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Folk Music of Atlantis: An Exploration of Water as a Sound Source in Music

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Folk Music of Atlantis: An Exploration of Water as a Sound Source in Music

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FOLK MUSIC OF ATLANTIS: AN EXPLORATION OF WATER AS A SOUND
SOURCE IN MUSIC

By

LUCY JACKSON, Bachelor of Music

Presented to the Faculty of the Graduate School of

Stephen F. Austin State University

In Partial Fulfillment

Of the Requirements

For the Degree of

Master of Music

STEPHEN F. AUSTIN STATE UNIVERSITY
May, 2020

FOLK MUSIC OF ATLANTIS: AN EXPLORATION OF WATER AS A SOUND

SOURCE IN MUSIC

By

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ABSTRACT

Folk Music of Atlantis is a programmatic composition for water instruments

and orchestra depicting the mythical city of Atlantis. I have researched water's

musical properties: its pitch bending, its ability to create sound through motion, and

its percussive effects on various materials. Drawing upon my research, I have

invented a collection of water-based instruments that take advantage of these

properties. *Folk Music of Atlantis* demonstrates their potential, combining them with

both the traditional orchestra and the innovations in water music of past composers.

The written portion of the thesis includes a historical overview of water as a

musical sound source, instructions for assembling the newly invented instruments,

and an exegesis of *Folk Music of Atlantis*. It examines the interplay between form,

thematic development, orchestration, and programmatic narrative, and demonstrates

the ways in which the musical qualities of water inform the theoretical and

programmatic underpinnings of the composition.

ACKNOWLEDGEMENTS

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Past Uses of Water in Music

Water and Sound

      Folk Music of Atlantis is an exploration of water. The sounds of water, whether

poured or splashed or simply used to tune instruments, are easy to produce yet highly

unpredictable. For this project I have experimented with these sounds and built a set of

instruments to utilize them: some through simple percussive effects, some through tuning

and pitch bending, and some through manipulation of physical properties unique to water.

In *Folk Music of Atlantis*, I have composed a piece that combines these instruments with

a traditional orchestra.

      In order to keep my work focused on the goal of creating music for water

instruments, I chose not to pursue certain areas of research. Ice and steam would both be

fascinating areas for experimentation, but their potential musical applications are entirely

different from those of liquid water, and a thorough exploration of these would strain the

limits of a ten-minute composition. While *Folk Music of Atlantis* does have a significant

programmatic dimension, my historical research does not deal with music inspired by

water, only music that uses water in the actual performance. Furthermore, the instruments

I created do not simply use water to operate, but incorporate it in the production of the

actual sound. Finally, since recordings and other electronic media would make the scope

of the thesis dauntingly broad, I have limited myself strictly to acoustic methods of sound production.

The evolution of water music has taken multiple paths. In some cases, the most important developments were instrumental innovations, with the work of individual composers and inventors forming a small part of the larger body of work. Crystal glasses, discussed below in further detail, have led to a wide variety of contributions far beyond their original creator. In contrast, composers such as Tan Dun have produced extensive water-based music on their own, and they merit individual discussion. Thus, the next section will begin with an overview of various water instruments, followed by a discussion of relevant composers.

Old and New Instruments

Crystal glasses, the most common water instruments, appear occasionally in concert literature. They can be used either individually or in sets. Varying amounts of water fill each glass, allowing the player to tune them. The larger the glass, and the more water fills the glass, the deeper the pitch will be. They may be struck with light beaters such as chopsticks, struck against one another, or rubbed along the rims. When struck, they produce a clinking sound with a fluctuating pitch. When rubbed, they produce an eerie and distant sound, somewhat similar to a bowed vibraphone. They do not possess a wide dynamic range. Nevertheless, in the right setting their effect can be haunting, and they are capable of sustaining pitches indefinitely.

Richard Pockrich developed the conventional use of musical crystal glasses in the 18th century and promoted them through his performances, but porcelain bowls called *tusut* in Arabic and *sazi kasat* in Persian predated his work.[1] These, tuned with water and struck with sticks, had been popularized in the Middle East by the 14th century.[2] Although sources on these early developments are limited, it is possible that Pockrich knew about these instruments and adapted them from porcelain to glass.

Crystal glasses are not standard members of the orchestra, but a few prominent examples of their use exist. In "God-Music," the tenth movement of *Black Angels*, George Crumb requires the violinists and the violist to play them, accompanying the cellist's melodic line.[3] An off-stage set of crystal glasses also appears in his piece *Dream Sequence: Images II*.[4] In both works, Crumb takes advantage of their ethereal sound, with "God-Music" offering listeners an escape from the terror that marks the rest of the work. In Joseph Schwantner's *...And the Mountains Rising Nowhere,* for wind ensemble, they

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[1] George N. Heller, "To Sweeten Their Senses: Music, Education, and Benjamin Franklin," *Music Educators Journal* 73, no. 5 (January 1987): 24.

[2] A. Hyatt King, "The Musical Glasses and Glass Harmonica," *Proceedings of the Royal Musical Association* 72, no. 6 (April 1946): 97-98.

[3] George Crumb, *Black Angels* (New York: C. F. Peters Corporation, 1970).

[4] George Crumb, *Dream Sequence: Images II* (New York: C. F. Peters Corporation, 1976).

lend the introductory passage a ghostly quality that starkly contrasts with the bombastic

percussion section.[5]

The armonica or glass harmonica, closely related to the crystal glasses, was

invented by Benjamin Franklin in 1761.[6] The glasses are replaced with bowls, suspended

on a rotating bar, and stroked in a similar fashion. The sound the instrument produces is

similar, but the construction allows for more convenient playing, with the bowls more

closely grouped together and arranged in order of ascending pitches like a keyboard

instrument. Wolfgang Amadeus Mozart wrote for it in his "Adagio and Rondo in C

Minor," K. 617.[7] In this piece, the unusual instrumentation gives Mozart's classicism a

striking, otherworldly character. The glass harmonica is less commonly used than crystal

glasses, possibly due to its complexity.

In very recent years, new instruments have begun to appear. The waterphone,

invented by Richard Waters, consists of a water-filled metal bowl with rods. The player

bows or strikes the rods, then tilts the instrument so the water will bend the pitch.[8] Its

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[5] Joseph Schwantner, . . . *And the Mountains Rising Nowhere* (Mainz: Schott Helicon Music Corporation, 1977).

[6] K. Marie Stolba, "Benjamin Franklin and Music," *American Music Teacher* 26, no. 2 (1976): 8.

[7] Wolfgang Amadeus Mozart, *Adagio and Rondo in C Minor, K. 617* (New York: Alfred Music, 1985).

[8] Bart Hopkin, "Trends in New Acoustic Musical Instrument Design," *Leonardo Music Journal* 1, no. 1 (1991): 14.

irregular shape, combined with the pitch-bending effect of the water, makes its sound

highly unpredictable. Often used to evoke horror, it appears in Christopher Rouse's

Gorgon.[9] The hydraulophone, invented by Steve Mann, relies on the flow of pressurized

water through a pipe, which the player can manipulate by pressing holes along the pipe in

a manner similar to many wind instruments.[10] It produces an organ-like sound, but

because of its novelty it has not yet gained a foothold in the literature. It has, however,

been featured in numerous exhibits, in locations such as the Ontario Science Centre.[11]

<u>John Cage (1912-1992)</u>

Among John Cage's many musical experiments, there are a number of

compositions incorporating water. In his *Trio* for percussion, he submerged a gong in

water so that he could give cues to synchronized swimmers. William Fetterman offers the

following account:

> Cage had joined a modern dance group at U.C.L.A. as an accompanist and
> composer, and was asked to write a work for the swimming team's annual water
> ballet. During rehearsals he discovered that the swimmers could not hear the
> music underwater. His solution was to lower a gong into the water which, when
> struck, could be heard by the swimmers.[12]

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[9] Christopher Rouse, "Gorgon," Press and Program Notes, accessed September 11, 2019, http://www.christopherrouse.com/gorgonpress.html.

[10] Ryan Janzen, "Hydraulophones: Acoustic Musical Instruments and Expressive User Interfaces" (master's thesis, University of Toronto, 2008), 5-8.

[11] Janzen, "Hydraulophones," iii.

[12] William Fetterman, *John Cage's Theatre Pieces: Notations and Performances* (New York: Routledge, 1996).

After this pragmatic development, he began exploring its artistic value and incorporated multiple submerged gongs in *First Construction (In Metal)*, layering tremolos as the gongs are raised or lowered in the water to create an eerie texture.[13] This proved to be his most influential innovation in the water music, with later composers using it frequently in their own work. Examples include Lou Harrison in *Labyrinth No. 3.*[14]

Cage explored other possibilities in works such as *Water Music,* which requires the performer to blow a duck call into a glass of water.[15] The deeper the call is held in the glass, the more muted the sound becomes. In *Water Walk,* a work specifically created for live audiences and famously performed on the game show *I've Got a Secret,* he experimented not only liquid water, but also ice and steam.[16] Cage requires the performer to fill a glass with ice, lower a gong and a cymbal into a bathtub, water a vase of roses, release steam from a pot, and whistle into a water glass, among other unusual techniques.

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[13] John Cage, *First Construction (In Metal)*. New York: Edition Peters, 1939.

[14] Don Russell Baker, "The Percussion Ensemble Music of Lou Harrison: 1939-1942" (master's thesis, University of Illinois at Urbana-Champaign, 1985), 84.

[15] Cage, *Water Music* (New York: Henmar Press, 1960).

[16] *I've Got a Secret,* hosted by Garry Moore, featuring Zsa Zsa Gabor and John Cage, aired February 24, 1960, on CBS; Cage, *Water Walk* (New York: Henmar Press, 1961).

Each of these techniques appears only briefly in the piece, since the performer must make every sound at a precise moment before moving to the next step.

Hermeto Pascoal (b. 1936)

The Brazilian composer Hermeto Pascoal has focused much of his career on finding music in nature, leading him to frequently include water in his work.[17] He turns to the natural world around him for inspiration, exemplifying a unique and valuable approach to composition. His work is deeply connected to rural Brazil. He borrows from numerous genres, and often uses everyday objects such as teakettles as musical instruments.[18]

Tan Dun (b. 1957)

Tan Dun's *Water Concerto*, composed in 1998, reflects Dun's sense of personal connection to water, which he associates with his childhood memories of Hunan, China.[19] The soloists play waterphones (both bowed and struck), pour water from glasses, drip it from their hands, splash it around in large bowls, and use the glasses to make air bubbles,

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[17] Luiz Costa Lima Neto, "The Experimental Music of Hermeto Paschoal e Grupo (1981-83): a Musical System in the Making," *British Journal of Ethnomusicology* 9, no. 1 (2000): 119-142.

[18] Hermeto Pascoal, "Hermeto Pascoal's Music Reaches Far into the Stratosphere," interview by Betto Arcos, *Morning Edition*, NPR, November 30, 2017, audio, 7:14, https://www.npr.org/2017/11/30/567220827/hermeto-pascoals-music-reaches-far-into-the-stratosphere.

[19] Tan Dun, *Water Concerto,* Water Concerto for Water Percussion and Orchestra, accessed February 5, 2020, http://tandun.com/composition/water-concerto-for-water-percussion-and-orchestra/

among other techniques. In contrast to *Folk Music of Atlantis,* in which I create new instruments that use water to produce sound, Tan Dun regards the water itself as the instrument in *Water Concerto,* using various methods of submerging instruments, pouring, and splashing to craft his sound palette. This allows him to communicate the personal nature of the work, with the main orchestra often remaining in the background while the soloists indulge in the rich but unpredictable sonorities at their disposal.

Viet Cuong (b. 1990)

In recent years, Viet Cuong has frequently used submerged instruments in his work. *Diamond Tide*, for wind ensemble, features two different water instruments.[20] In the first movement, crotales are struck and lowered into water bowls to bend the pitch. Like numerous composers, Cuong demonstrates an interest in expanding Cage's submerging technique to other instruments in the orchestra. He devotes the second movement to a set of crystal glasses. Although this is a traditional instrument with numerous examples in past literature, he uses it in unusual ways, having the performers tilt the glasses as they strike them or rub the rims, once again using water to bend pitches. The submerged crotales return in the final movement, though used much less extensively.

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[20] Viet Cuong, *Diamond Tide,* Wind Ensemble, accessed February 11, 2020, http://vietcuongmusic.com/diamond-tide.

Water, Wine, Brandy, Brine takes the sound of crystal glasses even further.[21] The players begin the piece by toasting one another in a steady rhythm with their carefully tuned glasses. Even the slight jostling of the water produces a noticeable shift in the pitch, and the resonant quality of glass gives the notes a strong, clear sound. In the following section of the piece the players strike their glasses with chopsticks repeatedly while tilting them, both techniques that appear in *Diamond Tide*. The chopsticks yield a more delicate sound than the toasting, though still fairly capable of projecting sound well. Finally, the players stroke their fingers along the rims of the glasses, producing the familiar haunting sound most often associated with the instruments. Once again, they tilt the glasses to bend the pitch. The piece is significant for its thorough exploration of the sounds that crystal glasses can produce, venturing further than *Diamond Tide* and broadening the scope of Cuong's sound palette.

Building on past work

The discoveries of these composers have informed my own work in *Folk Music of Atlantis*. I frequently use older instruments and techniques, including the glass harp and the submerging of instruments. Philosophically, I take inspiration from the creative curiosity that led to the creation of these sounds. Past music demonstrates important principles about the acoustics of water, and understanding them presents new possibilities that I hope to expand upon even further in my own composition.

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[21] Viet Cuong, "Water, Wine, Brandy, Brine." Chamber Music. Accessed September 17, 2019. http://vietcuongmusic.com/water-wine-brandy-brine.

CHAPTER 2

Acoustics and Design of Water Instruments

Researching and Inventing Water Instruments

In setting out to follow in the footsteps of other composers by creating new instruments and techniques, I had to engage in a lengthy process of experimentation. At the earliest stages, I created simple instruments that allowed me to better understand the acoustic properties of water. Although these early instruments had to be either significantly modified or discarded altogether before I could begin composing music, they allowed me to understand pitch bending, tuning, and the effects of water on various materials. With the acoustic properties of water in mind, I could create more effective instruments that would produce interesting new sounds. The completed instruments show a wide range of complexity and timbres, each using water in a unique way.

Acoustics of Water

The greatest challenge in finding musical applications for water arises from its tendency to mute sound. A water-filled container will ring far less when struck than an empty container. Likewise, an object struck underwater will not produce much sound, while an object struck in the air will be perfectly audible.

There are three ways to escape this limitation. The first, used in the whirl pot (discussed further in the next section), is to take advantage of the physical motion of

water to produce a unique sound. An object carried along by a current will move smoothly as long as the water continues to flow. A dozen marbles, rolled around in an empty pot, would produce an irregular rattling that would stop as soon as the performer stopped shaking them around. If the pot is filled with water, however, the performer only needs to stir the water a little to make the marbles roll in a smooth circle, continuing for several seconds even after the water is no longer being stirred.

The second approach, as demonstrated by the rain pot (also discussed in the next section), is to use the water itself as a percussion instrument. This can be done either by striking the water with an object, or pouring the water onto something else. The first approach has been featured in Tan Dun's *Water Concerto,* which requires the performer to strike the surface of the water with the palm of the hand.[22] The second approach opens up a wide range of possibilities, depending on how much water is poured, how quickly it is poured, and what it is poured against. This presents its own challenges. There is still a significant risk of excessive splashing, and from an acoustic standpoint, it is difficult to pour water onto an object without drowning out the effect with the flow of water itself.

In order to achieve the highest volume for water instruments, I have favored materials made of glass, ceramics, or metal. Glass and ceramics achieve both the best volume and the clearest tuning. Metal may be effective as well, particularly for brittle percussive sounds. Occasionally, there may be legitimate reasons to use quieter materials. In the whirl pot, for instance, I wanted to ensure that the stirring did not produce too

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[22] Dun, *Water Concerto.*

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much sound, allowing the marbles and the pot lid to ring out more clearly. In this case, a wooden spoon was highly effective.

A final physical aspect of water that will affect the instruments is evaporation. While this will not debilitate a single performance, a water instrument loses its original tuning, or even becomes unplayable, if it is stored over the course of several days. Unlike string instruments, in which the pitch lowers over time, the pitch of a water instrument rises as there is less water. The tuning problem, if it does arise, will most strongly affect the water chimes and the glass bowl chimes, both of which become ineffective without sufficient water.

<u>Instruments and Effects</u>

With those acoustic principles in mind, I could assemble instruments to use in *Folk Music of Atlantis*. Some produced simple, sharp attacks, and some produced multilayered percussive effects. Some played definite pitches, and some played indefinite pitches. Some, particularly the submerged instruments, were developed by earlier composers. Many of them utilized swirling, dripping, and pitch bending to create sound. Informed by my experiments with the acoustics of water, I was able to build a diverse collection of new instruments. All of them are described below.

To create the whirl pot, I filled a cooking pot (or occasionally a bucket, as seen in Figure 2.1) approximately halfway with water. I placed a handful of marbles, enough to make plenty of noise while still rolling around freely, inside the water. I then placed a lid in the water, slightly less wide than the pot, with the handle facing down. I chose one

with a rounded handle, allowing the lid to wobble in any direction. The easiest way to

ensure it was the correct size was to use a lid from a smaller pot in the same set as the one

being used for the instrument. Because every individual pot features a drastically

different design, I had to experiment with several different ones and choose the most

satisfactory sound. In performance, it may be effective to use several different pots, so

that multiple timbres may be explored throughout the performance.

Example 2.1: Whirl Pot

I used a large wooden utensil to stir the water, touching the lid directly. This

created two layers of continuous sound: the marbles rolling in a circle at the bottom of the

pot, and the lid wobbling and bumping against the side of the pot. The swirling water

ensured that the marbles and the lid maintained smooth, continuous motion, and even

after I stopped stirring, the marbles would roll for a long time. Musically, this created a

rumbling sound with a gradual crescendo and diminuendo. It was effective at creating a

percussive effect similar to that of a rainstick. It could not start or stop abruptly, and

could not play sharp, precise rhythmic patterns.

The rain pot required a cooking pot, a colander (approximately the same size as

the pot), several paper towels, and miscellaneous small objects. The objects were all

made of resonant materials. Metal and glass could make the most noise, and the thinner

they were the more they would ring out. Porcelain, though quiet, had a highly musical

quality, and with amplification it could produce a delicate effect.

Example 2.2: Rain pot (with colander removed)

I placed the objects inside the pot, with the colander on top of the pot. The inside

of the colander I lined with several layers of paper towels. To play this instrument, I

gradually poured water into the colander and let it drain into the pot, not so quickly that

the colander would overflow. The more slowly the water was poured and the more paper towels I used, the more slowly the pot will fill. As the water filtered through the colander, it would patter against the assorted objects, creating a rain-like sound. If the objects were all made of the same material, the sound would be more uniform. If they were made of a wide variety of materials, the sound would be somewhat more random and resemble actual rain. To ensure the sound could last a long time, it was best to pile the objects on top of one another, so the water could patter against them even after the lowest objects had been fully submerged.

Water pipes required only a set of jars and a set of hollow metal pipes of varying sizes. In my experiments, I used wind chimes that I had detached from their strings. I filled each jar with water and placed a pipe in each jar. Smaller pipes worked better, since the larger pipes underwent less pitch-bending. There is no limit to the number of jars and pipes that may be used, but I only used two in *Folk Music of Atlantis*. Once the water pipes had been assembled, there were two different ways I played them. The first was to scrape the pipes up and down against the sides of the jars. This produced a gritty metallic sound. Lifting a pipe bent the pitch upward, and lowering bent the pitch downward. Blowing into the pipe produced a soft, barely audible wind sound whose pitch could be similarly manipulated. Because of the low volume, this method would require amplification in a live performance. Both techniques produced indefinite pitches.

Of the new instruments, the water chimes were the most difficult to assemble. I used a set of wind chimes (medium-sized, with eight chimes tuned to a seven-note scale),

a large tub, two large props (chairs or small tables may work), a long metal grid, thin string, washers, duct tape, and nails. I filled the tub almost to the brim with water and placed it between the two props. The metal grid rested stably on the props over the tub, with plenty of space between it and the water. I cut the strings of the wind chime and detached the chimes. Then I looped a length of thin string through the largest wind chime. Each end of the string passed through two separate holes on the far left side of the grid, near the place I would sit to play the instrument, with the chime more than halfway submerged in the water. I left enough space between the two ends of the string to let the chime ring freely, and I made sure it was not submerged so deeply that I could not comfortably strike it. I tied the ends of the string in a knot over the grid, with a fair amount of string left over. I repeated this process for each chime in the set.

Example 2.3: Water chimes

The chimes may be tuned as desired, but for *Folk Music of Atlantis* I tuned it to a natural minor scale. Since the piece only uses seven notes out of the octave, the second scale degree may be omitted. The tuning depended on the length of string between the knots and the chimes, so I had to tie the knots extremely carefully, and some notes were slightly out of tune even with the most careful work. I decided this was acceptable, as long as no note was off by more than a semitone. To ensure that they could be played easily, I would arrange the chimes in either a straight line or a slight curve, with approximately two inches of space between them. After the tuning was complete, I tied washers to each string, just above the knot. To enable the key change partway through the piece, I lined several layers of duct tape under the grid and stuck nails through the layers. When I wanted to change to a new key, I would lift each washer and use a nail as a hook to hold it in place, lifting the chime higher than before so it would remain in the new key.

Example 2.4: Washers and nails to change the tuning of water chimes

The chime could be played with either one or two beaters. To briefly raise the pitch, I would strike a chime with one hand while pulling the washer upward with the other. Lowering the washer back down would restore the chime to the original pitch. Using only one beater made it difficult to play passages requiring agile movement, but also allowed me to bend pitches more freely. Using two beaters permitted much less pitch bending, but also enabled me to tackle difficult passages more effectively. The composer may have precise uses of pitch bending in mind, or may wish to leave such effects to the discretion of the performer, as I did in *Folk Music of Atlantis*. Either way, the intention should be clear in the score.

The second tuned instrument, the glass bowl chimes, required a set of eight glass bowls of varying sizes, from a large salad bowl to a moderate-sized serving bowl. I chose bowls that would ring clearly with a definite pitch when struck. I filled the four largest bowls partway with water. At this stage it was possible to tune them with some precision, but *Folk Music of Atlantis* requires only an approximate range of tunings from low to high pitches, similar to wood blocks. The largest of the empty bowls I let float inside the largest water bowl, the second largest empty bowl in the second largest water bowl, and so on. The water had to be deep enough that the empty bowls would float well above the bottom of the water bowls.

Example 2.5: Glass bowl chimes

Once the bowls were set up, it was possible to play the instrument in several

ways. The first was to push the empty bowls around at random so that they would strike

the sides of the water bowls. Although the instrument did not resemble wind chimes in its

design, it strongly resembled them in its sound. Because of the water, the chime sound

had a wobbling effect that was most pronounced in the larger bowls. The second method

of playing the instrument was to push the empty bowls down into the water so that they

would strike the bottom of the water bowls. For this to be effective, I had to make sure

that the water was not so deep that it would pour into the empty bowls when they

descended. To produce the clearest sound, I found it best to push them down with one

finger and release them the moment they struck. This produced the same wobbling effect

as the first technique, but much more pronounced and carefully controlled. After the bowl

was released, it would float around a bit until it struck the edge of the water bowl. The

performer may wish to steady the floating bowl, but *Folk Music of Atlantis* does not

require this. The sound is much more subdued than a deliberate strike, and the piece

favors the use of occasional uncontrolled sounds to contrast with the precision of most traditional orchestral instruments.

The French press, though not designed as part of this thesis, appears as a musical instrument. By filling it partly with water and pumping the handle up and down, I could create a steady rhythm. The movement consisted of two parts: downward and upward motion. The downward motion had a more precise attack, produced when the pump struck the surface of the water, accompanied by a sloshing sound as it pushed further down. The upward motion sloshed the water around without striking the surface, and although it could be precisely timed, the attack was not as clear as that of the downward motion. Because of the French press's low volume, it requires amplification to be used in an orchestral setting. Because of the design of my own French press, I had to tape the lid down so that it would not detach and cause a spill. As long as the lid was secure, however, the French press kept water well contained, making it fairly safe to use near recording or amplification equipment.

The simplest instrument, explored in Tan Dun's *Water Concerto* and producing a sound similar to the French press, required a bowl of water and a drinking glass. I held the glass upside down, plunged it into the water, and lifted it back up. As with the French press, the initial impact had a precise attack. If I made sure to plunge the glass underwater with a swift motion, an air bubble would form inside the glass. When I lifted the glass the bubble would escape, producing a deep sound vaguely like a pop. This instrument requires amplification to be effective, and because performance can lead to a large

amount of splashing, it requires precautions. The safest approach is to use a deep

container with shallow water so that very little will escape.

Lastly, there are a variety of orchestral percussion instruments that may be

submerged in water. Many of these, such as gongs and cymbals, have appeared in past

works, as discussed in chapter 1. *Folk Music of Atlantis* utilizes a gong, glass chimes, a

cymbal (both struck and bowed), finger cymbals, and a triangle. The finger cymbals are

both the quietest and least resonant, requiring amplification to be effective. The bowed

cymbal sounds similar to a waterphone, with a slightly more consistent sound. All the

other instruments retain their normal sounds, but with a gradual lowering and raising of

the pitch as they are submerged and raised.

Safety Precautions

A number of these instruments present serious risks, especially in an orchestral

setting. Splashing water can damage microphones, recording equipment, and certain

musical instruments. Onstage spills are a hazard to the performers themselves.

Several precautions must be taken in a live performance. The performers should first play

the water instruments on their own, away from other equipment and instruments, so that

they understand how much water each might spill during a performance. The instruments

with the highest risk of spilling are the rain pot, the drinking glass, and the glass bowl

chimes. These should be placed on tables far from the rest of the orchestra. They should

be kept away from the edges of the tables. The performers should wear non-slip shoes. If

possible, the piece should be played in a venue without a slippery stage. Microphones

should be placed well above the instruments, and when playing the performers should avoid overly aggressive movements.

Creating New Music with Water Instruments

Once I had created the instruments, *Folk Music of Atlantis* began to take shape. Since many of the sounds involved pitch bending, I took advantage of the numerous orchestral instruments that were capable of pitch bending as well. I also used the orchestration to reflect the timbral traits of the water instruments, combining the rain pot and the water chimes with light, fluid rhythmic textures. By weaving these technical approaches together, I could better communicate the piece's programmatic narrative, painting an image of rain and rising tides through the water instruments and traditional instruments alike. The following chapter presents the performance instructions and full score of *Folk Music of Atlantis*, followed by an exegesis of its musical ideas in Chapter 4.

CHAPTER 3

Folk Music of Atlantis

Instrumentation

2 flutes (1st player doubles piccolo)
2 oboes
2 clarinets in Bb
Bass clarinet in Bb
Soprano saxophone in Bb
Tenor saxophone in Bb
2 bassoons
Contrabassoon
4 horns in F
3 trumpets in Bb
2 tenor trombones
Bass trombone
Timpani (standard console of four)
Percussion 1 – tambourine, guiro, glockenspiel,
    bass drum
Percussion 2 – vibraphone, slapstick, chimes
Percussion 3 – marimba, triangle
Water percussion 1 – tub of water, medium gong,
    triangle, 2 water pipes
Water percussion 2 – tub of water, cymbal, bow,
    whirl pot, air glass
Water percussion 3 – tub of water, finger cymbals,
    rain pot, French press, water bowls
Water percussion 4 – tub of water, wind chimes,
    waterphone, bow, glass harp, water chimes
Harp
Violin 1
Violin 2
Viola Cello
Bass

Performance Instructions

Glissandi

There are three basic types of glissandi used in *Folk Music of Atlantis*. The first, the simple glissando, is notated as seen below:

The arrow indicates the direction of the glissando. The number indicates how many semitones should be ascended or descended (1 = one semitone, 1.25 = one and one fourth semitones.)

The glissando begins and ends roughly where the arrow begins and ends. The time taken and the number of semitones should be performed roughly according to the indications, but do not need to be exact.

The second type is the complex glissando:
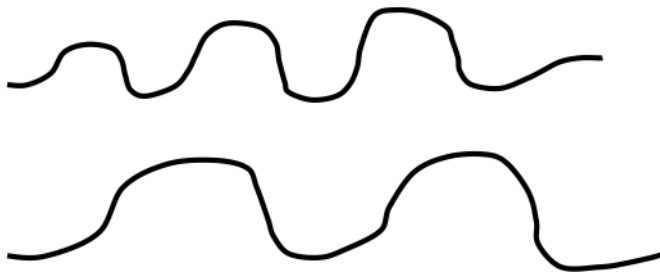
This should be played very freely, with the performer only roughly following the shape and length of the curve. Ideally, the high and low points of the glissando should be no more than a perfect 4th apart.

Finally, there are slides to pitches. These include an arrow and the instruction "slide to pitches," with no number given. These are played like traditional glissandi, with beginning and ending notes indicated in the score.
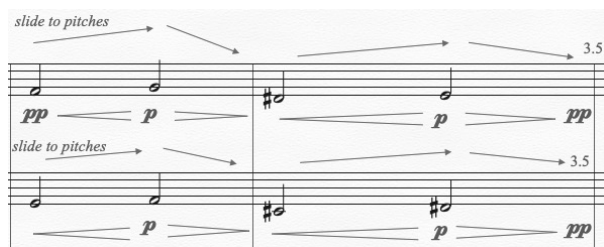
Many water instruments, like the French press, use arrows to indicate motion in a particular direction, and should not be confused with glissandi (see the instructions for individual instruments). Other directions for glissandi may appear written in the score and parts.

Notation and Performance of Water Instruments

Submerged instruments

Each percussionist who will play submerged instruments should have access to a large tub of water. Arrows pointing downward indicate that the performer should lower the instrument into the water. At upward arrows, they should raise it. Performers should follow the beginning and end points of the arrows, but they may bend pitches however much they wish. The following abbreviations are used for the submerged instruments:

Sub. medium gong – a medium-sized gong.

Cymbal W.P. – water poured on a cymbal.

Sub. Cymb. – a cymbal struck and submerged.

Sub. Bw. Cymb. – a cymbal bowed and submerged.

Sub. Orch. Chimes – a set of orchestral wind chimes.

Sub. finger cymbals – two finger cymbals struck together.

Sub. Trgl. – a triangle.
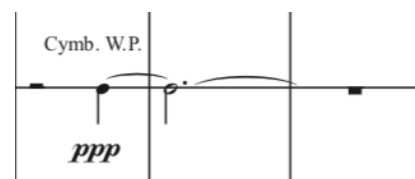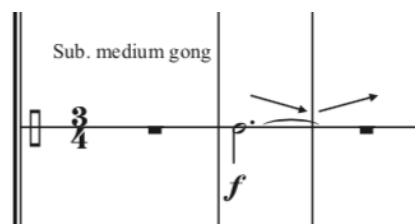
Whirl Pot

The whirl pot should be stirred with a wooden spoon. "Let whirl" indicates that the performer should stop stirring, but allow the sound to fade away on its own.
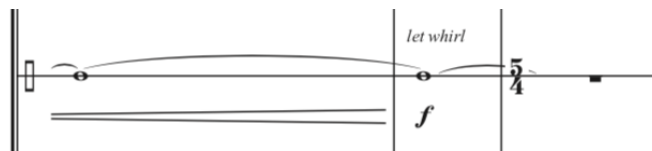
Rain Pot

The rain pot should be slowly filled with water. Once the colander is full, the performer should stand back and allow the water to filter through into the pot below.
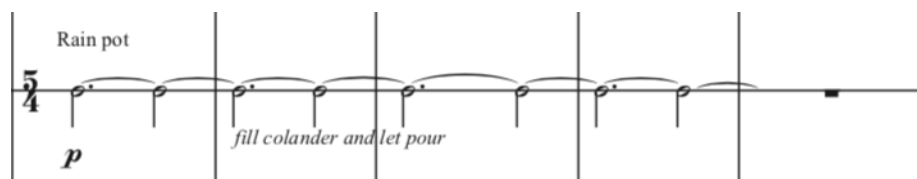
Water Pipes

There are two techniques for playing the water pipes. If the score says "water pipe blow" or "blow," the player should blow through a single water pipe into the jar of water. If it says "water pipes scrape," the player should scrape two water pipes up and down against the rim of the jar, raising or lowering them into the water. At upward arrows, the pipes should be raised; at downward arrows, they should be lowered.
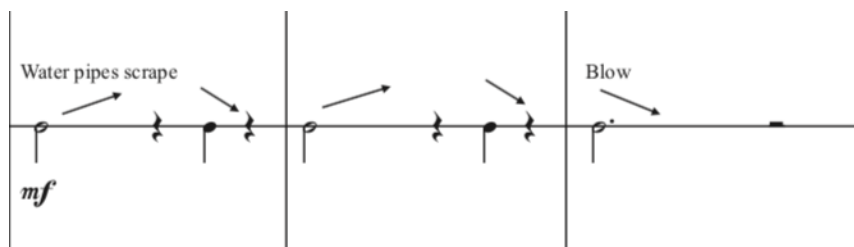
Water bowls

To play a note on a water bowl, the performer should push the bowl downward with one finger and then release as soon as it strikes the bottom. The bowls are notated in a manner similar to woodblocks. Each of the four spaces on the staff represents a different bowl, with the lowest space corresponding to the largest bowl, and the highest space to the smallest.

Whenever the bowls are used to create a wind chime effect, specific instructions will appear in the score.

Water Chimes

The water chimes should be played with two mallets; the choice of mallets is left to the performer's discretion. Pitches can be bent by holding the washers that suspend the chimes and raising or lowering them.

French Press

The French press is played using a pumping motion. Upward arrows indicate that the performer should raise the pump, and downward arrows indicate lowering it.

Air bubble glass

The performer should create air bubbles by lowering a glass into a water container. This works best if done in a swift motion, with the rim of the glass parallel to the surface of the water. Downward arrows indicate lowering the glass, and upward arrows indicate raising it to release the air bubble.

Waterphone

The waterphone will always be played with a bow. The exact technique used is left to the discretion of the performer.

CHAPTER 4

Exegesis of *Folk Music of Atlantis*

Imaginary Folk Music

In writing *Folk Music of Atlantis,* I had to create a piece that was both a technical

demonstration of my experiments with water and a programmatic depiction of a

legendary city. Both dimensions are deeply intertwined. The sound of the water

instruments shaped the portrayal of Atlantis, and my decision to evoke folk music shaped

the theoretical foundations of the whole work.

At the earliest stages of planning, I wanted to create a piece that drew on my

interest in fantasy and mythology. Since it would use water-based instruments, Atlantis

was a logical choice of subject matter. The story of the sunken city, told by Plato in

Timaeus and Critias, inspired centuries of speculation, and despite the lack of

archaeological evidence of Atlantis's existence, it proved to be a fruitful source of artistic

inspiration.[23] In order to depict a city that exists only in legend, I had to develop a

musical language that clearly suggested a folk tradition, without conforming too closely

to any existing traditions. This was challenging not only because of the depth and variety

of popular idioms that exist around the world, but also because of the ambiguous borders

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[23] Kathryn A. Morgan, "Designer History: Plato's Atlantis Story and Fourth-Century Ideology," *The Journal of Hellenic Studies* 118, no. 6 (1998): p. 101.

that surround the very concept of folk music. Matthew Gelbart writes, "Patent, 'objective' definitions of both folk and art music . . . are doomed to inconsistency, tautology, and ultimately self-contradiction because folk music and art music are not timeless, objective truths, but very human constructions."[24] And according to Ana Hofman, "Cultures are not homogeneous wholes, but consisted from the narratives and symbolisations of their members, and their complex social and significative practices."[25]

Nevertheless, composers often use certain idioms to evoke folk music. Ralph Vaughan Williams, for example, turned to modality and direct quotations of English folk songs, and Béla Bartók used augmented seconds and dotted rhythms drawn from Hungarian music.[26] The Phrygian mode suggests Spanish music, ragas and mictrotones suggest Indian music, and the Hirajoshi pentatonic scale suggests Japanese music. All these traditions are far richer than these individual idioms, but they nevertheless shape the expectations of listeners. Successfully creating imaginary folk music requires both an awareness of those expectations and the ability to manipulate them. In order to achieve

[24] Matthew Gelbart, *The Invention of Folk Music and Art Music: Emerging Categories from Ossian to Wagner* (Cambridge: Cambridge University Press, 2007), 4.

[25] Klisala Harrison, Elizabeth Mackinlay, and Svanibor Pettan, eds., *Applied Ethnomusicology: Historical and Contemporary Approaches* (Newcastle upon Tyne: Cambridge Scholars Publishing, 2010), 25.

[26] Joyce Kennedy, Michael Kennedy, and Tim Rutherford-Johnson, eds., *The Oxford Dictionary of Music*, 6th ed., s.v. "Ralph Vaughan Williams" (Oxford: Oxford University Press, 2012); David E. Schneider, *Bartok, Hungary, and the Renewal of Tradition: Case Studies in the Intersection of Modernity and Nationality* (Berkeley: University of California Press, 2006), 59.

my goal, I used particular scalar, modal, and rhythmic ideas to craft my thematic material, favoring ideas that either did not belong to specific traditions (such as the long glissandi throughout the work), or that belonged to many traditions throughout the world (such as the pentatonic scale in the second theme). However, I did not treat these ideas as fixed rules. Instead, to avoid the narrow view of folk music criticized by Gelbart and Hofman, I pushed the boundaries I had set for myself in order to achieve a nuanced, flexible musical language.

The form of the piece is simple, but understanding its overarching narrative will clarify the context of smaller details. There are five sections exploring three main themes. The Fanfare focuses on tone color rather than thematic development, introducing important orchestrational ideas in preparation for the Processional. The Processional, the Rain Dance, and the Puddle Dance each present a theme, repeat the theme, veer into thematic material taken from another section, and then return to the theme. The Fall of Atlantis takes the Processional theme and repeats it multiple times, building up in tonal instability and orchestrational density before reaching a final statement. The piece ends with a final chord in which the instruments gradually sink lower in their range and fade away. The following chart provides a more detailed summary of the form, particularly the thematic and orchestrational content of each section. "Pr." refers to the Processional theme, "RD" to the Rain Dance theme, and "PD" to the Puddle Dance theme. With this larger form in mind, what follows is an exploration of particular elements that unite the piece: thematic material and development, orchestration, and programmatic narrative.

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Example 4.1: Form of *Folk Music of Atlantis*

Section	Mm.	Themes	Water Instruments	Orchestral Instruments
Fanfare	1-23	None	Submerged	Brass, Strings
Processional	24-46	Pr. – Pr. – PD – Pr.	Submerged	Strings, Woodwinds, Percussion, Brass
Rain Dance	47-115	RD – RD – Pr. – RD	Percussive, Melodic	Strings, Woodwinds, Percussion
Puddle Dance	118-199	PD – PD – RD/Pr. – PD	Percussive	Strings, Woodwinds, Percussion
Fall of Atlantis	200-259	Pr. – RD/PD	Submerged, Percussive	Brass, Woodwinds, Tutti

Thematic Material

In order to establish a unique folk-like style in the three main themes of *Folk Music of Atlantis*, I adopted the following parameters:

1. The themes would span no more than an octave.

2. Each theme would be characterized by a strong, clear rhythmic idea.

3. Each theme would blend two different modes.

4. Cadences would use plagal rather than dominant motion in the melody.

5. Phrases would usually be periods rather than sentences.

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6. The first half of a phrase would be diatonic. Chromaticism, if present in the

theme, would appear in the second half.

The first, second, fifth, and sixth rules were meant to steer me away from the

drastic rhythmic and metric changes, constant nontonality, and extended phrases that

mark my typical style. Since my experience is deeply rooted in conventional classical

music, I had to make a conscious effort to adopt a folk idiom. The fourth rule represents a

simple idea that diverges drastically from functional harmony, in which authentic

cadences are far more common, without tying the music to a particular folk tradition. The

third rule is particularly significant, since it allowed me to use a wide variety of modes

without the fear that they would sound too evocative of existing musical cultures. With

these parameters in mind, I created three major themes: the Processional theme, the Rain

Dance theme, and the Puddle Dance theme.

Example 4.2: Processional theme

The Processional theme of *Atlantis* makes its earliest appearance in m. 24, in the

first violins. It portrays a royal procession. The tempo is marked "Majestic," the rhythm

is steady and grandiose, and the modes evoke a proud, somber feeling. It clearly breaks

the first limitation with the widest range of any of the themes, an octave and a major

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third. I chose to do this for several reasons. The only note that falls outside of the octave range is the final D, which functions not as a smooth continuation of the melodic contour, but as an emphatic cadential gesture. Furthermore, the expansive range of the theme and the flexible rhythm are meant to depict the grandeur of Atlantean royalty.

Rhythmically, the Processional theme is more fluid than the others, but there is still a clear idea undergirding it: a short-long gesture followed by a long-short gesture. This idea appears most clearly in the first measure. The second measure alters the rhythmic values and adds a note to the initial gesture, but keeps the basic idea intact. In the third measure, however, the theme breaks the pattern with a long-short gesture in the first half. This is in keeping with the tonal direction of the melody, which diverges into a new mode at this point. The final measure seems to escape the pattern entirely before concluding with a reiteration of the opening sixteenth and dotted quarter figure.

Two modes interact here. The first is a combination of the Hirajoshi pentatonic scale and the Lydian mode: G-B-C#-D-F#. The second is the D minor mode. The first two measures contain every note of the first mode. The first E, which I added while revising the theme, is not structurally important, but simply adds rhythmic variety. The second E, on the other hand, serves as the bridge between the two modes. B♭ and C♮ appear moments later, completing the shift to D minor. The last two notes conform to the plagal motion rule, but this introduces some tonal uncertainty. The theme could arguably end in either D minor or G minor. Since neither E nor E♭ appear in the last two measures,

and since the harmony (discussed later) is too chromatic to offer a clear answer, either

interpretation is valid.

Example 4.3: Rain Dance theme

The lively second theme, entering in the water chimes at m.71, is a stark contrast

to the stately processional. It features a much lighter tone, no chromaticism, and an

octave range. In part, I limited the range so strictly because that is the range of the water

chimes (without any retuning). On the whole, this is the only theme that perfectly

conforms to every parameter I set out for myself.

The strength of the Rain Dance theme comes from its rhythmic drive. At the fast

tempo, it feels like 6/8 + 2/4, with the last two quarter-notes accented in the melody,

harmony, or both. 5/4, though, is much easier to read in the score, and the music alone is

enough to suggest the intended rhythmic pulse. The last measure often has extra beats

and is split into either two 3/4 measures or a 3/4 followed by a 4/4 measure, allowing a

more satisfying cadence.

The Rain Dance theme makes a simple shift from F major pentatonic to D minor

pentatonic. Only a B♭ falls outside the two scales. Although the initial F scale appears to

be a drastic change from the G Hirajoshi of the main theme, the end of the phrase uses the same G-D cadence, this time clearly belonging to D minor pentatonic. Despite all the other contrasts between the two themes, this cadence communicates clearly that they belong to the same musical world.

Example 4.4: Puddle Dance theme

The Puddle Dance theme, entering in the flutes at the pickup to m. 134, follows most of the rules. The range is one semitone wider than an octave, but this is not particularly significant. The rhythm of eighth and dotted quarter-notes is relentless, and the second half of the phrase perfectly repeats the rhythm of the first.

What sets it apart is its chromaticism. Unlike the first two themes, it replaces the rule of blended modalities with a different approach. The mode in the most of the theme is C minor. In the third, seventh, and eighth measures, C, G, and D are each lowered by a half-step. Thus, the original mode itself is altered, with no alteration clearly communicating a change to a new mode. This is somewhat similar to the use of blue notes in a typical blues scale, but the pitches are different, and the lowered pitches stand on their own rather than emphasizing other notes.

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Together, these themes undergird *Folk Music of Atlantis*, with their development across major sections uniting drastically different moods and scenes into a single work. The overarching form allows old thematic material to be continually revisited and reinterpreted. Even amid drastic orchestrational contrasts, the connections between different thematic ideas form a bridge between formal sections, with each new statement of a theme introducing new meaning to the original statement. This thematic development is crucial to understanding the meaning of the work as a whole.

Thematic Development

As seen in the form chart, even though each theme is strongly associated with a particular section, they are woven through the whole piece, sometimes heavily disguised. Often, a hidden iteration of a theme will use only a small fragment of the original melody, recontextualized with a new rhythm and occasionally fused with a fragment from another theme. Other times, the themes will reappear complete and, for the most part, rhythmically intact. The Processional, Rain Dance, and Puddle Dance themes all move through the work in unique ways, guided by their own internal structures and harmonic implications.

The Processional theme, as stated earlier, makes its first complete appearance in mm. 24-27. This passage is scored with strings and sparse percussion accents. The restatement in mm. 28-31 omits the first violins and gives the theme to the cellos and basses, but otherwise there are no significant changes. This connection to the strings becomes significant in later sections. Also important, in these measures, is the harmonic

progression. The following example shows the progression as I originally wrote it; in the

actual score it is revoiced to suit the strings, but with no change to the essential harmony.

Example 4.5: Processional theme chord progression
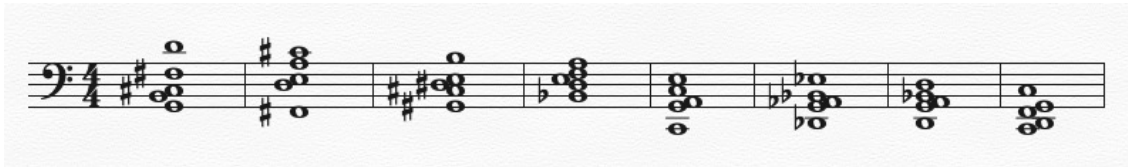
The first chord contains all the pitches of the G Hirajoshi/Lydian pentatonic scale,

discussed earlier as the basis for the Processional theme itself. The G-C# tritone places

the weight of the dissonance close to the root, while the F#-D minor 6th gives it a

poignant quality. The denseness of the chords and their slow descent evoke the feeling of

slowly sinking beneath water, foreshadowing the Fall of Atlantis. The Processional theme

returns in mm. 36-39 with a complete statement, carried by the flutes and strings, this

time transposed to D. The orchestration, unlike the melody, does not make a full return to

its original state, instead introducing the vibraphone and the marimba as a subtle hint that

the music is preparing for a departure from the Processional.

The theme begins to transform in mm. 40-45, signaling that there will be no

complete return for a long time. The rhythmic transformation begins with the first

trombone, which features the following melody.

Example 4.6: Altered processional fragment, mm. 40-42

This statement's first measure uses the rhythmic pattern of the original theme's last measure. The second measure, likewise, corresponds to the original's third measure. If this continued for a full four measures, it would form a complete reversal of the main theme. However, the first violins cut it short at m. 43 with a truncated version, followed by an echo in the piccolo and second flute.

The Processional theme then disappears, not returning until well into the Rain Dance section at mm. 81-84. Though this excerpt is short, it demonstrates well how restated themes adapt to larger sections. The first obvious change is the meter. Rather than attempting to return to its original stately 4/4, this reappearance of the Processional theme embraces the lively, syncopated 5/4 of the Rain Dance, along with the emphasis on the last two beats of each measure. In addition, none of these fragments, passed between the voices, aspire to total thematic completion. Instead, they feature only a short burst of the theme's opening notes before a retreat to bouncy accompaniment. Mm. 83-84 alter the theme still further with sixteenth-note runs.

Example 4.7: Processional theme in the Rain Dance section, mm. 81-84 (fragments

shown in boxes)

The orchestration, on the other hand, establishes a stronger connection to the

original theme. Arco strings have not appeared since m. 45, when the Processional

section ended. Mm. 59-75 did feature strings, but they were pizzicato accompaniment,

giving the passage a significantly different tone quality. Here, their first arco melodic

entrance is a return of the Processional theme, hearkening back to the first statement in

mm. 24-27. Each voice is doubled by a woodwind instrument as well, integrating the

theme into the timbral palette of the Rain Dance. This is only a transitional passage,

however, and the Rain Dance theme quickly reasserts itself at m. 85. Then, in mm. 89-91,

the Processional motive inverts and climbs downward, leading to bouncy cadential

fourths.

The next Processional fragments appear in mm. 162-165. Like the earlier iteration, this one is scored for arco strings after a prolonged passage of pizzicato accompaniment. Again, they are doubled by woodwinds. Motivically, these fragments are even farther removed from the original theme. The first three notes of each statement are a small fragment of the Rain Dance (^1-^2-^5), followed by a loose imitation of the Processional theme's melodic contour. Once again, the restatement conforms to the meter and tempo of the new section.

Example 4.8: Processional theme in Puddle Dance section, mm. 162-165


The Fall of Atlantis returns to the Processional theme, introducing it in the horns at mm. 206-209. Although this is a mostly faithful restatement to the original, aside from a few pitch changes and a new tonal center, the strings are missing for the first time. Furthermore, the harmonic progression has been replaced with much less dissonant chords, building a false sense of security.

Example 4.9: Horn chorale, mm. 206-209 (concert pitch)

The penultimate complete statement shortly follows in mm. 210-213, this time a quiet, ghostly version carried by the saxophones, accompanied by sparse woodwinds and the glass harp. This leads to a series of turbulent, rhythmically inconsistent statements, first in the trombones, then in the trumpets, gradually building toward the climax of the piece. Although the string section finally returns at m. 210, something is wrong. The basses are quiet and alone, droning on an A. The other strings enter one by one, all in a gradual crescendo. Since these drones remain fixed despite the constant modulation in the brass, they gradually create an intense dissonance that is not immediately apparent. Rather than signaling a safe return to the Processional theme, the strings have undermined the harmonic stability of the entire passage, culminating in an extremely dissonant final chord.

Example 4.10: Harmony at m. 222-225 (some notes altered through glissandi)
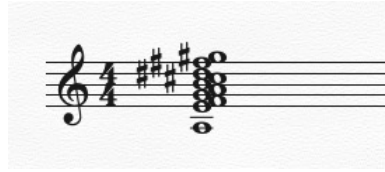
In mm. 228-231 the strings finally take the foreground with a transitional passage based on the Processional theme, doubling one another in an octave. This restoration of the strings leads, at last, to a nearly complete return to the original theme at m. 232, with a climactic use of the full orchestra. Although the melody diverges into a fusion of the Rain Dance and Puddle Dance themes at m. 235, the countermelody is based on the last four notes of the Processional theme, B♭-A-G-D. Thus, even though the melody cuts the theme short, the underlying structure preserves it and gives the passage a sense of completion.

The Rain Dance theme does not reoccur as often as the Processional, but it does appear regularly in fragmented form. The first statement appears in mm. 71-75. It was deliberately crafted with the water chimes in mind. Since the instrument has a limited range, I wanted to ensure that there was thematic material suited to it. The Rain Dance theme fits within an octave, and it is spritely without being difficult to play. The orchestration is highly percussive and bright, with even the strings being plucked. The harmonic language, mostly diatonic and consonant, contrasts strongly with the other sections of the piece. Mm. 76-80 repeat the theme, with the marimba taking the melody.

The next appearance takes place in mm. 85-88. Here, only the first quarter of the theme appears. Since it appears directly after a Processional theme with added sixteenth-notes, the Rain Dance theme takes on additional sixteenths as well. After a few transitional measures, mm. 98-115 repeat the Rain Dance theme, first in the flutes and glockenspiel, then in the oboes with added eighth-notes, then in the piccolo, second flute, vibraphone, and water chimes. With this appearance of the water chimes, the Rain Dance section comes full circle, and concludes after an extended cadential gesture.

Example 4.11: Rain Dance theme fragment, mm. 85-88

A fragmented Rain Dance theme appears during the Puddle Dance, in mm. 158-161. Here, a collection of five scale degrees (^1-^2-^5-^3-^5) imitates the original theme, this time as a lively 6/8 jig. The violas play it first, with a response from the second violins. The marimba and vibraphone carry a background accompaniment, pointing back to the Rain Dance section's heavy use of melodic percussion instruments.

A more substantial version of the Rain Dance theme appears as a countermelody to the Processional theme, serving as an important but subtle point of connection between the Processional Section and the Fall of Atlantis. It appears first in mm. 36-39, when the

Processional theme has returned from a brief venture to the Puddle Dance theme, again in the second and third trumpets at mm. 220-222, and later at the climactic final statement in mm. 232-234.

Example 4.12: Rain Dance theme as a countermelody, mm. 36-39 (with bassoon parts combined)

The Rain Dance theme's five-note motive (^1-^2-^5-^3-^5) adapts slightly to imply a Lydian mode (^1-^2-^5-^#4-^6), tying it to the Processional theme. The second half of the statement is loosely based on a motive from the Puddle Dance theme, making this a fusion of the two themes. In the final statement in the Fall of Atlantis, the Puddle Dance fragment is elongated, and the final scalar descent is omitted.

The last appearance of a Rain Dance fragment takes place immediately after this in mm. 235-238, once again fused with a Puddle Dance fragment. This passage contains several statements of the fused motives. The first two beats of m. 235 use the ^1-^2-^5-^3-^5 pattern, followed by the Puddle Dance motive in inverted form. M. 236 alters the pattern to ^1-^2-^6-^4-^5 and adds more triplets. After this, in m. 237 a single motive is repeated twice, this time inverting the first four notes of the Rain Dance motive. In m.

238, more triplets appear, and the motive becomes ^5-^4-^1-^3-^1-^4, a complete

inversion of the five-note pattern with an additional pitch to link the repetitions together.

Since the countermelody to this passage is based on the last four notes of the Processional

theme, this is a climactic union of all three major themes of *Folk Music of Atlantis* in

fragmented form.

Example 4.13: Fusion of Rain Dance and Puddle Dance themes, mm. 235-238

In contrast to the themes already discussed, the Puddle Dance theme is the only

one that appears in an altered form before its complete statement. Because of this, it is

best to focus first on its complete appearance in the Puddle Dance section, in mm. 134-

141, following a long section of brief motivic statements. Here, it features a distinctive

orchestration: the melody is in the flutes, the strings and the harp provide

accompaniment, and the tambourine provides a series of strikes and rolls. Mm. 142-148

add bassoons and oboes to the texture, establishing that, like the Rain Dance, the Puddle

Dance theme is associated with woodwinds, strings, and percussion.

Mm. 149-157 are unusual in that, while they are not part of the theme's first two

statements, they are still based on the Puddle Dance theme, so that there is not yet a

complete departure into new territory. This makes it similar to mm. 32-33, in which the

Processional theme gradually travels into unfamiliar territory rather than immediately

dropping away. This passage takes the primary motive of the Puddle Dance theme and

repeats it several times, varying each repetition slightly. The water bowls establish

themselves here as the primary water instrument for the Puddle Dance, with their loud,

ringing strikes well suited to the sharp 6/8 meter.

Example 4.14: Melody based on Puddle Dance theme, mm. 149-157

The first iteration of the Puddle Dance theme in the entire piece, occurring in mm.

33-35, is not directly based on the main theme itself, but on this altered version. The

flutes interrupt the Processional and play the melody from mm. 149-157, with only a few

slight changes to fit the meter and tempo of the Processional section. The orchestration is

noteworthy. Under the flute melody, the strings and harp are providing accompaniment,

and the tambourine is playing rolls. This ties mm. 33-35 not only to mm. 149-157, but

also to the complete Puddle Dance theme in mm. 134-141.

Although there are numerous fragments of the Puddle Dance fused with other themes throughout the work, they have already been addressed previously in connection with those fusions. These occur in mm. 36-39, mm. 232-234, and mm. 235-238.

All three of these themes guided the compositional process, but other musical elements shaped *Folk Music of Atlantis* as well. The orchestration, already closely tied to thematic development, served a number of major goals beyond supporting the themes.

Orchestration

As seen in connection with the Processional and Puddle Dance themes, orchestration connects thematic ideas across multiple major sections. On a grander scale, it paints each section with a particular tone color. Strings are present from the Processional section to the Fall of Atlantis, the Rain Dance and Puddle Dance feature prominent woodwinds and percussion, and the Fanfare and Fall of Atlantis bookend the piece with brass.

More specific connections exist between tone color and form, however. Brass drones and glissandi are closely associated with the Fanfare, so that their return in the middle of a section based on the Processional theme in mm. 219-225 feels tangled and disoriented. The conclusion in mm. 240-259 reflects back to the fanfare as well through its droning brass glissandi, this time announcing not the Processional theme, but the end of the piece. The timpani appear prominently in mm. 40-41 and mm. 226-231, forming yet another link between the Processional and the Fall of Atlantis. The harp, because of its unique tone color, only appears a few times, usually in connection with the Rain

Dance or Puddle Dance. Its only appearance outside of those sections is in mm. 34-35, in connection with a melodic fragment from the Puddle Dance. The water chimes and water bowls are closely associated with the Rain Dance and Puddle Dance, respectively.

Given the unusual ensemble, the orchestration must also tie the new sounds of the water instruments with the old sounds of the symphony orchestra. The most obvious example of this is the glissandi, prominently featured during the Fanfare and the Fall of Atlantis. The submerged instruments, as well as the waterphone, take advantage of the pitch-bending effects of water. The whole Fanfare showcases these instruments with only a loose metric pattern. The horn, which can handle very slight bending of the pitch, plays a G, shortly echoed by the submerged gong. This combination of horn drone and submerged gong reoccurs in mm. 200-204 to signal the beginning of the Fall of Atlantis. After this, other instruments gradually enter: the tuba, submerged finger cymbals, the submerged cymbal, trombones with glissandi, and the waterphone, all droning ecstatically on a small set of pitches, echoing back and forth with one another. With this combination of submerged instruments and brass glissandi, the water instruments find their place in the orchestra.

Later at m. 32, shortly after their stately thematic entrance, the strings glissando across seconds and thirds. Their next glissando at m. 40 is even wider. These glissandi evoke the image of surging waves, developing the concept of pitch bending from a compositional device to a major event with programmatic importance. As with the brass

glissandi, these deliberately venture into microtonal territory to produce a blurry tone color.

Although the water instruments feature occasional bent pitches through the Rain Dance and Puddle Dance sections, orchestral glissandi do not occur again until the Fall of Atlantis. They first appear in the contrapuntal trombone passage in mm. 216-224, when the whole orchestra is building up the Processional theme in preparation for the climax of the piece. A short but important glissando takes place in the strings in mm. 224-225, one of the few upward glissandi in the piece. Finally, after the final chord at m. 239, the strings and trombones gradually glissando downward, with microtonal glissandi in the horns. After almost all the other instruments have fallen away, the horn drone remains, this time without the submerged gong.

Two other major connections between the water instruments and the orchestra exist. The first is in mm. 226-231, when the orchestral chimes ring out like bells, their first appearance in the piece. Later, in mm. 234-241, the water bowls and water chimes answer, ringing even more wildly. The second is in mm. 59-70, where the pizzicato strings answer the irregular patter of the rain pot with an intricate set of rhythmic patterns, shown below. When combined, these rhythms produce seemingly spontaneous droplets of sound that blend effectively with the sound of the water.

Example 4.15: Mm. 59-70 string rhythms
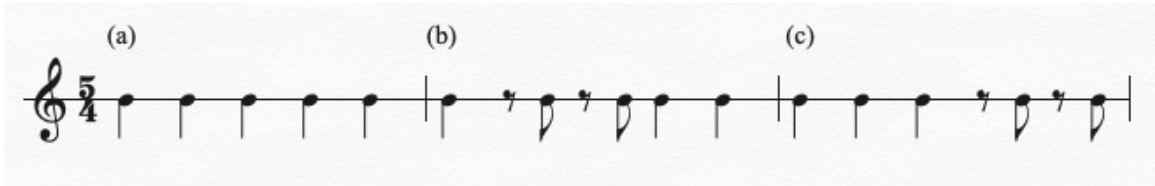
Programmatic Narrative

All of these elements and interconnections exist to paint a picture of the lost city of Atlantis. With its submerged instruments and brass glissandi, the Fanfare immediately abandons the familiar sounds of the orchestra in favor of mysterious, mythical territory. The gradual crescendo of drones, beginning with a lone microtonal horn and gong, heralds the approach of a procession of Atlantean royalty, their melody regal and more complex than the other themes.

The processional, rudely obstructed at mm. 33-35 by an early melody from the Puddle Dance, carries on at m. 36. Meanwhile, the strings have begun their watery glissandi, first as gently lapping waves in mm. 32-35, and then as troubled tides in m. 40-43. Despite this early sign that the sea might be restless, life carries on as usual.

The focus turns from the royal processional to a pair of folk dances. In contrast to the music of the nobility, these dances feature joyful rhythms and simple melodies that build constantly toward final bursts of energy. The instruments are built from cheap, simple materials, often accompanied by flutes, tambourines, and plucked strings. Both

are outdoor dances. The Rain Dance welcomes a light shower, while the Puddle Dance celebrates its aftermath with constant bubbling and splashing.

The final section, the Fall of Atlantis, takes a much more tragic direction. The drones of the horn and submerged gong return at mm. 200-205, but rather than initiating an extended passage of shimmering percussion and brass drones, they lead to a quiet, somber processional. The brass gradually builds up a turbulent, contrapuntal whirl of sound, like stormy winds gusting from the sea. In mm. 210-227, the waves begin to rise, represented by the crescendo of string drones. With a sudden upward glissando in mm. 224-225, the danger becomes clear, with the sea rising much higher than the walls of Atlantis can withstand. The harmony, here, reaches its most dissonant point. Bells sound frantically in mm. 226-231, joined by a militaristic timpani roll that harkens back to mm. 40-41, when the storm first threatened to fall upon Atlantis.

It quickly becomes clear that there is no escape. Defiantly, the music of the royal processional rings through the city one last time in mm. 232-237, as the people reject despair despite the utter hopelessness of the disaster. Their unity in the face of tragedy is reflected in the blending of the three themes in mm. 235-237. In the end, though, the city falls. Mm. 240-259 portray the gradual descent of Atlantis. All the instruments, trapped on the final chord, slowly fade away and disappear beneath the waves. The horn drone that began the piece survives the longest, but in the end, it sinks into the sea as well at m. 254. The dark, watery basses and cellos continue until m. 256, when even they vanish,

leaving the whirl pot. The sound is a steady pattern of surge and retreat, and nothing is

left of Atlantis but the tides.

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A Manual for Writers of Research Papers, Theses, and Dissertations by Kate Turabian

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