokes the stillness of a lake through repeated chords.[223]

Music often illustrates the motion of waves through kinetic anaphones and the spatial pitch metaphor, but motion is also be expressed through dynamic contrast. A crescendo can be described as "a rise in volume" or "turning up the volume" and a decrescendo described in opposite terms, suggesting a spatial metaphor for dynamics. The dynamic swells in "Auf dem Wasser zu singen," then, are suggestive of waves.

The "lapping" sixteenth-note motion Schafer describes is more apparent in the second half of "Auf dem Wasser zu singen" than earlier in the work. At m. 30, the piano accompaniment introduces gently rippling patterns in the right hand alongside instances of the original sixteenth-note pattern. The poetic text in the measures that precede the change describes the play of light from the setting sun on the water's surface (seen here in the second half of the first poetic stanza):

> Gleitet die Seele dahin wie der Kahn;
> Denn von dem Himmel herab auf die Wellen
> Tanzet das Abendrot rund um den Kahn.
>
> The soul, too, glides like a boat.
> For from the sky the setting sun
> dances upon the waves around the boat.[224]

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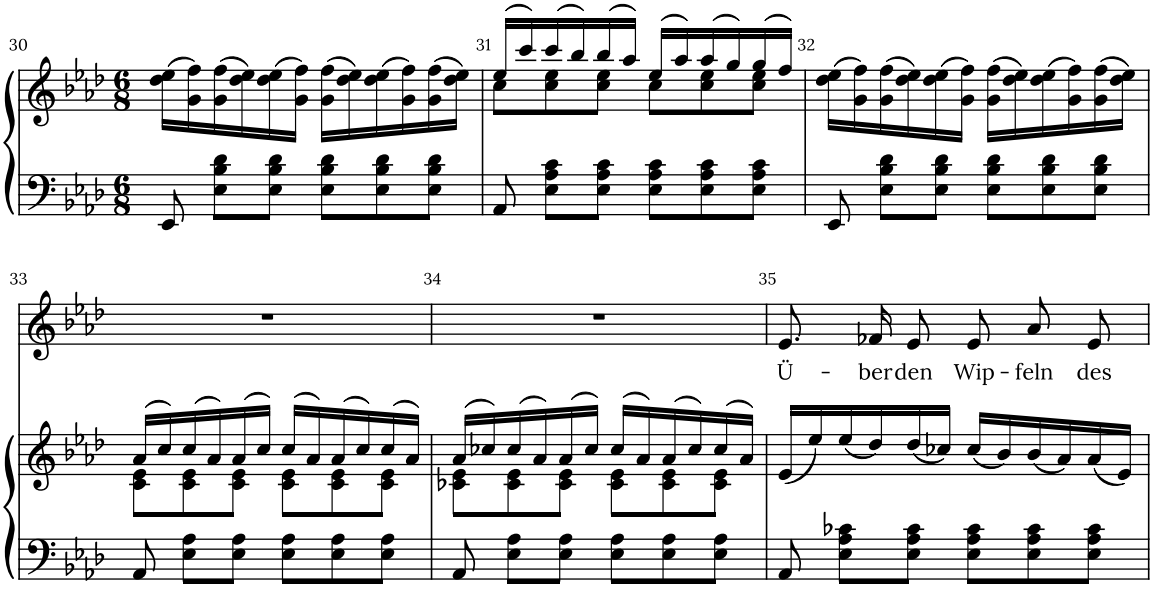
[223] Lewis, "Evocations of Water," 52.
[224] Translation © Richard Wigmore, author of Schubert: The Complete Song Texts, published by Schirmer Books, provided courtesy of Oxford Lieder (www.oxfordlieder.co.uk).

Example 3.8 shows rippling patterns introduced in m. 30 which begins on the harmonic interval of a major second (D♭5 and E♭5), repeatedly expands outward to a minor seventh (G4 and F5), and collapses back down the original interval. Although only the E♭ is dissonant against the prevailing harmony in the major second interval, it is separated registrally from the chords in the left hand that provide most of that harmony. A listener can hear the major second dissonance as distinct from dissonance against the prevailing harmony and suggestive of a kind of "shimmer" like the light on the waves that is mentioned in the text of "Auf dem Wasser zu singen."

EXAMPLE 3.8. Franz Schubert, "Auf dem Wasser zu singen," mm. 30-35: rippling wave patterns in the right hand



Many of Schubert's other water-themed song settings rely on implied motion, including the ascending triplet pattern of "Am Bach im Früling," D 361 (1816), the placidly undulating eighth notes in "Am Flusse," D 766 (1822), and the rippling

arpeggios and tremolos of "Auflösung," D 807 (1824). John Reed points out that in Schubert's barcarolles, he places strong beats in the middle of measures such that "each bar seems to advance and recede, like a wave."[225] "Auf dem Wasser zu singen" has the same dynamic shape in its first few measures.

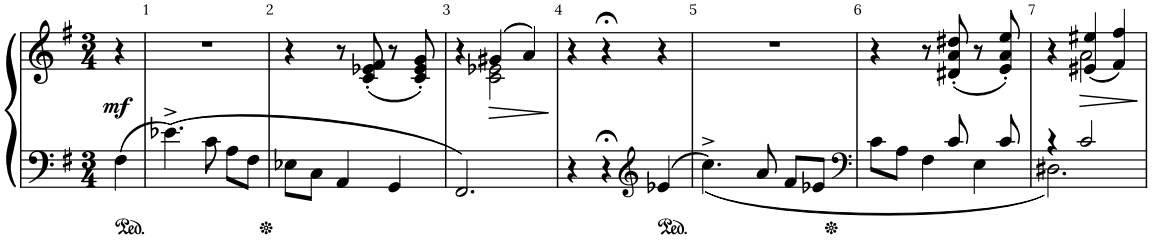
Franz Liszt, too, masterfully translates textual meaning and broad extra-musical themes to his piano accompaniments. Lewis identifies Liszt's works as some of the earliest and most significant contributions to water music at the piano, inspired though they were by Schubert's song accompaniments.[226] Liszt's *Die Loreley* delivers a dramatic narrative in a setting of Heinrich Heine's 1824 poem of the same name, expressed through a barcarolle meter and expressive incidental piano writing. Lewis calls *Die Loreley* "quasi-operatic in conception," with elements of recitative and aria bound together using a dramatic narrative within a barcarolle.[227] In Heine's poetic narrative, an oblivious young woman—perhaps a mythological siren—sits on a cliff overlooking the Rhine as she combs her hair. The song she sings captures the attention of a boatman and in his distracted state he crashes upon a rocky reef and sinks below the river's waves. Liszt's musical rendering of this tale builds upon and sets it apart from the previously analyzed contributions by Schubert, as the musical devices that depict the river evolve dramatically in response to the plot.

Die Loreley opens with subtle musical foreshadowing; the descending passages in the piano beginning in mm. 1 and 5 (Example 3.9) are an augur for the

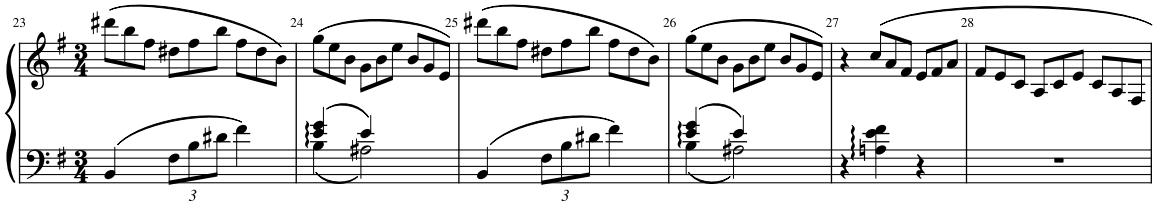
[225] John Reed, *The Schubert Song Companion* (Manchester, UK; New York, NY: Manchester University Press, 1997), 52.
[226] Lewis, "Evocations of Water," 1.
[227] Lewis, 130.

sinking boat and drowning boatman at the story's dramatic climax. The foreshadowing is continued in mm. 14-20, which contain a similar piano passage to the one that accompanies the boatman's fatal distraction in mm. 75-83 (though it occurs without the tension provided by the ascending chromatic ostinato). It is in m. 23 (Example 3.10) that the work's portrayal of the river water properly begins with the wave-like arpeggiated triads in the right hand. These arpeggios gradually descend throughout mm. 23-28, suggesting a change in location—travel—over rippling rolled chords in the left hand.

EXAMPLE 3.9. Franz Liszt, "Die Loreley," S. 273 (version 2), mm. 1-7: descending passages in the piano that foreshadow the drowning of the boatman



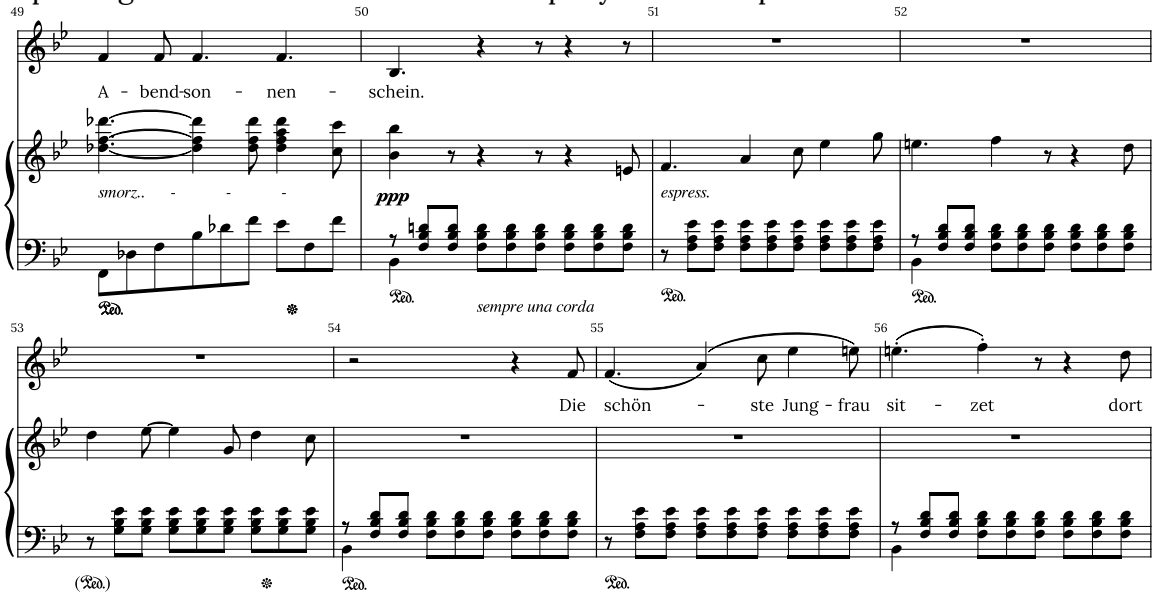
EXAMPLE 3.10. Franz Liszt, "Die Loreley," S. 273 (version 2), mm. 23-28: descending arpeggios in the right hand show travel and waves (piano isolated)



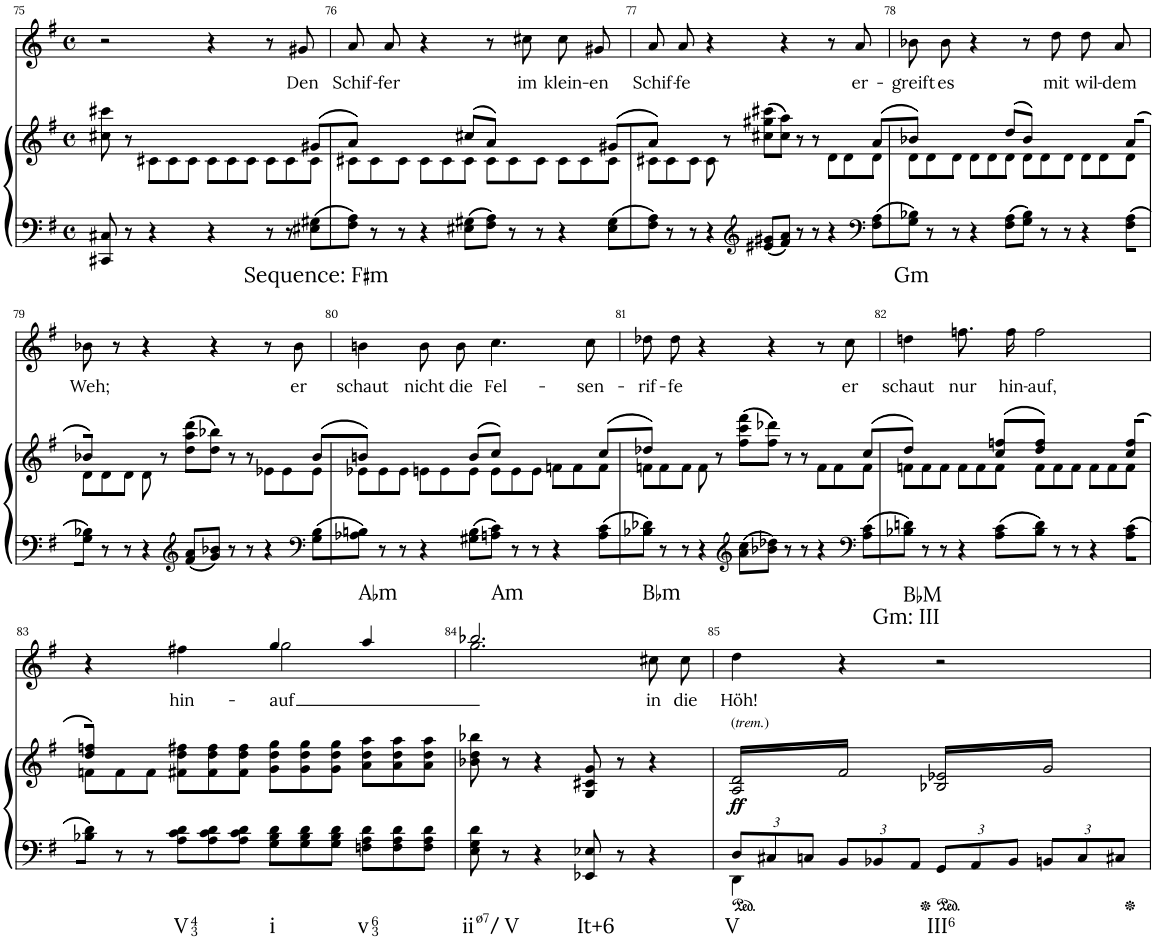
Liszt's piano accompaniment transitions in and out of depictions of the river Rhine, conveying its motion through arpeggiations and gradual descents, as well as gently undulating eighth-note patterns like those in Schubert's "Auf dem Wasser zu

singen." As Heine's poem progresses toward tragedy, Liszt's song gradually takes on a new character in anticipation (as shown in Example 3.11). Gently repeated chords suggestive of increasingly choppy water enter in m. 50, anticipating then accompanying Heine's description of the woman (which begins at the end of m. 54), as well as further foreshadowing the agitated waters over the rocky reef that will doom the boatman. Following an increase in tempo, m. 75 introduces an insistent C♯4 ostinato. The ostinato ascends by half steps over the course of several measures, supported by an accelerating harmonic rhythm leading into m. 81 in Example 3.12. The tension builds to an accented chord in m. 81, at which point the boat collides with the rocky reefs (*Felsenriffe*) described in the poem.

EXAMPLE 3.11. Franz Liszt, "Die Loreley," S. 273 (version 2), mm. 49-56: gently repeating chords in the left hand accompany the description of the woman



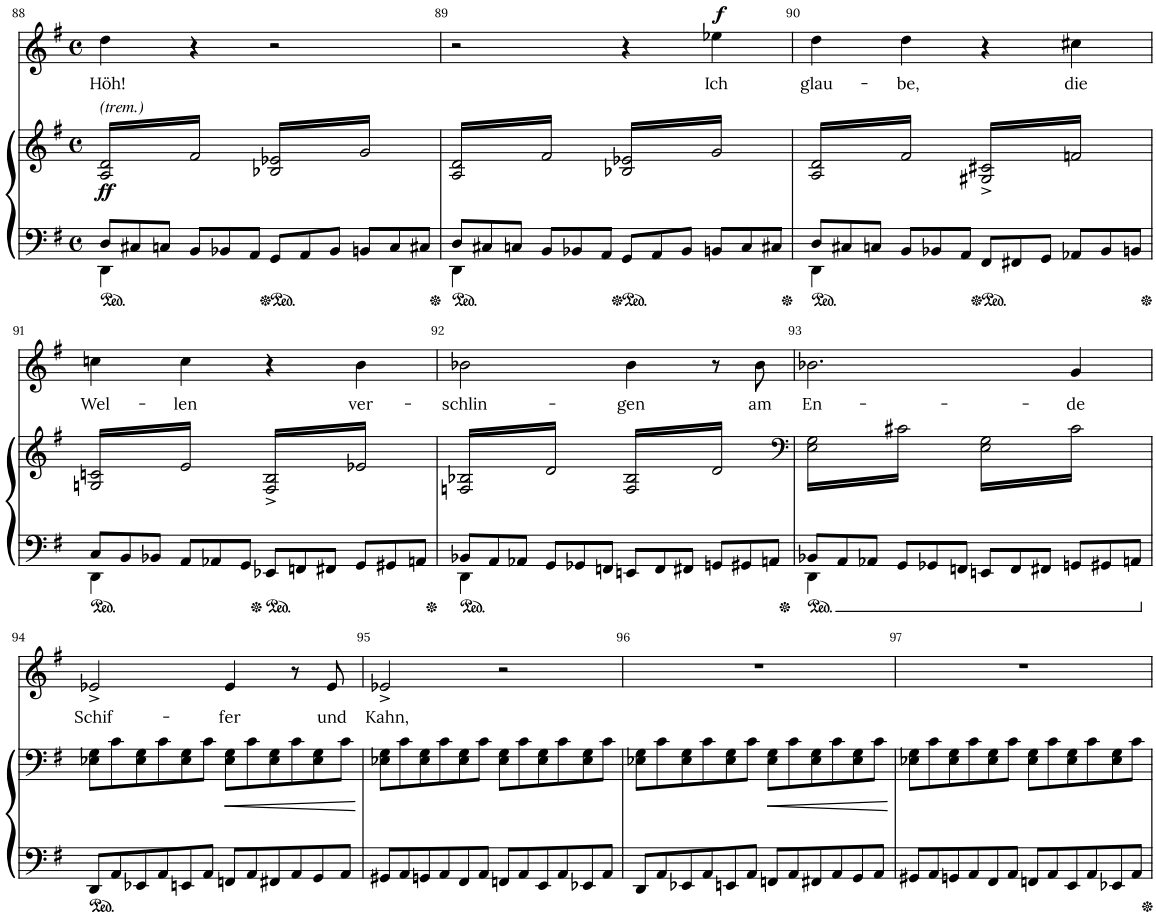
EXAMPLE 3.12. Franz Liszt, “Die Loreley,” S. 273 (version 2), mm. 75-85: increasing tension in ascending repeated eighth notes and accelerating harmonic rhythm leading to m. 82



Liszt offers a distinctly noisier and more agitated setting of the motion of water as the poem describes the boatman and his craft in mm. 85-94 (Example 3.13). Rising and falling patterns in the Schubert songs examined in this chapter have been composed of pairs of alternating notes, arpeggiated triads, and dynamic swells. The triad’s openness and its consonance convey a kind of serenity. Liszt instead opts for rapidly ascending and descending triplets in the muddier end of the piano’s range,

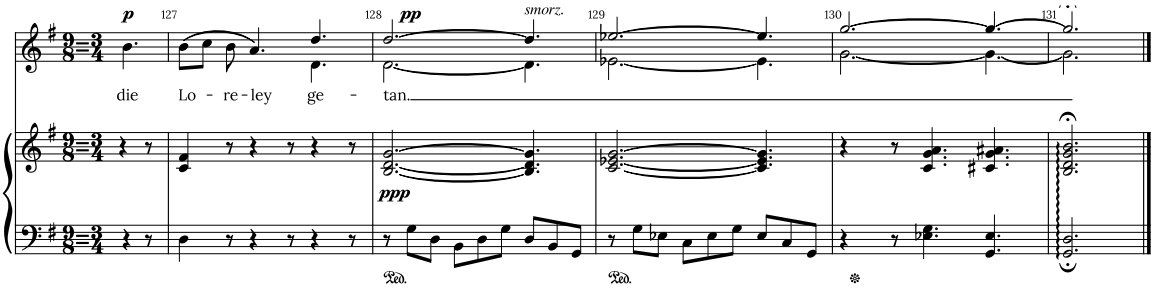
where low notes become increasingly distorted. These notes are further blurred together by the pedaling and by the rumbling tremolo in the right hand. The effect is one of turbulence and swirling eddies rather than the comparatively gentle waves of the Schubert examples. The lowness and subsequent distorted quality of the left-hand passage also gives the impression of the water's depth and murkiness, compounded by the gradual descent of these triplet patterns of the passage over six measures. The pattern begins in m. 85 on D3, then descends to C3 in m. 88, and B♭2 in m. 89 in imitation of the sinking of the boat and the drowning of the boatman.

EXAMPLE 3.13. Franz Liszt, "Die Loreley," S. 273 (version 2), mm. 85-94: swirling eddies depicted in the piano as the boatman drowns



Following the boatman's demise, the depiction of the river begins to return to the light undulations that accompanied his earlier journey and the woman's unaware singing. The water continues to flow beyond the rocky reef, indifferent to the boatman's misfortune. By m. 128 in Example 3.14 the waves from mm. 23-28 have returned in the pianist's left hand, signaling the end of the story and the end of the song.

EXAMPLE 3.14. Franz Liszt, "Die Loreley," S. 273 (version 2), mm. 127-131: gentle waves return in the piano as the song nears its conclusion



Die Loreley's depiction of the Rhine and the events that transpire on it in Heine's poem achieves a high level of detail and variety in its musical devices. Representations of the river's gently undulating waves contrast with its increasing agitation as the boatman approaches the reef and the swirling eddies where the river is the most dangerous. The Rhine's changing motion is portrayed through musical devices to communicate these important aspects of the narrative.

Interlude: The Problem with Metadata and Interpretation

Moving beyond representations of water in vocal works to those within instrumental music introduces new interpretive challenges. Explicit meaning

conveyed through a song's text creates many opportunities for both subtle and straightforward musical interpretation of extra-musical meaning. The composition may illustrate a word or lend support to a narrative through evocative techniques as that narrative is conveyed through poetic text. Instrumental music is free of the restrictions of a text but lacks it as an interpretive aid. Many instrumental works also lack titles that point to any kind of extramusical meaning. Musical devices within a composition may reasonably be subjected to all kinds of justifiable interpretations without a song text or metadata present to guide the listener by setting expectations.

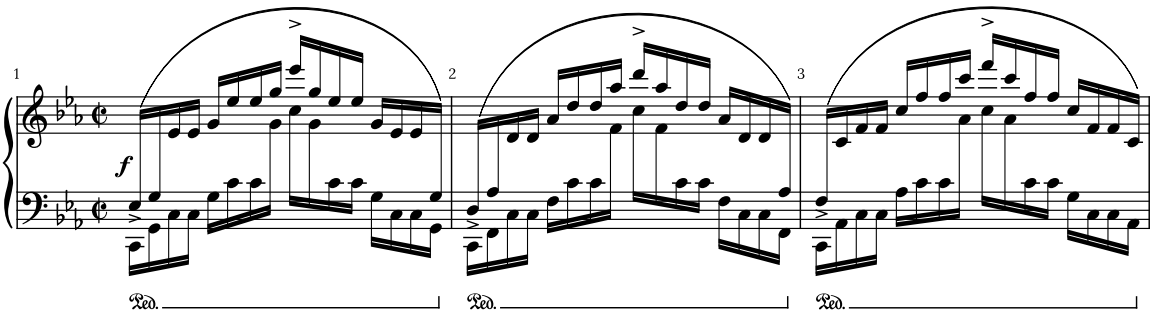
A fanciful interpretation may be imposed on a composition without any explicitly defined extramusical meaning. An immediately relevant example is Frederic Chopin's Étude Op. 25, No. 12 in C minor (c. 1832-1836), colloquially referred to as the "Ocean" étude. Many of Chopin's works have been given titles not selected by the composer. Peter Willis notes Chopin's frustration with "flowery titles" given by publishers.[228] It is possible that the title "Ocean" was randomly assigned but examining potential reasons for the selection of this title yields insights.

Apart from the coda, the "Ocean" étude is entirely composed of the sixteenth-note arpeggios shown in Example 3.15, giving it a consistent—if frantic—pace. These arpeggios suggest a rising and falling motion much like that which depict water waves in the Schubert and Liszt examples. The arpeggios in the étude are particularly large (spanning much of the piano keyboard), rapid, and aggressive. If a publisher assigned the title, as Willis seems to suggest, it may have been due the prevalence of wave-like

[228] Peter Willis, "Chopin in Britain" (PhD diss., Durham, UK, University of Durham, 2009), 40.

musical structures in Chopin's étude. They may have seen or heard the wide spanning arpeggiated rising and falling pattern, understood it as a kinetic anaphone (consciously or not), and associated it with the movement patterns of the ocean. This is entirely speculation; however, since rising and falling arpeggios are frequently associated with water in music, the title "Ocean" étude seems appropriate. Furthermore, this title prepares listeners to interpret the piece's content in terms of water. Regardless of whether Chopin intended this étude to take on extramusical meaning, it has become associated with water imagery.

EXAMPLE 3.15. Frederic Chopin, Étude Op. 25, No. 12 in C minor ("Ocean"), mm. 1-3: large wave patterns in both hands



Chopin's lack of apparent intent to reference a body of water in this étude would be seen by some scholars (e.g., Dahlhaus, Eggebrecht) as negating the validity of interpretations that assign meaning to this composition. Peter Kivy holds the view that to understand absolute music is "to enjoy and to appreciate in it those aspects of it that the composer intended you to enjoy and appreciate, and to enjoy and

appreciate them in the way or ways intended."[229] To enjoy and appreciate a work that was apparently meant to be absolute music, such as the "Ocean" étude, in terms of a programmatic title not assigned by the composer would seem to violate the composer's intent and negate understanding (assuming we can know the composer's intent at all). That the "Ocean" étude gained its title independently of Chopin speaks both to the role of the composer in supplying meaning for a musical work and the validity of interpretations that may or may not resemble any meanings a composer had intended to embed in their compositions. A listener's interpretation a work need not rely on extramusical information (e.g., metadata) from the work's composer, but such information can support or contribute to an interpretation. In her paper, "Why Does Pure Music Not Have Semantic Content?," music philosopher Elzė Sigutė Mikalonytė gives an illustration in which someone sees a stone wall that resembles a face.[230] The semblance of a face is happenstance, so Mikalonytė asserts that no meaning is present. Yet the experience of seeing the stone face is the same, regardless of the builder's purpose for the stone wall and intent for its design.

Similarly, a listener can find signs of the ocean in Chopin's Op. 25, No. 12 étude. Chopin may have intended to create a work of absolute music, he may have intended the étude to evoke the ocean, or it may have had some other private meaning. To know Chopin's intent would require intimate knowledge of the composer's

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[229] Peter Kivy, *Music, Language, and Cognition: And Other Essays in the Aesthetics of Music*, 1st ed. (Gloucestershire, England: Clarendon Press, 2007), 217.
[230] Elzė Sigutė Mikalonytė, "Why Does Pure Music Not Have Semantic Content?" *Philosophy of Music* 74, no. 4 (2018): 1366.

thoughts.[231] Even in cases where evidence of the composer's intention exists, issues concerning the authority, truthfulness, and sources of evidence complicate matters, making it exceedingly difficult—if not impossible—to know a composer's intent. Even a work's metadata may be deceptive or incomplete in its implications of meaning. Yet we must not dismiss metadata, since metadata known to a listener shapes the listening experience.[232] A listener can construct an analytical interpretation of a work by considering programmatic metadata, cultural norms and established meanings (that is, established musical relationships to things extramusical), and analogic relationships between the musical and the extramusical.[233] A composer's intent or lack of intent to portray water in music need not dictate an interpretation of a water work's meaning.[234]

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[231] W. K. Wimsatt and M. C. Beardsley, "The Intentional Fallacy," *The Sewanee Review* 54, no. 3 (September 1946): 469.

[232] Arnold, "Music, Meaning, and War," 20.

[233] Literary theorist Stanley Fish asserts that a reader does not approach a literary work as an isolated individual, but as a part of a community of readers and interpreters. He writes that, "it is interpretive communities, rather than either the text or the reader, that produce meanings" in *Is There a Text in This Class? The Authority of Interpretive Communities* (Cambridge, MA: Harvard University Press, 1982), 14. Music listeners, interpreters, and analysts can be considered members of a musical interpretive community.

[234] This brief discussion of meaning, interpretation, and intent is by no means exhaustive. For a deeper exploration of this topic in the realm of literary criticism, see Wimsatt and Beardsley, "The Intentional Fallacy;" Fish, *Is There a Text in This Class?*; and Roland Barthes, "The Death of the Author," in *Image-Music-Text*, trans. Stephen Heath (London, UK: Fontana Press, 1977), 142–48.

CHAPTER 4

REPRODUCING WATER IN SOUND

Musical portrayals of bodies of water rely on metaphor, but there is no musical sound that singularly maps onto water. Instead, music has the capacity to evoke various sensory experiences, including motion, sound, and touch (as described in Tagg's writings). This chapter examines prominent discernible aspects of bodies of water (e.g., motion, scale, and depth) and draws comparisons with musical sounds. My examination of musical structures that may convey aspects of bodies of water to a listener informs later analyses, including the case study on Smetana's *Vltava* that concludes the chapter.

Encountering Bodies of Water in Music

Sicut cervus demonstrates a simple musical depiction of water that is limited to suggesting the motion of waves. It is also highly constrained, being isolated to instances of the word that the music illustrates. Liszt's *Die Loreley* shows a more encompassing and expansive approach to portraying water. The piano functions as an important expressive vehicle, contributing much of the experience of the river and its changes over the course of the song's extramusical narrative. As the boatman approaches his untimely end at a rocky part of the river, the piano reflects the water's agitation and the depth of the waves he sinks below. Both works convey water through motion, but Liszt's contribution offers more variety through the evocation of both calm and agitated waters, as well as a depiction of water's depth through

registral diversity. The boatman's experience in *Die Loreley* involved more than travel down the river, and other elements of that experience are conveyed in the piano accompaniment. *Die Loreley* demonstrates the importance of motion in suggesting bodies of water and music's capacity to express details about a body of water through additional musical devices. A body of water's motion, sounds, tactile properties, reflectivity and translucency, scale, and depth contribute to a rich multisensory experience. Musical works can convey a similarly rich experience with sounds that evoke these features.

Water's Motion and Sounds

To experience a large body of water is to experience motion. Water in small quantities—as in a glass or small bowl—often appears stationary if it remains undisturbed. However, the types of large bodies of water that are the focus of this study (brook, river, lake, sea, and ocean) are rarely perceived to be stationary. Watercourses, such as brooks, creeks, streams, and rivers, are bodies of water that have a direction and continuous flow (barring a drought). Motion is fundamental to our experience of watercourses. Larger bodies of water, such as lakes, seas, and oceans, lack singular directional flow, yet our experiences of them are still largely defined by motion. Nearly any disturbance of the water's surface creates patterns of ripples and waves. Even a small amount of wind over a large surface area can have a significant impact on a body of water's surface motion, often generating small, lapping waves. At the scale of a particularly vast lake, a sea or an ocean, the effect of wind is magnified. Waves may be generated by the interactions of currents or the influence

of lunar gravity. Without motion, a large body of water would appear to be a vast, reflective, translucent, colored surface (although these properties are variable with its purity and the quality of light in the environment). Motion makes these bodies of water dynamic. Small waves give the surface of water unceasingly changing texture; reflections on the surface of water shift, perhaps sparkling with mirrored light. Larger waves, such as those that crash on a beach, repeatedly rise and fall or crash and recede in somewhat predictable patterns.

A sense of "motion" is also a property often ascribed to music and is a core aspect of the water-depicting works analyzed in the previous chapter. The intersection of music and motion has consequently been the subject of a great deal of scholarship. Judy Lochhead documents several examples of music referred to as having motional attributes in her paper *The Metaphor of Musical Motion: Is There an Alternative*.[235] For example, Milton Babbitt describes a "motion of a minor third from E to G" in Igor Stravinsky's *The Symphony of Psalms*, associating changes in pitch with movement.[236] Steve Larson and Mark Johnson claim that "people have no robust way of conceptualizing musical motion without metaphor" and that four basic experiences of physical motion ("we move our bodies," "we feel our bodies being moved by forces," "we use our bodies to set other objects in motion," and "we see (or hear) objects move") are the source of the metaphors we use to "conceptualize

[235] Judy Lochhead, "The Metaphor of Musical Motion: Is There An Alternative," *Theory and Practice* 14/15 (1990 1989): 84.
[236] Milton Babbitt, "Remarks on the Recent Stravinsky," *Perspectives of New Music* 2, no. 2 (Spring-Summer 1964): 38, https://doi.org/10.2307/832481.

musical motion."[237] The notion of "registral direction" and resultant intervallic motion is essential to Eugene Narmour's Implication-Realization (I-R) model of melodic expectation.[238]

Eric Clarke proposes a sophisticated "ecological" understanding of music and movement. He suggests that the sense of motion in music is not only part of a persistent and deeply embedded spatial metaphor but an "inevitable consequence of the event-detecting nature of the auditory system."[239] Clarke theorizes that musical meaning and its impact on listeners is a result of a fundamental link between music and motion. His work is grounded in an ecological perceptual theory that is useful for discussing cultural meaning, despite being developed to describe perception in natural environments. This theory suggests that information about a sound's source is contained in the sound and that source specification is an aspect of meaning (in the same way that knowing the source of a sound is helpful to understanding its implications in nature).[240] According to Clarke, the spatial location of the source of a sound, the materials involved in its production, the mode of excitation, and its separation from other sound sources are indicated by traits of the sound itself.[241] For

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[237] Larson and Johnson, "Something in the Way She Moves: The Metaphor of Musical Motion," 66–67. Since musical motion *is* the metaphor, Arnie Cox proposes that we substitute "relations among musical events" for "musical motion" in order to avoid the tautology in his review of *Musical Forces: Motion Metaphor, and Meaning in Music*, by Steve Larson, *Music Theory Online* 19, no. 1 (March 2013).
[238] Eugene Narmour, *The Analysis and Cognition of Basic Melodic Structures: The Implication-Realization Model* (Chicago, IL: University of Chicago Press, 1990).
[239] Eric Clarke, "Meaning and the Specification of Motion in Music," *Musicae Scientiae* 5, no. 2 (2001): 213–14.
[240] Clarke, "Meaning," 218.
[241] Clarke, 219.

example, a guitar outfitted with nylon strings has a warmer, mellower tone and is quieter than a bright, metallic-sounding guitar with brass-plated steel strings. The tone quality of each instrument reveals information about their sound-producing materials.

Clarke's theory relies on the notion of a "virtual [sound] source" generated by instrumental groupings and purposeful timbral manipulation. Musical sounds are produced by real, physical sources: instruments. Clarke builds on cognitive scientist Albert Bregman's conception of virtual sources as perceptual phenomena resulting from a listener interpreting the sound produced by a collection of instruments as a "sound with its own emergent properties."[242] As Clarke explains, music may reproduce or approximate real-world sonic events by creating "perceptual effects with the disposition of discrete pitches and instrumental timbres in time" even as instruments or voices involved in music-making will naturally reveal information about themselves (e.g., the sound's source, its method of sound production) by producing sound.[243] As an example of virtual sources in concert music, Jennifer Iverson discusses how Charles Ives composed aural scenes for the concert hall with notable frequency and competence in his musical collages. Several of his orchestral works contain distinct streams of aural information separated by distinctions in timbre, conflicting meters, dynamic contrast, and gaps in pitch range between

[242] Albert S. Bregman, *Auditory Scene Analysis: The Perceptual Organization of Sound* (Cambridge, MA: MIT Press, 1990), 460.
[243] Clarke, "Meaning," 219.

instrument groups.[244] *Putnam's Camp, Redding, Connecticut*, the second movement of Ives's *Three Places in New England* (1911-1914), contains distinct aural streams that suggest conflicting musical ensembles performing near one another. Ives's program notes describe the music's narrative. The story of a young boy opens during a chaotic Fourth of July celebration. The boy wanders away from the festivities into a forest, falls asleep and dreams of a figure resembling the "Goddess of Liberty." He later awakens to rejoin other children in their games and dances at the picnic. As the child initially wanders away from the bands performing on the lawn the music gradually fades to a dynamic level of *pppp* and transitions away from bombastic, festive tunes to a more ethereal soundscape. Thus, musical motion may be interpreted metaphorically (as in the spatial metaphor, which vertically organizes pitch space from low to high), analogically (an anaphone in Philip Tagg's sign typology), and, as Clarke's work suggests, in terms of ecological perception (in which a listener processes musical sounds in terms of a perceived environment). These categories are different ways of examining representations of motion in music, but they are not entirely distinct from one another, nor are they mutually exclusive. In an ecological perceptual theory, a gradual increase in volume from a physical sound source (or sources) in a musical work might give a listener the impression of an approaching virtual sound source. The same increase in volume is also a composite anaphone, bringing together the *sonic* effect of an approaching sound source and the *kinetic*

[244] Jennifer Iverson, "Creating Space: Perception and Structure in Charles Ives's Collages," *Music Theory Online* 17, no. 2 (2011): paras. 15–18, http://mtosmt.org/issues/mto.11.17.2/mto.11.17.2.iverson.html.

effect of that sound source moving. Yet despite overlap in what musical effects these perspectives might highlight, each remains independently useful for describing particular musical effects. Since Clarke's perceptual theory is concerned with describing the location and movement of a sound source, it is useful for describing music that depicts a moving sound source. If an increase in volume is not associated with an approaching conceptual sound source, it might be better described in terms of a sonic anaphone in order to dissociate it from implied movement.

Palestrina's melismatic setting of "aquárum" in *Sicut cervus* is a musical device that implies movement via kinetic anaphone, achieved through changes in conceptual pitch space on continuous individual syllables. A melisma might suggest all kinds of movement (or none at all), but the explicit meaning of "aquárum" creates an association between musically implied movement and water. Soprano and alto instances of "aquárum" melismas in the passage in Example 3.3 contain direction changes. Such an alternation between a conceptual "upward" and "downward" in pitch space through time perceptually map onto the up and down motion of small, lapping waves in a lake or undulation in pools of water.

Continuous motion, whether the flow of a watercourse or the waves of lakes and oceans, is a hallmark of our experience with bodies of water. The kinds of motion we witness in these bodies tends to be consistent and predictable. We may not be able to naturally predict the *precise* location of a small wind-driven wave on the surface of a lake, but we may perceive patterns in the sizes of waves, the speeds at which they move, the direction of motion, and the rates at which they collapse back into the lake's surface or give way to other waves. A representation of water's motion

in music might reflect its movement patterns through shifts in pitch level, dynamics, and rhythmic patterns; repeating figurations (especially patterns of notes that ascend then descend or descend then ascend to the same levels repeatedly, forming a wave-like pattern that corresponds to water-bound waves of similar sizes); or implied directional musical motion at various speeds and intensities. Such musical patterns might also suggest any number of repetitive changes in physical space. For instance, cyclic pitch patterns could evoke a spinning wheel, as they do in Franz Schubert's "Gretchen am Spinnrade" ("Gretchen at the Spinning Wheel"), Op. 2, D 118. The extramusical program contextualizes the musical content as it does in water-themed compositions.

Perceived motion in and of bodies of water can be categorized as two types that have similarities to terms associated with bodily movement: *unidirectional* aqueous motion (roughly equivalent to locomotor motion) and *polydirectional* aqueous motion (similar to a kind of non-locomotor motion). The terms "locomotor" and "non-locomotor" typically describe motion that is biological in nature. The former refers to movements that incorporate or result in travel (such as walking, running, skipping) while the latter refers to movements that use the space immediately available around the body without traveling (such as bending, twisting, and swaying). For example, researchers in mechanical systems and robotics Michael Sfakiotakis, David M. Lee, and John Bruce Davies use the phrase "aquatic locomotion" in an explanation of the physico-mechanical propulsive and maneuvering systems

evolved in fish.[245] The terms "locomotor" and "non-locomotor" are inappropriate for describing movement patterns in water, however, as they are associated with motion in biological entities. The terms *unidirectional* and *polydirectional* are more appropriate for describing perceived motion in water and its evocation in music.

Unidirectional motion achieves travel. This type of motion is associated with watercourses, such as rivers and streams that move through channels or, more rarely, floods and tsunamis made up of large amounts of displaced water. Unidirectional motion in water can be described as its *flow*. *Polydirectional* motion does not achieve travel. This type of motion may be present in all bodies of water, including those with directional flow. Surface waves, for example, are small, transient waves that have limited directionality and are experienced more as an up-and-down bobbing motion than a persistent directional motion. Since all movement involves a change in location it may seem that there is little distinction between unidirectional and polydirectional motion. The difference lies in whether a quantity of water is perceived to translocate or return to its starting position. For example, waves crashing on a beach advance onto the sand then recede. Unlike the water in a river, these waves differ in size but undergo no permanent or semipermanent change in location. The tide, too, advances onto a beach and recedes over a longer "period" than waves crashing on the beach.[246]

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[245] Michael Sfakiotakis, David M. Lane, and John Bruce Davies, "Review of Fish Swimming Modes for Aquatic Locomotion," *Journal of Oceanic Engineering* 24, no. 2 (1999): 237–52.

[246] The *period* of a wave is measured in terms of the time required for the completion of one cycle (one up and down motion that results in a return to the initial state). For example, a tide has a period of over twelve hours. The period of a wave formed by rising and falling arpeggios is distinct from a musical period.

Waves and tides, then, exhibit polydirectional motion. A body of water may exhibit both types of motion. A river has unidirectional flow since the water in the river moves from one place to another. Waves on its surface may move independently and polydirectionally as well.

The perception of motion is a significant part of our experience with bodies of water. Motion is also a key distinguishing feature for different types of bodies of water since motion patterns can vary greatly from one body of water to another. Yet motion is not water's only salient feature. In the same way unidirectional and polydirectional motion evoked in music can convey information, other devices can enhance the listener's experience and perception of the river, lake, ocean, or other body of water that is the work's extramusical depictive target.

Water's Tactile Properties

Water is heavier and denser than air. As humans mainly move on land through air, water's tactile qualities are perceptually and aesthetically significant. There are two ways music can evoke a tactile experience: by generating actual tactile effects or through tactile anaphones. Sebastian Merchel and M. Ercan Altinsoy write on listeners' experiences of vibrations produced during musical performances in a book chapter titled "Auditory-Tactile Experience of Music."[247] They outline a series of psychoacoustic experiments that facilitate their examination of the "influence of

[247] Sebastian Merchel and M. Ercan Altinsoy, "Auditory-Tactile Experience in Music," in *Musical Haptics*, ed. Stefano Papetti and Charalampos Saitis, Spring Series on Touch and Haptic Systems (Basel, Switzerland: Springer International Publishing, 2018), 123–48.

audio-induced vibrations at the skin on musical experience."[248] Despite Merchel's and Altinsoy's main focus on listeners' perceptions of music-induced vibrations and their impact on enjoyment and perceptions of loudness, their work demonstrates the potential of vibrations to influence the listening experience. Extramusical roughness, for example, could be simulated in music using loud bass drum rolls. However, they also point out that vibrational conductivity is context specific. Some performance spaces are more prone to transmit palpable vibrations to listeners than others. A work that is not closely associated with a specific performance space, then, might struggle to consistently convey tactile phenomena vibrationally as it is performed in different spaces.[249]

According to Tagg, tactile anaphones don't create actual tactile effects but rely on instrumentation and timbre. He notes that "timbre, in conjunction with particular combinations of pitch and loudness, seems to relate synaesthetically with senses of touch, texture, grain, consistency and substance."[250] Smoothly bowed orchestral strings in Tagg's study are described as "soft, gentle, velvety, silk and satin, lush, smooth, and rich," showing a range of tactile sensations.[251] Other musical sounds,

[248] Merchel and Altinsoy, "Auditory-Tactile Experience in Music," 123.
[249] Strictly speaking, all sonic phenomena are vibrational. A distinction is created by the separation of phenomena based on the sensing organs that detect them. Furthermore, the effects Merchel and Altinsoy describe could be perceived as kinetic in nature rather than tactile. Since Tagg asserts that there is no tactile experience without a kinetic one, there seems to be little distinction. However, Merchel and Altinsoy identify vibrations as tactile phenomena in their study.
[250] Tagg, *Music's Meanings*, 305.
[251] Tagg, 495.

such as "the distorted electric guitar used in some types of rock," are characterized as having a "rough, grainy" quality.[252]

How Music Touches: Musical Parameters and Listeners' Audio-Tactile Metaphorical Mappings by Zohar Eitan and Inbar Rothschild outlines a study in which participants were tasked with rating the "appropriateness of six dichotomous tactile metaphors (sharp-blunt, smooth-rough, soft-hard, light-heavy, warm-cold and wet-dry) to 20 sounds varying in pitch height, loudness, instrumental timbre (violin vs. flute) and vibrato."[253] They find that cross-modal audio-tactile metaphors are "neither coincidental or subjective, but relate systematically to basic qualities of sound."[254] Only two instrument sounds—flute and violin—were included in the study. The study's forty listeners rated violin sounds as "blunter (less sharp), rougher, harder, colder, and drier, as compared to the flute."[255] Listeners also rated pitches with a higher frequency as "sharper, rougher, harder, lighter, colder and drier" than lower-frequency pitches; louder sounds as "sharper, rougher, harder, heavier and colder" than quiet sounds; and sounds with vibrato were rated as "lighter, warmer and wetter" than sounds without vibrato.[256] Eitan's and Rothschild's study greatly expands music's empirically researched tactile palette.

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[252] Tagg, 497.
[253] Zohar Eitan and Inbar Rothschild, "How Music Touches: Musical Parameters and Listeners' Audio-Tactile Metaphorical Mappings," *Psychology of Music* 39, no. 4 (October 2011): 449.
[254] Eitan and Rothschild, "How Music Touches," 465.
[255] Eitan and Rothschild, 457.
[256] Eitan and Rothschild, 457.

Water's tactile properties are somewhat difficult to quantify, since humans lack hygroreceptors to give a sense of contact with water.[257] The sense of wetness is a perceptual illusion that results from the integration of thermal sensations and tactile sensations (esp. pressure and friction).[258] Yet Eitan and Rothschild show consistency in listeners' interpretation of musical sounds as "wet" and "dry" within their selected test group.[259] Musical sounds that are lower in frequency and have vibrato might suggest water more effectively than higher frequency sounds with no vibrato. Musical representations of pressure and friction are also suitable for portraying water's tactile properties. The smeared effect achieved using the sustain pedal on a piano, for example, might give an impression of friction.

Water's Reflectivity, Translucency, and Effects on Light

In their 2011 article "Meteorological Phenomena in Western Classical Orchestral Music," Alpin and Williams point out that "sunshine is relatively unpopular

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[257] Davide Filingeri et al., "Why Wet Feels Wet? A Neurophysiological Model of Human Cutaneous Wetness Sensitivity," *Journal of Neurophysiology* 112, no. 6 (June 18, 2014): 1457, https://doi.org/10.1152/jn.00120.2014.

[258] An experiment undertaken at Loughborough University in the United Kingdom demonstrated an increasing sensitivity to wetness in the experiment's subjects as water samples with decreasing contact temperatures were introduced. The experiment is detailed in Filingeri et al., "Why Wet Feels Wet?" 1460–61.

[259] Eitan and Rothschild's group of forty study participants was composed of twenty-one women and nineteen men with a mean age of 28.85 (age range: 18-60). They also account for musical training. They do not, however, identify the race, ethnicity, geographic area, level of education, or income level of participants. This creates an opportunity for future research in how differences in these demographic characteristics impact the interpretation of musical sounds in terms of tactile phenomena. Not all populations will necessarily consistently apply the terms "wet" and "dry" to musical sounds.

with composers."[260] Their survey of musical works dealing with meteorological subject matter finds, unsurprisingly, that musical works depicting fair weather tend to be in a major key and works depicting stormy weather tend to be in a minor key.[261] This might suggest an association between major tonalities and light level, since storms are associated with overcast weather. Alternatively, this might be the result of an association of clear, sunny weather with a positive emotional state (which is sometimes associated with music in a major key). The former would prepare us to expect major tonalities to be associated with light in musical works while the latter would not.

A note in the score for Eric Whitacre's *Lux Aurumque* (2000; *Light and Gold*) suggests another association between music and light. Whitacre writes, "if the tight harmonies are carefully tuned and balanced they will shimmer and glow." Since this choral work is in the key of C♯ minor and Whitacre's harmonies rely heavily on frequent dissonances of a major or minor second in otherwise triadic harmony, it would seem that Whitacre associates "shimmer" and "glow" with a minor key and dissonant harmonies. Similarly, "Luminance," the first movement of *In the Light of Air* (2014) by Anna Þorvaldsdóttir (Thorvaldsdottir) and György Ligeti's *Lux Aeterna* (1966) illustrate light through methodically applied dissonances, registral extremes, and gentle shifts in timbre and dynamics. There are also adjectives used to describe both music and light that might suggest perceptual parallels between the two phenomena,

[260] Karen L. Aplin and Paul D. Williams, "Meteorological Phenomena in Western Classical Orchestral Music," *Weather* 66, no. 11 (2011): 301.
[261] Aplin and Williams, "Meteorological Phenomena," 301.

making music an effective sonic analog for light. We may describe high-pitched sounds as "harsh" or "piercing," adjectives that are also used to describe a particularly bright and focused light. "Bright" is another adjective used to describe musical sounds that are high in pitch. Sounds that we describe as "bright," "piercing," "shrill," "sparkling," "shimmering," and "clear" might be used to depict light. These associations seem to extend beyond language. Newborns and chimpanzees have been shown to share an association of high frequency with brightness.[262]

In the context of water imagery, light might be associated with the motion of waves ("sparkling" and "shimmering" sounds, for example, would support the representations of choppy waves on the water's surface), with conditions that impact water's perceived coloration (stormy weather vs. fair weather), and changes in light might be associated with changes in depth (light is less able to penetrate water as its depth increases).

Water's Scale and Depth

Changes of depth in bodies of water can be experienced as more than just changes in light penetration. Depth is conceived in terms of distance from the surface of something. Therefore, to be "shallow" in water is to be close to or at the surface of a body of water and to be "deep" in water is to be far from the surface. The spatial metaphor for pitch describes pitches as "high" and "low." Those terms readily map

[262] Vera U. Ludwig, Ikuma Adachi, and Tetsuro Matsuzawa, "Visuoauditory Mappings Between High Luminance and High Pitch Are Shared by Chimpanzees (Pan Troglodytes) and Humans," *Proceedings of the National Academy of Sciences of the United States of America* 108, no. 51 (2011): 20661–65.

onto “shallow” (high in the water) and “deep” (low in the water), allowing musical sounds to function as an effective analog for depth.

Sonic perceptions of scale operate similarly. Sounds may be described as “little” or “big,” especially among children. These terms are comparable to “quiet” and “loud,” respectively. Musical expressions of size might be dependent on dynamics. Yet ensembles are also capable of representing scale through the “size” of the ensemble. That is, an ensemble is considered “small” if it has few musicians and “large” if it has many musicians. Size may be expressed in orchestral works, then, by the number of musicians performing.

Synthesizing Depictions

Musical portrayals of motion are especially capable of suggesting a body of water, even absent its other features. *Sicut cervus* demonstrates this. Bodies of water move in patterns of unidirectional flow, polydirectional waves, different levels of each, and states that combine the two. Artistic renderings of water can reflect the complexities of its movement patterns and other properties to convey information about the body of water being rendered. Furthermore, although the features of a body of water can be observed as phenomena distinct from motion, they are often closely related. Depth can be experienced as a persistent state, but any change in depth necessitates motion. The surface of a body of water can be shiny and translucent, but water that “shimmers” and has a “sparkling” must move in order to create a changing perception of light. Music that engages with its potential to evoke complex and varied motion states in combination with water’s other aspects can impart wide-ranging

depictions of bodies of water. As exemplified in Liszt's *Die Loreley*, musical works containing extramusical narratives related to changing bodies of water are especially suited for demonstrating diverse musical depictions. Smetana's portrayal of a journey down the river Vltava contains a great deal of variety in its depiction of the river, especially regarding its myriad motion states.

A Case Study: Smetana's Portrayal of the Vltava

Vltava (alternatively known as *Die Moldau* or *The Moldau*) is one of six symphonic poems by Smetana in a set called *Má vlast* (1874-1879; *My Fatherland*) and is one of history's most iconic water-themed compositions.[263] Smetana's diary reports that he finished the first movement of the set, *Vyšehrad*, a few weeks after falling deaf in 1874. He completed *Vltava* in December of the same year.[264] *Vltava* may have been inspired by his visit to the confluence of the river's two headstreams, the *Teplá Vltava* and the *Studená Vltava* (*Warm Vltava* and *Cold Vltava*) in 1867 and an 1870 boat trip along a portion of the river outside Prague known as "St. John's Rapids."[265] Smetana, through writer Václav Vladimír Zelený, describes the work as follows:

> The work tells of the *flow of the Vltava*, beginning from its first tiny sources– the *cold* and *warm* Vltava, the joining of the two little streams into one, then the *sweep* of the Vltava through the groves and along the meadows, through the countryside where harvest festivals are being celebrated [m. 80]; in the light of the moon the dance of the water-nymphs [m. 181]; on the nearby rocks

[263] Since *Vltava* is the original title of the work with which this dissertation is concerned, I refer to both the composition and the river by the Czech name, *Vltava*, rather than the German name, *Die Moldau*, which may be more familiar to some readers.
[264] Robert Philip, *The Classical Music Lover's Companion to Orchestral Music* (New Haven, CT: Yale University Press, 2018), 754.
[265] Philip, *Classical Music Lover's Companion*, 755.

> proud castles rear up, wide mansions and ruins; the Vltava swirls in the St. John's rapids [m. 271], the flows in a broad sweeping current on to Prague [m. 333], where the *Vyšehrad* comes into sight [m. 359] and finally disappears in the distance with its majestic sweep into the Elbe.[266]

Smetana's narrative description of *Vltava* maps onto the work's formal construction. Brown notes that it may be considered either a rondo (returning to the main theme along the musical journey past events and landmarks) or a kind of "compressed symphonic movement."[267] When considered in the context of the narrative, the role of the rondo-esque form in *Vltava* becomes apparent. Smetana's

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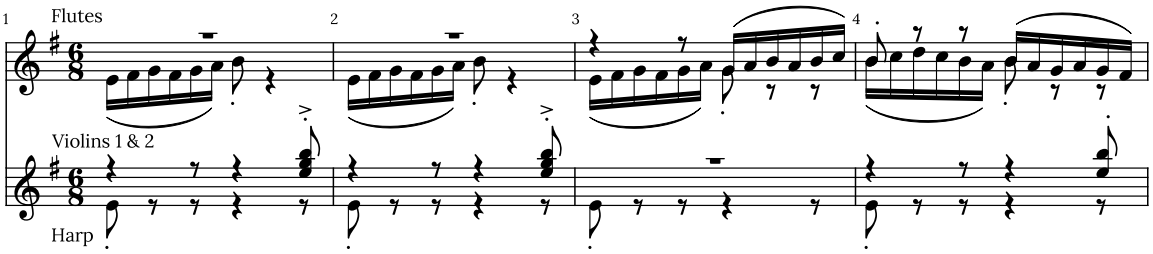
[266] A. Peter Brown, *The Second Golden Age of the Viennese Symphony: Brahms, Bruckner, Dvorak, Mahler, and Selected Contemporaries*, The Symphonic Repertoire, vol. 4 (Bloomington: Indiana University Press, 2002), 447. Measure numbers taken from source. In the preface to the Urtext edition of *Vltava*'s Eulenberg Study Score, Milan Pospíšil submits that "Smetana was not the sort of composer to offer the waiting world interpretations and literary commentaries on his works," believing that "the title of the work was itself sufficient to provide listeners with a basic sense of orientation and put them in the right frame of mind." He instead relied on journalists to write musical programs at his instruction when one was required. Václav Vladimír Zelený anonymously wrote the introduction to *Vltava* published in the press (in 1875) and in the first edition of the score (in 1880). Pospíšil notes that, as programs were written at Smetana's instruction, these may be regarded as authorized by the composer. In any case, the work's title and section headings provided by Smetana contain much of the same information, albeit conveyed in a slightly less flowery manner. More information can be found in Milan Pospíšil, "Preface," in *Vltava*, by Bedřich Smetana, trans. Steward Spencer, Urtext edition (Wiesbaden, Germany: Breitkopf & Härtel; Mainz, Germany: Ernst Eulenberg & Co. GmbH, n.d.). Also note that this description names the river at the end of the Vltava's course the river *Elbe* (its German name). In Czech it is called the river *Labe*. Although I refer to Smetana's work by its Czech name, I use the name *Elbe* for the river into which it flows because that name appears in the English translation of the program note for *Vltava* (as seen above) and because most sources refer to it as such.

[267] Brown, *Second Golden Age*, 447. He marks mm. 1-79 an "open-ended first movement." The following sections, the "forest hunt" (a gigue) and "rustic wedding" (a polka) form a scherzo. The slow movement is formed from the section Smetana identifies as relating to "moonlight and water sprites." The "St. John's Rapids" section serves as a development and recapitulation. The return of the *Vyšehrad* motif from the first movement serves as a finale.

composition is about the river. To enhance the river-centric narrative his work presents scenes that are incidental to the Vltava itself. The river is the constant that directs the narrative, provides context for ancillary scenes, and unites the narrative in a whole. By returning to musical ideas that are representative or evocative of the river, Smetana builds the narrative into the work and the musical composition becomes unified by the pervasive presence of the river. The work begins, then, by establishing the origins of the Vltava's flow with a depiction of the two streams that feed the river Vltava.

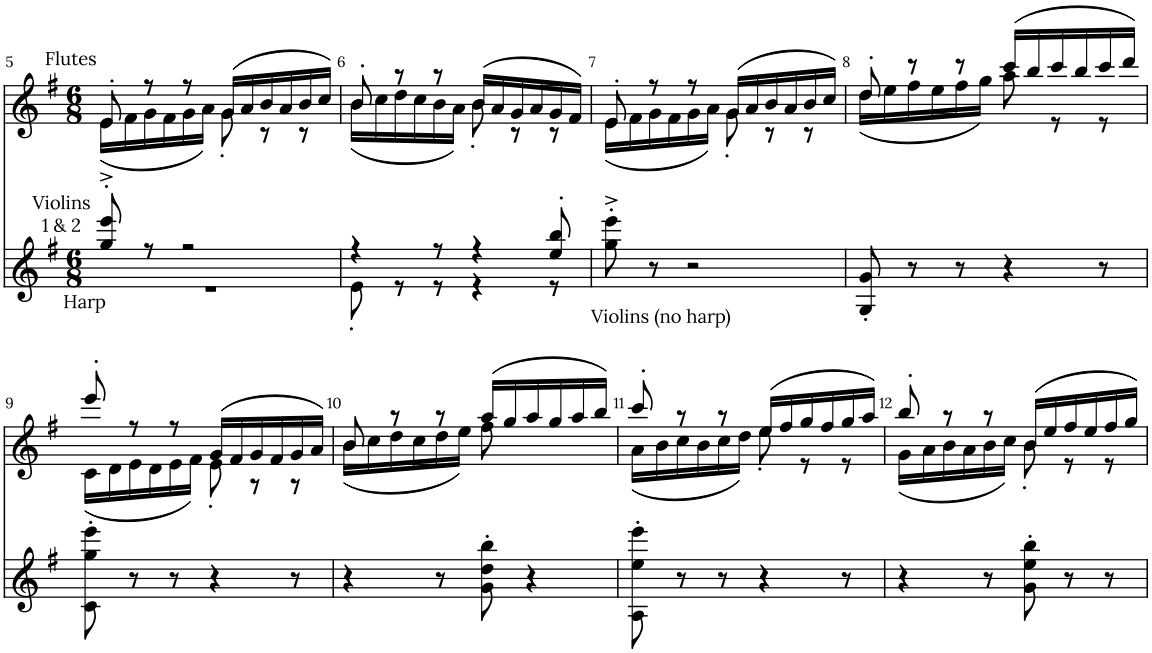
The flutes offer the composition's first instance of implied unidirectional movement in the form of swiftly rising sixteenth-note gestures in m. 1. A portion of the work's introductory section, which extends through m. 36, can be seen in Example 4.1. Motion in these passages is exclusively conjunct and rhythmically steady. The motion in these passages has a decidedly propulsive effect likely owing to both the rapidity of the gestures (the instruction given in the score is *Allegro comodo non agitato*, meaning that the music should be performed quickly but not in a manner that is restless or agitated) and the design of the small rising motives.

EXAMPLE 4.1. Bedřich Smetana, *Vltava*, mm. 1-4: the source of the river Vltava as depicted by the flutes



Vltava's opening flute passage begins on E4 in m. 1, ascends by step to G4, descends to F♯4, then ascends by step to B4. The overall effect is one of ascent. Each rising three-note step progression begins one step higher than the previous one, combining to form a gradual, meandering ascent in pitch space. Since the opening passages are not periodic, the effect is one of unidirectional flow. This opening section depicts two small bodies of water—two streams—that feed into a larger river. The meandering quality resulting from the momentary descents in the flute passage conveys a wandering stream that lacks the forceful directionality of a larger river. Furthermore, the movement of water in this passage is mostly portrayed as continuous following some initial sputters in mm. 1-2. The rising motion of the first two measures develops into a longer ascent to D5 and subsequent descent over the course of mm. 3-4. Although this passage achieves a periodicity that typically implies wave-like polydirectional motion, it is not sustained. As seen in Example 4.2, the regular rising and falling patterns in m. 7 and after give way to more insistent directional thrusts and sudden and surprising leaps. The momentary changes of direction following every three notes also continue to distinguish this passage disrupting what would otherwise be unidirectional scales.

EXAMPLE 4.2. Bedřich Smetana, *Vltava*, mm. 5-12: wandering streams of eighth notes in the flutes

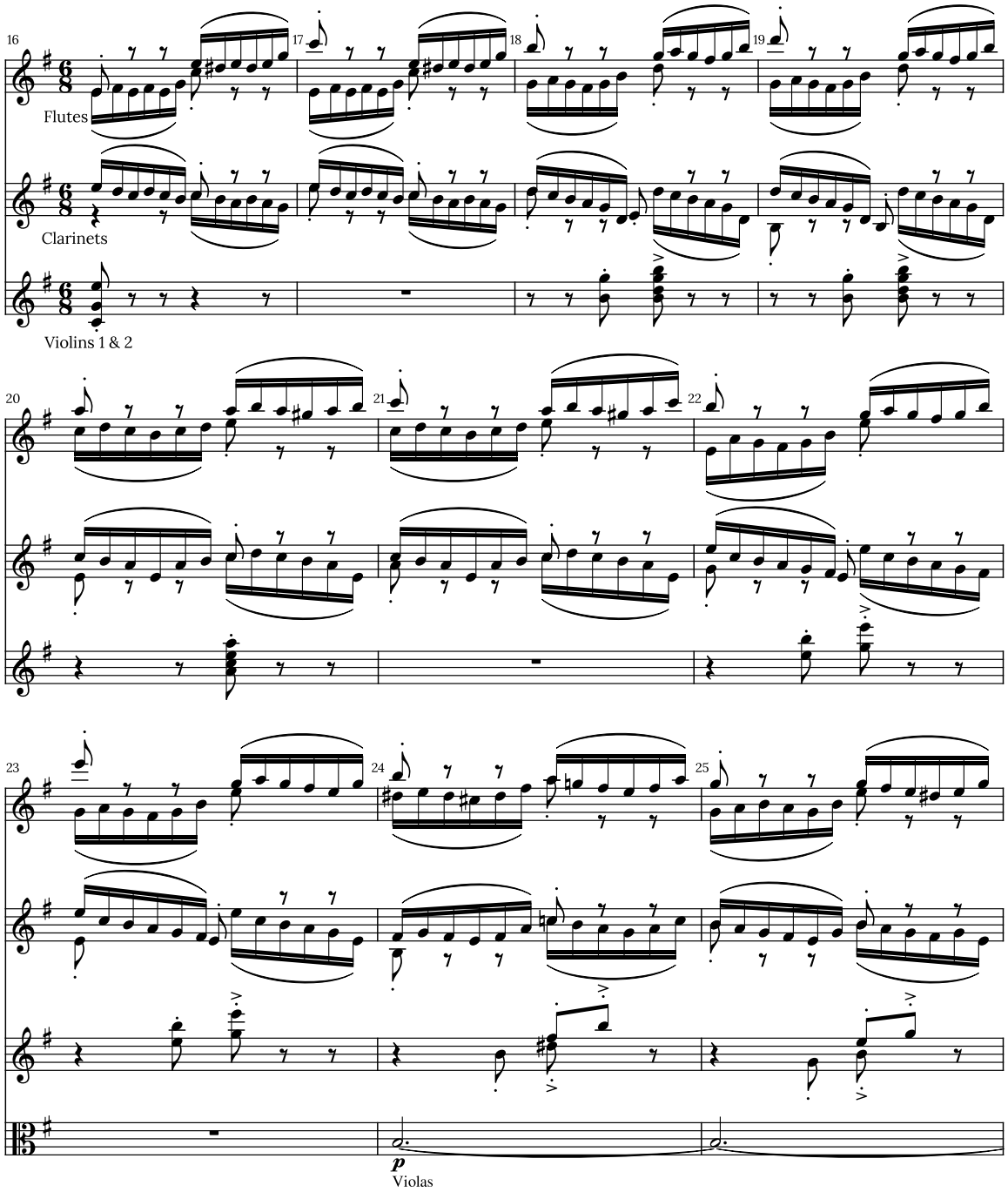


Although mm. 9, 11, and 12 restart the ascending pattern (which initially occupies two measures but is soon condensed to only one), the overlap of the highest note of one ascent with the lowest note of the one that follows it creates a sense of continuity such that the impression given is one of continual upward motion.

The addition of the clarinets performing meandering sixteenth-note passages like those performed by the flutes further reinforces the program. Since the flutes are present longer than the clarinets, their passage corresponds best with the *Teplá Vltava*, which is longer than the *Studená Vltava.* Example 4.3 shows that, in mm. 16, 17, and the first half of 18, the clarinets and flutes move mostly contrary to one another. Despite occasionally moving in parallel (e.g., the first four sixteenth notes in the second beat of m. 20), the flute and clarinet parts are primarily independent. The

flutes swirl in sixteenth-note eddies above a submerged structural line in the harp and violins. The plucked notes in the string instruments gradually increase in frequency, foreshadowing and progressing toward the viola's eventual *arco* entrance in m. 24. The appearance of the viola begins a transition toward the eventual entrance of the full string section.

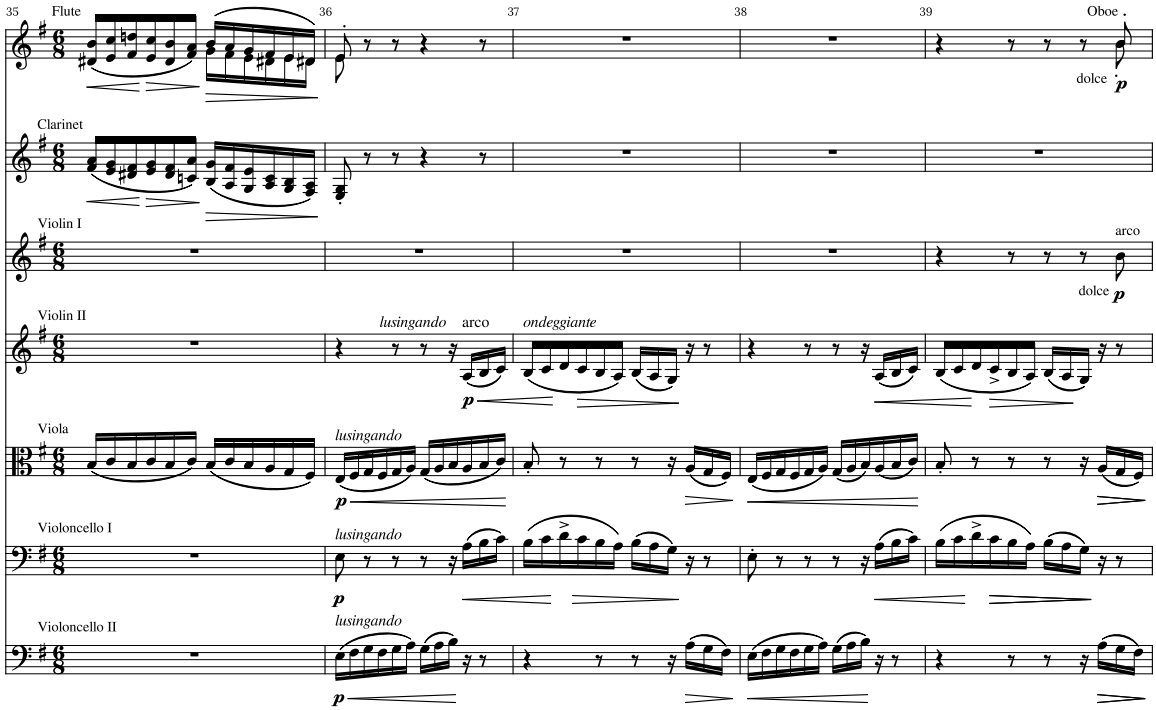
EXAMPLE 4.3. Bedřich Smetana, *Vltava*, mm. 16-25: flutes and clarinets depicting the two streams that become the river Vltava



As the flutes and clarinets fall silent at m. 36 in Example 4.4, the strings enter *en masse* with more consistent rising and falling gestures than the earlier woodwind

meanderings. The scalar patterns in the strings duplicate the flute passage in mm. 3-4 but distributes the notes across the string section and repats the pattern to form regular waves. The wave's two-measure period is initiated by the viola and second cello in m. 36. They fall still as the second violin and first cello take up the upper part of the wave pattern in the latter part of m. 36 and the first part of m. 37. The wave form is completed by the viola and second cello at the end of m. 37. This is the moment of confluence of the Teplá Vltava and the Studená Vltava, creating the river Vltava (see figure 4.1).

EXAMPLE 4.4. Bedřich Smetana, *Vltava*, mm. 35-39: strings and woodwinds at the confluence of the streams that become the river Vltava (relevant instruments isolated)



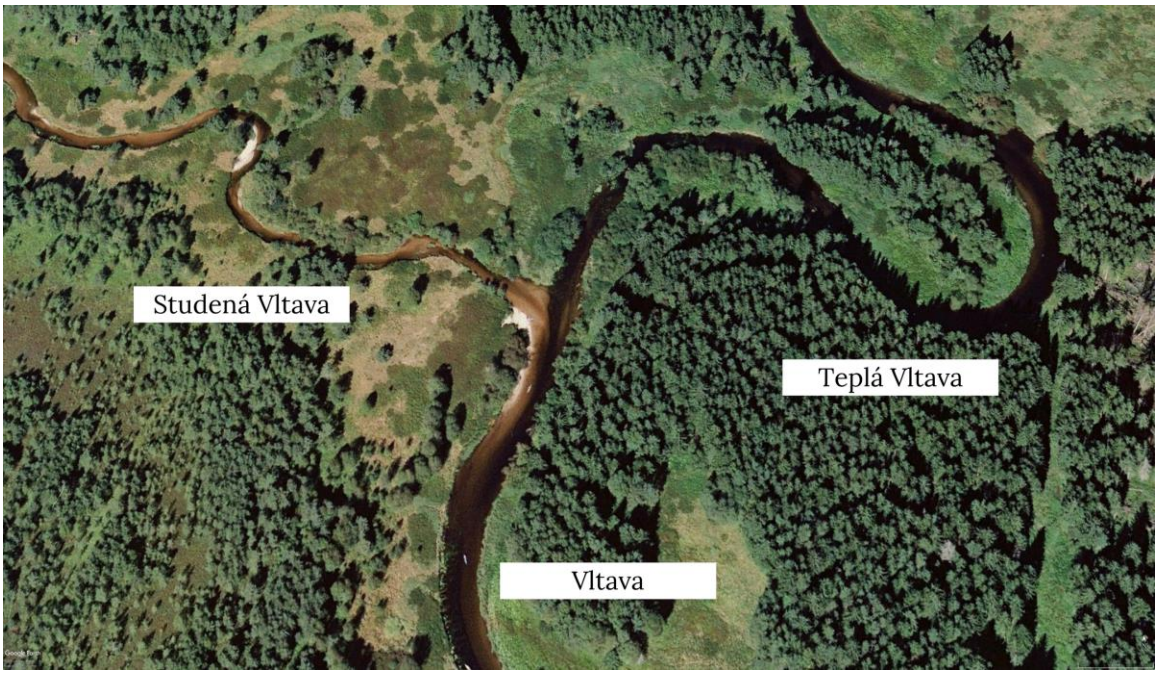


FIGURE 4.1. The confluence of the Teplá Vltava and the Studená Vltava at the source of the river Vltava in the municipality Pěkná, Nová Pec, off state road 39, south of Volary in the Czech Republic. Retrieved from Google Earth Pro July 1, 2020.

The entrance of the strings at m. 36 is the moment at which the importance of Smetana's orchestration to the musical program becomes most apparent, setting *Vltava* apart from works for piano and/or voice. The timbral variety and scope of the orchestra allows for a dramatic depiction of the difference between the Vltava's small tributaries and the river itself. Although musical motion is the primary means of conveying the extramusical program, *Vltava*'s changes in texture support the program and illustrates the power of orchestration to represent water. The thinly textured opening section contrasts with the thick, mostly homogenous texture of the strings, suggesting a change in size. A size increase is implied, too, by the entrance of the cellos at a lower pitch range and the greater overall range of pitches available to the string section in their rising and falling passages, which contrast with the

comparatively high-pitched, isolated-sounding flute and clarinet passages.[268] A change in size is further suggested by the growing number of instruments engaged in the depiction.

The new section of *Vltava* beginning in m. 36 also marks a shift in Smetana's representation of water. In mm. 1-35, *Vltava*'s flute and clarinet parts wandered up and down, seeming to sometimes change directions at random. The ascending and descending pattern in the strings in mm. 36-79 is more regular and periodic, suggesting a different kind of movement. The strings' depiction of a regular wave pattern is reinforced by textual indications for the strings in the score. The violin part is marked *ondeggiante* in m. 37 and the strings are marked *sempre ondeggiante* in m.

[268] A number of studies support the notion that humans associate high frequency sounds with smallness and low volume; see Zohar Eitan and Renee Timmers, "Beethoven's Last Piano Sonata and Those Who Follow Crocodiles: Cross-Domain Mappings of Auditory Pitch in a Musical Context," *Cognition* 114, no. 3 (March 1, 2010): 405–22, https://doi.org/10.1016/j.cognition.2009.10.013; Lawrence E. Marks, "On Cross-Modal Similarity: Auditory–Visual Interactions in Speeded Discrimination," *Journal of Experimental Psychology: Human Perception and Performance* 13, no. 3 (1987): 384–94, https://doi.org/10.1037/0096-1523.13.3.384; Catherine J. Mondloch and Daphne Maurer, "Do Small White Balls Squeak? Pitch-Object Correspondences in Young Children," *Cognitive, Affective, & Behavioral Neuroscience* 4, no. 2 (June 1, 2004): 133–36. Other studies seem to contradict this, uncovering an association between large size and high frequency, or find an association between large objects and low frequency sounds paired with an association between decreasing sound frequencies and decreasing size; see Mihailo Antovic, "Musical Metaphors in Serbian and Romani Children: An Empirical Study," *Metaphor and Symbol* 24 (July 10, 2009), https://doi.org/10.1080/10926480903028136; Zohar Eitan et al., "Lower Pitch Is Larger, yet Falling Pitches Shrink," *Experimental Psychology* 61, no. 4 (2014): 273–84, https://doi.org/10.1027/1618-3169/a000246; Ki-Hong Kim and Shin-Ichiro Iwamiya, "Formal Congruency between Telop Patterns and Sound Effects," *Music Perception* 25, no. 5 (2008): 429–48, https://doi.org/10.1525/mp.2008.25.5.429.

41, indicating *undulation* or *oscillation* (synonyms for *wave-like*). The wave pattern is supported by the dynamics as well, which swell with rising and falling pitch levels.

The perpetual rising and falling is akin to the undulations in works such as Chopin's "Ocean" étude and Schubert's "Auf dem see." In contrast, the directional flow of the flute and clarinet lines more resemble the falling sixteenth-note pattern at the beginning of Schubert's "Auf dem Wasser zu singen." The shift to consistent undulation in the strings at the streams' point of confluence suggests motion that is primarily perceived in terms of rising and falling; that is, it is the same kind of polydirectional motion one might associate with the surface of water in a lake or sea. Despite the river having directional flow, Smetana's switch to this kind of motion is unsurprising. A broad, slow-moving river like the Vltava is subject to the same forces as a large, slower-moving body of water (e.g., the wind stirring waves on the surface of a lake or sea) in addition to its continued unidirectional flow.[269]

The impression of this passage is not purely one of polydirectional undulations. The driving quality of this string passage evokes more directional force. Although the stuttering rising and falling passages exhibit a periodicity that evokes

[269] Notwithstanding the generally unidirectional downstream flow pattern or a river, the hydrodynamic behavior of water in a confluence is extraordinarily complex, characterized by "regions of flow stagnation, flow deflection, flow separation, maximum velocity, flow recovery and distinct shear layers." For a basic introduction, consult James L. Best, "Flow Dynamics at River Channel Confluences: Implications for Sediment Transport and Bed Morphology," in *Recent Developments in Fluvial Sedimentology* (International Fluvial Sedimentology Conference, Tulsa, OK: Society of Economic Paleontologists and Mineralogists, 1987), 27–35. and the more recent Wenhong Dai et al., "Numerical Modeling for Hydrodynamics and Near-Surface Flow Patterns of a Tidal Confluence," *Journal of Coastal Research* 36, no. 2 (March 2020): 295–312, https://doi.org/10.2307/26895950.

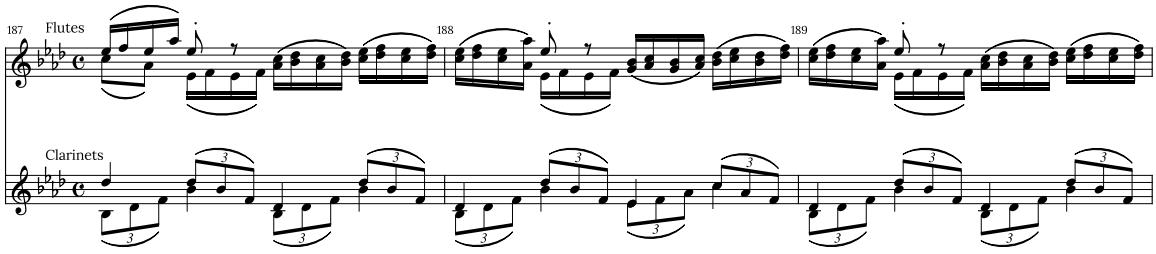
wave-like undulations, the breakdown into small rising gestures creates small upward and downward surges (e.g., the three sets of three rising notes in cello 2 in m. 36). The motion of musical gestures need not map directly onto motion of something extramusical or vice versa. Some listeners may hear the string passages mainly or exclusively as waves. Others may hear a flow in one direction than the other. In this case, either hearing is easily defensible, which is one of the most interesting qualities of Smetana's depictive writing.

Tranquility characterizes the river Vltava's representation through much of Smetana's piece. Undulating passages of a different character, taken up by the flute and clarinet, softly underlay the section beginning at m. 181. This is the section that evokes the moon-lit dances of water-nymphs, according to markings in the score. Following a brief transitionary passage, the flutes mostly perform two-note undulations that ascend to a higher pitch level every four notes beginning in m. 187 in Example 4.5. These flute passages evoke both polydirectional undulating waves and unidirectional flow. The clarinets, meanwhile, perform rising and falling triplet arpeggiated passages, reflective of the compound meter in mm. 1-117.[270] Due to both their longer wave period and the increased interval between successive notes, these

[270] In the first episode of the *Scores and Pours* podcast, Emily Reese and Jill Mott point out that the use of compound meter is typical in musical works that evoke water. In "Evocations of the Sea," Scores and Pours, accessed June 20, 2020, https://scoresandpours.podbean.com/. Niels Hansen and David Huron point to the use of compound meter in the opening measures of *Vltava*, referring to a "swirling water motion" (although these authors are more concerned with the notion of "twirling" as it is associated with compound meter than a metrical association with the evocation of water) in their paper "Twirling Triplets: The Qualia of Rotation and Musical Rhythm," *Music & Science* 2 (January 1, 2019): 2.

passages indicate slightly larger waves in a pattern similar to that found in Schubert's "Auf dem See" (Example 3.5). It is the most placid section of the work.

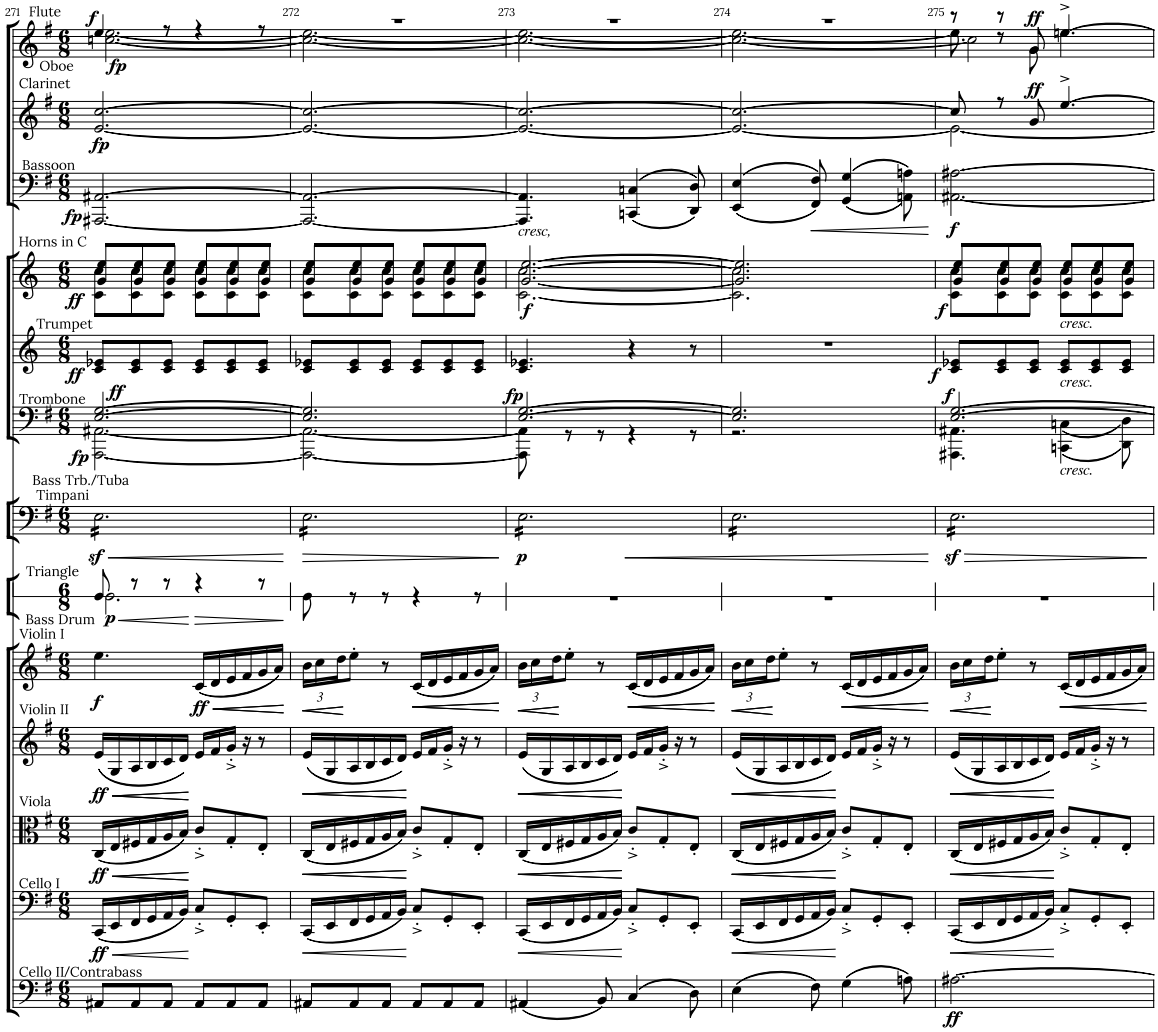
EXAMPLE 4.5. Bedřich Smetana, *Vltava*, mm. 187-189: small waves illustrated by the flutes and clarinets (relevant instruments isolated)



The *ondeggiante* string passage accompanies the rondo-like return of the main theme at m. 239. Between statements of this theme (beginning at mm. 37, 239, and 333) are portions of the symphonic poem that are not concerned with the river directly. These instead depict landmarks and events associated with a trip down the river (e.g., harvest festivals, ruins and mansions). Yet the depiction of the river in *Vltava* is not exclusively tranquil. As seen in Example 4.6, m. 271 marks a significant deviation in the river's musical representation. Smetana's symphonic journey has arrived at St. John's Rapids (Svatojánské proudy).[271]

[271] This section of the river Vltava no longer exists. One may visit some points on Smetana's musical expedition along the river, such as the confluence of its two headstreams, however the St. John's Rapids were flooded as part of the construction of the Štěchovice Reservoir dam between 1937 and 1945. Evidence of the rapids' existence today is sparse, but it appears in an award-winning 1912 documentary short film by Antonín Pech and a well-known illustration by Karel Liebscher that appears in volume 9 of the encyclopedia *Die Österreichisch-ungarische Monarchie in Wort und Bild*. Interestingly, *Svatojánské proudy* was also the name of an opera by one of Smetana's contemporaries, Josef Richard Rozkošný, for which Smetana conducted the premier performance three years before he wrote *Vltava*. More

EXAMPLE 4.6. Bedřich Smetana, *Vltava*, mm. 271-275: beginning of the section called "St. John's Rapids" with melodic fragments in the bassoon, cello II, and contrabass (reduction)



As their name suggests, rapids are a part of a river characterized by fast-moving, turbulent water. They tend to be shallower than the rest of a river. Rocks may protrude upward and stir the water, introducing air bubbles that give the water a

concerning Smetana's connection to Rozkošný and his opera can be found in Bedřich Smetana, *Bedřich Smetana: Letters and Reminiscences* (Prague, Czechoslovakia: Artia, 1955), 125. *Čertova stěna* (*the Devil's Wall*), Smetana's final opera (first performed at the New Czech Theatre in Prague on October 29, 1882), also involves the river Vltava.

noticeably white color. Smetana bases his musical representation of rapids on the same essential depictive techniques he has used to represent the movement of water in the rest of the river: continual flowing sixteenth-note passages performed by the strings. These passages primarily consist of conjunct motion with only occasional larger intervallic leaps, yet they differ greatly in character from those earlier in *Vltava*. They are performed at a *ff* dynamic level with quick, repetitive crescendos and accents at the apex of each rising line. An impression of persistent directionality is achieved through overlap; the sixteenth-note ascent in the viola and cello in m. 271 ends on C4 halfway through the measure at the same moment violin I begins its ascent on the same pitch. Violin II parallels the viola and cello a third above but continues its sixteenth note ascent for three notes following the transfer of the ascending line from the cello to the violin I. The pattern the strings create in m. 271 is repeated and imitated throughout the rapids section. There is some sense of contrary motion in the descending eighth notes performed by the violas and cellos, but the sense of continual upward motion supported by elision and the violin II part provides this section with a distinct sense of directionality. Repeating eighth note chords in the winds are reminiscent of the boat's collision with a reef in Liszt's "Die Loreley." Not only are the eighth notes loud and percussive, the timbre of the trumpets and horns allows them to pierce the instrumental texture.

Contributing to the sense of force and threat of danger and destruction posed by the rapids, the percussion section becomes more active in m. 271. The bass drum enters for the first time in the composition. With the timpani, the bass drum evokes crashing waters and the deep rumble of forcefully moving water (introducing sonic

anaphones to *Vltava*'s depictive palette). The thick instrumental texture, loud dynamics, dissonant chromaticism, and chaotic activity nearly drown out distorted fragments of the river's theme beneath the noise of the rapids as the section wanders chromatically through tonal areas (e.g., m. 273 in the cello, bass, and bassoon). The altered theme indicates that this is still the river Vltava, but in a for that is nearly unrecognizable in the context of earlier points in the journey. The bassoon, cello II, and bass imitate the ascending notes from the theme's first full measure and extends it to continue upward in mm. 273-274, further reinforcing the unidirectional motion of the section.

The musical and narrative tension of St. John's Rapids is broken by a brisk and triumphant statement of the main theme in a major key beginning in m. 333. This modulation signals a transition to a new section, "the broad flow of the Vltava" (Široký tok Vltavy). The river's theme is no longer paired with the now-familiar *ondeggiante* string passage that accompanies it in earlier sections. Instead, string arpeggios and rapid ascending scales convey both wave-like polydirectional and flow-like unidirectional motion from m. 334 through the coda. In the last ninety-five measures, the Vltava is characterized by a combination of flow and surface waves that characterize a broad river. The change in movement patterns, quick tempo, and modulation to E major contrast with earlier statements of the theme in E minor and with the preceding section. These changes seem to signal elation in response to the rapids; the musical journey down the river has successfully moved beyond the dangers posed by turbulent, dangerous rapids.

The comparative calm of the river after the rapids and the music's harmonic stability in its return to E major coincides with the journey's approach to Prague. In m. 334, the violin II, viola, and cello I perform intense rising and falling arpeggios with repeated notes (the repeated notes bear some mild similarity to the arpeggios of Chopin's Étude Op. 25, No. 12 in C minor, a portion of which can be seen in Example 3.15). The first violin joins the other strings in m. 359 in a passage that combines rapid upward unidirectional gestures like those in the St. John's Rapids section with wave-like polydirectional arpeggios and, at m. 374, the strings transition entirely to dramatic oscillating arpeggios with the strings lines largely in parallel. The breadth of musically implied motion expressed in these concluding sections reads as both an expression of celebration of a successful journey down the river Vltava and a reflection of the breadth and grandeur of the river at its end. Smetana's 430 km musical journey then ends where the river Vltava feeds into the river Elbe.[272] Figure 4.2 shows a timeline of events in *Vltava* with time stamps for a 2018 recording by the

[272] Oscar Brilliant notes that the Vltava is longer, wider, and deeper than the Upper-Elbe and its basin is double the size of the Elbe's. He also characterizes the Vltava as the "principal river of Bohemia," indicating that it is both the "main stem" in terms of hydrographic structure and the principal commercial artery (as the Upper-Elbe is not especially navigable). See Oscar Brilliant, "Bohemia: Geography and Statistics," in *The Encyclopædia Britannica: A Dictionary of Arts, Sciences, Literature and General Information* (New York, NY: Encyclopædia Britannica, Inc., 1910), 122. Using typical river naming conventions, then, the river below the confluence of the Vltava and Elbe would be called the Vltava. The Elbe would be classified as a tributary of the Vltava. This is the perspective of Onésime Reclus, *A Bird's-Eye View of the World: A Popular Scientific Description of the Great Natural Divisions of the Globe*, ed. Charles Hopkins Clark, trans. Malvina Antoinette Howe (Boston, MA: Ticknor and Company, 1892), 117. The oddity of this deviation from naming conventions seems to be due to tradition, possibly brought about because the Elbe continues straight at the confluence of the two rivers making it appear dominant. Whatever the case, Smetana reads the confluence as the end of the Vltava.

Czech Philharmonic (conducted by Jiří Bělohlávek), measure numbers, and descriptions of musical events within those sections that point to extramusical narrative events.

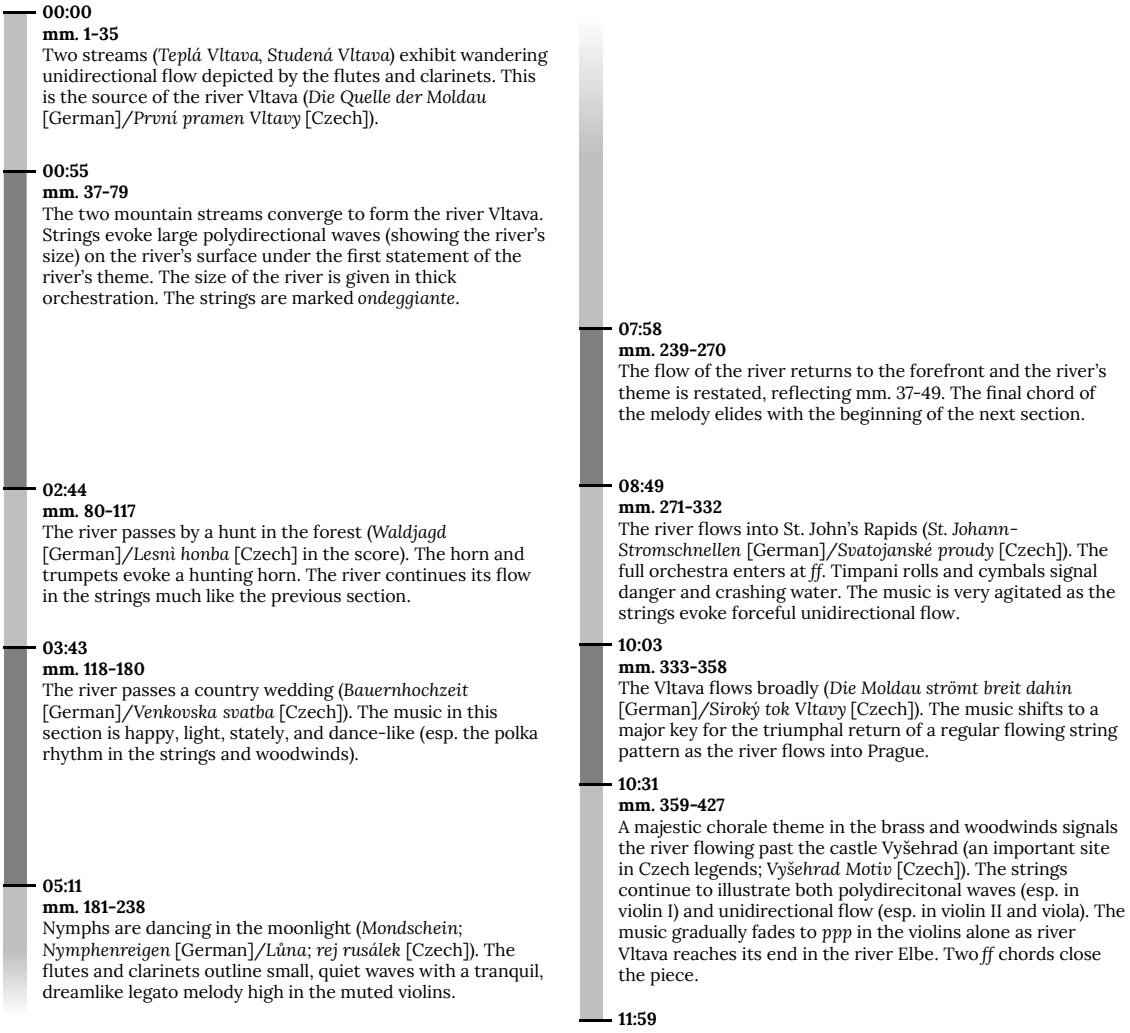


FIGURE 4.2. Timeline of musical and extramusical events in Bedřich Smetana's *Vltava*

Smetana's *Vltava* makes an effective case study for musical techniques that evoke water due to the vast variety in its depictive targets (e.g., the streams, the calm river, the rapids), the array of musical devices used to illustrate them, the prominence

of those musical devices, and the work's accessibility (being a frequently performed work and a staple in English-language music textbooks). Foremost among V*tava*'s water evoking devices are those that illustrate two kinds of motion in the form of kinetic anaphones relating to water's unidirectional and polydirectional motion states. The first type conveys unidirectional motion through non-periodic lines that do not return to an initial state and suggest a change in location. Early in V*ltava*, the meandering flute and clarinet lines convey unidirectional motion. An entirely ascending or descending passage is common for indicating unidirectional motion as well, as can be seen in the violins in m. 271. The second type conveys polydirectional motion through periodic rising and falling lines. In some cases, as in the viola part in m. 28, two alternating notes convey the kinetic anaphone. In other cases, the rise and fall occurs over several notes, as in the clarinet arpeggios in m. 187.

Kinetic anaphones—like those illustrated in V*ltava*—play a vital role in generating imagery in all kinds of water-themed works, but each composition provides a unique context for the movement it portrays. V*ltava* charts the course of a river. Other works may be concerned with the sea or with objects and narratives that are water adjacent. They may portray a body of water's depth or its size. Their kinetic anaphones, too, can differ in the scale and energy of the motion they convey. The following chapter will examine musical devices in several works to illustrate the variation that exists within primarily moving musical depictions of water.

CHAPTER 5

BODIES OF WATER IN MUSICAL WORKS

The *Vltava* case study illustrates the indispensable role of kinetic anaphones in evoking unidirectional and polydirectional motion in bodies of water. Although motion in the form of waves is not unique to water, the notions of "wave" and "water" tend to be closely linked. As such, the suggestion of the polydirectional wave pattern through musical sounds is especially indicative of water imagery in musical works. The case study also demonstrates the capacity of musically evoked unidirectional motion to convey water imagery. The association of unidirectional motion with water is less distinctive than the prototypical wave-water association, yet such motion conveyed through music can introduce or enhance a sense of change in the work. Polydirectional motion has an essentially static quality due to the pairing of ascending or descending musical passages with passages in the opposite direction. Unidirectional motion is defined by a sense of travel. Much of the richness of *Vltava*'s narrative is due to by its portrayal of unidirectional and polydirectional motion. Other depictive devices (e.g., varied numbers of active orchestral forces that convey differences in the river's size) support and enhance the depiction. This chapter continues to explore motion—especially interactions of musical motion patterns—and the roles of other musical devices that convey water's tactile properties, scale, and depth in creating effective portrayals of bodies of water. While not an exhaustive examination of these musical devices, this chapter provides analyses and examples of the devices in musical works.

Conveying a Body of Water's Motion

The distinction between unidirectional and polydirectional representations of motion is useful for analysis and discourse, but it is important to note that these are not strictly binary motion states. For instance, the waves in mm. 23-28 of Liszt's *Die Loreley* (Example 3.10) combine the two forms of motion, suggesting waves on the Rhine simultaneously with the river's flow along its course. *Vltava* first combines unidirectional and polydirectional motion in the string section's entrance at m. 36 (Example 4.4) and the combination takes on a much different character in m. 187's undulating woodwind passages (Example 4.5). These musical devices are subject to all kinds of combinations, suggesting a potentially infinite variety of subtly different motion states which are often relevant to a composition's extramusical subject matter. The musical devices and their interactions in works that depict rivers are often unlike those in works like works that portray much larger bodies of water. The ocean moves differently from a river, so musical devices acting as kinetic anaphones for water's motion take on distinct motional qualities. An abundance of works illustrate this difference, but Debussy's *La mer* contains an especially large variety of devices that depict motion and layers motional devices for an especially varied look at the sea. These qualities and the work's inclusion of other water-evoking musical devices make *La mer* a worthwhile subject for analysis in the context of this study.

La mer is an iconic water composition, but not Debussy's only contribution to that canon. Water was a popular topic among Impressionistic artists and for Debussy

in particular.[273] He wrote in a 1903 letter, "you perhaps do not know that I was destined for the fine life of a sailor and it was only by chance that I was led away from it. But I still have a great passion for the sea."[274] Debussy's catalog of water-themed works include eight for solo piano, one composition for piano in four hands, two works to accompany poetry, five songs, and two orchestral works.

Existing analyses of *La mer* address much of its history, formal structure, and melodic content (e.g., Barraqué, Cox, Dömling, Rolf, Trezise).[275] The depictive quality of *La mer*, however, deserves greater consideration. David Cox's brief analysis concerns the work's evocative content and is perhaps the most relevant. His description of the music's "rippling texture in the strings, the pentatonic wave-patterns in the woodwind [sic] (in consecutive fifths), the arpeggio figures in the harp parts" and a triplet figure "suggestive of the heaving motion of the sea," draws attention to the relationships between the work's musical elements and its extramusical program.[276] Such descriptive writing is common in literature addressing water-evoking music (perhaps especially in program notes and other documents

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[273] Chara M. Sonntag, "Jeux d'eau and Its Colleagues: Water and Artistic Expression at the Turn of the 20th Century" (Master's thesis, Ball State University, 2011).
[274] Edward Lockspeiser, *Debussy: Volume 1, 1862-1902: His Life and Mind* (Cambridge, UK: Cambridge University Press, 1978), 26.
[275] Jean Barraqué, "La mer de Debussy, Ou La Naissance Des Formes Ouvertes: Essai de Méthodologie Comparative: La Forme Musicale Considérée Non plus Comme Un Archétype Mais Comme Un Devenir," *Analyse Musicale* 12, no. 3 (June 1988): 15–62; David Vassall Cox, *Debussy Orchestral Music*, vol. 31, BBC Music Guides (London, UK: British Broadcasting Corporation, 1974); Wolfgang Dömling, *Claude Debussy: La mer* (Munich, Germany: Wilhelm Fink Verlag, 1976); Marie Rolf, "Debussy's La mer: A Critical Analysis in Light of Early Sketches and Editions" (PhD diss., University of Rochester, 1978); Trezise, *Debussy: La mer*.
[276] Cox, *Music and Embodied Cognition*, 27–28.

meant to guide a listener and assist in interpreting a musical work), yet many stop short of engaging in further analysis. Cox's descriptors suggest three motional intensity levels: "rippling" implies a small amount of up and down motion, "wave-patterns" evoke greater motion, and "heaving" connotes something more dramatic, all seemingly in the category of polydirectional aqueous motion. Figure 5.1 is a photograph taken from a drone at the Gulf Shores in the United States by Caleb Jones. It shows large, undulating waves on the ocean's surface dimpled by smaller ones, exemplifying different levels of intensity in the waves.

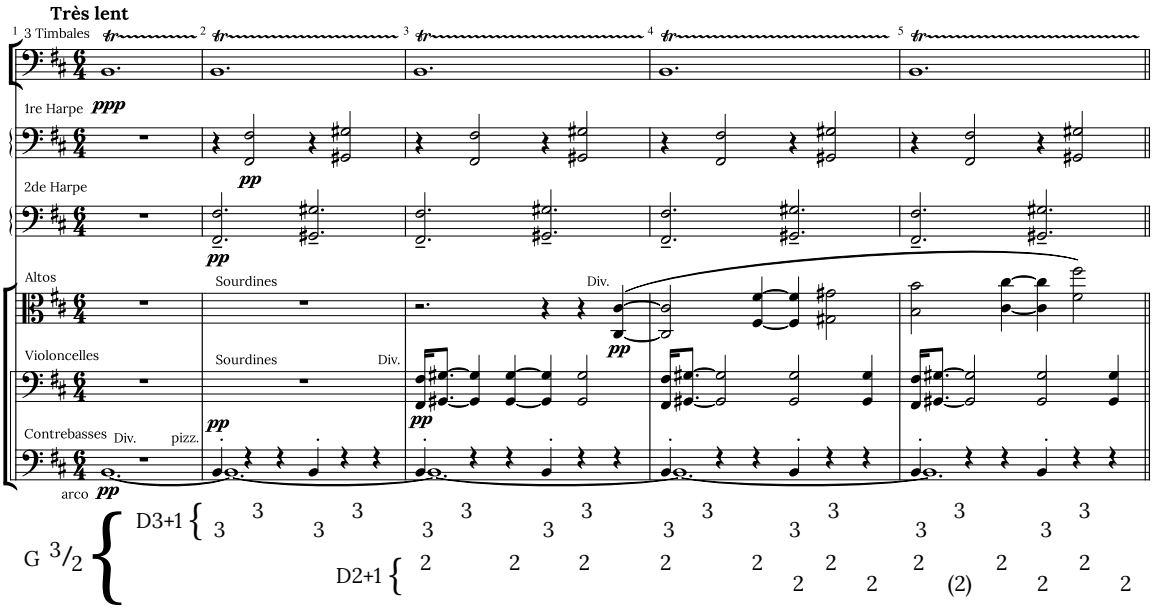
FIGURE 5.1. Caleb Jones, “Drone view of ocean waves,” 2016. Photograph. https://commons.wikimedia.org/wiki/File:Drone_view_of_ocean_waves_(Unsplash).jpg.

The musical structures described by Cox form motives that are scattered through *La mer*’s three movements. The formal structure of mvt. 1, “De l’aube à midi sur la mer” (“From dawn to midday on the sea”), is propelled by the repetition and development of these motives in service of its extramusical narrative. Debussy’s title

for the first movement suggests a half-day boat trip that unfolds over the course of the movement's 141 measures. The opening section, then, illustrates the dawn; Cox writes, "the opening music symbolises pentatonically the sun rising in the East."[277] These opening measures in Example 5.1 are metrically vague; the soft timpani roll and pedal B in the basses do nothing to establish a pulse. The m. 2 entrance of the two harps and the pizzicato B in the basses extend the metric ambiguity through a metrical displacement dissonance. Together, the harps initiate a gentle rising and falling motion in their oscillating F♯-G♯ pattern. The cellos begin to establish a clear pulse with the introduction of a sixteenth note-dotted eighth note appoggiatura motive—one of *La Mer*'s most pervasive motives—but the cellos and violas blur the nascent sense of meter in their apparently compound division of the measure that conflicts with the simple meter established by the harps and basses. The metrically dissonant rise and fall in the harps becomes an accompanimental quarter-note ostinato in m. 23, foreshadowing the eighth-note ostinato that characterizes the beginning of the next section.

[277] Cox, *Debussy Orchestral Music*, 27.

EXAMPLE 5.1. Claude Debussy, *La mer*, 1909 revised version, mvt. 1 "De l'aube à midi sur la mer," mm. 1-5: metrical ambiguity in all instruments, first motive introduced in the cello



Simon Trezise calls mm. 31-83 the "first principal section," or the B section of this movement's ABCDE formal structure (figure 5.2 shows a recreation of Trezise's formal diagram).[278] Just after the sunrise of the introductory section, the music evokes the strongest sense of polydirectional motion in *La Mer* thus far. In mm. 31-42 (a portion of which is shown in Example 5.2) the second violins and violas take up rippling two-note wave patterns that were foreshadowed by the harps in mm. 2-5. A divided second violin section performs M2 waves in contrary motion as the violas conjure larger, choppier waves with a greater interval in its two-note undulation. Harp I also assumes a pattern prefigured in the opening measures; the P4-M2 ascending pattern initially stated by the violas in mm. 3-4 is transformed by harp I

[278] Trezise, *Debussy: La Mer*, 52, 55.

into a wave pattern in mm. 33-34. Furthermore, this four-note wave pattern brings forward the metrical dissonance originating in the A section with a grouping dissonance against the established 6/8 meter.[279] The harp shifts again in m. 35, introducing a more directional arpeggiated passage that persists for several measures. Over six measures, abrupt changes in depictive material begins to suggest an exciting, ever-evolving seascape in the bright morning sun. Cyclical polydirectional motion is apparent in this section, but it is the layering of musical devices that give this depiction its character. These are not the predictable and unified waves of m. 36 of V*ltava*, nor the quick, forceful directional flow evoked in its "St. John's Rapids" section. *La mer*'s motion is sometimes constant (e.g., the violins and violas) and sometimes erratic (e.g., the harps), but it is the layering of musical structures that evoke motion that makes this depiction sea-like. This motional layering begins to resemble the complexity of a seascape like the one shown in Jones's photograph (figure 5.1).

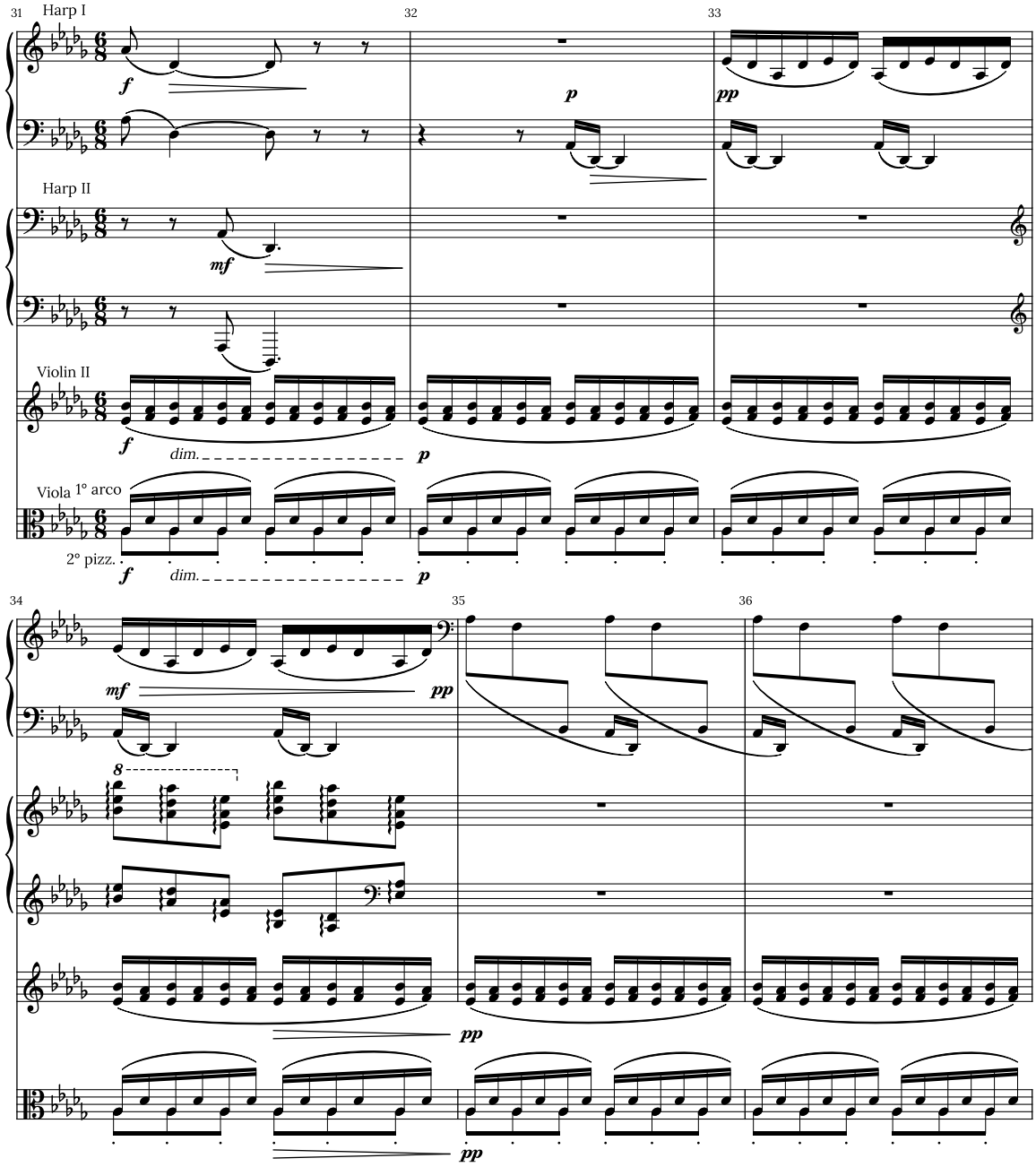
[279] For more on metrical dissonance, consult Harald Krebs, "Robert Schumann's Metrical Revisions," *Music Theory Spectrum* 19, no. 1 (1997): 35–54, https://doi.org/10.2307/745998; Harald Krebs, *Fantasy Pieces: Metrical Dissonance in the Music of Robert Schumann* (New York, NY: Oxford University Press, 1999).

Formal structure of “De l’aube à midi sur la mer”				
		progressive/open form	**8:32**	**D♭**
1	introduction	arch	0:00	B
31	first principal section	arch	1:21	D♭>E
84	second principal section	variations	4:34	C/B♭
122	interlude	strophic (a, a[1])	6:39	
132	coda	progressive	7:25	D♭

FIGURE 5.2. Simon Trezise’s table showing the formal structure of *La mer*, mvt. 1 (recreation)[280]

[280] Trezise, *Debussy: La Mer*, 54, table 2.

EXAMPLE 5.2. Claude Debussy, *La mer*, 1909 revised version, mvt. 1 "De l'aube à midi sur la mer," mm. 31-36: waves depicted in harp I, violin II, and viola

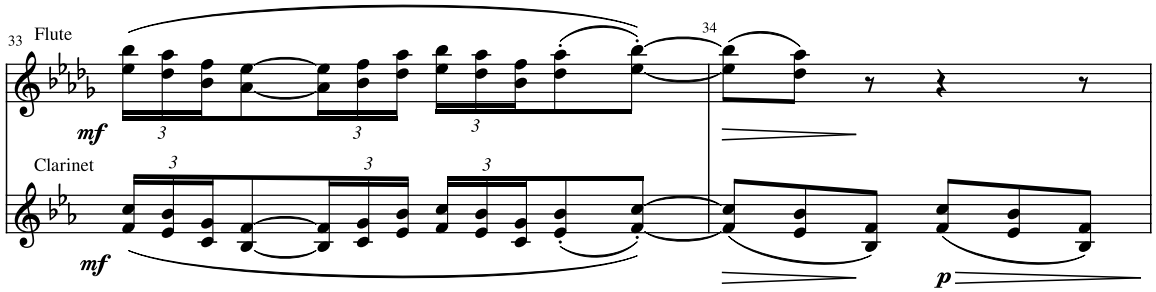


The motivic development and variety demonstrated in mm. 31-36 is a hallmark of Debussy's oceanic depiction in *La mer*. An especially distinctive wave-evoking motive is introduced in m. 33 (Example 5.3) over the accompanimental ostinatos and

harp passages shown in example 5.2. This D♭ pentatonic motive in fifths is a compellingly asymmetrical musical device. It has the rising and falling quality common to musical depictions of polydirectional waves but lacks the regular, symmetrical periodicity of musical waves common in *La mer*. Debussy's use of the pentatonic scale in his works evinces the impact of his attendance at the 1889 Exposition Universelle in Paris and the gamelan music of an ensemble from Java that performed there. Although Debussy engages with the pentatonic scale as an artifact of a musical tradition other than his own, he also engages with pentatonicism's purely musical effects in his use of pentatonic subsets, supersets, and transpositions.[281] The pentatonic scale becomes a compositional tool for Debussy that is removed from its cultural origins. In the context of a work that portrays extramusical subject matter, the pentatonic scale can take on other meanings (particularly in music where it is treated as an effect rather than the sole or primary determinant of a work's tonal content). The flute and clarinet passage in mm. 33-34 contrasts with the established and ongoing tonal language of *La mer* in its greater openness and lessened intervallic density. That sense of openness is enhanced by the parallel fifths, resulting in a clear or translucent quality that is especially apt in a water composition. The flutes and clarinets float above the activity of the other instruments, allowing a listener to glimpse the activity below their waves.

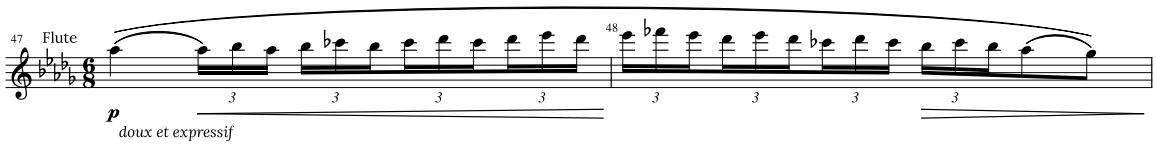
[281] Jeremy Day-O'Connell, "Debussy, Pentatonicism, and the Tonal Tradition," *Music Theory Spectrum* 31, no. 2 (2009): 226.

EXAMPLE 5.3. Claude Debussy, *La mer*, 1909 revised version, mvt. 1 "De l'aube à midi sur la mer," mm. 33-34: asymmetrical wave motif in the flute and clarinet (instruments isolated)



A more periodic but equally surprising passage is introduced in mm. 47-48 (Example 5.4) in the flute. This melody, which Trezise describes as "arabesque-like" and "sensuous," outlines a wave with a two-measure period. This wave is composed of smaller bobbing gestures suggestive of the sea's complex wave interactions. This passage abandons the earlier woodwind pentatonicism in favor of a subset of an octatonic collection.

EXAMPLE 5.4. Claude Debussy, *La mer*, 1909 revised version, mvt. 1 "De l'aube à midi sur la mer," mm. 47-48: complex two-measure wave in the flute (instruments isolated)

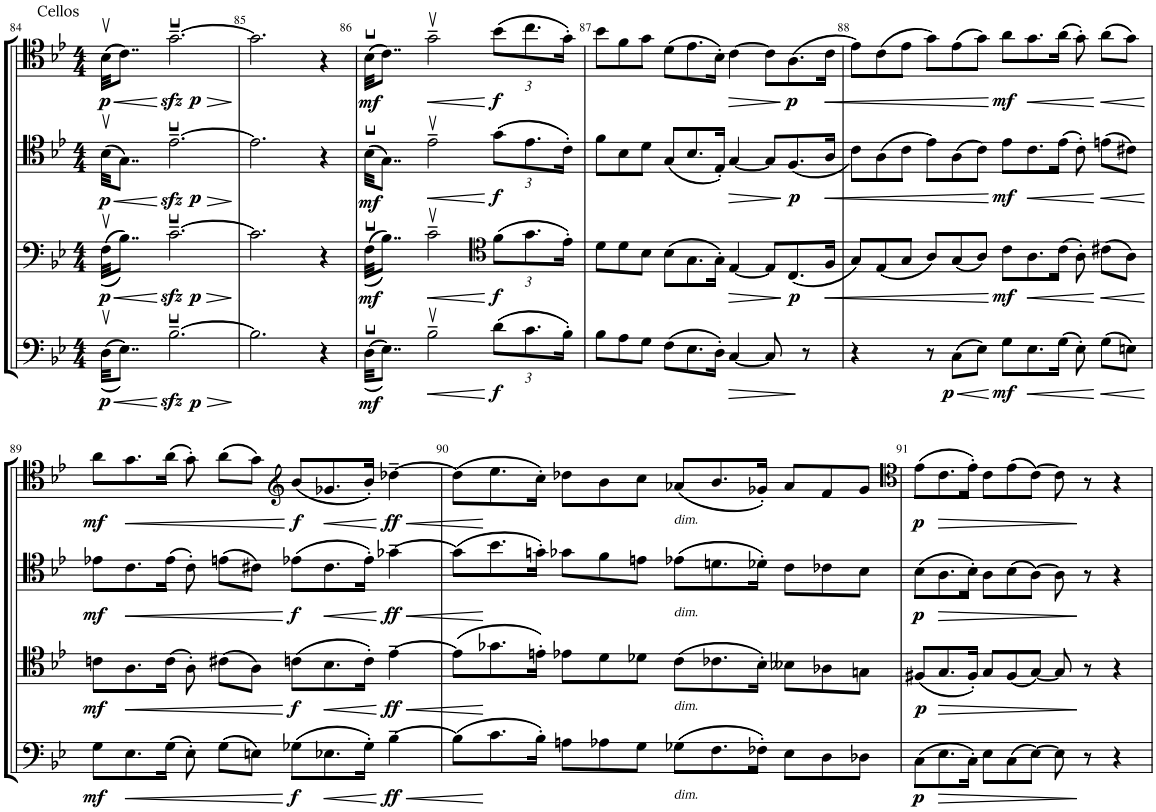


As the B section comes to a close, the music reaches a pacific state that seems to signal an early ending to the movement. Descending lines in the strings decrescendo to *ppp* as instruments drop out of the texture, seeming to settle into a quiet finale. A cello quartet interrupts this moment of quiet with a new, jubilant B♭

major motive at a faster tempo (Example 5.5) that begins the C section. The strings have functioned only as accompaniment to this point, making this moment in m. 86 all the more shocking. Trezise notes that "the propensity of the cello motif to climax on two oscillating notes . . . recalls the physical impact of a boat rocking from side to side."[282] The thirty second note-dotted sixteenth note slur that initiates mm. 84 and 86 in the cellos recalls the opening cello appoggiatura motive stated in mm. 3-5. This time, however, the motive launches a melody in mm. 84-91 with an unexpected playful quality. The melody's spontaneous pauses on dotted eighth notes and the quicky, jaunty sixteenth notes that follow are surprising additions that further disrupt expectations of periodic regularity established by other wave patterns in *La mer* (e.g., the rippling violin II and viola I passages in mm. 31-36). It is a stunning new beginning and one of *La mer*'s most captivating moments of character change.

[282] Trezise, *Debussy: La Mer*, 58. He also points out that this passage in *La mer* calls for sixteen cellos—an expensive proposition.

EXAMPLE 5.5. Claude Debussy, *La mer*, 1909 revised version, mvt. 1 "De l'aube à midi sur la mer," mm. 84-91: playful cello motive from C section

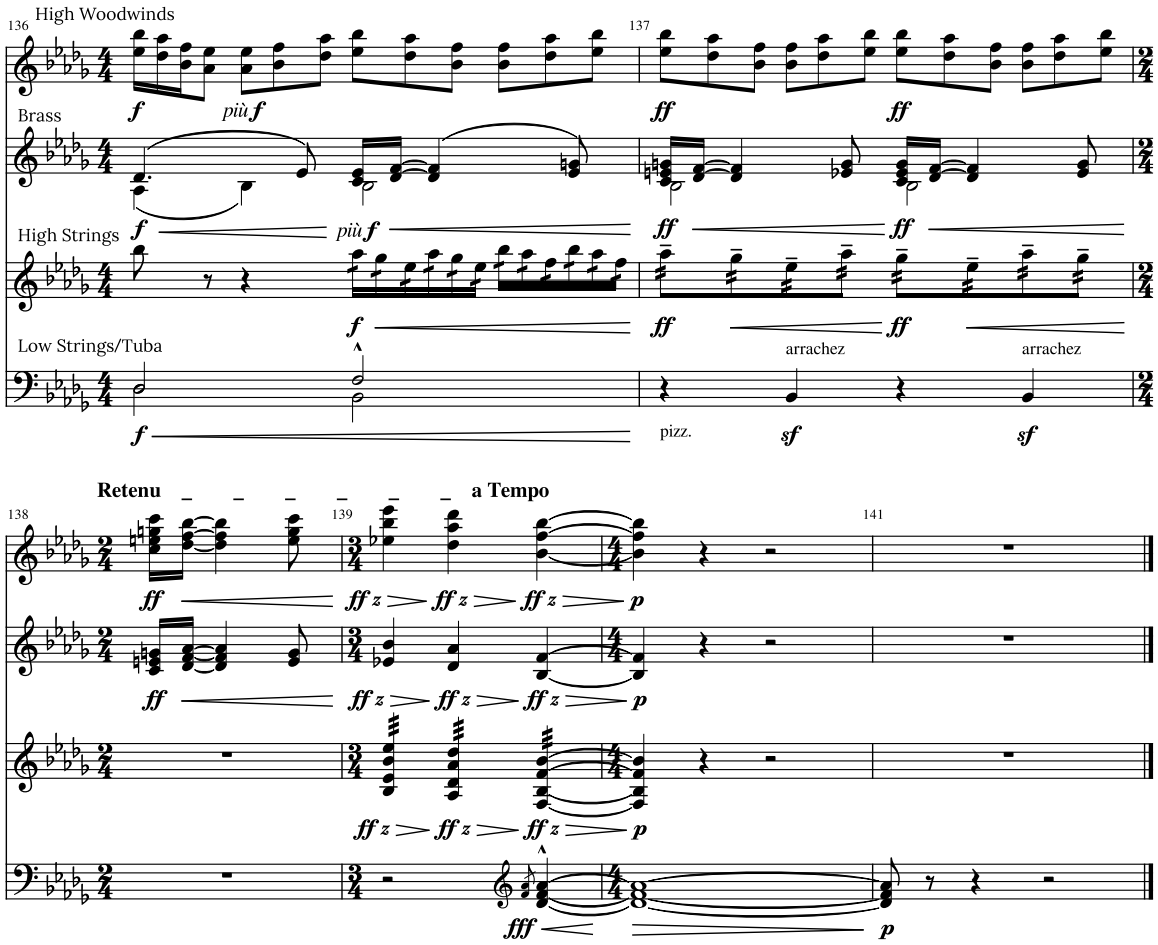


The remainder of the C section and the interlude that follows it constitute what Trezise calls a "harmonic mist" of whole-tone harmonies and tritone motives. Fragmented motives from earlier in the movement reappear then give way to a "rocking ostinato figure derived from the cello theme."[283] In the D section (the interlude) there is a settling into relative inactivity somewhat reminiscent of the close of the A section in its placidity and quietness. This winding-down over several measures seems to connote another dynamic descent into near-silence. Instead, it is preparation for the return of the sunlight, driving away the mist of the previous

[283] Trezise, 59.

sections. The trombones enter for the first time in m. 132, beginning a build to restrained yet triumphant *f* trumpet and trombone statements of the opening appoggiatura motive. The brass are paired with a rhythmically augmented version of the pentatonic woodwind motive above exuberant ascending harp glissandi (instances of the brass appoggiatura motive and pentatonic motive are shown in Example 5.6). This is only the beginning of a long crescendo from m. 132 to the movement's end in m. 141. As the final vestiges of the morning haze disappear, the modified motives the E section swell to a final *ff* D♭ major triad in mm. 139-141, on which the movement fades for the last time.

EXAMPLE 5.6. Claude Debussy, *La mer*, 1909 revised version, mvt. 1 "De l'aube à midi sur la mer," mm. 136-141: end of movement

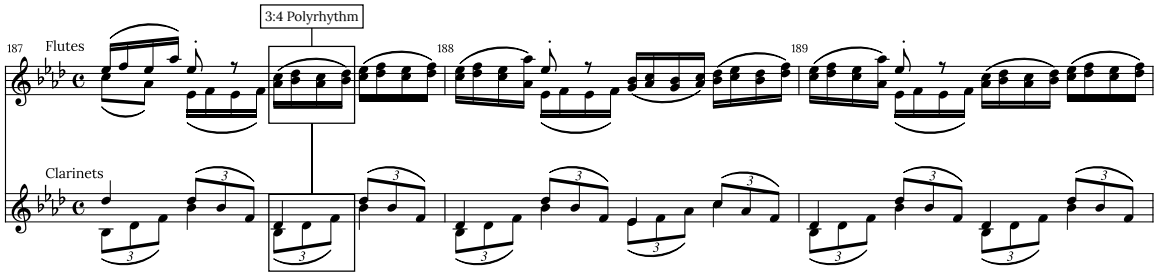


Layered musical devices conveying motion are frequently present in water compositions but can be employed to exceptionally great effect in ensemble works like *La mer*. A single instrumentalist, such as the pianist that accompanies a Schubert song, is physically limited in how many musical lines they may perform within a range typically limited by handspan. An orchestra's capacity to achieve a great variety of simultaneous musical events allows for a corresponding increase in potential for representative and evocative signs at a given moment. For example, the interaction of musical lines in mm. 31-36 of *La mer* (Example 5.2) creates a complex musical

evocation that maps effectively onto a correspondingly complex body of water. Simultaneous two-note bobbing gestures at different pitch levels and ranges suggests confined, small-scale activity. The small waves suggested by these kinetic anaphones contrast with concurrent larger waves evinced by the greater musical wave period in the harp, as well as the directional arpeggios beginning in m. 35. The evocative power of *La mer* lies both in its variety of materials and the cohesiveness created by its evolving motives. The sun rises and the behavior of the ocean changes through the movement, but the ocean's waves, despite changes in texture, in period, and in size, are essentially the same.

Although metrical conflict contributes a sense of contrasting motion in Debussy's depiction of the sea, it is somewhat restrained. A portrayal of independent patterns of motion in a body of water's waves can further enhance an evocation of water. Polyrhythms suggest such conflict in mm. 187-189 of *Vltava*, shown in Example 4.5 and recreated in Example 5.7 with the polyrhythms marked. Discordant motion evoked using polyrhythms is common enough in water compositions that it can be considered a subcategory of musically evoked motion patterns. This is explored further in the following section.

EXAMPLE 5.7. Bedřich Smetana, *Vltava*, mm. 187-189: polyrhythmic wave patterns in the flutes and clarinets (relevant instruments isolated)



Polyrhythms

Polyrhythms do not feature heavily in most of the works analyzed thus far, but they appear in a few. Ralph Vaughan Williams's *A Sea Symphony*, for example, contains a depiction of the ocean that is appreciably enhanced by its polyrhythmic evocations of motion.

A Sea Symphony is a kindred work to Debussy's *La mer* in that both are large-scale, multi-movement, water-evoking orchestral works containing simultaneous, interacting depictive musical lines. It is Vaughan Williams's first and longest symphony; musicologist Alain Frogley writes that it "must surely have been the longest British symphony written to date."[284] Frogley also notes that *A Sea Symphony*'s combination of elements of symphony, oratorio, and cantata has caused its status as a symphony to be disputed.[285] The symphony features a choir throughout, singing sea-themed poetry from Walt Whitman's *Leaves of Grass*. Mvt. 1 contains fragments

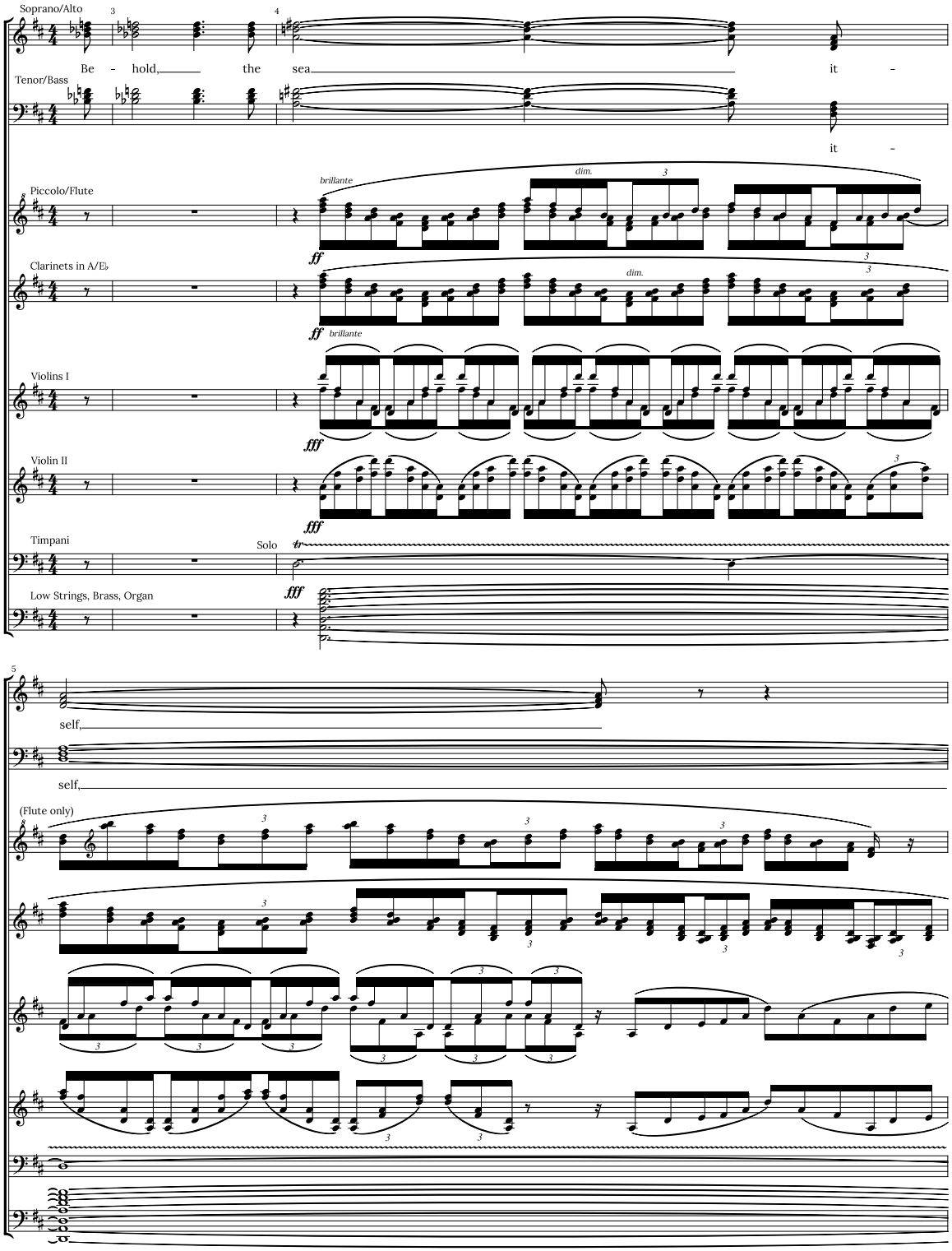
[284] Alain Frogley, "History and Geography: The Early Orchestral Works and the First Three Symphonies," in *The Cambridge Companion to Vaughan Williams*, ed. Alain Frogley and Aidan J. Thomson (New York, NY: Cambridge University Press, 2013), 93.
[285] Frogley, "History and Geography," 93.

of the poems “Song of the Exposition” and “Song for all Seas, all Ships,” mvt. 2 sets sections of “On the Beach at Night Alone,” the entirety of “After the Sea-ship” is set in mvt. 3, and mvt. 4 contains parts of the poem “Passage to India.”[286]

Following a brief introductory horn and trumpet fanfare, the choir enters alone at *ff* leading into m. 3 (Example 5.8), singing, “behold, the sea.” A booming timpani roll and D organ pedal evokes crashing waves on the word “sea,” and raucous, energetic swells (in pitch if not in dynamics) in the violins and high woodwinds begin one beat later over a thunderous sustained D major chord in the brass, low woodwinds, and organ. The animated passage in the violins and high woodwinds begin a gradual transition from quadruplet to triplet waves, scattering 3:4 polyrhythms over these measures. The energy of the waves is conveyed in both the sound of the violin arpeggios and their embodiment in the players; the rise and fall of bows in the mass of onstage violinists is visually akin to ocean waves.

[286] Walt Whitman, *Leaves of Grass*, The "Death-Bed" Edition (New York, NY: Modern Library, 1993).

EXAMPLE 5.8. Ralph Vaughan Williams, A *Sea Symphony*, mvt. 1 “A Song for All Seas, All Ships,” mm. 2–5: waves and swells illustrated in the piccolo, flute, clarinet in A and E♭, violin I, and violin II (instruments isolated)



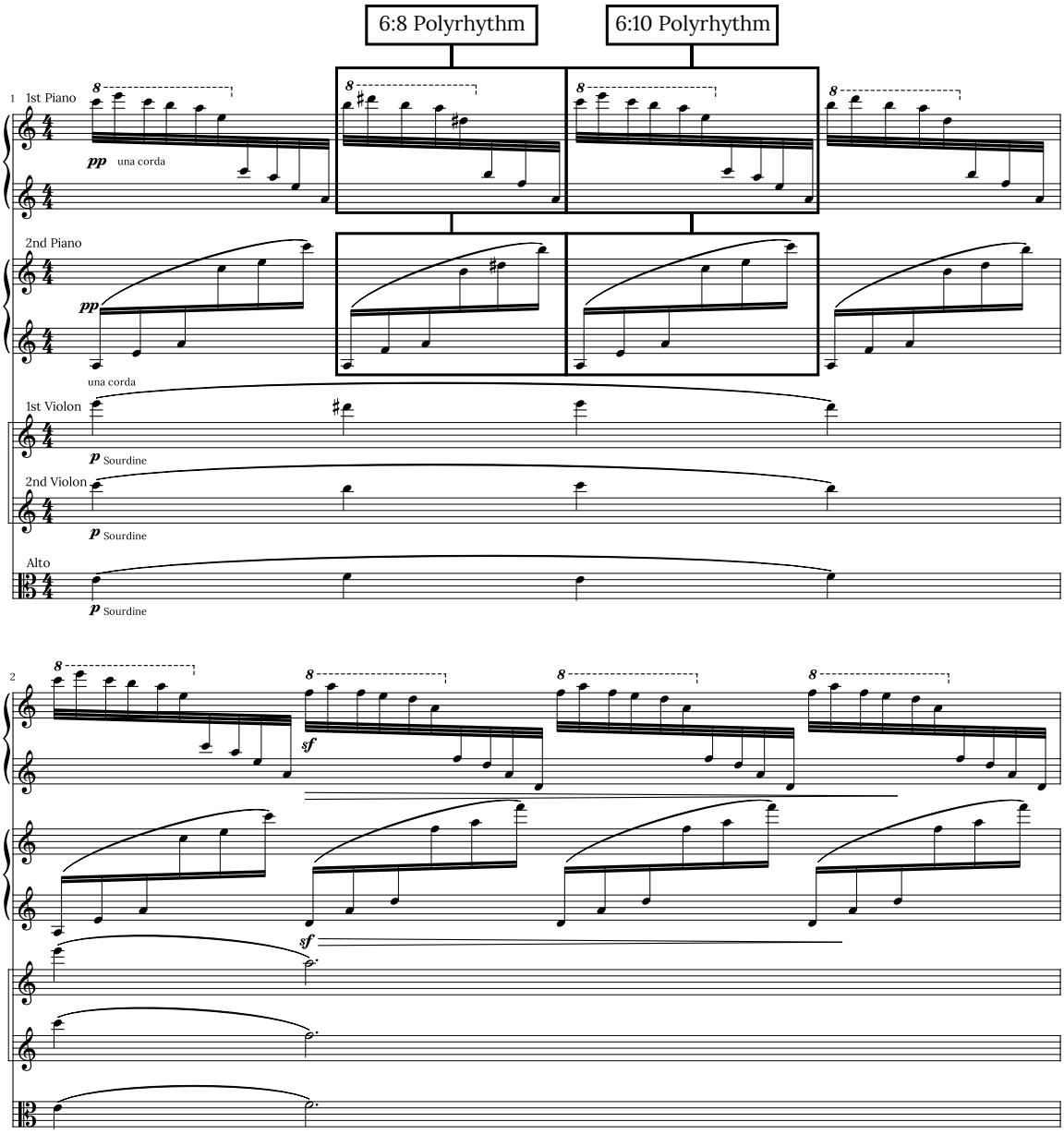
Over two measures of energetic activity, the gradual introduction of triplets against the thirty-second notes in the woodwinds and violins slows the wave motion and signals greater calm in the coming measures. Although the maelstrom of mm. 4-5 is transformed into gentler waves (providing a template for further dramatic contrasts in first movement's oceanic depiction), polyrhythms continue to add complexity to A *Sea Symphony*'s oceanic depiction throughout much of the work.

Depictions of bodies of water like rivers and ponds, which lack the tidal motions and large waves of the sea are similarly enhanced by polyrhythms. In such cases, the conflicting activity may reflect the same phenomenon that is present in *La mer* and A *Sea Symphony* (if at a different scale) or they may support a somewhat different kind of motion. "Aquarium," the seventh movement Camille Saint-Saëns's popular and persistently evocative *Le carnaval des animaux*, contrasts sharply with the first movements of *La mer* and A *Sea Symphony* in its tonal consistency, leaner instrumentation, and limited material.[287] Even so, the short movement exhibits depictive patterns similar to those in the two large-scale works. Example 5.9 shows the movement's first two measures. The strings take up a now-familiar two-note bobbing gesture in the first measure beneath repetitive ostinatos in contrary motion—a musical device present in the Debussy and Vaughan Williams works—in the two pianos. The arpeggio in piano I initially rises and the remaining eight to ten notes

[287] A public aquarium in the late nineteenth century would likely contain a collection of several tanks quite a bit larger than a typical tabletop aquarium for home use. To a modern listener, however, the zoo-like setting indicated by the menagerie in the other movements of *Le carnaval des animaux* would more likely feature a much larger aquarium. In either case, water's motion in an aquarium is limited and evidenced by the plants and creatures it contains.

descend. The six-note figure in piano II ascends exclusively. The two largely unidirectional gestures are most suggestive of opposing currents, collectively signifying swirling water. The currents flow into one another rather than to a destination, thus lacking a single directional pull like the that which characterizes the rapids section of *Vltava*. The motion of the water is constrained. "Aquarium" has musical bounds on the piano passages as well; both pianos are limited almost entirely to the upper half of their range. The waves in piano I never descend below D4 while the ascending passages in piano II only twice fall below G3. The movement's harmony also plays a depictive role: parsimonious voice leading in the distinctive i, c.t.+6, i, c.t.+6, i, iv6/4 chord progression suggests restriction and confinement. The imagery produced in this passage is especially appropriate for water and water animals contained in an aquarium.

EXAMPLE 5.9. Camille Saint-Saëns, *Le carnaval des animaux*, mvt. 7 “Aquarium,” mm. 1-2: polyrhythms in the rippling piano passages over a bobbing string line



The strings are marked *sourdine* (mute) in m. 1. The dampening effect of the mute suggests string instruments resonating underwater: a sonic anaphone. The shimmering quality of the high piano arpeggios evokes something entirely different: reflected and refracted light on the surface of moving water.

Surprisingly, Saint-Saëns also managed to include an element of actual water in the "Aquarium" movement. The composer indicates a part for the glass harmonica: an instrument that comprises glass bowls graduated in size that produce musical tones when a musician applies friction with their fingers.[288] Water acts as a lubricant yet allows enough friction to create vibrations in the glass. The glass harmonica not only adds an actual watery element to a performance of *Le carnaval des animaux*, it lends an eerie shimmering quality to the close of the "Aquarium" movement.

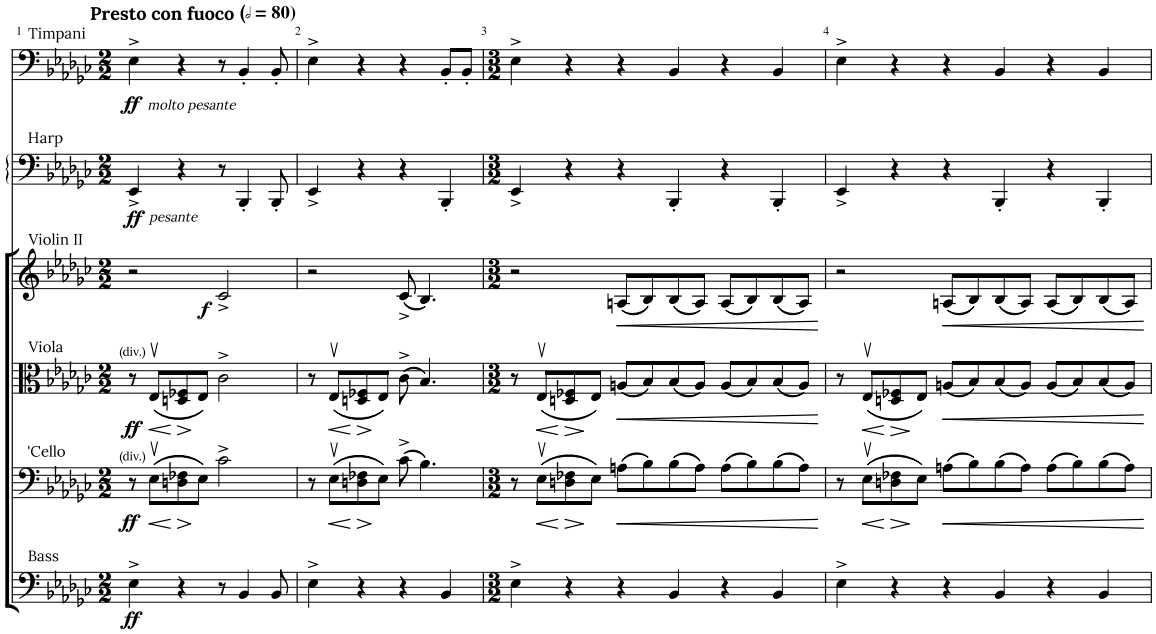
Conveying a Body of Water's Tactile Properties

Instrumental and timbral variety plays an important role in *Vltava*, distinguishing the small, playfully wandering streams suggested by the woodwinds in the work's opening measures from the expansive, more forcefully flowing and oscillating river expressed through the strings. In this and other orchestral water compositions the strings take on an important role in generating water imagery. For example, Paul Dukas's *L'apprenti sorcier* is replete with evocative string gestures. In m. 2, the strings have a clear tone and a soft, ethereal quality as they evoke the flowing stream and water-filled basins of Goethe's poem with gently falling and quivering

[288] Occasionally, Saint-Saëns's call for a "harmonica" in the score has been (humorously) interpreted as a call for the kind of harmonica called a "mouth organ," notable for its use in American folk music, blues, jazz, and country music. Norman Del Mar points out ambiguity in Saint-Saëns's use of the term in *Anatomy of the Orchestra* (Berkeley, CA: University of California Press, 1983), 492, but notes that the list of instruments Saint-Saëns is likely suggesting does not include the mouth organ. Still, the mouth organ is heard in the occasional recording of the "Aquarium" movement, including one by the Czecho-Slovak Radio Symphony under the direction of conductor Ondrej Lénard.

wave gestures. Mellow violins and violas gently bob and flow beneath Roden Noel's poetry in "Sea Slumber Song," the first movement of Edward Elgar's 1899 *Sea Pictures*, Op. 37 for contralto and orchestra. "Storm," the fourth movement of Benjamin Britten's *Four Sea Interludes* from *Peter Grimes* suggests rough, tossing waves in the low, heavy string passage in mm. 3-4 with thunder and violent battering in the thudding, resonant effect created by the timpani, harp, and bass performed *con fuoco* (Example 5.10).

EXAMPLE 5.10. Benjamin Britten, *Four Sea Interludes* from *Peter Grimes*, Op. 33a, mvt. 4 "Storm," mm. 1-4: tossing, crashing waves evoked by the timpani, harp, violin II, viola, and bass (instruments isolated)



Bowed string instruments are certainly not the sole source of water evoked in music, even in orchestral works. Furthermore, the frequency with which the strings take on a depictive role in these works might merely be a function of the prominent

role of the strings in common orchestral compositional practice or their vast array of timbral resources. Yet the strings are effective in that role. In chapter thirteen of *Music's Meanings*, Tagg considers descriptors applied to musical works containing string pads at a library music company.[289] He defines string pads as the sound of "orchestral strings bowed smoothly and without harsh dissonances to produce a slowly moving, continuous, chordal texture," characterized by "their lack of distinct attack and decay, and by their relatively consistent envelope" when performed by live instruments.[290] Violinist and violist Mimi Rabson remarks upon the capacity of string pads to "[present] the harmonic content [of a work] without interfering with the rhythmic or melodic content."[291]

Tagg discusses the tactile (and, occasionally, gustatory or olfactory) descriptors associated with individual pieces of library music and their relationships to musical phenomena, such as "soft," "gently flowing," and "smooth," as well as some added by Tagg, "homogenous," "emulsified," and "viscous." Although "gently flowing" has more to do with a kinetic experience than a tactile one, several of these terms combine a tactile quality with a suggestion of liquid. The "homogenous," "smooth" quality suggested by the strings, especially, maps easily onto conceptions of water. When combined with the wave kinetics suggested by changes in pitch level, the use

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[289] Tagg, *Music's Meanings*, 494. The phrase "string pad" more frequently describes the string sounds on synthesizers than instrumentation in an orchestral composition. A library music company owns library music (alternatively called "production music" or "stock music") in many styles and genres that it licenses for commercial use.

[290] Tagg, 494. "String pads" are so named because they "pad holes and fill gaps in the music's overall texture," says Tagg.

[291] Mimi Rabson, *Arranging for Strings* (Boston, MA: Berklee Press, 2018), 59.

of strings conveys a sense of gradual rising and falling that relates to oceans or lakes. The surface of the ocean does not rise and fall in square waves, alternating suddenly between high and low states. The rise and fall is gradual and even aggressive waves have a smooth, gradated contour. The timbre of the strings generates a tactile anaphone that modifies the kinetic anaphone, making the waves smoother and thicker than the flitting, comparatively thin stream evoked by the woodwinds in *Vltava*, for example.

The waves of *Vltava*, *L'apprenti sorcier*, and *Four Sea Interludes* mostly lack "gaps" and "holes," due in part to the homogeneity of a mass of string instruments performing waving passages. Even an individual string instrument can seemingly sustain endlessly if bowing changes are performed with enough subtlety. The endlessly sustained effect is enhanced further when individual players change bowing *ad lib*. Individual wind instruments, by contrast, are generally limited in their capacity to sustain by the breath capacity of a player (although circular breathing can extend that capacity). This limitation is overcome when wind instrumentalists share a musical line and do not breathe together, hiding their individual breaths.

The piano is another particularly "watery" instrument and its role in the canon of water-themed works is documented in the writings of Lewis and Park (discussed in chapter one).[292] They describe many of the same instrumental effects cited here—such as wave-like arpeggios and quick rising and falling scalar passages—and examine the impact of effects unique to the piano on its evocative capacity. "Hazy pedaling" in

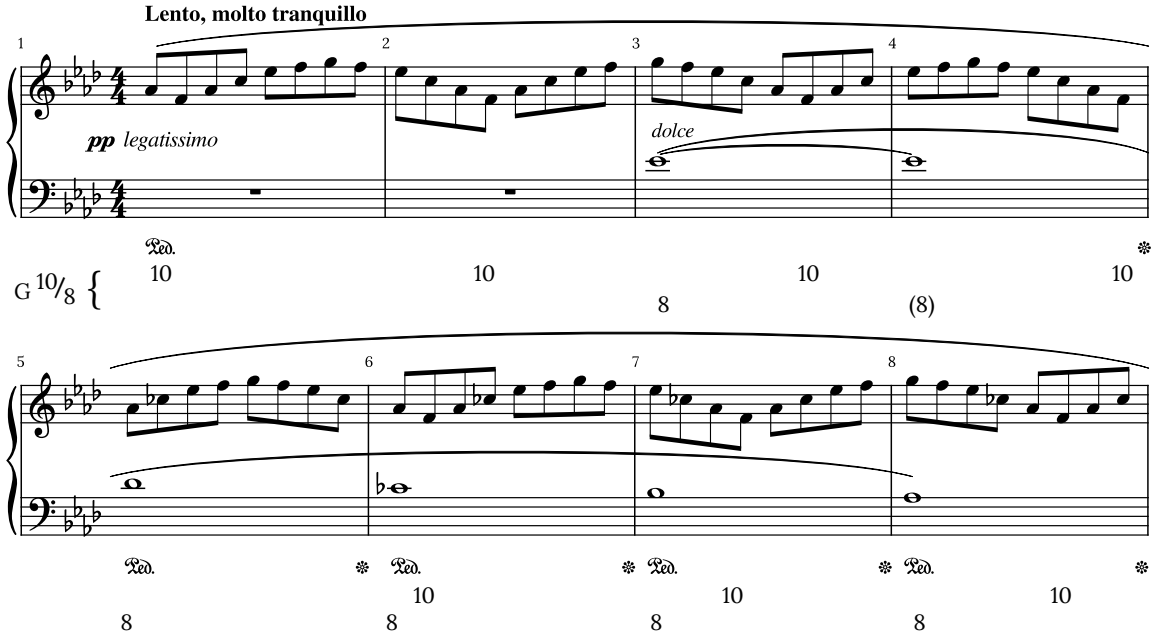
[292] Lewis, "Evocations of Water"; Park, "Elements of Impressionism."

Debussy's music, for example, has a role in creating "seamless borders" that reflect impressionist painting technique.[293]

It is the capacity of the piano to sustain that I find most compelling in the context of water imagery. The long, gradual decay of a held note creates ambiguity in it boudnaries, contributing to a homogeneity not unlike that of an orchestral string section. A wind instrument is monophonic, performing a single note at a time (although an instrumentalist may tease out more through multiphonic techniques). An organ is polyphonic, but its capacity for sustain gives clarity to the release of each note. Both wind instruments and organs can achieve smooth connections between notes, but the natural decay of a note performed on the piano can be exploited to create a "blurred" or "smeared" effect through continually waning tones giving way to each successive one. Example 5.11 shows Amy Beach's *By the Still Waters*, in which each note of the swelling arpeggios sustained by the pedal from mm. 1-4 is present in the piece's texture even as it decays, but the initial sounding of each note is distinct and unhampered by the already-decaying previous note. The notes have a perceptible beginning but no distinct, perceptible end. The blurred effect is enhanced by the grouping dissonance between the right-hand ostinato and the left-hand whole notes.

[293] Park, "Elements of Impressionism," 62.

EXAMPLE 5.11. Amy Beach, *By the Still Waters*, Op. 114, mm. 1-8: the pedal gives the waves in the right hand a "smeared" effect

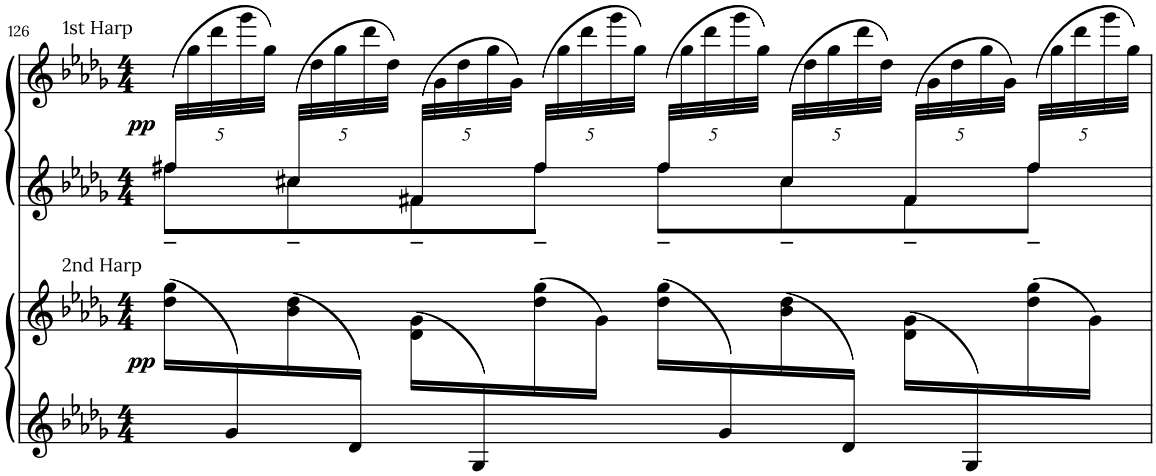


Effects achieved by the harp, the last of three instruments (or instrument sections) especially associated with water imagery discussed in this section, frequently have a similar blurred quality owing to the sustained resonance of the plucked strings. In the inaugural episode of the *Scores and Pours* podcast, titled *Evocations of the Sea*, classical music radio host Emily Reese notes the frequent use of the harp in water-themed music of the Romantic era, especially as used for "water droplets" and "swirling lines" in ascending and descending arpeggiations and scales.[294] Debussy features the two harps in *La mer* in distinctive wave-like arpeggios, like the

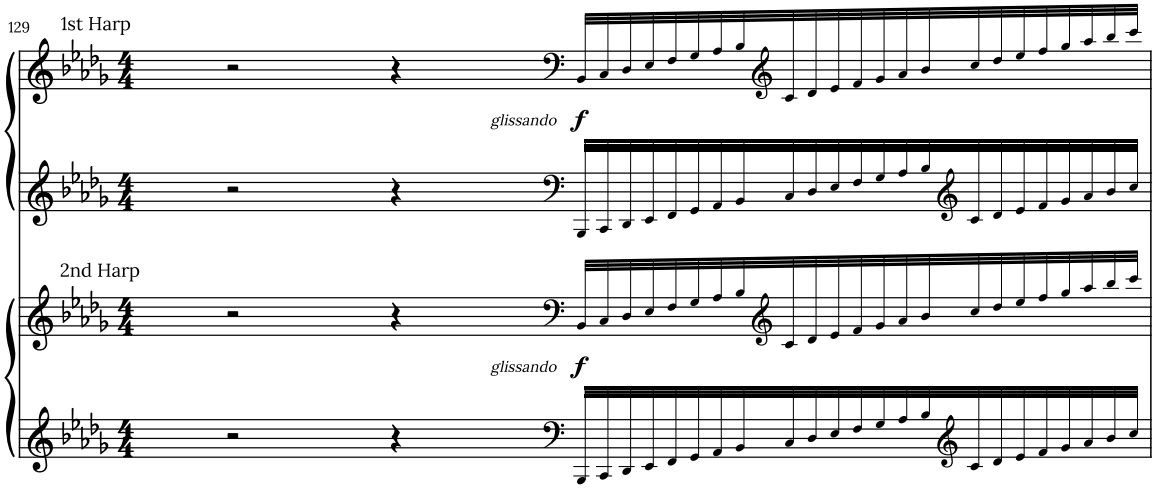
[294] Reese and Mott, "Evocations of the Sea." Reese goes on to say that these musical structures may be used to evoke extramusical ideas apart from water, such as a "metaphorical mental downfall," and that knowing the subject of a musical work is key to interpretation.

ones in mm. 126-128 (m. 126 is shown in Example 5.12), and characteristic glissandi (m. 129 in Example 5.13), both of which suggest unidirectional aqueous motion.

EXAMPLE 5.12. Claude Debussy, *La mer*, 1909 revised version, mvt. 1 "De l'aube à midi sur la mer," m. 126: polyrhythmic waves in harps I and II



EXAMPLE 5.13. Claude Debussy, *La mer*, 1909 revised version, mvt. 1 "De l'aube à midi sur la mer," m. 129: harp glissandi



The sound of the harp and its music is sometimes described using water metaphors. The Vienna Symphonic Library—a major developer of music production

software and orchestral sample libraries—provides written content that conveys the character of instruments and samples. The company's note describes the sound of the harp as "rushing," "clear," "glittering," "flowing," "splashing," and "cascading."[295] A 1984 New York Times article documents Wendy Chambers's description of her composition for thirty harps, *Pluck* (1984), as a "vivacious score opening with uninote [sic] sound attacks crisply falling like raindrops, which slowly congeal into a cascade of rich harmonies and multitudinous glissandi."[296] Martin Scheuregger notes that the modern stereotype of the harp is defined by "sounds of shimmering glissandi and resonant arpeggios" and describes his composition *Be still* (2015) for harp and marimba as lacking the "lush, cascading qualities traditionally associated with the instrument."[297] Each of these descriptions contains words explicitly associated with water, from adjectives such as "rushing" and "clear" to words referring to water directly, such as "splashing" and "raindrops." The term "cascade," referring to waterfalls and the act of pouring water, appears in all three descriptions of the harp and harp music. Just as the "viscous" and "smooth" texture of the string section modifies its representations of motion, the sound of the harp conveys details of the musical motion it conveys. Its dripping, cascading quality is due to sonic and kinetic

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[295] "Sound Characteristics - Vienna Symphonic Library," accessed August 12, 2020, https://www.vsl.co.at/en/Harp/Sound_Characteristics. Music library companies that Tagg describes in *Music's Meanings*, like Vienna Symphonic Library, assign colorful descriptors to works to convey emotions, moods, and other extramusical associations.

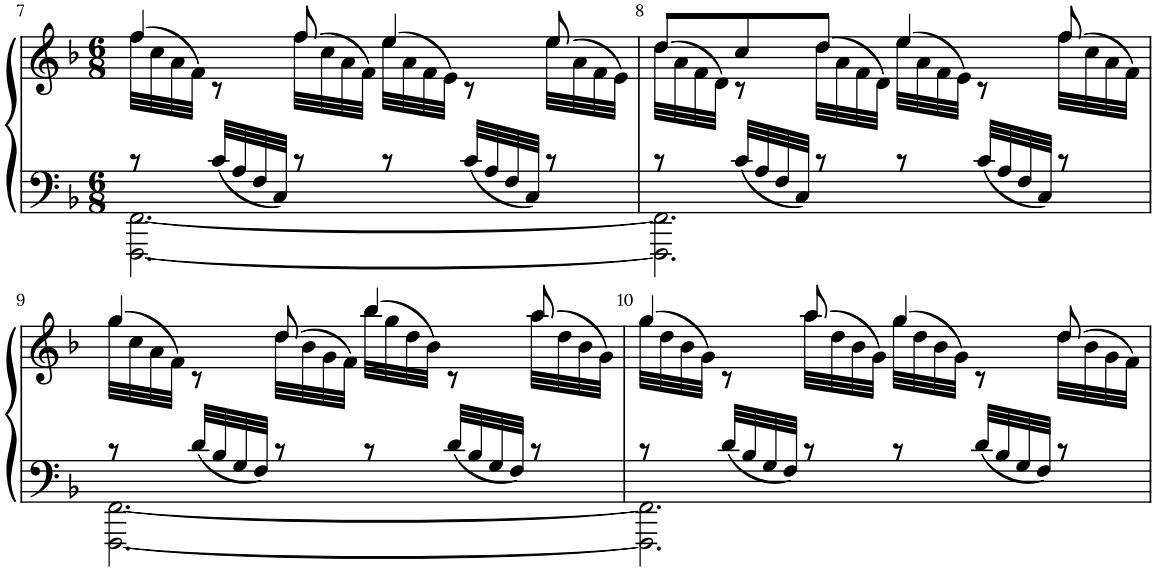
[296] Tim Page, "A Cathedralful of Harp Strings," *The New York Times*, September 21, 1984, sec. C, 1.

[297] Martin Scheuregger, "Redefining Idiomatic Writing for the Pedal Harp," *Contemporary Music Review* 38, no. 6 (November 2019): 555.

anaphones; a plucked string has a percussive quality like a drop of water falling into a larger body, and the quiet resonance of the harp dissipates gradually like ripples on water's surface.

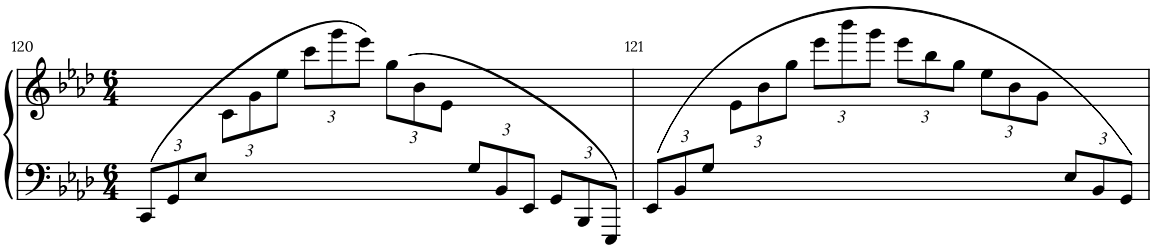
"Cascading" is an apt description of Alphonse Hasselmans's harp writing in *La Source*. It is a standout among water works in that it is a concert étude for solo harp rather than a composition featuring the piano or for orchestra. It is not the only water composition for solo harp—*The Little Fountain* (1965) by Samuel Pratt is a solo harp piece of a similar style—but it is distinguished by its fame and status as a foundational piece of harp literature. *La Source* contains two brief measures arpeggiating up and down a C dominant seventh chord, but it is almost entirely composed of fast-moving four- and eight-note downward arpeggios beneath a melody (see Example 5.14). These unidirectional passages fall rapidly from notes in the work's melody.

EXAMPLE 5.14. Alphonse Hasselmans, *La Source*, mm. 7-10: cascading harp arpeggios



The harp's appearances in Xinghai Xian's *Huánghé Dàhéchàng* (*Yellow River Cantata*) are more associated with wave-like motion than with the cascades of Hasselmans's work. The seventh movement features the harp more extensively than other movements. The wide pitch range of the harp—the pedal harp typically has a range of about six and a half octaves—enables the many large, expansive waves in Xian's composition, most resembling the arpeggiated waves seen in mm. 120-121 (Example 5.15).

EXAMPLE 5.15. Xian Xinghai, *Huánghé Dàhéchàng*, mm. 120-121: expansive waves in the harp



The harp is also prevalent in other water-themed works, such as Michael Daugherty's *Niagara Falls* (1997), John Mackey's *Wine-Dark Sea* (2014), Sergei Rachmaninoff's *Isle of the Dead*, Op. 29 (1908), Jean Sibelius's *Tuonelan joutsen* (*The Swan of Tuonela*) from *Lemminkäinen Suite* (*Four Legends from the Kalevala*), Op. 22 (1895), and Vaughan Williams's previously-mentioned *A Sea Symphony*.

Conveying a Body of Water's Scale

The topic of scale has already been broached in the case study on *Vltava*. Following the woodwind introduction, the waterway widens as the strings enter the

texture and take on the primary depictive role at m. 36. A small number of flutes and clarinets (two of each) depicting two small streams gives way to the much larger string ensemble where the river begins. In the context of *Vltava*'s program and in combination with its kinetic anaphones, the increase in the ensemble's scale suggests an increase in the size of the body of water they portray. The increase in dynamic level resulting from a larger ensemble further enriches this portrayal, since an increase in volume is linked to both size (larger) and proximity (nearer).

Changes in size are also suggested through dynamic levels and dynamic contrast. In his book, *How We Hear Music* (2002), scientist and musician James Beament writes that "detecting how big a sound is, is the most primitive ability of our detecting system."[298] He describes dynamics in terms of perceived size. I have found the conflation of *loudness* and *size* to be common amongst students at the primary level (they are inclined to use basic size descriptors for auditory phenomena, saying, "that's a big/small sound"). In *Vltava*, the increase in the number of players engaged in kinetic-anaphonic gestures at the entrance of the string section results in an increase in dynamic level, as does the swell from *p* to *f* just a few measures after the addition of strings to the piece's texture. As such, the increase in the size of the river at the confluence correlates both to ensemble size and dynamic level.

The perceived relationship between dynamic level and size is not entirely consistent, however. Size states are also closely associated with pitch level. Scholars

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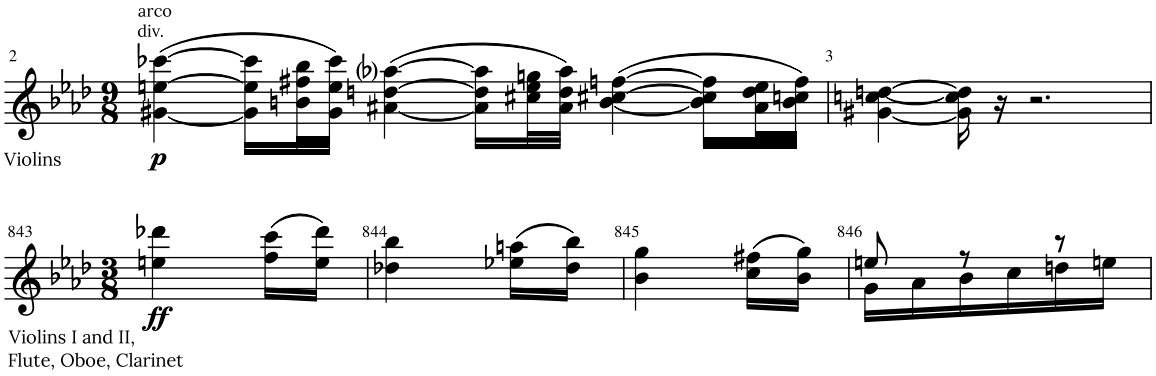
[298] James Beament, *How We Hear Music: The Relationship Between Music and the Hearing Mechanism* (Woodbridge, UK: Boydell & Brewer, 2002), 85. The primary purpose of this section of the book is to highlight problems with assessing loudness and the complex perceptual interaction of loudness with frequency, tone, and pitch.

have documented the human ability to use cues, such as highness and lowness, in vocal sounds to make judgments about the relative size of speakers (e.g., Smith, Patterson, and Turner).[299] Alternatively, loudness and softness are frequently associated with closeness such that changes in loudness and softness may be associated with changing distance of the sound source.

When aligned with the extramusical program, shifts in dynamics and pitch level that might indicate changes in size and spatial relationships can seem to take on clearer meaning. The subtle dynamic contrasts throughout Beach's *By the Still Waters* do not clearly point to anything extramusical since they have no clear association with the "still waters" of the title and the work lacks the clarity offered by a programmatic description. By contrast, *Vltava* has a program that goes beyond the river in its title. The work's programmatic narrative suggests that the music will go beyond the vagaries of a musically implied river to the specifics of its course and resultant changes in state. The specific meanings of musical passages in *Vltava* (e.g., the confluence of the two streams, the rapids) would be more unavailable without a specific program. Example 5.16 shows dynamic contrast in *L'apprenti sorcier*'s water-depicting string passages. In m. 2, it is a small stream of water that flows into the basin from the apprentice's bucket. By m. 843, the workshop is flooding as the basin overflows. The change in dynamics from *p* to *ff*, enhanced by the greater number of instruments, reflects this change in the quantity of water.

[299] David R. R. Smith et al., "The Processing and Perception of Size Information in Speech Sounds," *The Journal of the Acoustical Society of America* 117, no. 1 (January 2005): 305–18.

EXAMPLE 5.16. Paul Dukas, *L'apprenti sorcier*, mm. 2-3, 843-846: dynamic contrast between water-evoking passages early and late in the work (reduction)



Conveying a Body of Water's Depth

Many kinetic anaphones rely on the spatial metaphor for pitch. Increasing pitch frequency is a metaphor for "rising" and decreasing pitch frequency evokes "lowering." As such, scales and arpeggios over a greater pitch range are interpreted as "larger" than scales and arpeggios over a more limited range (consider, for example, the gradually expanding arpeggios and corresponding crescendo in Richard Wagner's prelude to *Das Rheingold* [1854]). With these suggestions of height come suggestions of depth and, to some extent, scale. In *La mer* and *Vltava*, illustrations of water tend to occur over a wide pitch range. The large waves accompanying the river Vltava's theme contrast with earlier material that is more constrained in range, conveying the growing size of the river at m. 40. In *La mer*, that expansiveness connects with the depth and breadth of its subject matter. As previously noted, the waves illustrated by the harp in *Huánghé Dàhéchàng* are quite large.

To examine musical evocations of depth more thoroughly, it is useful to analyze a work in which changes in depth are a part of the narrative. As with musical

portrayals of scale, contrasts in depictions of depth allow varying states to be compared. After all, notions of "shallow" and "deep" are relative. One work in which changing depth is conveyed especially well is Debussy's "La Cathédrale engloutie" from his first book of preludes.

An ancient Breton legend holds that the sea swallowed the city of Ys. It goes on to suggest that church bells from the city's cathedral can still be heard echoing beneath the waves of the Bay of Douarnenez. Another legend asserts that the city will rise again.[300] "La Cathédrale engloutie" narrates in music the gradual rise of the city's cathedral above the waves and its return to the depths. Kathryn Lucas, in her master's thesis, meticulously charts the prelude's narrative symbolism, describing motives suggestive of bell tolls, Gregorian plainsong, and the "force of the sea."[301]

Lucas observes that music relating to the sea is "generally given in the bass."[302] As such, the prelude's portrayal of the sea is tied to the lowest, deepest notes in the piece. Example 5.17 shows the opening chord of "La Cathédrale engloutie," which conveys a sense of depth through its extreme range, spanning G1 to D7. The prelude's opening passage evokes a marked stillness in its bell tones and repetitive, slow-moving organum-like motive that evokes the titular cathedral. The initial chords at the low end of the piano keyboard in mm. 1-15 occur in sync with distant notes high in the right hand. Lucas describes these chords as "the sound of the bell."[303]

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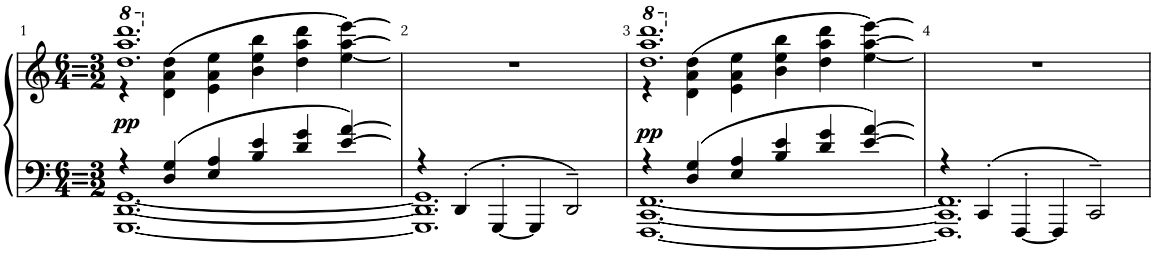
[300] Hauntingly, this second legend states that the city of Ys will rise when Paris (which translates to "little Ys" in Breton) is swallowed by the sea.
[301] Kathryn June Lucas, "Symbolism in Debussy's Music" (Master's thesis, University of North Dakota, 1980), 79–80.
[302] Lucas, "Symbolism," 80.
[303] Lucas, 79.

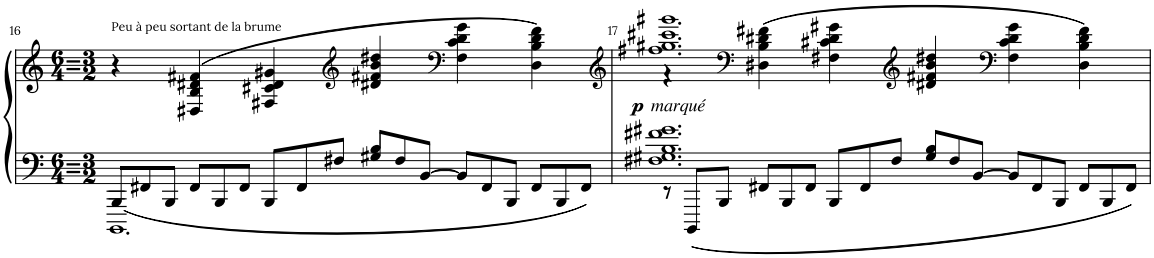
EXAMPLE 5.17. Claude Debussy, "La Cathédrale engloutie" from *Préludes*, *Livre* 1, mm. 1-4: opening chords



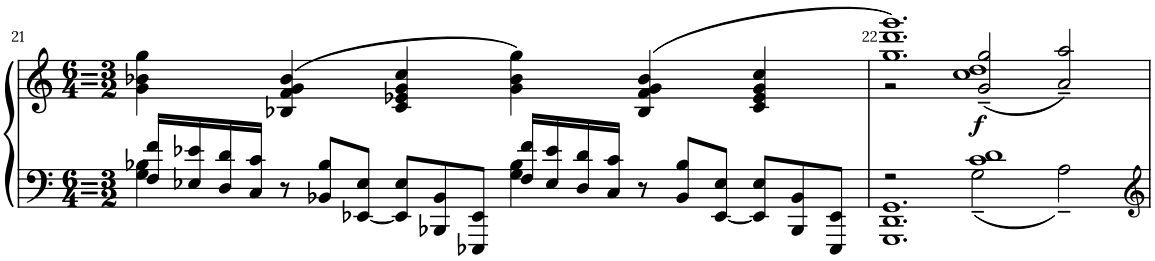
The prelude's initial stillness is disturbed by notably increased activity at m. 16 (see Example 5.18; Debussy marks the score "Peu à peu sortant de la brume," or "little by little coming out of the mist"). Lucas describes the subsequent passage as "the first indication of movement" and increasing activity in the bass register later in the passage (likely referring to descending gestures with some briefer durations in mm. 21-22; see Example 5.19) as "suggestive of a stronger tide."[304] This motion stirs at the low, tonally muddy end of the piano, not only evoking depth but the murky darkness associated with the ocean's depths. The music supports the narrative of the cathedral at the bottom of the sea. The pianist's left and right hands outline rising and falling waves over a one-measure wave period; the right hand ascends and descends steadily at a quarter-note pace while the left hand moves more quickly and erratically in triplets. By m. 20, the drama of the narrative has intensified. Water moves more forcefully and cascades down the rising cathedral as it rises. When it comes to a halt, perched on the surface of the sea, the bells chime loudly and clearly, no longer muffled in the water.

[304] Lucas, 80.

EXAMPLE 5.18. Claude Debussy, “La Cathédrale engloutie” from *Préludes*, *Livre* 1, mm. 16-17: first wave-like motion in the bass



EXAMPLE 5.19. Claude Debussy, “La Cathédrale engloutie” from *Préludes*, *Livre* 1, mm. 21-22: increasing motion in the bass indicating greater activity

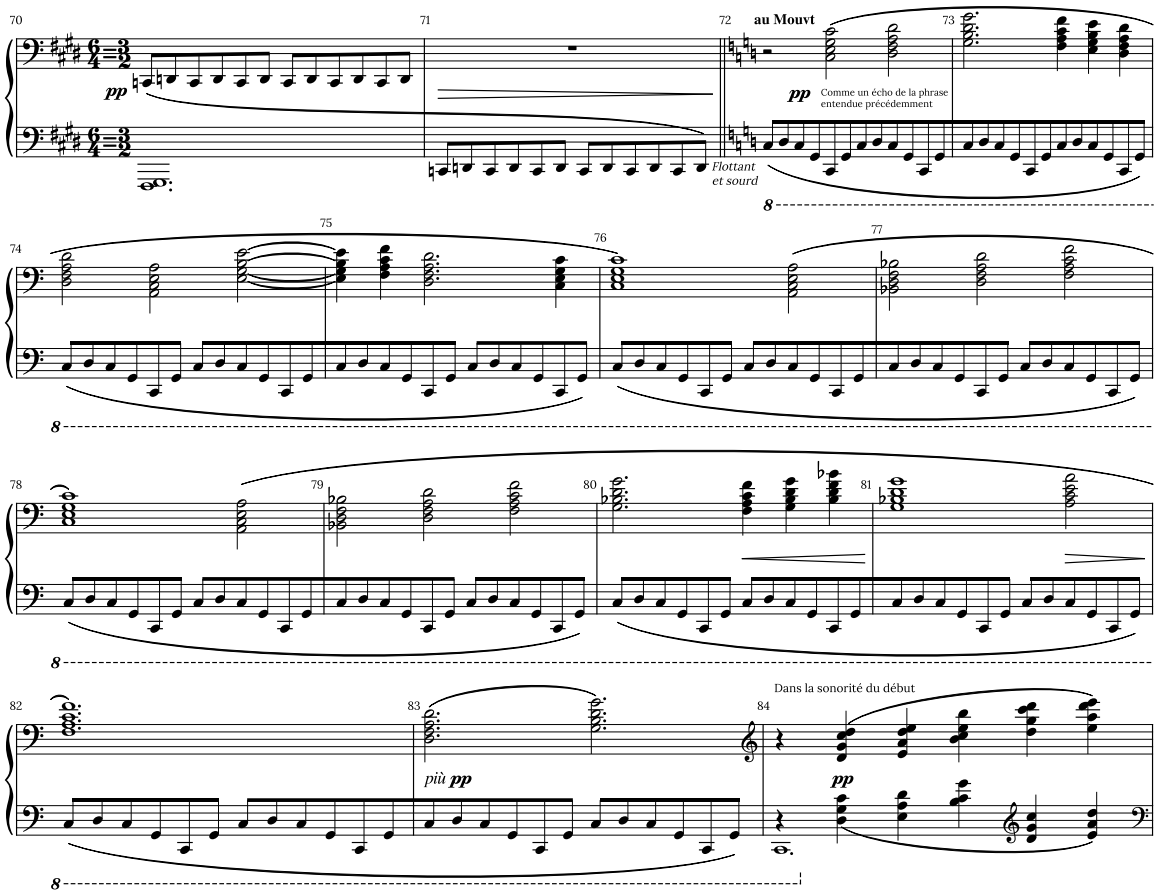


A sense of depth is achieved simply and effectively in “La Cathédrale engloutie,” yet motion through pitch space is not the primary means of conveying the cathedral’s rise. The swirling and undulating motions in the bass do not leave the low register. Instead, the cathedral’s approach and departure from the surface of the bay is primarily conveyed through dynamic contrast. A long, slow crescendo begins in m. 16 as the water stirs, reaching its climax in m. 28 as the cathedral arrives at its destination. To a listener on the water’s surface or a nearby piece of land, the increase in dynamic level is not only indicative of an approach but of a lessening of intervening material between the listener and the sound source. There is progressively less water dampening the church bells.

The motional implications of "La Cathédrale engloutie" only become apparent as the prelude unfolds. Wave-like motion in m. 16 contextualizes the widely spaced bell tones in earlier measures as relative stillness. This sense of motional contrast persists through the remainder of the work. The prelude begins in motionlessness, but water begins moving as the cathedral itself rises. Musical and narrative climax are achieved as the cathedral triumphantly stands over the waves and the bass register settles on C1 (m. 28). When the water stirs again at m. 70 the cathedral begins its journey to stasis below the sea by sinking back into the waves.

The cathedral's descent takes on a different character than in mm. 16-21. In contrast to the densely scored, increasingly agitated portrayal in these early measures, motion in mm. 70-83 is regular, predictable, constrained (the arpeggios span only about an octave rather than two), and comparatively stark. Where the cathedral's rise was triumphal and exciting, its descent is calm and quiet. The cathedral does not surge to the seabed, it settles. The waves in the left hand are accompanied only by the low and soft chant melody, which close on a return to stillness and a return of the opening bell motif at m. 84 (see Example 5.20) as the cathedral rests again below the smooth surface of the Bay of Douarnenez.

EXAMPLE 5.20. Claude Debussy, “La Cathédrale engloutie” from *Préludes*, *Livre* 1, mm. 70-84: quieter, less agitated motion eventually leads to stillness in the bass



In much the same way a painting of a body of water can give a visual impression of depth, breadth, texture, and its motion, a musical depiction of a body of water can give an impression of these features through sound. A painting of the ocean’s color that lacks its other features is likely unrecognizable as the ocean; its depiction becomes less ambiguous with detail. Likewise, a musical depiction can be enhanced by providing listeners with more information about the body of water being conveyed. In the case of “La Cathédrale engloutie,” the changes in depth illustrated in the music are vital to the work’s portrayal of the sea and of the narrative. The sense

of confinement suggested in Saint-Saëns's "Aquarium" is wildly different from "La Cathédrale engloutie," but no less vital to the movement's suggestion of water in a container. It is the combination of musical devices that portray a body of water's features that brings clarity to the musical depiction in which they occur.

CHAPTER 6

THE FOCUSED MUSICAL DEPICTION

The works presented in this dissertation have not been exclusively evocative of bodies of water.[305] They depict other subject matter alongside water, such as boatmen, ships, and cathedrals. Chapter six delves into a rather recent development in water-evoking music: the *focused musical depiction*. Such a depiction's musical content is entirely (or almost entirely) evocative of a single subject matter and its attributes. What follows is a study of John Luther Adams's contributions to the water-evoking musical repertoire, which takes the form of four works that are detailed and focused depictions of waterbodies. The chapter begins by further exploring the notion of focused depiction. As Adams's interest and approach to writing music based on the natural world is rooted in his love of nature, life experiences, and work in environmental advocacy, the next section briefly examines his background and approach to incorporating environmentalist themes in his music. Analyses of Adams's four water works are the heart of the chapter. They focus on the roles of the compositions' component musical devices—especially tonal wave structures, dynamics-based wave structures, and formal design—in creating focused depictions. The chapter concludes with considerations for future research in the areas of Tagg's system of anaphones—including possible uses and a potential expansion of the

[305] Chopin's "Ocean" étude, made up entirely of wave-like arpeggios, could be considered an exception.

system, depictions of all kinds of motion beyond that of water in musical works, and how other natural phenomena are evoked in music.

John Luther Adams's Water Compositions

The first of John Luther Adams's water-themed compositions is "solitary and time-breaking waves," the second movement of the percussion ensemble piece *Strange and Sacred Noise*. It is followed by the original version of *Dark Waves* for orchestra and electronics, the version of *Dark Waves* for two pianos and electronics, and two works from his orchestral *Become* trilogy: *Become River* and the Pulitzer Prize-winning *Become Ocean*.[306] Apart from "solitary and time-breaking waves," which is set apart especially by its limited instrumentation, each of these works employs a sonic palette common even in non-water-related works by Adams. For example, *The Light Within* (2007) contains the same kinds of dense orchestration, complex harmonics, and wave-like gestures as *Dark Waves* and *Become Ocean*. Like *The Light Within*, *Dark Waves*'s orchestral texture and harmonic qualities are bolstered by pre-recorded electronically processed sounds that Adams describes as

[306] The version of *Dark Waves* for two pianos and electronics is quite different from the original orchestral version. In a program note, Adams says that it could be considered a different piece altogether. See John Luther Adams, *Dark Waves* (Two Pianos Version) (Fairbanks, AK: Taiga Press, 2007), n.p. The pianos lack the capacity of wind and string instruments to sustain, have a different capacity for smooth motion between notes, lack the ability to steadily crescendo from inaudible dynamic levels on a single note, and lack the timbral variety of the orchestra (a principal feature of the original and the subject of some of the literature concerning the piece).

an "aura."[307] Adams accounts for harmonic and textural similarities in his works in a 2010 interview with Molly Sheridan, saying it is "a sound that [he had] been working toward in the orchestra for many years."[308] The wave patterns, too, appear in a few of his non-water works, including *A Northern Suite* (1983) and *Ten Thousand Birds* (2014). Given Adams's penchant for musically interpreting the wilderness and adeptness at creating original sonic landscapes, it is likely that components of his non-water-themed works have counterparts in the geography, ecology, and native cultures of the settings that inspire him. In the context of a composition with metadata that indicates an association of the music with water, rising and falling dynamics and patterns of notes take on a decidedly aquatic depictive role.

Each of Adams's water-themed compositions are focused depictions in that they are composed entirely of musical devices that depict attributes of bodies of water. This quality sets his works apart from compositions like Smetana's *Vltava*, which depicts the river in combination with other elements, such as dancing water nymphs and the *Vyšehrad*. A focused depiction of the river Vltava would consist only of musical devices that suggest the river's motional patterns, breadth, depth, and other characteristics, forgoing the water nymphs, the *Vyšehrad*, and other extramusical objects, entities, and phenomena peripheral to the river. Even

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[307] See Adams's program notes in *Dark Waves* (Orchestral Version) (Fairbanks, AK: Taiga Press, 2007) and *The Light Within* (Fairbanks, AK: Taiga Press, 2010). Molly Sheridan also applies the term to Adams's accompanimental electronic effects in her book chapter. Molly Sheridan, "The Light Within," in *The Farthest Place: The Music of John Luther Adams*, ed. Bernd Herzogenrath (Boston, MA: Northeastern University Press, 2012), 180.

[308] Sheridan, "The Light Within," 185.

Hasselmans's *La Source*, largely made up of trickling arpeggios, contains a melody that is distinct from the work's depiction of a stream. Adams's water works constitute a new generation of large-scale musical water depictions in that they forgo musical content that does not contribute to the depiction (e.g., melody) and focus on bodies of water as subjects rather than settings or peripheral objects. These works move toward increased objectivity in their direct, unembellished portrayals of water. Annea Lockwood's three "sound map" assemblages could be considered the maximal form of sonic objectivity in water works since, although editorial decisions are involved in their creation, the works are completely constructed from actual recordings of rivers.

Water Music as Environmentalism

Adams's artistic interest in natural phenomena is linked with his concern for humanity's impact on the natural environment, as has been documented in scholarship, journalism, and Adams's own writings. His cognizance of the ongoing climate change crisis is rooted in both his personal experiences as a forty-six-year Alaskan resident and his professional work as an environmental advocate and activist. For about a decade, Adams worked as a lobbyist and executive director of the Fairbanks Environmental Center (now called the Northern Alaska Environmental Center), where his efforts helped beget the Alaska National Interest Lands Conservation Act of 1980. He experienced the enormous wildfires, increasingly mild winters, and early snowmelts that are manifestations of accelerating climate change

in Alaska.[309] The personal toll of environmental advocacy led Adams to leave that career when he was thirty-six years old, though he lived in Alaska for some time afterward. He and his wife now live elsewhere, but he has discovered upon a return visit that the Alaskan cabin they own is sinking because of melting permafrost.[310] Climate grief has deeply impacted Adams. He describes his ongoing compositional projects as "the most grief-filled music [he has] ever written," pervaded by a "sense of loss, of sorrow, of grief."[311] It is unclear how much of his present grief is extant in his earlier body of work, but Adams openly acknowledges the influence of the natural world, his experiences as an activist and Alaskan resident, and perspective on climate change on his compositional practice.

The relationships between Adams's compositions and nature have not been static. Each work is an expression of his changing attitudes and new revelations concerning the environment and the expressive capacity of music. Yet if Adams has an essential musical credo, it was probably best put into literary form in "The Place Where You Go to Listen," which manifests as a short original fable.[312] In it, Adams

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[309] Jake Cline, "How One Composer Channels Climate Grief Into Orchestral Pieces," Sierra: the National Magazine of the Sierra Club, December 30, 2020, https://www.sierraclub.org/sierra/2021-1-january-february/mixed-media/how-one-composer-channels-climate-grief-orchestral-pieces-john-luther-adams; Dianne Chisholm, "Shaping an Ear for Climate Change: The Silarjuapomorphizing Music of Alaskan Composer John Luther Adams," *Environmental Humanities* 8, no. 2 (November 1, 2016): 174, https://doi.org/10.1215/22011919-3664211. The pair sold the cabin that was their home when they left Alaska, but they retained ownership of the cabin that functioned as Adams's studio.

[310] Cline, "How One Composer Channels Climate Grief Into Orchestral Pieces."

[311] Cline.

[312] John Luther Adams, "The Place Where You Go to Listen," in *The Book of Music and Nature*, ed. David Rothenberg and Marta Ulvaeus (Middletown, CT: Wesleyan

writes of an Iñupiaq shaman who comes to *Naalagiagvik*—the "place" of the title—and her experience there.[313] "As she listened, she came to hear the breath of each place—how the snow falls here, how the ice melts—how, when everything is still—the air breathes. The drums of her ears throbbed with the heartbeat of this place, a particular rhythm that can be heard in no other place."[314] After listening and considering for a time, the shaman "stands, motionless, listening to the resonant stillness. Then, slowly, she draws a new breath. In a voice not her own, yet somehow strangely familiar, she begins to sing…"[315] David Rothenberg condenses the philosophy expressed in Adams's fable to "you do not start with your own music until you have truly heard the sounds of where you are."[316]

The use of sounds captured directly from nature as music or within music, as Alan Hovhaness did in *And God Created the Great Whales* (1970), is a technique Adams has avoided. His *songbirdsongs* (1980) approaches imitation, but Adams classifies it as an evocation rather than a transcription of bird song. Much of Adams's music can be taken as a reflection or impression of the natural world. Bernd Herzogenrath writes, "Adams does not represent nature through music. He creates tonal territories that resonate with nature—immersive listening experiences that evoke limitless distance,

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University Press, 2001). This essay is not to be confused with his sound installation or book—written over a decade after the essay—of the same name.

[313] David Rothenberg, "Go There to Listen: How Music Based on Nature Might Not Need Natural Sounds," in *The Farthest Place: The Music of John Luther Adams*, ed. Bernd Herzogenrath (Boston, MA: Northeastern University Press, 2012), 107.

[314] Adams, "The Place Where You Go to Listen," 181.

[315] Adams, 182.

[316] Rothenberg, "Go There to Listen," 107.

suspended time, deep longing and even transcendence."[317] These need not be mutually exclusive. In musically capturing the sensations Herzogenrath describes, Adams elicits listener responses that mirror his own encounters with the wild world. His music also depicts or represents natural phenomena through sonic analogy.

In his earlier music, Adams tended toward aural mimesis (sonic anaphones). Rothenberg writes, "he was stretching the behavior of string, wind, and percussion instruments to sound more like the sounds of the natural world."[318] *The Place Where You Go to Listen* (2006) is a notable departure from his previous approach to engaging with nature in that it does not closely mirror natural sights and sounds (excepting the rumbling sounds of earthquakes evoked in what Adams calls *The Place*'s "Earth Drums," though those also reflect geological activity beyond what can typically be heard). It is an audio-visual art installation at the University of Alaska's Museum of the North that dispenses with performers, instead relying on computer systems to generate a spectacle of light and sound using astronomical, meteorological, geomagnetic, and seismological data (the latter is received from five Alaskan monitoring stations).[319] The various sound sets, including the aforementioned "Earth

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[317] Bernd Herzogenrath, "Introduction," in *The Farthest Place: The Music of John Luther Adams* (Boston, MA: Northeastern University Press, 2012), 1.
[318] Rothenberg, "Go There to Listen," 108–9.
[319] *The Place* originally aggregated seismic data from three locations: COLD station (an Arctic station that captures data from the Brooks Range), KTH station (located in the hills above Kantishna in Denali National Park), and PAX station (the most southern and eastern station outside Paxson). Two more were added in a 2016 revamp of the installation: CCB station (at Clear Creek Butte, visible from the museum) and MLY station (near Manley Hot Springs). The 2016 upgrade also involved the addition of sounds linked to wind speeds, new speakers, signs, tweaks to the system's interpretation of seismic data, and other upgrades. See "Revamping the Sound Installation 'The Place Where You Go to Listen,'" Alaska Earthquake

Drums" as well as the "Day Choir," "Night Choir," "Voice of the Moon," and "Aurora Bells," convey through metaphor all kinds of natural activity. Adams's water works do not continue his use of purely electronic media—electronic sounds are a component alongside live performers in the two versions of *Dark Waves*—but they show his continued use and gradual refinement of techniques for depicting natural phenomena through sonic metaphor.

Depictions of water and other features of the natural world in Adams's music serve as a kind of artistic environmental advocacy, perhaps even a form of activism. When asked how he feels about human-influenced climate change, Adams said,

> I have a great sense of sadness and loss. And longing. Longing for what, I'm not sure. Maybe it's a yearning for an Alaska that never existed, except in my imagination. And I think it's a profound existential longing that we all share now and that we have to confront. And if we don't—well, to the extent that we don't, it's to our own collective peril.[320]

He also feels that his music can be "a way of making us more present in the world, a vision of how we might be together not only with each other, but with the larger community of life."[321] In this context, works like *Dark Waves*, *Become River*, and *Become Ocean* serve to engage listeners with the inexorable motion of bodies of water. The waters they depict act as a second symbolic layer, representing the threat of sea level rise, coastal erosion, and the broader implications of climate change. Water is commonly perceived as a symbol for life and rebirth. Adams writes in his

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Center, October 4, 2016, https://earthquake.alaska.edu/revamping-sound-installation-place-where-you-go-listen.

[320] Tom Service, "John Luther Adams: A Force of Nature," The Guardian, July 2, 2015, https://www.theguardian.com/music/musicblog/2015/jul/02/john-luther-adams-music-across-the-distance-southbank.

[321] Service.

program note for *Become Ocean*, "life on this earth first emerged from the sea."[322] But in *Become Ocean*, which reviewer Alex Ross called "the loveliest apocalypse in musical history," water also symbolizes the threat of climate change.[323] Adams's program note continues, "and as the polar ice melts and sea level rises, we humans find ourselves facing the prospect that once again we may quite literally become ocean."[324] This possible future is certainly a bleak one. Adams's ability to blend bleakness and beauty in his compositions contributes to their interest as a form of artistic environmentalism. With another apocalyptic work, titled *Vespers of the Anthropocene*, well underway, Adams intends to continue engaging with humanity's impact on the planet.[325] He says,

> I'm 67 now. With whatever time I've got left, what's the best that I can give to the generations that I believe are going to—*must*—repair the damage that my generation has done to the world? I want to leave something that's going to be useful in some way to them. It's a lot to hang on music, but it's all I've got.[326]

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[322] John Luther Adams, *Become Ocean* (Fairbanks, AK: Taiga Press, 2015), n.p.
[323] Alex Ross, "Water Music," The New Yorker, July 8, 2013, https://www.newyorker.com/magazine/2013/07/08/water-music-3.
[324] Adams, *Become Ocean*, n.p.
[325] Winston Cook-Wilson, "How an Acclaimed Composer Found His Musical Voice Through Birdsong," Audubon, September 16, 2020, https://www.audubon.org/news/how-acclaimed-composer-found-his-musical-voice-through-birdsong. *Vespers of the Anthropocene* for chorus and orchestra is the work Adams predicts will be his last for symphony orchestra. The Latin text of its most significant movement, "Litanies of the Sixth Extinction," lists 192 critically endangered and extinct species. It concludes with Homo sapiens.
[326] Cook-Wilson. Emphasis original.

Adams's "Waves" Compositions

Of Adams's five explicit water compositions, the titles of "solitary and time-breaking waves" from *Strange and Sacred Noise* and the two versions of *Dark Waves* are the least specifically evocative. *Become River* and *Become Ocean* reference bodies of water directly in their titles. They draw attention to their connections to water. As water is not the sole medium for wave phenomena, the titles "solitary and time-breaking waves" and *Dark Waves* seem comparatively general. Notes included in the works' scores offer further insight.

The tamtam quartet "solitary and time-breaking waves" is described in its program note as "cresting in a massive tsunami of sound."[327] The piece's connection to a body of water is made clear by Adams's reference to tsunamis (the large waves generated by the displacement of water, often resulting from seismic events and volcanic eruptions), making the use of the unpitched tamtam—with its considerable expressive capacity, range of tonal possibilities, and long decay—strikingly apt. To create this tsunami, Adams utilizes a symmetrical form—a kind of formal musical palindrome.

Formal symmetry is present in much of Adams's music; the composer writes that "symmetry is predictable. It neutralizes the questions about where the music is 'going' or what will happen next. If the next sound is inevitable, then it's free to stand only for itself."[328] Symmetrical forms are utilized throughout the *Strange and Sacred*

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[327] John Luther Adams, "solitary and time-breaking waves," in *Strange and Sacred Noise* (Fairbanks, AK: Taiga Press, 1997), n.p.
[328] John Luther Adams, *Winter Music: Composing the North* (Middletown, CT: Wesleyan University Press, 2004), 132.

Noise cycle, and movements together form a kind of broad, large-scale symmetry. The formal palindrome (which musicologist Dave Herr calls a "chiastic formal structure") of "solitary and time-breaking waves" is especially fitting for a water-themed work.[329] Its mirrored quality creates a waveform in which musical content is paired with its reverse. Increases in dynamic level are met with subsequent decreases of the same degree, creating a predictable water-like swell. Adams notes that he readily breaks the symmetry of his works to respond to issues presented by instruments' physical characteristics and capabilities and practical realities of performance and notation.[330] These kinds of musical swells reflect what is known in the study of fluid dynamics as a "solitary wave," of which the first recorded observation was made by naval architect John Scott Russell. A solitary wave retains its shape and velocity as it propagates.[331] It is from this language that Adams derives the piece's title. He makes the inspiration for the work's structure explicit in a program note for "solitary and time-breaking waves," saying that the piece "echoes the natural phenomenon in which waves of varying periods converge to form a single, massive solution [sic] or solitary wave."[332] The formal structure of "solitary and time-breaking waves" is therefore a kinetic anaphone for solitary waves on a water surface.

Figure 6.1 shows a recreation of Herr's diagram of changing dynamic levels in the four tamtam parts of "solitary and time-breaking waves." Each wave begins and

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[329] Dave Herr, "Timbral Listening in *Dark Waves*," in *The Farthest Place: The Music of John Luther Adams*, ed. Bernd Herzogenrath (Boston, MA: Northeastern University Press, 2012), 204.
[330] Herr, 198.
[331] Herr, 198.
[332] Adams, "solitary and time-breaking waves," n.p.

ends with its quietest possible sounds with a single peak halfway between the two quiet moments. For the instruments that perform more than one wave, the peak dynamic level increases with proximity to the central climax. This central climax is thus made even louder than if each instrument performed waves of the same amplitude for the duration of the piece. The four tamtams are at their loudest at the work's halfway point.

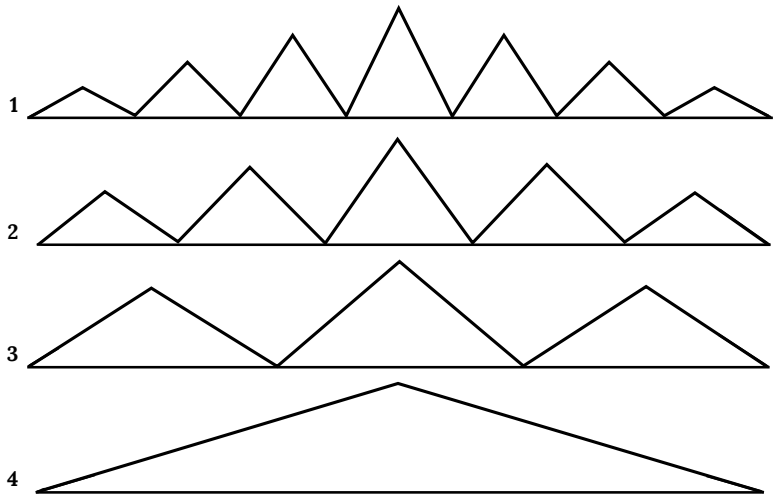

FIGURE 6.1. Dave Herr's diagram of dynamic changes in John Luther Adams's "solitary and time-breaking waves" (recreation)[333]

Herr points out that Adams's choice of prime numbers in the temporal ratios of the crescendos and diminuendos (1/3/5/7) prevents waves from peaking simultaneously at points other than the climax.[334] Figure 6.2 is a waveform graph generated from a recorded performance of "solitary and time-breaking waves" by

[333] Herr, "Timbral Listening in *Dark Waves*," 200.
[334] Herr, 200.

Percussion Group Cincinnati. It shows changes in amplitude in the recording (dynamics) over time, visually demonstrating the aural effect created by synchronous dynamic peaks at the work's climax.

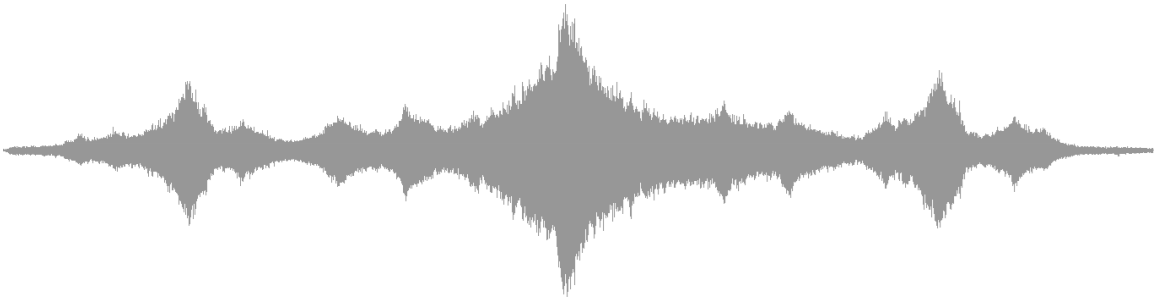

FIGURE 6.2. Waveform graph of Adams's "solitary and time-breaking waves"[335]

Changing musical dynamics over the duration of "solitary and time-breaking waves" serve to generate the bulk of its depiction of water through a kinetic anaphone. Crescendos and diminuendos of different durations create individual waves and an approximately-eleven-minute composite wave that crests over the listener. The tamtam timbre serves the musical depiction as well. Its noisy, shrill, resonant, and occasionally harsh character, combined with the tamtam's indefinite pitch, resembles the sound of waves crashing on the seashore. The tamtam's clamorous inharmonic partials and plangent qualities give it the means to effectively evoke the roaring ocean. Additionally, the instrumentational homogeneity of "solitary and time-breaking waves" supports the work's water depiction. Its smaller dynamic

[335] The waveform graph was created from Percussion Group Cincinnati, *John Luther Adams: Strange and Sacred Noise*, CD (New York, NY: Mode Records, 2006).

waves emerge then fade into a uniform sound source, creating a sense of a gently shifting, undulating mass. The piece effectively creates the "tsunami of sound" Adams describes.[336]

Adams's program note in the score for orchestral version of *Dark Waves* describes similar imagery and details an essentially unchanged form he imports from "solitary and time-breaking waves" (which was written a decade earlier):

> I began with an impossible orchestra—large choirs of virtual instruments, with no musicians, no articulation and no breathing—sculpting layer upon layer into expansive waves of sound. Then I added the human element.
> The musicians of the real orchestra impart depth and texture, shimmer and substance to the electronic sounds. They give the music life. Their instruments speak in different ways. They change bow directions. They breathe. They play at different speeds. They ride the wave.
> Together, the orchestra and the electronics evoke a vast rolling sea. Waves of Perfect Fifths rise and fall, in tempo relationships of 3, 5 and 7. At the central moment, these waves crest together in a tsunami of sound encompassing all twelve chromatic tones and the full range of the orchestra.[337]

Adams again makes use of prime-number temporal relationships in his construction of dynamic waves, preventing coinciding peaks at any point but the work's central climax (thus retaining its importance). This results in a dynamic profile in both the orchestral and two-piano versions of *Dark Waves* (the latter of which can be seen in the form of an amplitude waveform graph in figure 6.3) very similar to that of "solitary and time-breaking waves."

[336] Adams, "solitary and time-breaking waves," n.p.
[337] Adams, *Dark Waves* (Orchestral Version), n.p.

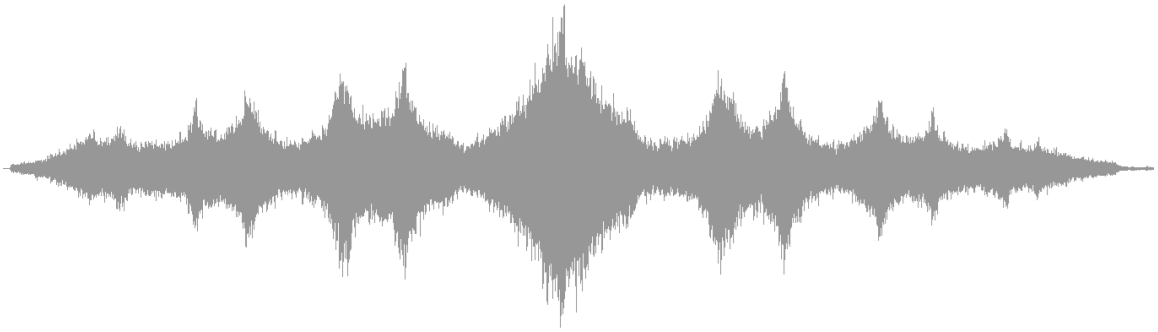

FIGURE 6.3. Waveform graph of Adams's *Dark Waves*[338]

Again, the overlapping succession of waves are a metaphor for the natural rise and fall of water waves that combine to form a sonic tsunami at the piece's halfway point. Alex Ross, in a 2008 article for the *New Yorker*, describes *Dark Waves* thus:

> One of the most arresting American orchestral works of recent years, it suggests a huge entity, of indeterminate shape, that approaches slowly, exerts apocalyptic force, and then recedes. Every instrument is, in one way or another, playing with the simple interval of the perfect fifth—the basic building block of harmony—but at the climax the lines coalesce into roaring dissonances, with all twelve notes of the chromatic scale sounding together.[339]

Dark Waves lacks the singular wave performed by the fourth tamtam in "solitary and time-breaking waves," but both works incorporate dynamic peaks every third, fifth, and seventh of their respective durations. In *Dark Waves*, these waves take on new qualities thanks to the work's much broader instrumentation and greater

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[338] The waveform graph was created from Stephen Drury and Yukiko Takagi, *John Luther Adams: Red Arc/Blue Veil*, CD (Venice, CA: Cold Blue Music, 2007).
[339] Alex Ross, "Song of the Earth," The New Yorker, May 12, 2008, https://www.newyorker.com/magazine/2008/05/12/song-of-the-earth. Adams describes, in an email message to Dave Herr, a suppression of form and process as "the object of [listener] attention," saying that "the sound itself" is what he wants a listener to hear. Refer to Herr, "Timbral Listening in *Dark Waves*," 199. Adams's lack of focus on form and process seem to support Ross's reading of the piece as a "huge entity with indeterminant shape" and my later description of the *Dark Waves* ensemble as a "sonic mass."

timbral possibilities. Instruments switch between temporal layers, entering and exiting the texture and participating in waves of thirds, fifths, and sixths—often without completing a full period of the wave. As with the string ensemble in *Vltava*, this sound mass contributes to the musical depiction's representation of scale; the addition and subtraction of instruments creates shifts in collective timbre and orchestral density. This causes the timbre of each wave to shift subtly over its course, particularly since it is not typically apparent in which wave an instrument or instrument group is participating. The overall effect is one of a mutating mass of sound in which new groupings of instruments rise to the foreground and disappear back into the texture. The central climax, then, becomes not only a point of maximum loudness but of maximum timbral cacophony as all instruments of the orchestra peak together.

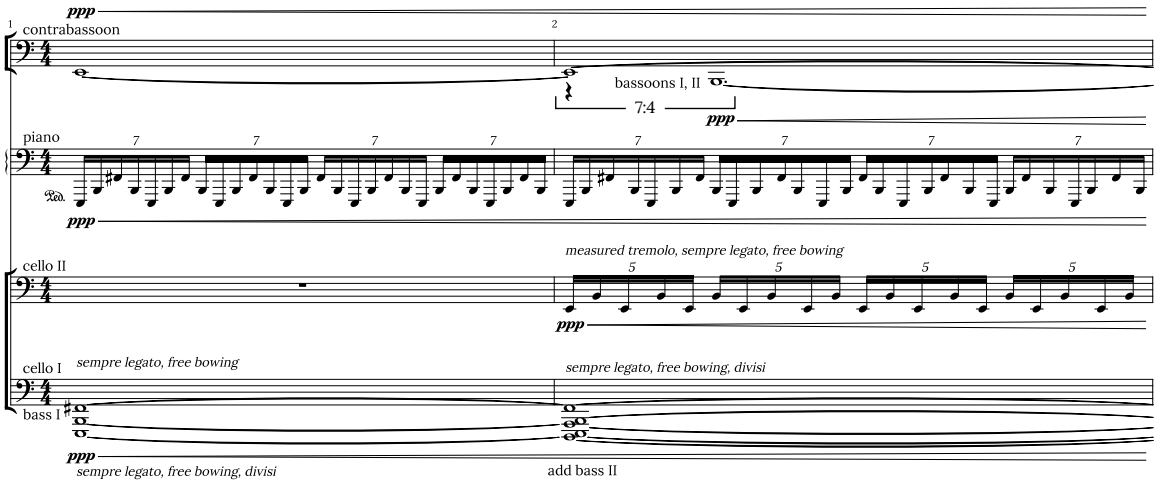
This effect is further enhanced by *Dark Waves*'s electronic aura. Adams's *The Place Where You Go to Listen* omitted the human musical element in favor of electronic sounds generated from naturally occurring events. *Dark Waves* unifies the artificial and the human in musical performance almost seamlessly. Adams's "impossible orchestra" provides a steadfast foundation that executes the composer's plan with mathematical precision, over which performers add tonal and performance variations, imperfections, and organic qualities absent in the electronic track. Adams says that the work's defining timbral shifts are due, at least in part, to a need to distribute sounds throughout the orchestra to compensate for a lack of necessary forces. *Dark Waves* would require three orchestras to "fully sound all the waves" with

notes stacked in fifths as Adams intended.[340] These three orchestras are present alongside the live orchestra within the electronic aura, allowing Adams to utilize the best features of both electronic music—with its infinite stamina, uninterrupted bowing, unending breath capacity, and temporal stability—and organic, human-performed music—full of variations, character, and a capacity for sensitivity.

Dark Waves's dynamics are but one of its water-evoking musical devices. The "waves" of the title also take the form of continual arpeggiations, first present in the piano in m. 1, and oscillating note pairs, which begin in the second cello in m. 2. In Example 6.1, the piano is accompanied by a low and soft (*ppp*) chord comprising fifths in the basses, cellos, and contrabassoon. These arpeggios and oscillating passages initiate ongoing surface motion—relatively small, fleeting, immediately apparent surface waves—that are present over the piece's crescendos and diminuendos throughout. They contribute to a sense of continual activity in an aquatic restlessness that characterizes most of Adams's music water depictions. Adams divides the quarter note into quintuplets, sextuplets, and septuplets, creating polyrhythms and imposing a form of independence on the arpeggiations and oscillations that suggest complex interactions of waves on the surface of a lake or sea. Their independence is further reinforced by the variable periodicity of their waves; the opening piano septuplets arpeggiate over a six-note undulation.

[340] Herr, "Timbral Listening in *Dark Waves*," 200.

EXAMPLE 6.1. John Luther Adams, *Dark Waves*, orchestral version, mm. 1-2: septuplet waves in the piano (reduction; basses at sounding pitch)



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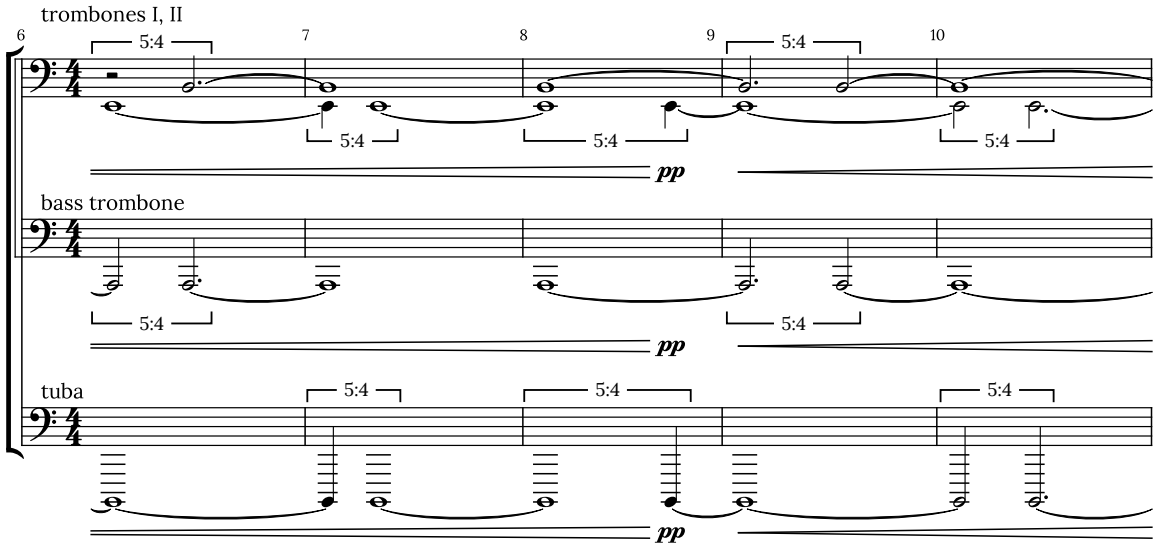
Similar divisions occur at the level of the half note and the whole note, although *Dark Waves*'s arpeggiations and oscillations are limited to the quarter-note divisions. These higher metrical levels are instead populated mostly by repeating notes, like those in mm. 6-10 (shown in Example 6.2). The notated 4/4 meter is only meaningfully adhered to where the quarter note divisions align on the beat.[341] The measure is never divided into a grouping of four, nor is the quarter note divided into even-number groupings. Example 6.2 also shows the quintuple division of the measure in the low brass section. In this case, it contributes to a sense of evolving and conflicting meter. Triple, quintuple, and sextuple divisions of the measure create further polyrhythms (in addition to those that divide the quarter note) that interact

[341] Dave Herr calls the notated meter of *Dark Waves* a "tempo grid" that gives no preference to one tempo or metrical layer over others. See Herr, 201.

and conflict throughout the piece, causing *Dark Waves* to seem amorphous at the micro level, despite the parallelism of these polyrhythms with the interaction of dynamic swells that divide the work at the same ratios. It is only at the piece's macro level—the level of its form-generating dynamic waves—that its organization becomes apparent. As on the surface of the ocean, apparently chaotic surface waves exist alongside more predictable tidal waves.

EXAMPLE 6.2. John Luther Adams, *Dark Waves*, mm. 6-10: rearticulated notes in the trombone, bass trombone, and tuba (instruments isolated)



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In much the same way "solitary and time-breaking waves" functions as a stylistic antecedent of *Dark Waves*, the latter work serves as a kind of prototype for

the two water works in what would eventually be called "The *Become* Trilogy:" *Become Ocean* and *Become River*.[342]

Adams's "Become Water" Compositions

Adams's *Become Ocean* achieves a depiction of water on an even grander scale than the composer previously managed. Both Adams and music critic Alex Ross consider *Dark Waves* a stylistic antecedent to *Become Ocean*, which preserves the former work's formal structure, transforms its sonic palette, and compounds its spatial effects in an even lengthier and more ambitious work.[343] Adams says in a program note for *Become Ocean* that it was conceived as the composer considered whether the single texture of *Dark Waves* could be sustained for a greater time span.[344] However, *Become Ocean* is not merely a temporal expansion of *Dark Waves* from twelve minutes to forty-two minutes (more than three times the length of the earlier work). The newer work abandons the electronic component on which *Dark Waves* was dependent in favor of a large orchestra, making *Become Ocean* an even grander undertaking for the musicians that perform it (the percussionist rolls

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[342] The third member of this musical trilogy is *Become Desert* (2017).

[343] Ross, "Water Music"; Adams, *Become Ocean*. Ross writes that *Become Ocean* is Adams's "most ambitious work" using the gradually shifting patterns present in *Dark Waves*.

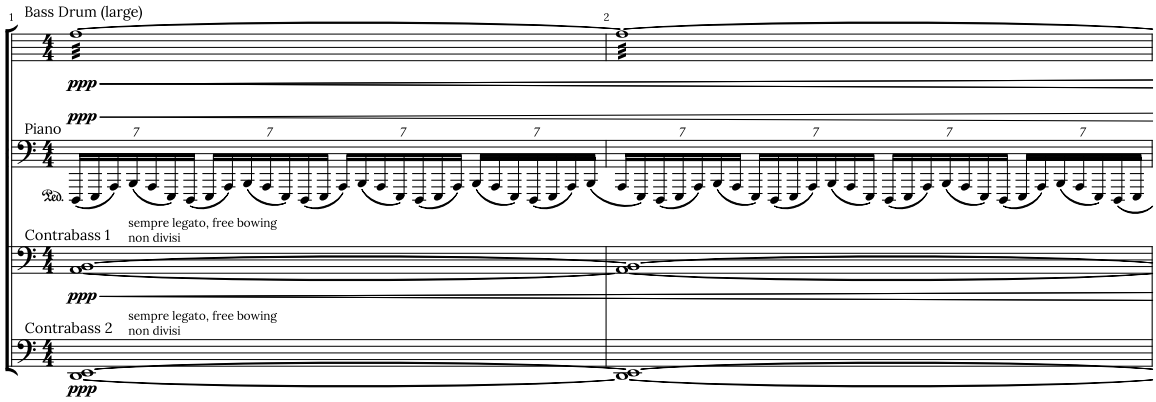
[344] Adams, *Become Ocean*, n.p. He also said in an interview for *BBC Music Magazine* that "several listeners told [him] they thought [*Dark Waves*] was too short," and that he had "stumbled on something that needed exploring on a larger scale." See Rebecca Franks, "John Luther Adams: The Pulitzer Prize-Winning Composer on His Piece *Become Ocean*," Classical Music: Brought to you by BBC Music Magazine, November 11, 2014, https://www.classical-music.com/features/artists/john-luther-adams/.

unceasingly for forty-five minutes on a collection of instruments and the pianist generates uninterrupted septuplets) and securing its status as a monumental composition in its own right. It is the ultimate realization of the chiastic dynamic and formal model established in Adams's earlier water compositions.

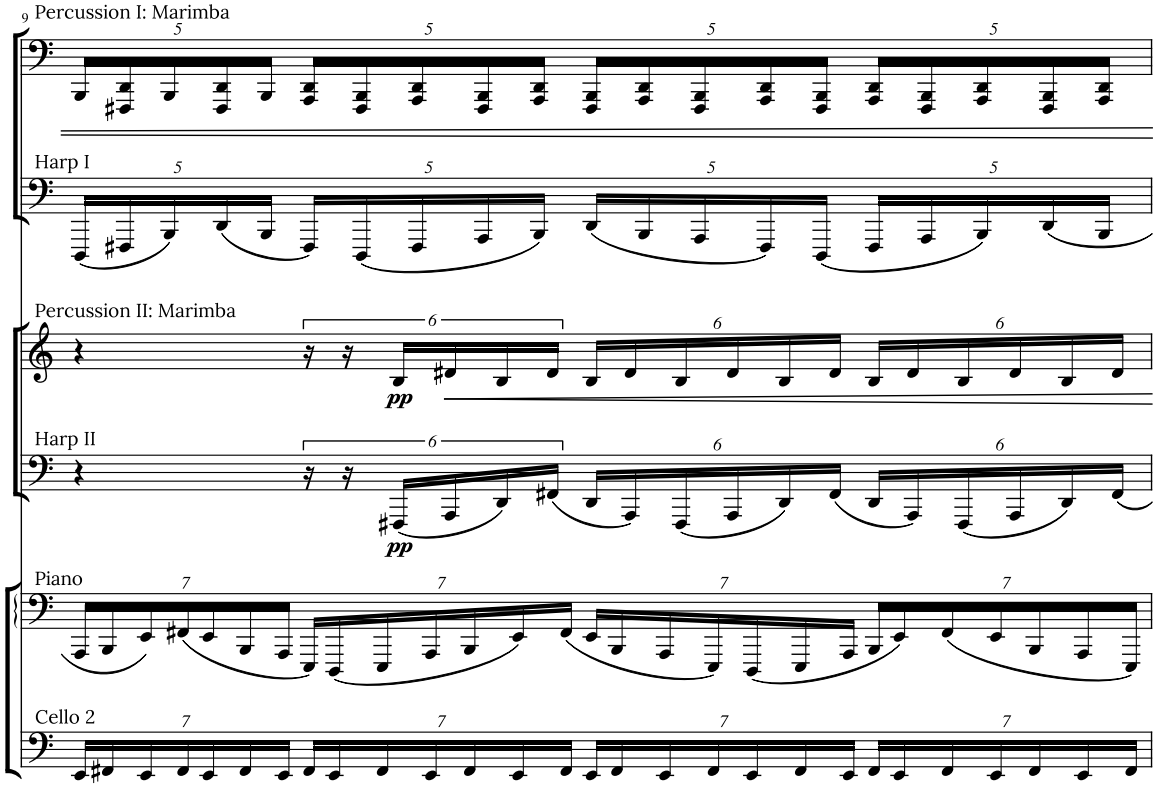
Like *Dark Waves*, *Become Ocean* opens at *ppp* with piano septuplets and low, resonant dissonances (although they differ in *Become Ocean*'s exclusion of the contrabassoon), along with a quiet bass drum roll (see Example 6.3). From the first moment the piano evokes calm, gentle waves through an arpeggiated chord acting as a polydirectional kinetic anaphone.[345] As other instruments of definite pitch enter the texture, they either sustain tones in the manner of the contrabasses or depict waves melodically through rising and falling passages in the manner of the piano. As instruments enter, they add diverging independent waves to the musical waterscape and create polyrhythms against the piano and against one another. By the end of m. 9 in Example 6.4, *Become Ocean* has layered quintuple, sextuple, and septuple divisions of the quarter note. The periodic temporal intervals of the waves they evoke vary dramatically, further complicating the wave textures.

[345] The low, rumbling piano arpeggiations out of phase with the notated meter are strikingly similar to the six-note arpeggios in the closing section of Debussy's "La Cathédrale engloutie" (comprised of C1, G1, C2, and D2).

EXAMPLE 6.3. John Luther Adams, *Become Ocean*, mm. 1-2: waves in the piano amidst bass drones and a rumbling bass drum (reduction)



EXAMPLE 6.4. John Luther Adams, *Become Ocean*, m. 9: percussion I and harp I quintuplets, percussion II and harp II sextuplets, and piano and cello II septuplets (instruments isolated)



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The dynamics-based formal structure of *Become Ocean* is the supreme form of the palindromic approach Adams utilizes in many of his works. *Become Ocean* comprises three principal composite dynamic swells, peaking with three *fff* climaxes, each functioning as a kind of smaller chiastic structure within the work's larger form. On his blog, *The Rest is Noise*, Alex Ross provides his diagram of the complex interaction of dynamic swells that takes place over the course of *Become* Ocean, which he created to "decipher the structure" of the piece.[346] Adams divides the orchestra into three distinct choirs, prescribing that they be separated spatially on a stage (another performance strategy imported from *Dark Waves*).[347] The *Become Ocean* stage directions dictate:

> The Strings should be arrayed in the widest possible arc, as far downstage as is practical. The Woodwind choir should be upstage right, as far as possible from the Strings and Brass. The Brass choir should be upstage left, as far as possible from the Woodwinds and Strings.[348]

Dynamic activity in the three choirs is charted in Ross's diagram in score order (see figure 6.4). Ross diagrams only the first half of the piece (ending at m. 316) since the whole work is palindromic in its formal structure. An expansion of the diagram would mirror the existing chart to its right to show the complete structure of *Become Ocean*.

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[346] Alex Ross, "John Luther Adams's *Become Ocean*," *Alex Ross: The Rest Is Noise* (blog), accessed March 30, 2020, https://www.therestisnoise.com/2013/07/jlas-become-ocean.html.
[347] Adams, *Become Ocean*, n.p.; Adams, *Dark Waves* (Orchestral Version), n.p.
[348] Adams, *Become Ocean*, n.p.

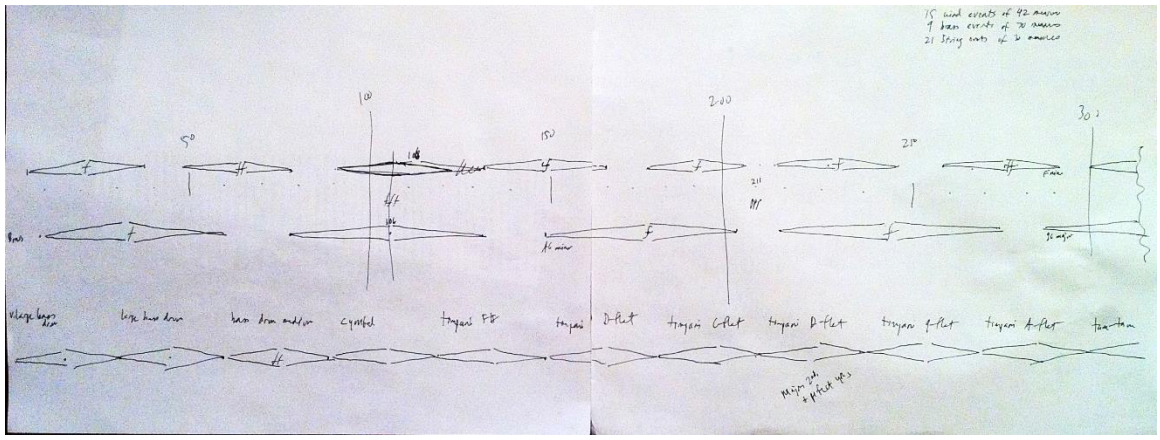

FIGURE 6.4. Alex Ross's diagram of swells in the three instrumental choirs of John Luther Adams's *Become Ocean*[349]

Ross's formal diagram demonstrates the dynamic independence of the three choirs and hints at the result of their interactions. In his blog he describes each palindromic swell as a "unit": "the winds have fifteen units of forty-two bars (including rests); the brass nine units of seventy bars; the strings twenty-one units of thirty bars."[350] These overlapping swells result in occasional composite swells in a third, deeper motion layer, reaching their loudest climaxes at mm. 106, 316, and 526 with corresponding moments of greatest quiet and repose at mm. 211 and 421. The middle climax is the largest and loudest. The three enormous crescendos, according to Ross, "suggest a tidal surge washing over all barriers."[351] The waveform graph in figure 6.5 was generated from the 2014 Seattle Symphony recording of *Become Ocean* and shows its three subordinate palindromes and their climaxes.

[349] Ross, "John Luther Adams's *Become Ocean*."
[350] Ross.
[351] Ross, "Water Music."

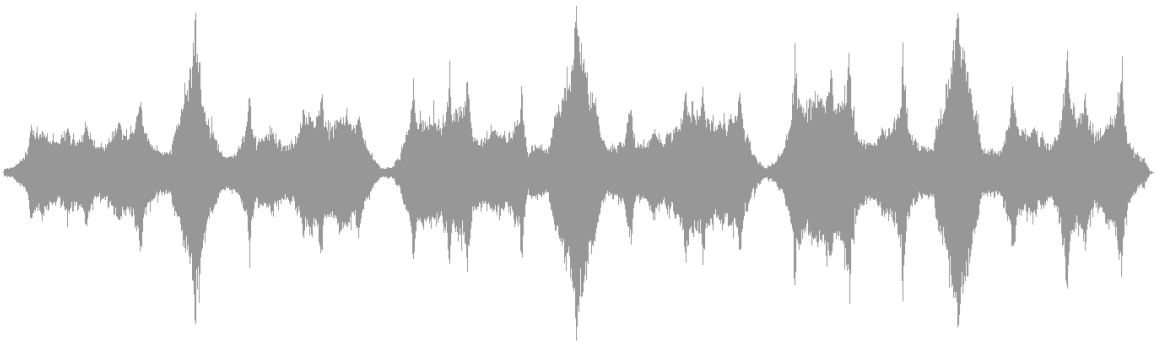

FIGURE 6.5. Waveform graph of Adams's *Become Ocean*[352]

The effect achieved through dynamics-based kinetic anaphones in *Become Ocean* is one of large-scale motion. There are differences in the size and speed of kinetic anaphones generated by arpeggiated dyads and chords containing three, four, or more notes. The rise and fall suggested by alternating neighboring notes is smaller—due to the interval—and quicker—having a short periodic temporal interval—than an arpeggiated chord spanning a greater interval and having a greater number of notes (assuming similar individual note durations). The septuplet piano arpeggiations that open *Become Ocean* set up a calm, gentle undulation. The arpeggio's rise and fall occurs over six notes, so the wave period does not align with the beat pulse (a seven-note undulation would achieve alignment). As a result of slightly more than one wave occurring per the quarter note pulse, the piano illustrates more than sixty waves every minute (*Become Ocean* is marked ♩=60).

The waves evoked by swells in the three instrumental choirs are of a much greater scale. The twenty-one waves in the third choir each have a period lasting two

[352] The waveform graph was created from Seattle Symphony Orchestra, *Become Ocean*, CD (Brooklyn, NY: Cantaloupe Music, 2014).

minutes. The fifteen waves in the first choir each have a period lasting almost three minutes. The nine waves in the second choir are larger still, each having a period lasting more than four and a half minutes. Each is significantly larger than the kinetic anaphones generated by rising and falling pitch waves in individual instruments and instrument groups. The resulting kinetic experience resembles a larger, more complex version of the waves-on-waves effect described earlier in the context of Debussy's *La mer*, with greater scope than what Adams achieved in "solitary and time-breaking waves" and *Dark Waves*. The kinetic experience is like that of the ocean's surface. The photograph by Caleb Jones in figure 5.1 shows ocean waves under a particular set of conditions, demonstrating the tendency for complex wave shapes and interactions. There is a sense of regularity and periodicity in ocean waves, but they tend not to form singular, unified, repetitive undulations. *Become Ocean* conveys this through the complex interaction of the three instrumental choirs and the resultant large-scale swells.

The large dynamic swells produced through this interaction and described by Ross on his blog have a periodicity of fourteen minutes, evenly distributed through the forty-two-minute composition. The swells in *Become Ocean* are tidal in that they are ponderous and grand in scale. Like the tides, these large dynamic swells occur at a large scale over a long period of time. In *Become Ocean*, kinetic anaphones exist at every level: the individual, rippling pitch undulation of a single instrument; the slow, dramatic waves of each the three choirs; and the large-scale formal level.

The last of Adams's water compositions (as of 2020) is *Become River*, a work for chamber orchestra that was written alongside *Become Ocean* yet premiered first.[353] Adams writes on the genesis of both works in *Become River*'s program note:

> I went on at length about the music I'd begun to imagine, finally concluding: "It's called Become Ocean. The title comes from a poem that John Cage wrote in honor of Lou Harrison."
> Cage observes that the breadth and variety of Harrison's music make it "resemble a river in delta." He concludes that:
>
> LiStening to it
> we becOme
> oceaN.[354]

Although Adams had only just begun work on *Become Ocean*, Schick convinced him to "go ahead and compose that river in delta" for the Saint Paul Chamber Orchestra.[355]

Adams alludes to a key difference between his other water compositions and *Become River* when he says in the program note that "from a single high descending line, this music gradually expands into a delta of melodic streams flowing toward the depths."[356] Where the kinetic anaphones in *Becomes Ocean* primarily take the form of waves (polydirectional motion), *Become River* primarily evokes flow (unidirectional motion) through continual descending musical passages. The notion of flow is evoked

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[353] *Become Ocean* was commissioned by the Seattle Symphony Orchestra; see Adams, *Become Ocean*, n.p. *Become River* was commissioned by the Saint Paul Chamber Orchestra; see John Luther Adams, *Become River* (Fairbanks, AK: Taiga Press, 2012), 4.
[354] Adams, *Become River*, 4. I have attempted to accurately recreate the portion of the published program note that contains Cage's poem fragment. The text alignment in the program note is not consistent with published forms of Cage's poem, which vertically align the letters S, O, and N. See John Cage, *Empty Words: Writings '73-'78* (Middletown, CT: Wesleyan University Press, 1979).
[355] Adams, *Become River*, 4.
[356] Adams, 4.

visually as well as aurally. Adams divides the *Become River* chamber orchestra into four instrumental choirs and provides a detailed staging chart in the score (recreated in figure 6.6). It arranges musicians in a form the composer describes as "an interlocking network of musical streams on five levels" (risers on the stage achieve the five-level effect).[357] The positioning of the chamber orchestra's personnel in lines from high points to low points recalls the downhill flow of streams.

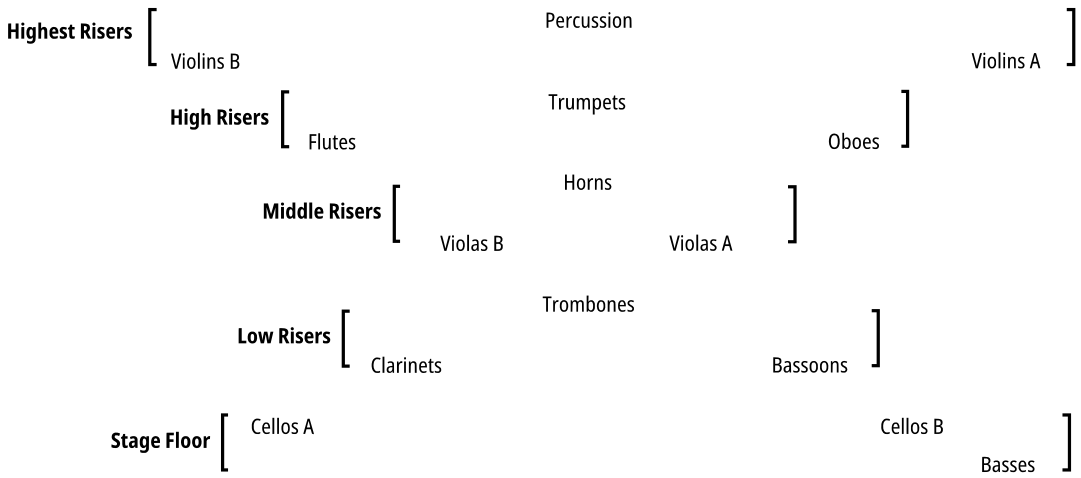


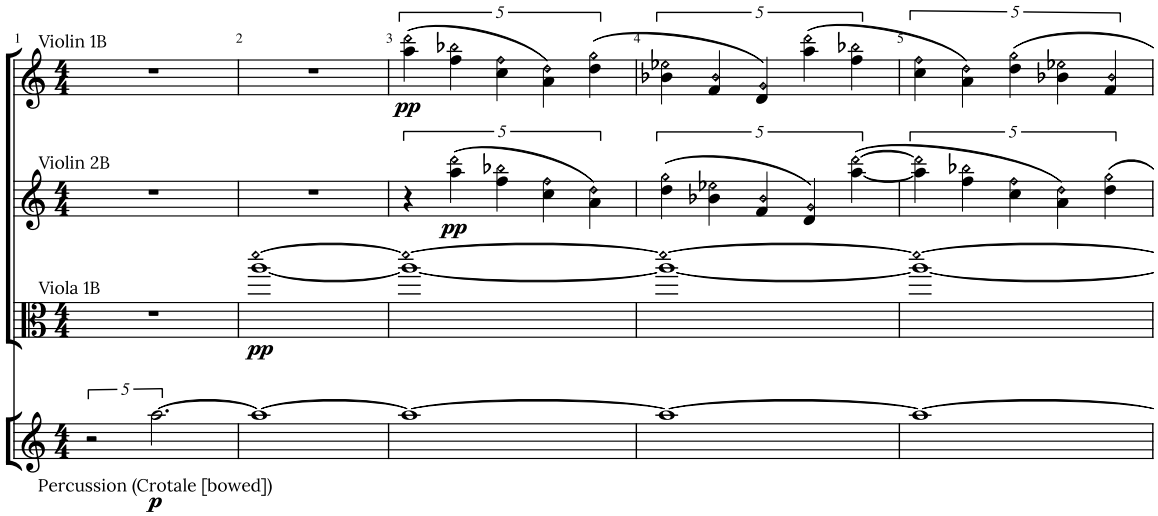
FIGURE 6.6. Adams's seating diagram for performances of *Become River* (recreation)[358]

Kinetic anaphones in *Become River* occur on more than one level, as they do in *Become Ocean*. The surface level is composed mainly of repetitive overlapping descending passages conveying unidirectional flow alongside sustained pitches. Example 6.5 shows the first appearance of these descending passages (m. 3) in violin

[357] Adams, 4.
[358] Adams, 4.

1B and violin 2B. A sense of continual directional motion is achieved as a result of the overlap; the upward leaps that precede each downward line occur simultaneously with a continued descent. Polyrhythms throughout the piece further enhance the sense of continual motion by obscuring the "seams" where upward leaps initiate another descending line. The texture of the piece increases in complexity following the quiet opening passage.

EXAMPLE 6.5. John Luther Adams, *Become River*, mm. 1-5: descending passages in violins 1B and 2B, sustained notes with harmonics in viola 1B, and bowed crotale



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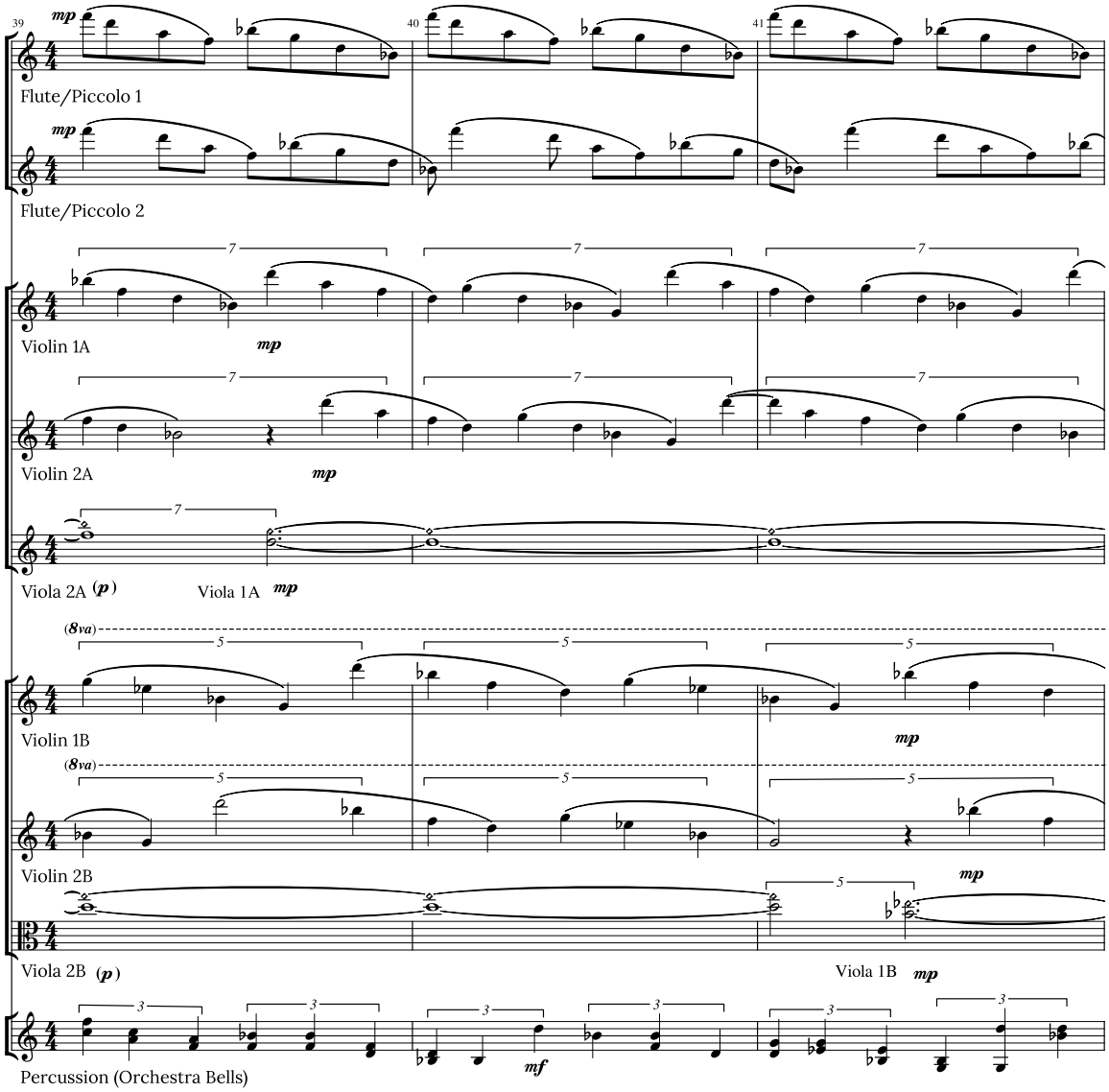
The "submerged" structural level of *Become River* makes much slower progress. Over the course the entire work there is a long downward pitch progression. Figure 6.7 shows roughly which instrument sections are active (indicated by dark gray lines) as the piece progresses and the overall dynamic level of the

ensemble. String instruments tend to enter *Become River* with sustained pitches high in their individual registers (e.g., viola 1B in Example 6.5, which uses string harmonics to produce an A7) and gradually descend on sustained pitches until these are replaced with faster-moving repetitive downward passages. Wind instruments tend to enter with repetitive descending lines rather than sustained pitches (e.g., the flute entrance in m. 39, Example 6.6). These passages, too, gradually shift to lower pitch ranges.

EXAMPLE 6.6. John Luther Adams, *Become River*, mm. 39-42: descending passages in flutes, piccolos, violins, and percussion and sustained notes with harmonics in violas (reduction)



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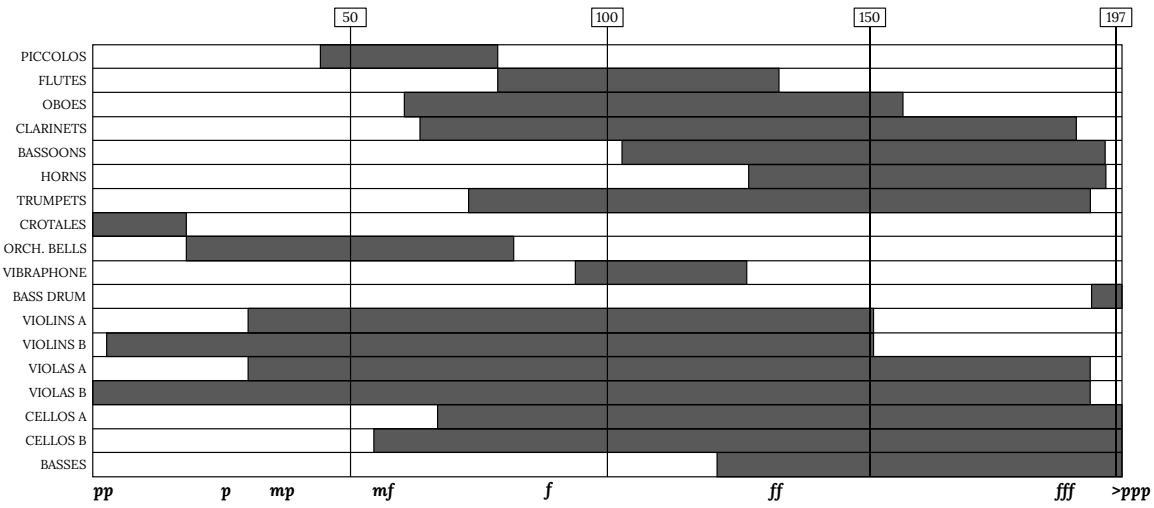
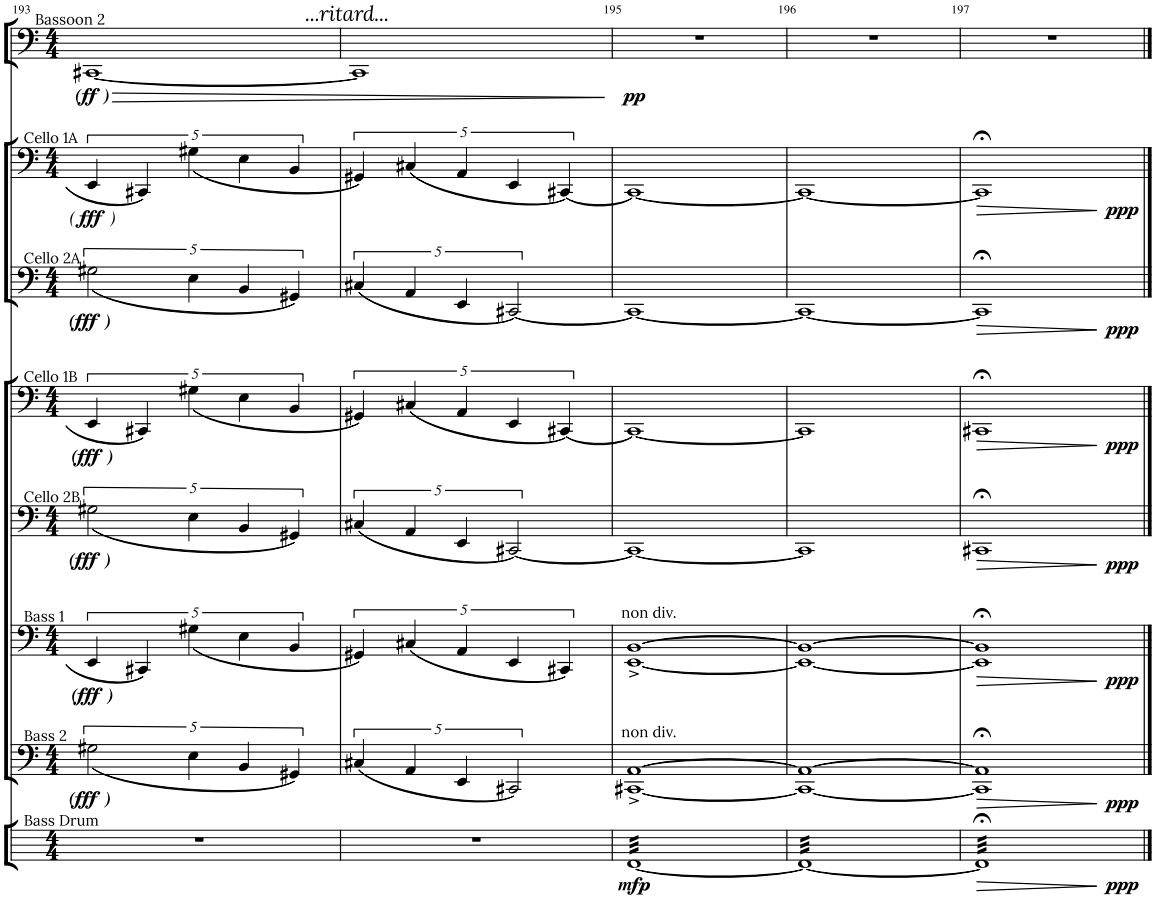


FIGURE 6.7. Diagram of instrumental activity and ensemble dynamic levels in John Luther Adams's *Become River*

A return to a more static state on sustained pitches lower in the instrumental registers heralds each instrument's withdrawal from the piece. As shown in figure 6.7, the descending lines outlined by each instrument overlaps with descending lines in other instruments. In the woodwinds, for example, the piccolo enters at m. 39 and overlaps with the oboes and clarinets before yielding to them and the flute. This process is repeated as the flute and oboe give way to the bassoon. As such, a generally descending musical line is maintained across instruments for *Become River*'s duration. At m. 195 (see Example 6.7), *Become River* returns to a stasis similar to its first two measures but at a much lower pitch. Musical activity in the ensemble also shifts in physical space: the music begins on the highest and middle risers and moves toward the audience and stage floor. The source of the sound descends from a high place to a low place as the music descends in pitch space.

EXAMPLE 6.7. John Luther Adams, *Become River*, mm. 193-197: ending



Become River
By John Luther Adams
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Become River's protracted descent in pitch level is paired with a similarly lengthy increase in dynamic level. The source of the sounds grows closer to listeners in a live performance as the dynamic level increases (see the seating diagram in figure 6.6). Adams indicates only one diminuendo—in m. 197—and no explicit crescendos in the score. The effect of a crescendo is instead achieved by staggering changes in dynamics across the ensemble. Figure 6.7 shows approximate points at which most active instruments have shifted to a louder dynamic. Following a long opening section

at *ppp*, the pace at which dynamic levels shift decreases until near *Become River*'s end. In Example 6.7, it concludes with a rapid decrease in volume to the lowest dynamic of the piece: *ppp*. Figure 6.8 shows the waveform graph generated from the Seattle Symphony Orchestra's 2020 recording of *Become River*, demonstrating a formal departure from Adam's other water-themed compositions that suits the primarily unidirectional flow of the work's depictive target.

FIGURE 6.8. Waveform graph of Adams's *Become Ocean*[359]

The water works of John Luther Adams derive their evocative power primarily from kinetic anaphones illustrating water that moves polydirectionally (waves) and unidirectionally (flow). They also incorporate several other musical devices to evoke water: all four of Adams's water-themed compositions evoke depth with low, resonant notes. In *Become Ocean*, depth is suggested in the contrabasses and the low resonance of the bass drum from m. 1. *Become River*—which illustrates a river delta—becomes deeper as it progresses; the notes move gradually lower to reflect the

[359] The waveform graph was created from Seattle Symphony Orchestra, *Become River*, CD (Brooklyn, NY: Cantaloupe Music, 2020).

increasing depth of the river as it flows into the sea. *Become River* also musically evokes scale. As the river broadens in delta, more instruments enter, suggesting an increase in scale. Instrumentation and timbre also play important roles in Adams's water-themed works. Shifting instrumentation in *Become River* enables its large-scale descent. *Become Ocean* incorporates the harp early in the work, giving it and the piano the important role of initiating the work's wave-like kinetic anaphones. Both *Become Ocean* and *Dark Waves* take on harsher timbres as dynamic levels increase.

Dark Waves, *Become Ocean*, and *Become River* are focused depictions of bodies of water in that they incorporate varied evocative devices and forgo elements that would not contribute to a musical depiction. The result of this focus is an almost hypnotic musical experience. The works are predictable; *Become River* quickly establishes its unidirectional route—leaving only the question of when the descent will end—and the cyclical quality of the polydirectional waves and tides of Adams's other water works have a similar predictability. The motion of the water in these compositions is indifferent and inevitable, conveying in a small way a sense of the scale and grandeur of the bodies of water the music portrays.

Conclusion

This study examines music originating from the European classical tradition that portrays bodies of water, exploring how such portrayals are achieved. This is a vast repertoire, so I limit my sample for study to musical works that explicitly reference bodies of water in their metadata, are particularly influential, contain

readily identifiable depictive musical devices, and that achieve particularly effective depictions of water by conveying details about water and the extra-musical program beyond water's mere presence (e.g., the change in the scale of the streams that feed the river Vltava over the course of *Vltava*'s first thirty-five measures) and combining depictive devices. Even with these limitations on the sample in place, numerous works could have been included in this study. More could be said of the contributions of Richard Wagner, Felix Mendelssohn, and Franz Schubert, especially. In most cases, the water-themed works I excluded portray bodies of water through the same or similar musical devices as those detailed in preceding chapters, so I have avoided examining in detail works that would result in comparable analyses with similar results. My inquiry is by no means exhaustive. Continued exploration of evocative water-themed musical works, including the search for alternative approaches to depicting bodies of water and continued exploration of major water compositions, will no doubt further our understanding of how bodies of water, and other natural phenomena, are portrayed in musical sounds.

Perhaps the most noteworthy findings of this study are (1) the critical role musically implied motion plays in creating depictions of water and (2) the two distinct forms that water's motion takes in such depictions (unidirectional and polydirectional motion). Musical devices in the form of kinetic anaphones tend to drive depictions of water in music with other devices, such as those that evoke breadth, depth, and light, serving a supporting role. A body of water's depth, breadth, color, and refractive qualities are presented alongside or in the context of its motional state. The *Vltava* case study in chapter four demonstrates that the conveyance of motion through

music is not only indispensable to Smetana's portrayal of the titular river, but an effective instrument for supplying detailed impressions of the body of water being portrayed in a musical work. The character of the stuttering and meandering stream that opens *Vltava* is markedly different from the steadily and insistently flowing swelling and flowing river established thirty-six measures later. So too is the motion of the sea in Vaughan-Williams's *A Sea Symphony* distinct from that in Adams's *Become Ocean*. Portrayals of water's motion can define works in which water is portrayed.

The importance of motion in musical depictions of water is in no small part due to the dissimilarities in evoked unidirectional and polydirectional motion. The two water works of Adams's *Become* trilogy are particularly reliant on that distinction. *Become Ocean* is a study in polydirectional motion. Its melodic/harmonic and dynamic content outline periodic waves at levels of the piece from individual instrumental passages to its formal construction, often conflicting and interacting with other simultaneous waves. It successfully conveys the kind of motion we expect in large bodies of water that are acted upon by forces like wind and gravity. *Become River* eschews evocation of polydirectional motion. It is instead an inexorable unidirectional flow from its first moment to nearly its last. The piece's melodic/harmonic and dynamic content progresses constantly from a soft and high-pitched starting state to a loud and low-pitched ending state. The two works' differing evocations of motion are vital to their depictive targets. Adams's twenty-first century water works continue to rely on musically evoked motion in much the same way works have for centuries. As listeners, recognizing differences in movement can

enhance our experience of water works. Identifying movement patterns in music enables us to play an active role in mapping those patterns onto recognizable extramusical phenomena, especially when a work's metadata provides context for motion. Improving our understanding of how music conveys water's motion and its other properties allows us to engage with these depictions more fully and examine our responses to such music. This dissertation facilitates active listening and conscious, deliberate musical interpretation on the part of musicians and audiences that experience water works by providing tools for understanding musical representations of bodies of water.

Musical devices evoking properties of water are key to portraying water in music. I have shown that these musical devices often take the form of sonic analogs (anaphones) bearing some similarity to sonic, kinetic, and tactile properties of rivers, lakes, and oceans. I have also shown that these devices often suggest the same characteristics of water in similar fashions across compositions. Evocations of water's motion in the form of kinetic anaphones are especially effective at representing large bodies of water since rivers, lakes, oceans, and similar bodies possess cognizable motion patterns. Musically suggested motion is also quite common in such compositions, often forming a large part of a work's musical depiction. Other musical devices can further enhance a work's depiction of motion patterns by adding complexity reflective of the complex waves on a body of water's surface, or may evoke some other property of water, such as its sonic properties, tactile properties, scale, and depth. Many water-evoking compositions contain several such musical devices, but John Luther Adams's focused depictions are especially vivid in that they not only

portray many aspects of bodies of water but are composed entirely or almost entirely of depictive musical devices. These works demonstrate the evocative power of musical motion in water-evoking works and the depictive potential of musical devices functioning in tandem to create a singular extramusical illustration.

Considerations for Future Research

The limitations of an academic project define it as much as its goals. The scope of this project is necessarily limited to a subset of music in the European-influenced Classical tradition. The methodologies of this dissertation, particularly the examination of musical depictions in terms of anaphones, could be applied to other music both within and outside that tradition. Although Philip Tagg established his sign typology in his writings in 1992 and further developed it in 2015, it has seen fairly little use in academia. A study with the goal of examining music with Tagg's system must consider the appropriateness of imposing concepts from one musical tradition on another and potential limitations on its effectiveness. Concepts and sonic materials are frequently traded between musical traditions in Europe and the Americas. Consider, for example, the influx of sounds from jazz to the classical concert hall in the twentieth century and the interaction of so-called "popular" and "art" music styles in the work of musicians like Nico Muhly. Furthermore, Tagg's anaphones are at least partly intended to address a dearth of analyses of popular music.[360] As such, I am particularly interested in exploring the anaphonic content of popular music and jazz. A further study might examine the exchange of anaphones themselves between

[360] Tagg, "Towards a Sign Typology in Music," 369.

musical traditions and genres or examine extramusical references of a type (light, animal life, machinery, etc.) in and across varied musical traditions.

Further research into musical water representations could benefit from such an inclusive study. I focused my work similarities in water-evoking compositions rooted in the European classical tradition. Looking instead into differences in conceptions of bodies of water, access to water, understandings of music as a representational medium, and musical norms across musical cultures and subcultures that have practices compatible with explorations of extramusical meaning could reveal even greater variation in representations of water than are explored here. Exploring changes in how water is represented in music through time could prove similarly beneficial; that Palestrina's *Sicut cervus* and Smetana's *Vltava* contain radically different portrayals of water is evident in my dissertation, but I do not systematically examine the evolution or introduction of depictive devices in the intervening time between the works' dates of composition, nor since. A broader cultural study encompassing changing approaches to depicting the extramusical in music rooted in the European classical tradition, approaches to metaphor in the arts beyond music, the societal roles of music, and humanity's understanding of and relationship to the natural world through time is a massive undertaking, but it would likely yield interesting results and enhance our understanding not only of depictive music of the past but of the trajectory of depiction in our musical future.

Another related avenue of study involves works that musically depict natural phenomena apart from bodies of water, such as weather. Depictions of rain are especially common in music. The tendency of particular kinetic anaphones to drive

depictions of bodies of water distinguish depictions of rain, with its entirely different movement patterns, from the works studied in this dissertation. Rain's unique properties necessitate a separate investigation. A study of the evocation of rain might examine Chopin's Prelude, Op. 28, No. 15. As with the "Ocean" étude, this prelude has a fanciful and evocative title—the "Raindrop" prelude—that likely did not originate with Chopin. It would be interesting to examine the possible origins of such a title and whether the content of the work does, in fact, relate (through anaphones or otherwise) to the rain. More promising works include Eric Whitacre's *Cloudburst* (1991), Benjamin Britten's *Noye's Fludde*, Op. 59 (1958), Edvard Grieg's "Foraarsregn" ("Spring Rain") from 6 Songs, Op. 49 (1886-1889), and the many works that refer to storms and violent weather. Some of these, such as *Cloudburst* and *Noye's Fludde*, evoke the sound of rainfall with percussive effects like snapping fingers or taps against mugs of water (sonic anaphones). "Foraarsregn" evokes the falling motion of rain with repetitive descending eighth-note passages (kinetic anaphones). Musical representations of other weather phenomena, like wind, are also worthy of exploration. Such a study would expand on the work of Aplin and Williams, who catalog meteorological phenomena in classical music and discuss the various ways those phenomena are evoked (such as through the use of wind and thunder machines).[361]

Evocations of weather phenomena in music will likely rely on movement. Wind and precipitation are defined by motion, after all. Examinations of motion beyond the

[361] Aplin and Williams, "Meteorological Phenomena."

unidirectional and polydirectional movement of water examined in this dissertation might be fruitful. John Coolidge Adams's *Short Ride in a Fast Machine* (1986) is said by its composer to have been inspired by a ride in a Ferrari with an unskilled driver and Andrew Norman's *Gran Turismo* (2004) for eight violins is at least partly inspired by a racing video game of the same name.[362] Both works seem to portray the motion of motor vehicles. Nico Muhly's *Gait* (2012), by contrast, concerns motion on foot. In his blog, he describes using "each family of winds as a kind of creature with a specific range of locomotive patterns" as he prepared to write *Gait*.[363] Analyses of such works might reveal interesting musical motion patterns.

A possible expansion of Tagg's system of anaphones is another interesting potential topic for study. Anaphones relate music to sonic phenomena (that which is heard), tactile phenomena (that which is felt), and kinetic phenomena (that which moves). In a conversation with Tagg I advanced the notion of uniquely *visual* anaphones that might relate music to primarily visual phenomena.[364] I was specifically interested in the distorted quality of particularly low notes in the piano and further distortion achieved through pedaling in Debussy's "La Cathédrale engloutie," which seem to convey a sense of darkness and murkiness separate from any sonic, kinetic, or tactile experience. Although Tagg rejects the notion of anaphones for

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[362] Stanley V. Kleppinger, "Metrical Issues in John Adams's *Short Ride in a Fast Machine*," *Indiana Theory Review* 22, no. 1 (2001): 65; John Schaefer, "Ensemble LPR - Andrew Norman's Gran Turismo," LPR Live, accessed January 18, 2021, https://podcasts.apple.com/us/podcast/lpr-live-from-new-york/id1078462823?mt=2.
[363] Nico Muhly, "Gait 1," *Nico Muhly* (blog), September 12, 2016, http://nicomuhly.com/news/2012/gait-1/.
[364] Philip Tagg, interview by James Evans, April 2, 2018.

"transparency" and "murkiness," a wealth of evocative titles and programmatic descriptions for musical works concern distinctly and uniquely visual subject matter (that are not heard, felt, or observed to move). "Light" and "dark," for example, feature in the programs of several works by Adams. He also describes the electronics that accompany the orchestra in *Dark Waves* as an "aura," a phenomenon with no clear sonic, kinetic, or tactile component. Herr writes on Adams's evocation of light in Adams's works, saying that his music "has increasingly become a sonic evocation of light, and in particular the 'lightscapes' of Alaska."[365] Herr goes on to say that harmony and timbre in Adams's works, such as *Dark Waves*, could be "heard as sonic equivalents of the lightscape."[366]

Light is not an uncommon subject in music. Works with titles that evoke light include the aforementioned "Luminance" from *In the Light of Air* by Anna Þorvaldsdóttir, *Lux Aeterna* by György Ligeti, and *Lux Aurumque* by Eric Whitacre, as well as *Notes on Light* (2006) by Kaija Saariaho, *Light Screens* (2002) by Andrew Norman, and *Bulb* (2006) and *Dirty Light* (2013) by Donnacha Dennehy. It would be interesting to pursue a study relating these descriptive words for visual phenomena to musical phenomena. In the same way that this study examines common musical devices for musically depicting water, a study of the relationships between specific visual experiences and musical experiences might uncover commonalities in musical works that have the same expressed extramusical depictive targets.

[365] Herr, "Timbral Listening in *Dark Waves*," 201.
[366] Herr, 203.

EPILOGUE

The musical waterscape has a long history and a variety of purposes, extending from lean evocations of waves in medieval text painting to intricate, expansive modern portrayals of entire rivers and oceans. Water has long captured the human imagination, finding a place in ritual, myth, and legend. Portrayals of bodies of water in the arts have the potential to transport us and empower us to engage with the natural world and its influences on human life and culture through abstract means.

Each contribution to the water-evoking repertoire is an opportunity to experience the natural world anew through music and to experience music in terms of nature. Evocative musical devices are the mechanisms by which the division between what is musical and what is extramusical becomes blurred. Through works like Debussy's "La Cathédrale engloutie" we sense the murky depth of the sea. In Liszt's *Die Loreley* we feel the swirling eddies of the river. And in Adams's *Become Ocean* and *Become River* the water washes over us in relentless motion. That so much about bodies of water is conveyed by sonic analogs for motion, in particular, reveals the vast potential of musical creativity and the prominence of motion—of change—in all kinds of human experience.

In this dissertation, I examined the evocative power of water music and the way it encapsulates extramusical phenomena. This repertoire is not only historically significant and artistically valuable, but it also takes on new meaning as we begin to meaningfully reckon with humanity's contemporary relationship with water. Limited access to potable water is nothing new, but the highly publicized contamination of

Flint, Michigan's and Newark, New Jersey's water infrastructure with lead has demonstrated the danger humanity poses to itself even in what is considered a "developed country."[367] Meanwhile, the threat posed by rising sea levels to cities like Venice, Italy; Kivalina, Alaska; and Miami, Florida is a harbinger of future crises as the world's oceans continue to change the landscape slowly but inexorably. We face the reality that parts of our world, like the legendary city of Ys and its cathedral, will disappear below the waves, displacing millions of people. Water is reshaping our world in ways we do not fully understand and creating a future we cannot yet fully envision, so engagement with the natural world is imperative and inescapable. Music will not increase access to potable water. Music will not forestall climate change and its rising oceans, nor bring about the changes in human activity required to begin correcting it. Music and the other arts can only offer an avenue for the beginnings of necessary social and environmental engagement.

Music is not a score. It is not a succession of waves in a medium that are perceived as sound. Music is an interactive human pursuit through which we communally and personally construct and impose meaning on sounds. By examining musical representations of the extramusical, this study will deepen our

[367] Melissa Denchak, "Flint Water Crisis: Everything You Need to Know," Natural Resources Defense Council, https://www.nrdc.org/stories/flint-water-crisis-everything-you-need-know (accessed August 31, 2020); Marisa Iati, "Toxic Lead, Scared Parents and Simmering Anger: A Month inside a City without Clean Water," *The Washington Post*, October 3, 2019, https://www.washingtonpost.com/climate-environment/2019/10/03/toxic-lead-scared-parents-simmering-anger-month-inside-city-without-clean-water; Paul Mohai, "Environmental Justice and the Flint Water Crisis," *Michigan Sociological Review* 32 (2018): 1–41.

understanding of humanity's capacity for creative expression, our perceptions of the world, and our roles as participants in the activity of music.

BIBLIOGRAPHY

Adams, John Luther. "The Place Where You Go to Listen." In *The Book of Music and Nature*, edited by David Rothenberg and Marta Ulvaeus. Middletown, CT: Wesleyan University Press, 2001.

———. *Winter Music: Composing the North*. Middletown, CT: Wesleyan University Press, 2004.

Agawu, Kofi. *Playing with Signs*. Princeton, NJ: Princeton University Press, 1991.

———. Review of *Signs of Music: A Guide to Musical Semiotics*, by Eero Tarasti. *Music & Letters* 85, no. 1 (2004): 144–46.

Almén, Byron. *A Theory of Musical Narrative*. Bloomington, IN: Indiana University Press, 2008.

Antovic, Mihailo. "Musical Metaphors in Serbian and Romani Children: An Empirical Study." *Metaphor and Symbol* 24 (July 10, 2009). https://doi.org/10.1080/10926480903028136.

Aplin, Karen L., and Paul D. Williams. "Meteorological Phenomena in Western Classical Orchestral Music." *Weather* 66, no. 11 (2011): 300–306.

Arnold, Ben. "Music, Meaning, and War: The Titles of War Compositions." *International Review of the Aesthetics and Sociology of Music* 22, no. 1 (1991): 19–28. https://doi.org/10.2307/837033.

Ashley, Richard. "Musical Pitch Space Across Modalities: Spatial and Other Mappings Through Language and Culture." In *Proceedings of the 8th International Conference on Music Perception and Cognition*, edited by Scott D. Lipscomb, Richard Ashley, Robert O. Gjerdingen, and Peter Webster, 64–67. Adelaide, Australia: Causal Productions, 2004.

Atkins, Karen. "The Illusion of the Prima Pratica and Seconda Pratica in the Music of Willaert and Rore." PhD diss., University of North Carolina, 2012.

Babbitt, Milton. "Remarks on the Recent Stravinsky." *Perspectives of New Music* 2, no. 2 (Spring-Summer 1964): 35–55. https://doi.org/10.2307/832481.

Baker, Michael. "Completion and Incompletion in the Solo Songs of Felix Mendelssohn." *Indiana Theory Review* 29, no. 2 (2011): 1–29.

Baldwin, Robert. "A Bibliography of the Sea, Shipwreck, and Water in Western Literature and Art." *Bulletin of Bibliography* 48, no. 3 (1991): 153–70.

Barraqué, Jean. “La Mer de Debussy, Ou La Naissance Des Formes Ouvertes: Essai de Méthodologie Comparative: La Forme Musicale Considérée Non plus Comme Un Archétype Mais Comme Un Devenir.” *Analyse Musicale* 12, no. 3 (June 1988): 15–62.

Barthes, Roland. “The Death of the Author.” In *Image-Music-Text*, translated by Stephen Heath, 142–48. London, UK: Fontana Press, 1977.

Beament, James. *How We Hear Music: The Relationship Between Music and the Hearing Mechanism*. Woodbridge, UK: Boydell & Brewer, 2002.

Bernstein, Leonard. *The Unanswered Question: Six Talks at Harvard*. Cambridge, MA: Harvard University Press, 1976.

Best, James L. “Flow Dynamics at River Channel Confluences: Implications for Sediment Transport and Bed Morphology.” In *Recent Developments in Fluvial Sedimentology*, 27–35. Tulsa, OK: Society of Economic Paleontologists and Mineralogists, 1987.

Bharucha, Jamshed J. “Music Cognition and Perceptual Facilitation: A Connectionist Framework.” *Music Perception* 5, no. 1 (October 1987): 1–30.

Boden, Margaret. *Mind as Machine: A History of Cognitive Science*. Vol. 1. 2 vols. Oxford, England: Clarendon Press, 2006.

Brazil, Rachel. “Life’s Origins by Land or Sea? Debate Gets Hot: Volcanic Springs and Deep-Ocean Vents Get New Evidence.” *Chemistry World* (blog), May 15, 2017. https://www.scientificamerican.com/article/lifes-origins-by-land-or-sea-debate-gets-hot/.

Bregman, Albert S. *Auditory Scene Analysis: The Perceptual Organization of Sound*. Cambridge, MA: MIT Press, 1990.

Brilliant, Oscar. “Bohemia: Geography and Statistics.” In *The Encyclopædia Britannica: A Dictionary of Arts, Sciences, Literature and General Information*. Vol. 4. New York, NY: Encyclopædia Britannica, Inc., 1910.

Brown, A. Peter. *The Second Golden Age of the Viennese Symphony: Brahms, Bruckner, Dvorak, Mahler, and Selected Contemporaries*. The Symphonic Repertoire, vol. 4. Bloomington: Indiana University Press, 2002.

Cage, John. *Empty Words: Writings ’73-’78*. Middletown, CT: Wesleyan University Press, 1979.

Caplin, William E. “On the Relation of Musical Topoi to Formal Function.” *Eighteenth-Century Music* 2, no. 1 (2005): 113–24.

Chamberlain, Gary. *Troubled Waters: Religion, Ethics, and the Global Water Crisis*. Lanham: Rowman & Littlefield Publishers, 2007.

Chandler, Daniel. *Semiotics: The Basics*. 2nd ed. New York, NY: Routledge, 2007.

———. *Semiotics: The Basics*. 3rd ed. New York, NY: Routledge, 2017.

Chisholm, Dianne. “Shaping an Ear for Climate Change: The Silarjuapomorphizing Music of Alaskan Composer John Luther Adams.” *Environmental Humanities* 8, no. 2 (November 1, 2016): 172–95. https://doi.org/10.1215/22011919-3664211.

Clarke, Eric. “Meaning and the Specification of Motion in Music.” *Musicae Scientiae* 5, no. 2 (2001): 213–34.

Cline, Jake. “How One Composer Channels Climate Grief Into Orchestral Pieces.” Sierra: the National Magazine of the Sierra Club, December 30, 2020. https://www.sierraclub.org/sierra/2021-1-january-february/mixed-media/how-one-composer-channels-climate-grief-orchestral-pieces-john-luther-adams.

Conte, David, Steven Sametz, and Robert Kyr. “Toward a Choral Pedagogy for Composers.” *Choral Journal* 55, no. 1 (August 2014): 8–26.

Cook, Nicholas. *Music, Imagination, and Culture*. Oxford, England: Clarendon Press, 1990.

Cook-Wilson, Winston. “How an Acclaimed Composer Found His Musical Voice Through Birdsong.” Audubon, September 16, 2020. https://www.audubon.org/news/how-acclaimed-composer-found-his-musical-voice-through-birdsong.

Copland, Aaron. *What to Listen for in Music*. New York, NY; London, UK: Signet Classics, 2011.

Cox, Arnie. *Music and Embodied Cognition: Listening, Moving, Feeling, and Thinking*. Bloomington, IN: Indiana University Press, 2016.

———. Review of *Musical Forces: Motion Metaphor, and Meaning in Music*, by Steve Larson. *Music Theory Online* 19, no. 1 (March 2013).

Cox, David Vassall. *Debussy Orchestral Music*. BBC Music Guides. London, UK: British Broadcasting Corporation, 1974.

Croft, William, and D. Alan Cruse. *Cognitive Linguistics*. Cambridge Textbooks in Linguistics. Cambridge, UK; New York, NY: Cambridge University Press, 2004.

Cross, Ian. "Pitch Schemata." In *Perception and Cognition of Music*, edited by John Sloboda and Irène Deliège, 353–86. East Sussex, UK: Psychology Press Ltd., 1997.

Cumming, Naomi. Review of *Musical Meaning in Beethoven: Markedness, Correlation and Interpretation*, by Robert Hatten. *The Semiotic Review of Books* 5, no. 3 (1994): 2–4.

Dahlhaus, Carl. "Schoenberg and Programme Music." In *Schoenberg and the New Music: Essays by Carl Dahlhaus*, translated by Derrick Puffett and Alfred Clayton, New Edition., 94–104. Cambridge, United Kingdom: Cambridge University Press, 1989.

Dai, Wenhong, Ahmed Bilal, Qiancheng Xie, Ijaz Ahmad, and Ishwar Joshi. "Numerical Modeling for Hydrodynamics and Near-Surface Flow Patterns of a Tidal Confluence." *Journal of Coastal Research* 36, no. 2 (March 2020): 295–312. https://doi.org/10.2307/26895950.

Danesi, Marcel, ed. *Messages, Signs, and Meanings: A Basic Textbook in Semiotics and Communication*. 3rd ed. Studies in Linguistic and Cultural Anthropology 1. Toronto, Ontario: Canadian Scholars' Press, 2004.

Davidson, Donald. "Communication and Convention." In *Synthese: Institut International De Philosophie Entretiens*, 59:3–17. Oslo, Norway, 1984.

Day-O'Connell, Jeremy. "Debussy, Pentatonicism, and the Tonal Tradition." *Music Theory Spectrum* 31, no. 2 (2009): 225–61.

Del Mar, Norman. *Anatomy of the Orchestra*. Berkeley, CA: University of California Press, 1983.

Denchak, Melissa. "Flint Water Crisis: Everything You Need to Know." Natural Resources Defense Council, November 8, 2018. https://www.nrdc.org/stories/flint-water-crisis-everything-you-need-know.

Deutsch, Diana, and John Feroe. "The Internal Representation of Pitch Sequences in Tonal Music." *Psychological Review* 88, no. 6 (1981): 503–22.

Dömling, Wolfgang. *Claude Debussy: La Mer*. Munich, Germany: Wilhelm Fink Verlag, 1976.

Dunsby, Jonathan M. Review of *Fondements d'une sémiologie de la musique*, by Jean-Jacques Nattiez. *Perspectives of New Music* 15, no. 2 (1977): 226–33. https://doi.org/10.2307/832821.

Eggebrecht, Hans Heinrich. "Symphonische Dichtung." *Archiv Für Musikwissenschaft* 39, no. 4 (1982): 223–33. https://doi.org/10.2307/930609.

Eitan, Zohar, and Inbar Rothschild. "How Music Touches: Musical Parameters and Listeners' Audio-Tactile Metaphorical Mappings." *Psychology of Music* 39, no. 4 (October 2011): 449–67.

Eitan, Zohar, Asi Schupak, Alex Gotler, and Lawrence E. Marks. "Lower Pitch Is Larger, yet Falling Pitches Shrink." *Experimental Psychology* 61, no. 4 (2014): 273–84. https://doi.org/10.1027/1618-3169/a000246.

Eitan, Zohar, and Renee Timmers. "Beethoven's Last Piano Sonata and Those Who Follow Crocodiles: Cross-Domain Mappings of Auditory Pitch in a Musical Context." *Cognition* 114, no. 3 (March 1, 2010): 405–22. https://doi.org/10.1016/j.cognition.2009.10.013.

Fauconnier, Gilles, and Mark Turner. "Blending as a Central Process of Grammar." In *Conceptual Structure, Discourse, and Language*, edited by Adele Goldberg. Stanford, CA: CSLI Publications, 1996.

———. "Conceptual Integration Networks." *Cognitive Science* 22, no. 2 (1998): 133–87.

Filingeri, Davide, Damien Fournet, Simon Hodder, and George Havenith. "Why Wet Feels Wet? A Neurophysiological Model of Human Cutaneous Wetness Sensitivity." *Journal of Neurophysiology* 112, no. 6 (June 18, 2014): 1457–69. https://doi.org/10.1152/jn.00120.2014.

Fish, Stanley. *Is There a Text in This Class? The Authority of Interpretive Communities*. Cambridge, MA: Harvard University Press, 1982.

Franks, Rebecca. "John Luther Adams: The Pulitzer Prize-Winning Composer on His Piece *Become Ocean*." Classical Music: Brought to you by BBC Music Magazine, November 11, 2014. https://www.classical-music.com/features/artists/john-luther-adams/.

Frogley, Alain. “History and Geography: The Early Orchestral Works and the First Three Symphonies.” In *The Cambridge Companion to Vaughan Williams*, edited by Alain Frogley and Aidan J. Thomson, 81–105. New York, NY: Cambridge University Press, 2013.

Gibbs Jr., Raymond W. *The Poetics of Mind: Figurative Thought, Language, and Understanding*. 1st ed. Cambridge, UK; New York, NY: Cambridge University Press, 1994.

Gjerdingen, Robert O. “Categorization of Musical Patterns by Self-Organizing Neuronlike Networks.” *Music Perception* 7, no. 4 (July 1990): 339–69.

———. “The Psychology of Music.” In *The Cambridge History of Western Music Theory*, 956–81. Cambridge, United Kingdom: Cambridge University Press, 2006.

Goethe, Johann Wolfgang. *Sämtliche Werke, Briefe, Tagebücher Und Gespräche*. Edited by Karl Eibl. Vol. 2. Berlin: Deutscher Klassiker-Verlag, 1987.

Goldberg, Adele E. *Constructions: A Construction Grammar Approach to Argument Structure*. Edited by Gilles Fauconnier, George Lakoff, and Eve Sweetser. Cognitive Theory of Language and Culture. Chicago, IL; London, UK: The University of Chicago Press, 1995.

Gopal, Madan. *India Through the Ages*. Edited by K. S. Gautam. 1st ed. Publication Division, Ministry of Information and Broadcasting, Government of India, 1990.

Grady, Joseph E., Todd Oakley, and Seana Coulson. “Blending and Metaphor.” In *Metaphor in Cognitive Linguistics: Selected Papers from the Fifth International Cognitive Linguistics Conference, Amsterdam, July 1997*, edited by Gerard J. Steen and Raymond W. Gibbs, 101–22. Philadelphia, PA: John Benjamins Publishing, 1999.

Haar, James. *Essays on Italian Poetry and Music in the Renaissance, 1350-1600*. Berkeley, CA: University of California Press, 1986.

Hansen, Niels Chr., and David Huron. “Twirling Triplets: The Qualia of Rotation and Musical Rhythm.” *Music & Science* 2 (January 1, 2019): 2059204318812243.

Harwood, Dane L. “Universals in Music: A Perspective from Cognitive Psychology.” *Ethnomusicology* 20, no. 3 (1976): 521–33.

Hatten, Robert. “Foreword.” In *The Sense of Music: Semiotic Essays*, by Raymond Monelle, xi–xiii. Princeton, NJ: Princeton University Press, 2000.

———. “Four Semiotic Approaches to Musical Meaning: Markedness, Topics, Tropes, and Gesture.” *Muzikološki Zbornik* 41, no. 1 (2005): 5–30.

———. *Interpreting Musical Gestures, Topics, and Tropes: Mozart, Beethoven, Schubert*. Bloomington, IN: Indiana University Press, 2004.

———. *Musical Meaning in Beethoven: Markedness, Correlation, and Interpretation*. Bloomington, IN: Indiana University Press, 1994.

Herr, Dave. “Timbral Listening in *Dark Waves*.” In *The Farthest Place: The Music of John Luther Adams*, edited by Bernd Herzogenrath, 188–205. Boston, MA: Northeastern University Press, 2012.

Herzogenrath, Bernd. “Introduction.” In *The Farthest Place: The Music of John Luther Adams*, 1–12. Boston, MA: Northeastern University Press, 2012.

Hill, George R. Review of *Classic Music: Expression, Form, and Style*, by Leonard G. Ratner. *Notes*, Second Series, 38, no. 1 (1981): 64–65.

Hill, John Walter. Review of *Classic Music: Expression, Form, and Style*, by Leonard G. Ratner. *Eighteenth-Century Studies* 17, no. 1 (1983): 78–82. https://doi.org/10.2307/2738265.

Hogwood, Christopher. *Handel*. New York, NY: Thames and Hudson Inc., 1985.

Iati, Marisa. “Toxic Lead, Scared Parents and Simmering Anger: A Month inside a City without Clean Water.” *The Washington Post*, October 3, 2019. https://www.washingtonpost.com/climate-environment/2019/10/03/toxic-lead-scared-parents-simmering-anger-month-inside-city-without-clean-water.

Iverson, Jennifer. “Creating Space: Perception and Structure in Charles Ives’s Collages.” *Music Theory Online* 17, no. 2 (2011). http://mtosmt.org/issues/mto.11.17.2/mto.11.17.2.iverson.html.

Jackendoff, Ray, and Fred Lerdahl. “The Capacity for Music: What Is It, and What’s Special about It?” *Cognition* 100 (2006): 33–72.

Johnson, Mark. *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason*. Chicago, IL: University of Chicago Press, 1987.

Kay, Paul. “Construction Grammar.” In *Handbook of Pragmatics: Manual*, edited by Jef Verschueren, Jan-Ola Östman, and Jan Blommaert, 171–77. Amsterdam, Netherlands: John Benjamins Publishing Company, 1995.

Kim, Ki-Hong, and Shin-Ichiro Iwamiya. “Formal Congruency between Telop Patterns and Sound Effects.” *Music Perception* 25, no. 5 (2008): 429–48. https://doi.org/10.1525/mp.2008.25.5.429.

Kivy, Peter. *Music, Language, and Cognition: And Other Essays in the Aesthetics of Music*. 1st ed. Gloucestershire, England: Clarendon Press, 2007.

Kleppinger, Stanley V. “Metrical Issues in John Adams’s *Short Ride in a Fast Machine*.” *Indiana Theory Review* 22, no. 1 (2001): 65–81.

Koelsch, Stefan. *Brain and Music*. Oxford, England: Wiley-Blackwell, 2012.

———. “Towards a Neural Basis of Music-Evoked Emotions.” *Trends in Cognitive Science* 14, no. 3 (2010): 133–37.

Kramer, Lawrence. “Musical Narratology: A Theoretical Outline.” *Indiana Theory Review* 12 (1991): 141–62.

Krebs, Harald. *Fantasy Pieces: Metrical Dissonance in the Music of Robert Schumann*. New York, NY: Oxford University Press, 1999.

———. “Robert Schumann’s Metrical Revisions.” *Music Theory Spectrum* 19, no. 1 (1997): 35–54. https://doi.org/10.2307/745998.

Krumhansl, Carol L. *Cognitive Foundations of Musical Pitch*. New York, NY: Oxford University Press, 1990.

———. “The Psychological Representation of Musical Pitch in a Tonal Context.” *Cognitive Psychology* 11, no. 3 (1979): 346–74.

Lakoff, George, and Mark Johnson. *Metaphors We Live By*. 2nd ed. Chicago, IL: The University of Chicago Press, 1980.

Lang, Paul Henry. *George Frideric Handel*. Mineola, NY: Dover Publications, Inc., 1996.

Larner, Gerald. “Settling Scores.” *Guardian*. November 16, 1989.

Larson, Steven, and Mark Johnson. “Something in the Way She Moves: The Metaphor of Musical Motion.” In *Musical Forces: Motion, Metaphor, and Meaning in Music*, 61–81. Bloomington, IN: Indiana University Press, 2012.

Leistra-Jones, Karen. “‘The Deeps Have Music Soft and Low’: Sounding the Ocean in Elgar’s Sea Pictures.” *Music & Letters* 97, no. 1 (2016): 61–99.

Lerdahl, Fred, and Ray Jackendoff. A *Generative Theory of Tonal Music*. Cambridge, MA: The MIT Press, 1983.

Lewis, Alexandra M. "Evocations of Water at the Piano: From Schubert to Liszt and Ravel." PhD diss., City University of New York, 2005. ProQuest/UMI (3187399).

Lewis, David. *Convention: A Philosophical Study*. Oxford: Blackwell, 2002.

Lidov, David. *Elements of Semiotics*. Basingstoke, United Kingdom: Palgrave Macmillan, 1999.

———. "Emotive Gesture and Its Contraries." In *Music and Gesture*, edited by Anthony Gritten and Elaine King, 24–44. Farnham, United Kingdom: Ashgate Publishing, 2006.

Lochhead, Judy. "The Metaphor of Musical Motion: Is There An Alternative." *Theory and Practice* 14/15 (1990 1989): 83–103.

Locke, John. *An Essay Concerning Human Understanding*. 1st ed. Oxford World's Classics. New York, NY: Oxford University Press, 2008.

Lockspeiser, Edward. *Debussy: Volume 1, 1862-1902: His Life and Mind*. Cambridge, UK: Cambridge University Press, 1978.

London, Justin. *Hearing in Time: Psychological Aspects of Musical Meter*. 1st ed. New York, NY: Oxford University Press, 2004.

Longfellow, Henry Wadsworth. *Outre-Mer: A Pilgrimage Beyond the Sea*. Vol. 2. New York, NY: Harper & Brothers, 1835.

Longuet-Higgins, H. C. "Perception of Melodies." *Nature* 263, no. 5579 (1976): 646–53.

Lucas, Kathryn June. "Symbolism in Debussy's Music." Master's thesis, University of North Dakota, 1980.

Ludwig, Vera U., Ikuma Adachi, and Tetsuro Matsuzawa. "Visuoauditory Mappings Between High Luminance and High Pitch Are Shared by Chimpanzees (Pan Troglodytes) and Humans." *Proceedings of the National Academy of Sciences of the United States of America* 108, no. 51 (2011): 20661–65.

Malbon, Elizabeth Struthers. "Structuralism, Hermeneutics, and Contextual Meaning." *Journal of the American Academy of Religion* 51, no. 2 (June 1983): 207–30.

Marks, Lawrence E. “On Cross-Modal Similarity: Auditory–Visual Interactions in Speeded Discrimination.” *Journal of Experimental Psychology: Human Perception and Performance* 13, no. 3 (1987): 384–94. https://doi.org/10.1037/0096-1523.13.3.384.

Martin, William, and Michael J. Russell. “On the Origins of Cells: A Hypothesis for the Evolutionary Transitions from Abiotic Geochemistry to Chemoautotrophic Prokaryotes, and from Prokaryotes to Nucleated Cells.” *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences* 358, no. 1429 (2003): 59–85.

Maus, Fred Everett. “Music As Narrative.” *Indiana Theory Review* 12 (Spring and Fall 1991): 1–34.

McKay, Nicholas. “On Topics Today.” *Zeitschrift Der Gesellschaft Für Musiktheorie* 4, no. 1–2 (2007): 159–83.

McMullen, Erin, and Jenny Saffran. “Music and Language: A Developmental Comparison.” *Music Perception* 21, no. 3 (2004): 289–311.

Mead, George Herbert. *Mind, Self, and Society: From the Standpoint of a Social Behaviorist*. University of Chicago Press, 1934.

Merchel, Sebastian, and M. Ercan Altinsoy. “Auditory-Tactile Experience in Music.” In *Musical Haptics*, edited by Stefano Papetti and Charalampos Saitis, 123–48. Spring Series on Touch and Haptic Systems. Basel, Switzerland: Springer International Publishing, 2018.

Meyer, Leonard B. *Emotion and Meaning in Music*. Chicago, IL: University of Chicago Press, 1991.

Middleton, Richard. *Studying Popular Music*. 1st ed. Milton Keynes, England; Philadelphia, PA: Open University Press, 1990.

Mikalonytė, Elzė Sigutė. “Why Does Pure Music Not Have Semantic Content?” *Philosophy of Music* 74, no. 4 (2018): 1355–76.

Mirka, Danuta. *The Oxford Handbook of Topic Theory*. New York, NY: Oxford University Press, 2014.

Mohai, Paul. “Environmental Justice and the Flint Water Crisis.” *Michigan Sociological Review* 32 (2018): 1–41.

Molino, Jean, J. A. Underwood, and Craig Ayrey. “Musical Fact and the Semiology of Music.” *Music Analysis* 9, no. 2 (1990): 105–56. https://doi.org/10.2307/854225.

Mondloch, Catherine J., and Daphne Maurer. “Do Small White Balls Squeak? Pitch-Object Correspondences in Young Children.” *Cognitive, Affective, & Behavioral Neuroscience* 4, no. 2 (June 1, 2004): 133–36.

Monelle, Raymond. “Music and the Peircean Trichotomies.” *International Review of the Aesthetics and Sociology of Music* 22, no. 1 (June 1991): 99–108.

———. *The Sense of Music: Semiotic Essays*. Princeton, NJ: Princeton University Press, 2000.

Muhly, Nico. “Gait 1.” *Nico Muhly* (blog), September 12, 2016. http://nicomuhly.com/news/2012/gait-1/.

Mulkidjanian, Armen Y., Andrew Yu Bychkov, Daria V. Dibrova, Michael Y. Galperin, and Eugene V. Koonin. “Origin of First Cells at Terrestrial, Anoxic Geothermal Fields.” Edited by Norman H. Sleep. *Proceedings of the National Academy of Sciences of the United States of America* 109, no. 14 (April 2012): E821–30.

Music, David W. “Chapter 8: Giovanni Pierluigi Da Palestrina: Polyphonic Music as Devotional Expression.” In *Hymns and Hymnody: Historical and Theological Introductions*, edited by Mark A. Lamport, Benjamin K. Forrest, and Vernon M. Whaley, Vol. 2. Eugene, OR: Wipf and Stock Publishers, 2019.

Nakayama, Shigeru, and Nathan Sivin, eds. *Chinese Science: Explorations of an Ancient Tradition*. 1st ed. The MIT Press, 1973.

Narmour, Eugene. *The Analysis and Cognition of Basic Melodic Structures: The Implication-Realization Model*. Chicago, IL: University of Chicago Press, 1990.

Nattiez, Jean-Jacques. *Fondements d’une Sémiologie de La Musique*. Paris, France: Union Générale d’Éditons, 1975.

———. “Reflections on the Development of Semiology in Music.” Translated by Katharine Ellis. *Music Analysis* 8, no. 1/2 (July 1989): 21–75. https://doi.org/10.2307/854326.

Norman, Donald. “Twelve Issues for Cognitive Science.” *Cognitive Science* 4, no. 1 (1980): 1–32.

Page, Tim. “A Cathedralful of Harp Strings.” *The New York Times*. September 21, 1984, sec. C.

Park, Sun Hye. “Elements of Impressionism Evoked in Debussy and Ravel’s ‘Reflets Dans l’eau’ and ‘Jeux d’eau’: The Theme of Water.” PhD diss., University of Washington, 2012.

Pearce, Marcus, and Martin Rohrmeier. “Music Cognition and the Cognitive Sciences.” *Topics in Cognitive Science* 4, no. 4 (2012): 468–84.

Peirce, Charles Sanders. *Collected Papers of Charles Sanders Peirce*. Edited by Charles Hartshorne, Paul Weiss, and Arthur W. Burks. Vol. 2. 8 vols. Cambridge, MA: Belknap, 1931.

Philip, Robert. *The Classical Music Lover’s Companion to Orchestral Music*. New Haven, CT: Yale University Press, 2018.

Portnoy, Julius. Review of *Emotion and Meaning in Music*, by Leonard B. Meyer. *The Journal of Aesthetics and Art Criticism* 16, no. 2 (1957): 285–86. https://doi.org/10.2307/427625.

Pospíšil, Milan. “Preface.” In *Vltava*, by Bedřich Smetana, translated by Steward Spencer, Urtext edition. Wiesbaden, Germany: Breitkopf und Härtel; Mainz, Germany: Ernst Eulenberg & Co. GmbH, n.d.

Preston, Beth. “Behaviorism and Mentalism: Is There a Third Alternative?” *Synthese* 100, no. 2 (1994): 167–96.

Rabson, Mimi. *Arranging for Strings*. Boston, MA: Berklee Press, 2018.

Radocy, Rudolf E., and J. David Boyle. *Psychological Foundations of Musical Behavior*. 4th ed. Springfield, IL: Charles C. Thomas Publisher, Ltd., 2003.

Randel, Don, ed. “Barcarolle.” In *The New Harvard Dictionary of Music*. Cambridge, MA: Harvard University Press, 1986.

Ratner, Leonard. *Classic Music: Expression, Form, and Style*. New York, NY: Schirmer Books, 1980.

Reclus, Onésime. *A Bird’s-Eye View of the World: A Popular Scientific Description of the Great Natural Divisions of the Globe*. Edited by Charles Hopkins Clark. Translated by Malvina Antoinette Howe. Boston, MA: Ticknor and Company, 1892.

Reed, John. *The Schubert Song Companion*. Manchester, UK; New York, NY: Manchester University Press, 1997.

Reese, Emily, and Jill Mott. “Evocations of the Sea.” Scores and Pours. Accessed June 20, 2020. https://scoresandpours.podbean.com/.

Alaska Earthquake Center. “Revamping the Sound Installation ‘The Place Where You Go to Listen,’” October 4, 2016. https://earthquake.alaska.edu/revamping-sound-installation-place-where-you-go-listen.

Riemann, Hugo. *Musikalische Syntaxis: Grundriss einer harmonischen Satzbildungslehre*. Wiesbaden, Germany: Breitkopf und Härtel, 1877.

Rohrmeier, Martin. “Towards a Generative Syntax of Tonal Harmony.” *Journal of Mathematics and Music* 5, no. 1 (2011): 35–53.

Rolf, Marie. “Debussy’s La Mer: A Critical Analysis in Light of Early Sketches and Editions.” PhD diss., University of Rochester, 1978.

Rosen, Joe. “Motion.” In *Encyclopedia of Physics*. New York, NY: Facts on File, Inc., 2009.

Ross, Alex. “John Luther Adams’s *Become Ocean*.” *Alex Ross: The Rest Is Noise* (blog). Accessed March 30, 2020. https://www.therestisnoise.com/2013/07/jlas-become-ocean.html.

———. “Song of the Earth.” The New Yorker, May 12, 2008. https://www.newyorker.com/magazine/2008/05/12/song-of-the-earth.

———. “Water Music.” The New Yorker, July 8, 2013. https://www.newyorker.com/magazine/2013/07/08/water-music-3.

Rothenberg, David. “Go There to Listen: How Music Based on Nature Might Not Need Natural Sounds.” In *The Farthest Place: The Music of John Luther Adams*, edited by Bernd Herzogenrath, 107–15. Boston, MA: Northeastern University Press, 2012.

Russell, Bertrand. *History of Western Philosophy*. Routledge Classics. London, UK: Routledge, 2004.

Saslaw, Janna. “Forces, Containers, and Paths: The Role of Body-Derived Image Schemas in the Conceptualization of Music.” *Journal of Music Theory* 40, no. 2 (1996): 217–43. https://doi.org/10.2307/843889.

Saussure, Ferdinand de. *Course in General Linguistics*. Translated by Roy Harris. London, UK: Bloomsbury, 2016.

Schaefer, John. “Ensemble LPR - Andrew Norman’s Gran Turismo.” LPR Live. Accessed January 18, 2021. https://podcasts.apple.com/us/podcast/lpr-live-from-new-york/id1078462823?mt=2.

Schafer, Maureen. “Illuminating Text: A Macro Analysis of Franz Schubert’s ‘Auf Dem Wasser Zu Singen.’” *Musical Insights* 2 (2002): 97–104.

Scheuregger, Martin. “Redefining Idiomatic Writing for the Pedal Harp.” *Contemporary Music Review* 38, no. 6 (November 2019): 553–76.

Scruton, Roger. *The Aesthetics of Music*. Oxford: Clarendon Press, 1999.

Sebeok, Thomas. *Signs: An Introduction to Semiotics*. 2nd ed. Toronto, Ontario: University of Toronto Press, 2001.

Service, Tom. “John Luther Adams: A Force of Nature.” The Guardian, July 2, 2015. https://www.theguardian.com/music/musicblog/2015/jul/02/john-luther-adams-music-across-the-distance-southbank.

Sfakiotakis, Michael, David M. Lane, and John Bruce Davies. “Review of Fish Swimming Modes for Aquatic Locomotion.” *Journal of Oceanic Engineering* 24, no. 2 (1999): 237–52.

Shapiro, Michael. *Asymmetry: An Inquiry Into the Linguistic Structures of Poetry*. Amsterdam, Netherlands: North-Holland Publishing Co., 1976.

———. *The Sense of Grammar: Language as Semiotic*. Bloomington, IN: Indiana University Press, 1983.

Shepard, Roger N. “Geometrical Approximations to the Structure of Musical Pitch.” *Psychological Review* 89, no. 4 (1982): 305–33.

Sheridan, Molly. “The Light Within.” In *The Farthest Place: The Music of John Luther Adams*, edited by Bernd Herzogenrath. Boston, MA: Northeastern University Press, 2012.

Sloboda, John A. *Exploring the Musical Mind: Cognition, Emotion, Ability, Function*. Oxford, England: Oxford University Press, 2005.

Smetana, Bedřich. *Bedřich Smetana: Letters and Reminiscences*. Prague, Czechoslovakia: Artia, 1955.

Smith, David R. R., Roy D. Patterson, Richard Turner, Hideki Kawahara, and Toshio Irino. "The Processing and Perception of Size Information in Speech Sounds." *The Journal of the Acoustical Society of America* 117, no. 1 (January 2005): 305–18.

Sonntag, Chara M. "Jeux d'eau and Its Colleagues: Water and Artistic Expression at the Turn of the 20th Century." Master's thesis, Ball State University, 2011.

"Sound Characteristics - Vienna Symphonic Library." Accessed August 12, 2020. https://www.vsl.co.at/en/Harp/Sound_Characteristics.

Spence, Keith. "Debussy at Sea." *The Musical Times* 120, no. 1638 (1979): 640–42.

Straus, Joseph N. *Extraordinary Measures: Disability in Music*. 1st ed. New York, NY: Oxford University Press, 2011.

Stravinsky, Igor. *Stravinsky: An Autobiography*. New York, NY: Simon and Schuster, Inc., 1936.

Swain, Joseph P. "The Concept of Musical Syntax." *The Musical Quarterly* 79, no. 2 (1995): 281–308.

Tagg, Philip. "Gestural Interconversion and Connotative Practice." *Film International* 3, no. 1 (2005): 20–31.

———. *Music's Meanings: A Modern Musicology for Non-Musos*. Larchmont, NY: New York & Huddersfield: The Mass Media Music Scholars' Press, 2013.

———. "Towards a Sign Typology in Music." In *Secondo Convegno Europeo Di Analisi Musicale*, edited by Rossana Dalmonte and Mario Baroni, 1:369–78. Trento, Italy: Università degli studi di Trento, 1992.

———. Interview by James Evans, April 2, 2018.

Tarasti, Eero. A *Theory of Musical Semiotics*. Bloomington, IN: Indiana University Press, 1994.

———. *Semiotics of Classical Music: How Mozart, Brahms and Wagner Talk to Us*. Semiotics, Communication and Cognition 10. Berlin, Germany: De Gruyter Mouton, 2017.

———. *Signs of Music: A Guide to Musical Semiotics*. Approaches to Applied Semiotics 3. Berlin, Germany: Walter de Gruyter, 2002.

Trezise, Simon. *Debussy: La Mer*. Cambridge, UK: Cambridge University Press, 1994.

Von Eckardt, Barbara. “Multidisciplinarity and Cognitive Science.” *Cognitive Science* 25, no. 3 (2001): 453–70.

Whitman, Walt. *Leaves of Grass*. The "Death-Bed" Edition. New York, NY: Modern Library, 1993.

Willis, Peter. “Chopin in Britain.” PhD diss., University of Durham, 2009.

Wimsatt, W. K., and M. C. Beardsley. “The Intentional Fallacy.” *The Sewanee Review* 54, no. 3 (September 1946): 468–88.

Worth, Sarah. Review of *The Aesthetics of Music*, by Roger Scruton. *The Review of Metaphysics* 52, no. 4 (1999): 981–83.

Yakin, Halina Sendera Mohd., and Andreas Totu. “The Semiotic Perspectives of Peirce and Saussure: A Brief Comparative Study.” *Procedia - Social and Behavioral Sciences*, The International Conference on Communication and Media 2014 (i-COME'14) - Communication, Empowerment and Governance: The 21st Century Enigma, 155 (November 6, 2014): 4–8. https://doi.org/10.1016/j.sbspro.2014.10.247.

Zatorre, Robert. “Music, the Food of Neuroscience?” *Nature* 434, no. 7031 (2005): 312–15.

Zbikowski, Lawrence M. *Conceptualizing Music: Cognitive Structure, Theory, and Analysis*. New York, NY: Oxford University Press, 2002.

———. *Foundations of Musical Grammar*. Edited by Steven Rings. 1st ed. Oxford Studies in Music Theory. New York, NY: Oxford University Press, 2017.

———. “Metaphor and Music.” In *The Cambridge Handbook of Metaphor and Thought*, edited by Raymond W. Gibbs, Jr., 502–24. Cambridge, United Kingdom: Cambridge University Press, 2008.

———. “Metaphor and Music Theory: Reflections from Cognitive Science.” *Music Theory Online* 4, no. 1 (1998).

———. “Reflections on Words and Music.” *Dansk Musikforskning Online/Særnummer 2016, Danish Musicology Online/Special Edition 2016*, no. Word and Music Studies—New Paths, New Methods (2016): 5–13.

———. “Words, Music, and Meaning.” *Signata*, no. 9 (2015): 143–64.

Zhang, Lan. “Iconographic Representations of the Five Elements.” *The Tibet Journal* 38, no. 3–4 (Autumn-Winter 2013): 21–34.

MUSIC SCORES REFERENCED

Adams, John Luther. *Become Ocean*. Fairbanks, AK: Taiga Press, 2015.

———. *Become River*. Fairbanks, AK: Taiga Press, 2012.

———. *Dark Waves* (Orchestral Version). Fairbanks, AK: Taiga Press, 2007.

———. *Dark Waves* (Two Pianos Version). Fairbanks, AK: Taiga Press, 2007.

———. "solitary and time-breaking waves." In *Strange and Sacred Noise*. Fairbanks, AK: Taiga Press, 1997.

Beach, Amy. *By the Still Waters*, Op. 114. St. Louis, MO: Art Publication Society, 1925.

Britten, Benjamin. "Storm." In *Four Sea Interludes from Peter Grimes, Op. 33a*. London, UK: Boosey & Hawkes, 1945.

Chopin, Frédéric. Étude No. 12 in C Minor "Ocean." In Études, Op. 25. New York, NY: G. Schirmer, 1883.

Debussy, Claude. "La Cathédrale Engloutie." In *Préludes, Livre 1*, 1st ed. Paris, France: Durand et Cie., 1910.

Debussy, Claude. *La Mer*. Revised Version. Paris, France: Durand & Fils, 1909.

Dukas, Paul. *L'Apprenti Sorcier*. Paris, France: Durand & Fils, 1897.

"Exsúrge Quare." In *Graduale Romanum*, 77. New York, NY: Desclée & Co., 1961.

Hasselmans, Alphonse. *La Source*, Op. 44. Paris, France: Durand & Fils, n.d.

Lang, David. "You Will Return." In Death Speaks. New York, NY: Red Poppy Music, 2012.

Palestrina, Giovanni Pierluigi da. *Missa Papae Marcelli*. London, UK: Novello & Co., 1964.

———. "Sicut Cervus." In *Opera Omnia Ioannis Petraloysii Praenestini*, 5:148–51. Leipzig, Germany: Breitkopf & Härtel, 1875.

Saint-Saëns, Camille. "Aquarium." In *Le Carnaval Des Animaux*, First Edition. Paris, France: Durand, 1922.

Schubert, Franz. “Auf Dem See,” D 543 (Version 2). Leipzig, Germany: Breitkopf & Härtel, 1895.

———. “Auf Dem Wasser Zu Singen,” D 774. Leipzig, Germany: Breitkopf & Härtel, 1895.

Smetana, Bedřich. *Vltava*. Leipzig, Germany: Breitkopf & Härtel, 1930.

Vaughan Williams, Ralph. *A Sea Symphony*. London, UK: Stainer & Bell, n.d.

Xinghai, Xian. *Huánghé Dàhéchàng*. Beijing, China: SDX Joint Publishing Company, 1949.

DISCOGRAPHY

Czech Philharmonic, and Jiří Bělohlávek. *Smetana: Má Vlast*. CD. London, UK: Decca, 2018.

Czecho-Slovak Radio Symphony, and Ondrej Lenárd. *Prokofiev: Peter And The Wolf/Britten: The Young Person's Guide to the Orchestra/Saint-Saens: Carnival Of The Animals*. CD. Toronto, Ontario: Naxos, 1996.

Drury, Stephen, and Yukiko Takagi. *John Luther Adams: Red Arc/Blue Veil*. CD. Venice, CA: Cold Blue Music, 2007.

Percussion Group Cincinnati. *John Luther Adams: Strange and Sacred Noise*. CD. New York, NY: Mode Records, 2006.

Seattle Symphony Orchestra. *Become Ocean*. CD. Brooklyn, NY: Cantaloupe Music, 2014.

———. *Become River*. CD. Brooklyn, NY: Cantaloupe Music, 2020.

Worden, Shara, Bryce Dessner, Nico Muhly, Owen Pallett, Elizabeth Farnum, Katie Geissinger, Alexandra Montano, Alex Sweeton, and Maya Beiser. *Death Speaks*. CD. New York, NY: Cantaloupe Music, 2013.

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Bachelor of Music in Music Education (2011)

Professional Positions Held

Indiana Wesleyan University: Cincinnati, OH - Instructor, Fine Arts, 2018-2021
University of Kentucky: Lexington, KY - Teaching Assistant, Aural Skills, 2015-2016
Eastern Kentucky University: Richmond, KY - Instructor, Music Theory and Aural Skills, 2012-2013
Eastern Kentucky University: Richmond, KY - Teaching Assistant, Music Theory and Aural Skills, 2011-2012

Scholastic and Professional Honors

School of Music Grant, University of Kentucky, 2019-2020
College Music Society Great Lakes Regional Conference Student Presentation Award, 2018

James E. Evans