

*For my parents*

# Voyager

For Percussion  Octet

Ben Justis  
(2018 – 2019 C.E.)

Total production time ≈ 1:55:00

## Instrumentation

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Eight players total. A slideshow assistant controls the procession of images as indicated in the score. As marked in some of the Approach movements, vibraphone 1, vibraphone 2, and percussion 1 must play parts 1 – 3 (respectively) to keep specific equipment with those players. Other than these requirements, assign players as desired to the parts of the Approach movements.

Vibraphone 1 (3-octave, with motor, needs bow)	Marimba 1 (4.3-octave)	Synthesizer and Voice (1 player) (61 or 88-key synth. or midi controller with mod wheel and velocity sensitivity recommended. Also needs sustain pedal, computer, microphone, audio interface, the program MainStage, and a monitor. A volume pedal is helpful but not required.)	Percussion 1 and 2 (2 players) (Crotales [high octave, needs bow], concert bass drum, suspended cymbal, djembe [mounted], tam-tam, ocean drum, brake drum, pair of large caxixi)
Vibraphone 2 (3-octave, with motor, needs bow)	Marimba 2 (5-octave, 2 players)		

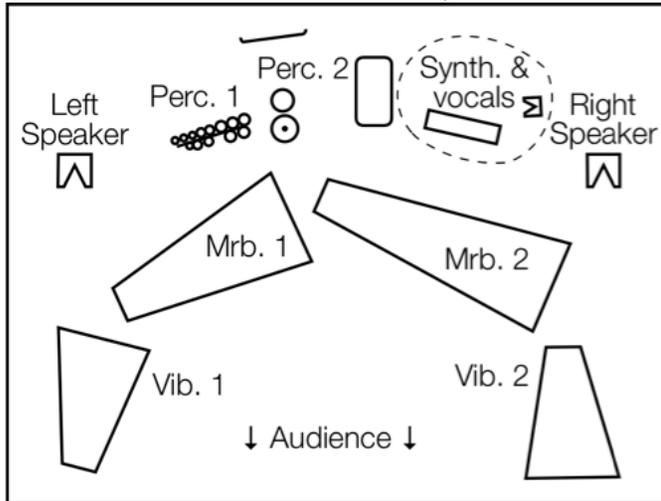
Approach instruments include:

- ◆ Two standard sets of four timpani (eight drums total)
- ◆ Eight suspended cymbals
- ◆ Two octaves of crotales
- ◆ An octave of almglocken (C4 – B4)
- ◆ Six pairs of knitting needles. I recommend the Boye aluminum 14-inch long size 10 (6mm) model. Product code: BOY3216328010M.
- ◆ Two sets of concert chimes
- ◆ Eight triangles
- ◆ Eight snare drums
- ◆ 16 small single Old Fashioned glasses (see performance notes for Approach V)
- ◆ Two good speakers, cables, and a small mixer are also need for the fixed media and monitor for the synth. player.

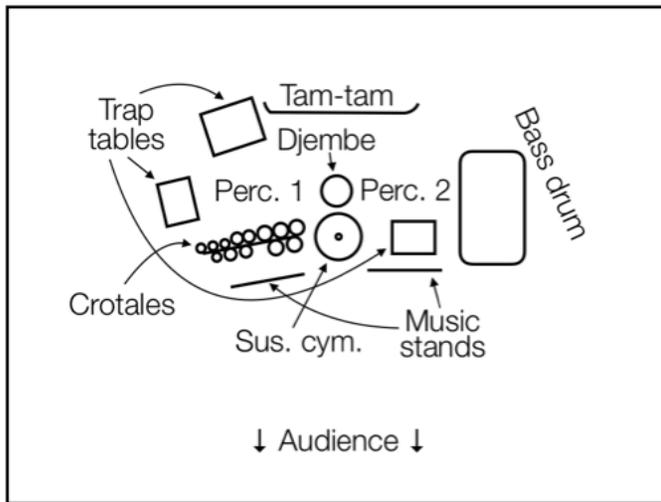
## Encounter Layout

Adherence to the Encounter layout below is essential to ensure the spatialization effects built into the music are properly realized.

General Encounter layout



Percussion 1 and 2 detail



## Vibraphone Articulations

- ♦ Staccato = totally dry, no pedal



- ♦ Slurred = let all slurred notes ring together using the pedal



- ♦ No marking = length at the performer's discretion (generally full-value but with clarity)

- ♦ Tenuto-staccato = very clear mallet-dampening



- ♦ Sometimes a pedal-lift caret is used for quick breaks in resonance.



## Movements

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The page numbers below refer to the entire production, listed in the bottom-right corner of the pages. Intra-movement page numbers are found at the bottom-center. There are performance and program notes specific to each movement at the beginning of each.

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For a composer biography, to browse other works, or to inquire about commissions and projects, visit [benjustis.com](http://benjustis.com).

## General Performance Notes

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- ◆ Performance and program notes specific to every movement can be found before the first page of each.
- ◆ The score is transposing.
- ◆ Accidentals carry through the bar.
- ◆ Any dynamics not accompanied by *crescendi* or *diminuendi* should be played *subito*.
- ◆ A half slurs is used to show when a note or chord should be allowed to vibrate (*l.v.*).
- ◆ A down-bow symbol ( ▣ ) indicates that a note is to be bowed.
- ◆ A forward arrow ( → ) next to a technique (such as *8<sup>va</sup>*, or *ped.*), indicates that the technique is to be active until cancelled or changed by another instruction.
- ◆ A dampen symbol ( ⊕ ) indicates a sudden, precise silencing of a note. These are often found above rests.
- ◆ Whenever a hardness of mallet is specified (medium mallets, for example), the choice of yarn versus cord and mallet weight is at the discretion of the players.
- ◆ When a portion of music is enclosed by bracketed arrows ( ⇨ ⇩ ) and followed by a repeat symbol ( ⌘ ) with a thick line, this instructs the performer to repeat that content, sometimes with variations. The global time continues to move ahead, though, so do not return to the beginning of excerpt. For instance, in Encounter I, measure 10, marimba 2 (high) is provided a one-measure pattern (enclosed in bracketed arrows) followed by a line. They should play measure 10 as written, then go immediately on to measure 11 while improvising a similar running 16<sup>th</sup>-note pattern on the same pitches for the duration of the line.
- ◆ All improvisations should be similar to, but noticeably different from, any provided example passages.
- ◆ Floating noteheads with brackets ( ◉ — ) show how long to extend an aleatoric passage within a bar. For example, see Encounter I, measure 13. Marimba 2 (high) should continue their improvisation for four quarter-notes in measure 13 before stopping on beats five and six.
- ◆ Except for the end of Encounter II when all players sing, the synth./vocals performer should always sing into the microphone to activate the various vocoders set up in MainStage. Numbers in hexagons correspond to the patch procession.
- ◆ The synth. player should pre-set appropriate volume levels for all playback tracks within MainStage so they don't need to make adjustments while the audio is playing.
- ◆ A conductor may be employed, if desired.
- ◆ Ideally, all movements will be performed in order without pause. Encounters and/or Approach movements may be excerpted for production in a conventional concert environment, but this is not preferable.
- ◆ Performers should move expeditiously and gracefully between their Encounter and Approach setups. The motion itself is not intended to draw any attention.
- ◆ Due to the spatialization aspect of this production, *Voyager* should be performed in a large, multi-chambered, indoor space such as an art gallery or museum. For more information about staging ideas including the layout for the premiere, see the Production Guide document.
- ◆ The overall volume level should never get so loud as to make venue-goers (or venue administrators) uncomfortable. Staying beneath a 90-decibel ceiling is advisable.
- ◆ In-depth information such as mallet suggestions, electronics concerns, venue mapping, and build instructions can be found in the Production Guide.
- ◆ I anticipate the score will be continually refined, especially after the premiere (slated for November, 2019). Contact the composer through [benjustis.com](http://benjustis.com) for the most up-to-date version, errata, and Production Guide which will be made available after the first performance.
- ◆ If questions arise or you find an error, please reach out using the contact page at [benjustis.com](http://benjustis.com).

## General Program Notes

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*It's like knocking on eternity's door.*

(Golden Record producer Timothy Ferris via  
mission planetary scientist Carolyn Porco)

NASA's Voyager mission is an inspiring story of both scientific discovery and humanitarianism. Launched in 1977, the ensuing observations made by the twin spacecraft revolutionized our understanding of our cosmic neighborhood and proclaims our species' existence to an incomprehensibly vast universe. This emblem of humanity is currently over 17 billion miles away (traveling at 11 miles per second). It took over 11,000 work-years to build and cost billions of dollars. Its next encounter will be with the "nearby" Gliese star system in about 40,000 years. Onboard both spacecraft are copies of the Golden Record, a time capsule depicting Earth and humanity in the event that the Voyagers are discovered by sapient beings in the future. That the scientists involved thought it wise to include recordings of so much *music* on such an important mission is a testament to the esteemed place of art in our society. The Voyager program also serves as an awe-inspiring reminder of the ability nations have to use their power for exploratory endeavors that benefit of all.

The musical composition *Voyager* (for percussion octet) consists of 11 parts: a prelude with greetings in 55 languages from the Golden Record, five main movements (called "Encounters"), and five spatial interludes (called "Approaches") for a total production time of approximately one hour and 55 minutes (including a 30-minute pre-concert section). The work is designed to be presented in a large, multi-chambered space such as a museum in order to realize the spatial aspects of the composition and allow for the audience to interact with the piece free from the constraints of a typical concert setting.

*Voyager* is dedicated to my parents Peggy and Glen.

## ✧ Prelude: Greetings

### Performance Notes

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- ✦ Movement duration ≈ 30:30
- ✦ The synth. player should launch the greeting audio playback track within the first patch of MainStage exactly 30 minutes prior to the advertised performance start time. As audience members enter the venue, they will hear greetings in 55 languages as they were recorded on the Golden Record. If *Voyager* is being presented in a concert hall, the house lights should be left up during the greeting audio.
- ✦ Performers should not be at their Encounter I positions during the bulk of the greeting audio. They should wait to move in during the final minute or two.

### Program Notes

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The music you hear consists of greetings in 55 languages featured on the Golden Record, as spoken by language professors at Cornell University prior to Voyager's launch. Charmingly, whale sounds were also included along with short speeches by members of the United Nations and can be prominently heard at several points during this piece. Though the grunts, clicks, and squeals of the creature's songs are delightful in their original state, they take on a rich, symphonic timbre when drastically stretched out using an algorithm. Other instances of sound stretching are employed many times throughout this piece to convey a sense of immense, astronomical expanses of distance and time. Swirling underneath is the text "Hello from the children of planet Earth" spoken by Nick Sagan (son of famous astronomer and science advocate Carl Sagan) but the words have been heavily manipulated through granular alterations. The text fades randomly in and out, backward and forward, as the audio moves in stereo unpredictably. We finally hear it unaltered at the very end, which brings us to the first Encounter, a portrait of our home, Earth.

## ⊕ Encounter I: Terra Firma

### Performance Notes

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- ◆ Movement duration ≈ 7:45
- ◆ If *Voyager* is being presented in a concert hall, house lights should fade down at the beginning of this movement.
- ◆ At the beginning, marimba 1 will start their pattern while Nick Sagan's spoken "Earth" from "Hello from the children of planet Earth" echoes at the end of the Golden Record greetings. Entrances are staggered according to the instructions listed in each part. Players all have independent tempi and should not strive to synchronize.
- ◆ At letter E, the repeated rhythm changes but players should still not synchronize.
- ◆ At letter F, someone should give a big cue. The mallets play the ascending 32<sup>nd</sup>-note patterns as fast as possible without synchronizing, meaning that players will arrive at the *mp* roll at slightly different times. The vibes should cue each other at the start their 32<sup>nd</sup>-note pattern after their quarter note which lasts for one second. Very similar gestures occur at letter I and L.
- ◆ Players should be synchronized at letter H and K. Crescendo and release together.
- ◆ Letter M onward should be in time and synchronized.
- ◆ See General Performance Notes (on page five) for an in-depth explanation of bracketed arrows followed by lines.
- ◆ At measure 39, the vibraphonists should experiment with playing closer to the nodes with their pitch-bending mallet to achieve a tone that is bright and delicate without being harsh.
- ◆ The synth. player will launch the Approach I audio playback track as the final note dies. Players will then move to their Approach I positions and begin.

### Program Notes

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Inclusion of *Voyager's* origin point as the first Encounter is important, as the mission's cultural and humanistic side is every bit as important as the knowledge it unlocked. The mallet players start in independent tempi playing the morse code for "hello" as they overlap with the echoes of Nick Sagan's words from the Golden Record greetings. Later the vocalist (who is also the synthesizer player) enters over a murmur of keyboard rolls by singing into a vocoder, a virtual instrument which takes the enunciation and volume of speech and runs it through a synthesizer patch. This unification of the human and the technological is fitting given the duality of *Voyager's* intention. More and more of Sagan's text is heard over a lullaby-like melody that grows in energy and complexity. After the climax of the movement, the texture winnows down and a new idea is heard which foreshadows our next destination. It's a series of strong, parallel-voiced chords referred to as the "Jupiter progression" that will occur several more times during *Voyager*.

## ✧ Approach I

### Performance Notes

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- ✦ Movement duration  $\approx$  10:00
- ✦ Because players are synchronized for much of this movement, they should be placed within ear and eye-shot of one another in the venue. They should all be close enough to hear the arpeggios that emerge about halfway through the audio track.
- ✦ The playback audio is launched by the synth. player at the end of Encounter I as indicated in their part.
- ✦ An identical cue staff is indicated above each player's part. A bright, bell-like sound will be heard in the audio track around the elapsed time indicated (1:20, for instance).
- ✦ Until rehearsal letter B, nothing needs to synchronize. Entrances are staggered based on the instructions in each part.
- ✦ Some fermati must be held for a long time until there is a cue to continue as other players finish their musical gestures.
- ✦ Someone should give a big cue to play rehearsal letter B together. From B onward, players should be in time and synchronized.
- ✦ From letter F to H, players should listen to the 16<sup>th</sup>-note arpeggios in the audio for tempo.
- ✦ The volume should never get loud enough to cover the playback audio track.

### Program Notes

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Transit time to Jupiter: 2 years. Distance from Earth: 390 million miles.

To illustrate the vast distance and travel time between planetary Encounters, the Approach movements employ slow-moving, ambient backdrops and the performers disperse within the venue. As the mission progresses, the degree of structure changes as the precise pitches, rhythms, synchronization, amount of improvisation, and even specificity of the instructions themselves deteriorate. This plays into the concept of an über-diminuendo, whereby many musical elements are reduced or downgraded over a long period of time. This mirrors the drop in transmission strength received from Voyager which is so far away (at over 13.4 billion miles as of this writing) that the signal wattage received here on Earth is less than 20-billionths the power of a watch battery.

Several coincidental near-integer orbital resonances exist between the planets. Basically, there are tidy relationships between how often the planets in the solar system go around the sun. Almost exactly eight years pass here on Earth for every 13 Venusian orbits, for instance. The resulting ratios can be used to derive rhythmic material or even an exact musical interval. For example, the Venus – Earth resonance creates something close to a major 6th (the opening interval to “My Bonnie Lies Over the Ocean”). These ratios factored heavily into Voyager’s mission design, as its launch was scheduled to take advantage of a near-alignment of the outer planets sometimes referred to as the “Grand Tour” that only occurs every 176 years. Both spacecraft used the gravitational pull of each celestial body to drastically increase their speed. Without such “slingshot” maneuvers, travel to the far reaches of the solar system using a chemical propulsion system requires a huge amount of fuel at launch and would take much, much longer. In fact, Voyager 2 did not have adequate escape velocity to leave the sun’s gravitational influence until after its flyby of mighty Jupiter.

The movement opens with a rich drone on D, which serves as the pitch center for the movement. It is derived from the extreme stretching of a synthetic string sound, so that its embedded harmonics are brought to the fore. This is accomplished by processing the original source through an algorithm that drastically elongates and smooths the audio at a granular level. The sustained pitch wanders to F-sharp, then F, and finally G, which outlines the roots of a series of chords yet to come. The rhythms played on the timpani relate to the Jupiter – Earth orbital resonance of 1:12. The interval produced from this ratio is a perfect fifth, which features prominently in the design of the “Jupiter progression” heard at the end of the first Encounter and halfway through this movement. The fixed media employs pythagorean intonation which is mathematically in tune when the pitch center is D but sound perplexingly (and deliciously) out of tune when in other “keys”. As the progression repeats and gains intensity, new voices, patterns, and timbres are added to the mix, and finally the timpani join the chorale in full force before dissolving into a wash of cymbal rolls.

## Encounter II: World of Storms

### Performance Notes

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- ◆ Movement duration ≈ 6:30
- ◆ The movement starts with percussion 2 playing a bass drum roll that roughly follows the line contour indicated in their part. The roll should be very dramatic without getting very loud. When percussion 2 starts this gesture, the synth. player should press the “stop and fade out” button on the MainStage display which will automatically fade out the Approach I track very slowly.
- ◆ Percussion 2 should connect the end of their long gesture with the notated *pp* roll at measure 1.
- ◆ Once percussion 2 finishes their gesture and sustains a *pp* roll, vibraphone 1 enters at measure 1.
- ◆ After the G.P. in measure 176 (in time), all players enter singing on beat 1 of measure 177 according to the instructions in the score and parts.

### Program Notes

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Jupiter, king of the solar system, is known for the beautiful bands of storms that perpetually swirl in its thick atmosphere. In fact, the diameter of The Great Red Spot (a maelstrom thought to have been continuously raging for over 350 years) is greater than that of the entire Earth.

The turbulent bass drum roll in the beginning sets the tone of the movement before an explosive mallet motive bursts in, cast in D half-whole octatonic. The parts intertwine and dance around each other before lining up for thunderous impacts. This material is repeated and developed until the contrasting middle section, a break in the tempest, arrives. The music continues to move ahead but with less aggression, while a very old tune by Spanish composer Thomas Luis de Victoria is presented. *O Magnum Mysterium*, which translates to “O great mystery”, is a nod to Voyager’s exploratory purpose. The elegant, stirring harmonies of this sixteenth-century motet provide a refreshing contrast to the violence of the primary motives. The calm doesn’t last, however, and the undulating, gentle polyrhythms are replaced by recapitulatory material. It builds to a fevered coda based on the pre-established Jupiter progression, a final burst of thunder, then, finally, tranquility.

## ✧ Approach II

### Performance Notes

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- ✦ Movement duration  $\approx$  10:00
- ✦ Nothing in this movement should be synchronized between players, though they must be within ear-shot of each other. Clear lines of sight between performers are neither required nor desired for this movement.
- ✦ Cells may be selected for performance more than once within each part of the movement.
- ✦ Whenever a metronome marking range is displayed with the text “you choose”, each player will select their own tempo (within that range) for that particular cell.

### Program Notes

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Transit time to Saturn: 2 years. Distance from Jupiter: 400 million miles.

The 2:5 ratio of Saturn to Jupiter's orbital resonance features prominently in this Approach. The performers select musical cells (short phrases) as desired to complement the overall sonic landscape. Many of the composed rhythms use direct five-against-two patterns and the audio emphasizes the major third interval produced by the ratio. The stacking of this interval results in augmented triads, a symmetrical sonority with an endless, otherworldly flavor. The high squealing and whooshing sounds are actually data taken from the plasma wave instrument package aboard Voyager after being converted into an audio format by simple voltage translation and time compression. The low, bass drum-like tones were picked up by the plasma detectors whenever the cold gas thrusters of the ship's reaction control system fired for orientation maneuvers. In essence, we are hearing what Voyager picked up as it left Jupiter. The long drones were created by applying extreme stretching to some of the more “tonal” plasma noise, relegating the output to only natural harmonics, and shifting the frequency up or down to get an array of pitches.

## ‡ Encounter III: World of Rings and Hexes

### Performance Notes

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- ◆ Movement duration ≈ 7:30
- ◆ At measure 80, the speed of the 16<sup>th</sup>-note sextuplet becomes the speed of the 16<sup>ths</sup>.
- ◆ Starting at measure 93, when a stemless chord is followed by slashes (and little headless 16<sup>th</sup>-notes), the performer should continue playing running 16<sup>th</sup> notes on those pitches by improvising new patterns for the duration of the slashes. Most chords last one or two measures. Notes can be played more than once in a row, but all of them should be used at some point during the improvisation. Occasional 16<sup>th</sup>-note rests may be interpolated as desired. Chord symbols are added as a convenience.
- ◆ At measure 173, the speed of the dotted eighth-note becomes the speed of the eighth-note, making the quarter-note 92 BPM.
- ◆ The synth. player should launch the Approach III audio track on beat one of the last bar. Players may move to their Approach III positions when ready.

### Program Notes

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Saturn. Crown jewel of our cosmic neighborhood. After the tenderness of Earth and the ferocity of Jupiter, a movement with a sweeter was desirable. Patterns of syncopated 16<sup>th</sup>-notes interlock and sparkle as little motives are passed between players. Due to the particular setup of the instruments, the imitation is continually passed in a ring shape that both hints at Saturn's iconic adornment and provides a moving point of interest. This develops until the texture thins to only the vibraphones, who use a metric modulation (basically, a faster note value becoming a slower one which has the effect of making the tempo proportionally quicker) to increase the speed. Now, chords in a flurry of constant 16<sup>th</sup>-notes in patterns improvised by the performers dominate as a melody creeps in underneath. The rigid passing of upward fills strikes me as more hexagonal movement than elliptical. Such a hexagon is clearly seen at Saturn's north pole. How this regular geometric shape formed within otherwise turbulent cloud layers eludes scientist to this day. Once all players are in, the vocoder carries the lyrical tune as the phrase repeats, sometimes with new harmonies. After a key change, the energy builds to a climax and another metric modulation down-shifts us into a recapitulation. As the imitation continues, notes are strategically removed from the independent lines to thin out the counterpoint and let the music evaporate.

## ✧ Approach III

### Performance Notes

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- ✦ Movement duration  $\approx$  10:00
- ✦ Always blend with the playback audio. Never cover it.
- ✦ During part 4, it may be beneficial to put a small spot of beeswax on the head (away from the normal playing zone) to facilitate the friction rolls. These rolls should have a warm, tonal hum.

### Program Notes

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Transit time to Uranus: 5 years. Distance from Saturn: 900 million miles.

Uranus' 7:20 orbital resonance with Saturn results in a compound tritone, an interval built prominently into the long melodies that intertwine with each other in this movement. Each of the drone layers (which start in unison) are gradually moved up or down by a tritone as well over the course of several minutes with faster tracks bent upward and slower ones downward. These harmonic strata undergo extreme stretching in multiples of seven (14x, 21x, etc...) to create offset temporal and frequency patterns that, if given time to play out, would take a very long time to finally align.

The percussionists are asked to listen closely to the audio and, when they hear a specific note they are "responsible" for, activate their instrument in the manner described in the score. The act of responding to certain pitches creates artificial resonance thereby causing the performance space to sound larger and more acoustically reflective than it actually is.

## ⌘ Encounter IV: World of Ice

### Performance Notes

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- ✦ Movement duration ≈ 7:30
- ✦ Encounter IV is the only movement that does not overlap. The synth. player should launch the Encounter IV playback as soon as possible after the Approach III audio ends.
- ✦ Performers should choose pitches in response to the overall acoustic environment.
- ✦ Whenever chords are tied, do not choose different notes. Keep them the same.
- ✦ When the same chord is seen without a tie, you may choose new notes. Usually, these harmonies have an asterisk above them.
- ✦ Always strive to blend with the audio and adjust to its volume.
- ✦ Vibraphone 1, vibraphone 2, and percussion 1 need to take their bows with them to their Approach IV positions.

### Program Notes

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Planetary scientists hypothesize that Uranus is composed mostly of ices made of frozen water, ammonia, and methane. A mysteriously low core temperature makes it the coldest planet in our solar system and its hydrocarbon-rich atmosphere bestows it with a light green tint that is simultaneously beautiful and bland.

This is the only Encounter movement that uses fixed media; the crackling and buzzing sounds were created using a modeling synthesizer to simulate objects bouncing against a glass resonator. The goal was to mimic the sound of a string ensemble trapped under a thick layer of fracturing ice beneath your feet. The performers are instructed to add and subtract pitches from a large chordal stack in response to the ever-shifting acoustic environment. These sorts of in-the-moment decisions make every rendition of “World of Ice” different. The synthesizer player and vibraphonists create lean, arcing lines to form a melodic layer atop the long drones. The product is a meditative soundscape that is beautiful but bland, much like the celestial body it depicts.

## ✧ Approach IV

### Performance Notes

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- ✦ Movement duration  $\approx$  8:00
- ✦ Vibraphone 1, vibraphone 2, and percussion 1 need to bring their bows to their Approach IV positions. They should remove their lowest crotale from the nearby Approach II rack (see the layout in the Production Guide) to use on the timpani.
- ✦ A glass mallet is a small, light, medium-hard plastic glockenspiel mallet wrapped in a thin layer of moleskin. It is designed to be used on the glasses to achieve a delicate, resonant, full sound with little attack. See the Production Guide for more information about the glass mallet.
- ✦ The two glasses used by player 8 should be small single Old Fashioned glasses with moderately thick sides. They are around three inches in diameter, three-and-a-half inches tall, with quarter-inch thick walls. The pitch should be as close as possible to E5 or E6 (660 hz or 1320 hz). Do not fill the glasses with anything.



- ✦ Snare should only be on when playing the snare drum. Disengage when not in use to avoid sympathetic buzzing.
- ✦ There is a notable swell in the audio around seven minutes when all of the whales sing together. The performers should also swell similarly at this point as indicated in their part.
- ✦ Vibraphone 1, vibraphone 2, and percussion 1 need to take their bows with them when they return to the Encounter setup.

### Program Notes

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Time to Neptune: 3 years. Distance from Uranus: 1 billion miles

This is the only movement wherein the performers play all of the instruments featured in the other Approaches to create rich palette of colors. However, the 1:2 orbital resonance of Uranus to Neptune results in the interval of an octave; not exactly a stimulating musical distance or rhythmic relationship. So, *naturally*, lots and lots of whale sounds was the solution. The songs of humpbacks were featured on the Golden Record underneath greetings from members of the United Nations. Given that Neptune has strong associations with the ocean (as the Roman god of the sea) a more aquatic sound environment seemed appropriate. Applying extreme stretching to the whale song resulted in the rather pleasing discovery of a beautiful array of lush timbres. By shifting the audio tracks by a particular amount, the whales sing as a choir as their squeals and grunts interlock and diverge, seemingly at random. Finally, on a big crescendo, the songs align to create a haunting sonority which is mirrored by the performers.

# Ψ Encounter V: World of Darkness

## Performance Notes

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- ♦ Movement duration ≈ 6:30
- ♦ The second time at measure 15, the tempo should very gradually increase to 68 BPM by measure 40.
- ♦ There is a slight but noticeable tempo jump at measure 42 from 68 BPM to 72 BPM.
- ♦ From measure 42 to 53, the tempo should steadily increase from 72 BPM to 84 BPM. Small metronome markings are included as a guide along the way.
- ♦ Individual performers should leave for their final Approach positions when indicated in their part.

## Program Notes

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At more than 2.7 billion miles from its origin point, Voyager was a long, long way from home when it visited Neptune. At that distance, it took over four hours for signals (traveling at light speed) to reach ground stations on Earth. The navigational accuracy across such a vast distance is like sinking a golf putt from 2,260 miles away; the distance from London to Cairo. Taking imagery of the planet proved especially difficult, as its deep blue surface as distance from the sun makes it 900 times dimmer there than on Earth. Like Jupiter, it has visible weather patterns including a massive patch in the atmosphere called “The Great Dark Spot”.

The mood of this movement is one that is dark but not bitter. Darkness, after all, is a beautiful thing. A deep-black night allows us view the splendor of the night sky. Had Earth been tidally locked in a state of perpetual daylight, astronomy as a field may never have formed and we would know nothing of the other planets, stars, solar systems, and galaxies out in the cosmos. A slow vibraphone ostinato is gradually joined by other voices to create a ponderous harmonic texture. The chords drift around, sometimes less predictably, while lingering dissonances gradually resolve to sweeter sonorities. After a repeat of this section with unpitched material added, the layers suddenly fall away and the vibraphonists shift us into a much more energetic section. We realize that, though Voyager’s appeared to meander lazily past the planets when it took observations, at 11 miles per second (that’s over *Mach-50*, by the way), it was actually going very, very fast. The low marimba roars in with the Jupiter progression as the high part adds a severe, blues-infused filigree; a nod to Neptune’s azure hue. The other instruments pile on as the tempo increases and a brief drop in energy re-introduces the *O Magnum Mysterium* tune for just a few bars. The speed picks up more and the texture explodes in a series of loud 16<sup>th</sup>-notes. We’re left with a wandering, lonely pattern like the beginning now punctuated with soft, sustained chords and gentle counterpoint. The instruments fall away gradually as the performers depart for the final Approach.

