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The University of Southern Mississippi

PSAPPHA BY IANNIS XENAKIS:

DEVELOPING MULTIPLE PERCUSSION LITERACY

by

Owen Phillip Rockwell

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Musical Arts

May 2015

ABSTRACT

PSAPPHA BY IANNIS XENAKIS:

DEVELOPING MULTIPLE PERCUSSION LITERACY

by Owen Phillip Rockwell

May 2015

Psappha by Iannis Xenakis was written for a solo percussionist in 1975, and since then has been performed almost exclusively by elite musicians. The work suffers from broad neglect by students and professionals alike, because the structure and notation are difficult to access. Through *Psappha*, Xenakis created an alternative approach to serialist and chance compositional techniques that enabled him to communicate what he believed was rhythm in its purest form. The notation is unconventional and challenges the performer to approach *Psappha* in a similar manner. The main thrust of this project was to re-imagine the work in a more traditional notation system, making it accessible to a new generation of performers.

Understanding the difficulties and breaking them down in a systematic way empowers the performer to approach the work with confidence that the wealth of musical information contained is successfully conveyed to an audience. Also, by partitioning *Psappha* into 16 sections, presented as etudes of progressive difficulty, the work is useful for the development of basic multiple percussion technique. The skills acquired by learning the material of *Psappha* are ones needed to perform the subsequent repertoire for solo multiple percussion.

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Owen Phillip Rockwell

A Dissertation

Submitted to the Graduate School
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for the Degree of Doctor of Musical Arts

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DEDICATION

I wish to thank my family and friends for their love, support, and encouragement, as well as their patience and understanding, as I worked to complete this project. I am particularly grateful to my lovely wife Erin, who helped keep me grounded throughout the doctoral process. I dedicate this project to my late grandfather, Albert J. Gersitz, who maintained that an educated mind is something “no one can ever take away from you.”

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Thanks to colleagues at my first teaching job, Jackson State University, who urged me to pursue a doctorate and help me carve out room in my schedule to complete the coursework while working full-time: Dr. Darcie Bishop, Dr. Thomas Calhoun, Dr. Lewis Liddell, Sr., and Dr. Renardo Murray.

Thanks also to the many friends who shared from their own experiences in academic and doctoral programs which proved invaluable to my efforts. Special thanks to both Dr. Joseph Brumeloe and Dr. Edward Hafer for assisting me during the writing and editing processes for this document. Thanks also to Carrie Partridge for proofreading an earlier version of this document, as well as the prospectus. Thanks to Dr. Ellen Rennie Flint, who took the time to speak with me about her meeting with Iannis Xenakis in Paris, as well as her thoughts on the importance and interpretation of *Psappha*. Thanks to the Chief Editor at Éditions Salabert for taking an interest in this project and for granting permission to use my transcription of the score in this document.

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TABLE OF CONTENTS

ABSTRACT.....	ii
DEDICATION.....	iii
ACKNOWLEDGMENTS.....	iv
LIST OF MUSICAL EXAMPLES.....	vii
CHAPTER	
I. INTRODUCTION.....	1
Purpose of the Study	
The Problem	
The Score	
Need for the Study	
Limitations of the Study	
About Xenakis and His Works for Percussion	
Solo Repertoire Prior to <i>Psappa</i>	
II. INTRODUCTION TO THE STUDY.....	14
Definitions and General Considerations on the Notation of <i>Psappa</i>	
Tempi	
Meter and Rhythm	
Instrument Choice	
Set-Up	
Implements	
Accents	
Dynamics	
Phrasing	
III. STUDY GUIDE.....	28
The Etudes	
Order for Learning the Etudes	
IV. CONCLUSIONS.....	63
APPENDIXES.....	66
BIBLIOGRAPHY.....	86

LIST OF MUSICAL EXAMPLES

Examples

1.	<i>Psappha</i> , Note Explicative by I. Xenakis.....	21
2.	<i>Psappha</i> , 1-10T by I. Xenakis, transcr. O. Rockwell.....	28
3.	<i>Psappha</i> , 46-61T by I. Xenakis, transcr. O. Rockwell.....	30
4.	<i>Psappha</i> , 47-60T by I. Xenakis.....	30
5.	<i>Psappha</i> , 70-74T by I. Xenakis.....	32
6.	<i>Psappha</i> , 80-120T by I. Xenakis, transcr. O. Rockwell.....	33
7.	<i>Psappha</i> , 201-214T by I. Xenakis, transcr. O. Rockwell.....	34
8.	<i>Psappha</i> , 287-297T, 325-337T, and 353-366T by I. Xenakis, transcr. O. Rockwell.....	35
9.	<i>Psappha</i> , 380-399T by I. Xenakis, transcr. O. Rockwell.....	37
10.	<i>Psappha</i> , 519-532T by I. Xenakis, transcr. O. Rockwell.....	38
11.	<i>Psappha</i> , 719-739T by I. Xenakis.....	39
12.	<i>Psappha</i> , 719-739T by I. Xenakis, transcr. O. Rockwell.....	40
13.	<i>Psappha</i> , 740-769T by I. Xenakis, transcr. O. Rockwell.....	43
14.	<i>Psappha</i> , 770-799T by I. Xenakis, transcr. O. Rockwell.....	43
15.	<i>Psappha</i> , 990-1030T by I. Xenakis, transcr. O. Rockwell.....	45
16.	<i>Psappha</i> , 1307-1354T by I. Xenakis, transcr. O. Rockwell.....	46
17.	<i>Psappha</i> , 1411-1428T by I. Xenakis, transcr. O. Rockwell.....	47
18.	<i>Psappha</i> , 1410-1463T by I. Xenakis.....	49
19.	<i>Psappha</i> , 1539-1557T by I. Xenakis, transcr. O. Rockwell.....	50
20.	<i>Psappha</i> , 1717-1746T by I. Xenakis, transcr. O. Rockwell.....	51

21.	<i>Psappa</i> , 1784-1805T by I. Xenakis, transcr. O. Rockwell.....	52
22.	<i>Psappa</i> , 1747-1764T by I. Xenakis, transcr. O. Rockwell.....	53
23.	<i>Psappa</i> , 1983-1917T by I. Xenakis, transcr. O. Rockwell.....	54
24.	<i>Psappa</i> , 2013-2022T by I. Xenakis, transcr. O. Rockwell.....	55
25.	<i>Psappa</i> , 2023-2049T by I. Xenakis, transcr. O. Rockwell.....	58
26.	<i>Psappa</i> , 2120-2149T by I. Xenakis.....	59
27.	<i>Psappa</i> , 2120-2149T by I. Xenakis, transcr. O. Rockwell.....	59
28.	<i>Psappa</i> , 2175-2197T by I. Xenakis, transcr. O. Rockwell.....	60
29.	<i>Psappa</i> , 2260-2285T by I. Xenakis, transcr. O. Rockwell.....	61
30.	<i>Psappa</i> , 2378-2396T by I. Xenakis, transcr. O. Rockwell.....	61
31.	<i>Okho</i> , mm.4-6, by I. Xenakis.....	65

CHAPTER I

INTRODUCTION

Psappha for percussion solo is widely regarded as one of a few pivotal works in the development of the multiple percussion solo repertoire. The percussionist Steven Schick has performed the piece over 500 times and singles out *Psappha* in the historical context of the repertoire in the following ways:

Composers who did write for the newly conceived medium of solo percussion naturally had a lot to say about its early development. That also meant that every new piece by a major composer added an important but potentially destabilizing weight to the rapidly growing sense of percussion definition. A new work like Iannis Xenakis's *Psappha* (1975) increased the size of the percussion repertoire by nearly 20 percent. There was no question that every serious percussionist would immediately learn *Psappha*...many percussionists were looking for a new direction, but there was not much new percussion music to light the way. *Psappha* exerted extraordinary musical and historical impact in large part because it was born into a relative vacuum.¹

Purpose of the Study

The purpose of this project is to promote the continued study and widespread performance of *Psappha* by Iannis Xenakis through the creation of an arrangement of the score that can be used either as a resource to assist those learning to play the entire work, or as a progressive pedagogical method for the developing multiple percussionist. Despite the significance of the piece, relatively few performers attempt to learn it, and most of those who do are among the elite in the field of percussion performance. Without a concerted effort to promote the work more broadly and to percussionists of all

¹Steven Schick, *The Percussionist's Art: Same Bed, Different Dreams*. Rochester, NY: University of Rochester Press, 2006, 4.

skill levels, it risks being lost to history.² At the same time, repertoire and performance opportunities for percussionists are presently expanding at an astonishing rate,³ but there are surprisingly few method books for developing the technique needed to play them, as perusing the listings in any music distributor's catalog would reveal. Interestingly, developing the skill set required for performing *Psappha* is also essential to all percussionists for learning the multiple percussion solo repertoire. Whether learned in part or as a whole, the work is useful to every multiple percussionist.

For more than a hundred years, composers have experimented extensively with all manner of producing musical sounds on percussion instruments. At present those skills are particularly relevant. *New York Times* music critic Allan Kozinn observed the gathering of forces to place music for and by percussionists at the forefront of the musical profession saying: "If you think about it, percussion is the new violins."⁴

Intentional or not, Iannis Xenakis presents through *Psappha*, the basic technique of performing multiple percussion. *Psappha* is not only progressive in terms of the technical demands placed on the performer throughout the piece, but it is musically and structurally significant as well. Consider the following words by keyboard percussionist David Freidman: "Exercises should not be approached mechanically; they should be approached with the same joy and sense of musical challenge as a piece of music, which

² Philip Kennicott, "Listen Up: A Composer's Unheard-of Exhortation - Iannis Xenakis's Demanding Music Suffers from Neglect." *The Washington Post*. Washington, D.C., July 22, 2001, sec. G, pg. G10.

³Brian Christopher Tinkel, "Rebonds by Iannis Xenakis: Pedagogical Study and Performance Analysis". Dissertation, Norman, OK: University of Oklahoma, 2009, 127.

⁴Allan Kozinn, "Percussionists Go From the Background to Podium." *The New York Times*. New York, NY, December 28, 2009.

is exactly what a good exercise is; a good piece of music.”⁵ Besides a work of extraordinary musical significance, *Psappha*, is also a set of really useful musical exercises to a multiple percussionist.

The Problem

Psappha is often overlooked by performers in favor of learning Xenakis’s other piece, *Rebonds* (1989), as well as other works found in the repertoire that are shorter and which are arranged in a configuration specified by the composer. *Psappha* offers none of this. Additionally, at present, there are relatively few methods for learning the technique required to play this literature, especially compared to marimba, xylophone, snare drum, and timpani—not to mention other orchestral instruments. By giving only passing attention to the work’s historical status, it seems like a tremendous opportunity is being missed by the percussion community.

Furthermore, because of the infamous “note explicative” at the end of the score, most of the scholarship surrounding *Psappha* focuses almost exclusively on instrument choice. Starting with instrumentation makes sense, since that is left up to the performer, and as Steve Schick puts it: “inevitably, instrumentation takes precedence. Solving the problems of tempo phrasing requires at the very least having something to play.”⁶ A decade later, there is a much greater consensus surrounding what constitutes a “correct” set of instruments for the piece. Schick’s student, Morris Palter, in his dissertation from the University of California, San Diego, went a bit further, addressing what he called the

⁵David Friedman, *Vibraphone Technique: Dampening and Pedaling*. Boston: Berklee Press Publications, 1973, Introduction.

⁶Schick, *The Percussionist’s Art: Same Bed Different Dreams*, 194.

“solidification” of performance practice surrounding *Psappha*, including tempi accents, in addition to instruments.⁷

There is a noticeable gap in the discourse as to how to actually learn *Psappha*, not to mention many of the other early works for percussion. Increasingly in the field of percussion, there are revised editions of important works and published “master classes” on them, both in written form and on video. Brian Tinkel took a pedagogical approach in his dissertation, an analysis of *Rebonds*, Xenakis’s later work for solo percussion, and suggested that others take the same approach with other pieces by the composer.⁸ While his study is methodical down to the specific set-up instructions for instrument placement and exact sticking choices, mine focuses on keeping with the openness Xenakis gave to Gualda to interpret as he saw fit,⁹ including instrument choices.

Much of the material in *Psappha* is simpler than what is found in *Rebonds*,¹⁰ which only increases in density and complexity as each movement progresses. *Psappha*, on the other hand, has moments of extreme density, followed by more relaxed passages or outright silence to frame these moments. These moments require a mature approach to technique, but can be isolated and perfected to allow for seamless execution of larger sections, and they are the focus of the Study Guide later in this paper.

Notation is the greatest single obstacle facing the performer. As early as 1970, Reginald Smith Brindle advocated for the standardization of percussion notation. Since

⁷Morris S. Palter, “The Solidification of Performance Practice Issues in Solo Percussion Performance.” Dissertation, La Jolla, CA: University of California, San Diego, 2005.

⁸Tinkel, “*Rebonds* by Iannis Xenakis: Pedagogical Study and Performance Analysis,” 129.

⁹Simon Emmerson, “Xenakis talks to Simon Emmerson.” *Music and Musicians* 24, no. 9 (May 1976): 25.

¹⁰Schick, *The Percussionist’s Art: Same Bed, Different Dreams*, 193/213.

the early part of the 20th century, when composers first began to write for multiple percussion, performers have often had to transcribe works for multiple percussion.

The first such example of this is Igor Stravinsky's *L' Histoire du Soldat*.¹¹ Besides the original, there are several published versions of the percussion score, due in large part to the problematic notation as well as outdated, unusual, or otherwise misleading indications in the score. James Blades created a version of the percussion part for the 1987 edition of the piece which has become the standard approach for percussionists to use.¹²

In both *L' Histoire du Soldat* and *Psappha*, each composer created a score which, it seems, they believed would best present relationships and the manipulation of rhythmic information in the clearest way to them. However, neither of their approaches took root, meanwhile other conventions for writing for percussionists did. British composer/author Reginald Smith Brindle mentions the need for percussion notation to be standardized "so that a player does not have to adjust himself to a new notation with each piece of music."¹³ In the case of *L' Histoire du Soldat*, the percussion score was eventually reformatted to make it more idiomatic for percussionists to read.

In the case of *Psappha*, the score itself is incomplete. Throughout Xenakis' career as a composer, he almost always created a preliminary version of the score, in the form of some kind of graphical representation. In virtually every instance, save for *Psappha*, Xenakis later converted the graphic score onto manuscript paper using some

¹¹Igor Stravinsky, *L' Histoire Du Soldat*. London: J. and W. Chester Ltd. 1924.

¹²Igor Stravinsky, *L' Histoire Du Soldat*. London: J. and W. Chester/Edition Wilhelm Hansen Ltd. 1987.

¹³Reginald Smith Brindle, *Contemporary Percussion*. London: Oxford University Press. 1970: 5.

form of conventional notation.¹⁴ Yet, in the case of *Psappha*, the score was published largely as is, with only a few changes made to the original. Among these, the percussionist Sylvio Gualda suggested to enlarge the graphic score to make it easier to see. Since Gualda did not encourage any significant changes beyond that, and Xenakis left the score as it was, it almost seems like he stopped before it was truly finished. He never changed the graphic score into one that could be more easily read by the broader population. The last point is actually understandable from a certain perspective, however. Once a piece was premiered and published, it was characteristic of Xenakis to move on to the next project, and it appears that Gualda pressed Xenakis to change very little in the score.¹⁵

It is also important to note that many of the other percussion scores published up to and well after this point used some kind of graphic score. This, perhaps, helped to surround the piece and those who played it in a kind of shroud of mysticism. While it is frustrating for percussionists to have to deal with so many different kinds of notations, we largely accept our plight. As Robin Engleman puts it:

Every year I play pieces that require hours of preparation in order to decipher and memorize instructions and unique notations. Sometimes I must play two or three pieces on a concert each having a different notation. A composer might spend months or years developing special notation, but...we only have a week or two to assimilate it. Dots, dashes, squiggly lines, rectangles, triangles, circles, squares and half-circles, arrows, exclamation points !!!!, numbers (Arabic and Roman), anatomical drawings, miming gestures (“pretend you’re playing” is one of my favorites), arcane religious quotations, obtuse scientific theories, request for the performers to “relate to each other”, innumerable symbols designating instruments and sticks – all of these and variations have appeared in pieces I have played. Some of this looks good and I’ve wanted to frame, if not play, a few

¹⁴ Nouritza Matossian, *Xenakis*. London, England: Kahn & Averhill, 1986: 306.

¹⁵ Ibid., *Xenakis*. 291; Michael Rosen, “An Interview with Sylvio Gualda Concerning *Psappha*.” *Percussive Notes* 27, no. 4 (Summer 1989): 33.

pages. But most have demonstrated a shameful disregard for the art of calligraphy or an ignorance of a performer's visual ability.¹⁶

Psappha is a good example of a piece that could have been made to be much simpler to read.

Conspicuously absent in any discussion by percussionists is how exactly to partition *Psappha* into manageable pieces for learning. The work is clearly divided by changes in tempo into seven sections, as the percussionist Barry Larkin outlines in his analysis. Anyone studying the work with the intent to perform it will benefit from having it further divided. This was analyzed even more extensively by the theoretician Ellen Rennie Flint in 1989, and while many have referenced the study, it is clear that not much has made its way into the actual discourse surrounding *Psappha*. Flint breaks the work into two parts, I and II (much like *Rebonds: a, b*), with five larger sections: two (A and B) in the first part and three (C, D, E) in the second. Of these five sections, three include subsections. Section A is broken into four subsections; section C is broken into four subsections; and section D is broken into two subsections. Flint partitions the work into smaller segments—what she calls “modules of rhythmic activity.” There are thirty-four such “modules” which range in length from two to sixty-four seconds in length.¹⁷

My partitioning takes these two analyses into account, and the resulting pieces, called etudes from this point forward, are the primary focus of this document. As with learning any kind of music, the performer must study the work even down to individual phrases of material, often practicing the movement between individual notes within those

¹⁶ Robin Engleman, “Percussionists in the West - Coping with Change.” *Contemporary Music Review* 7, no. 1 (1992): 10.

¹⁷ Ellen Rennie Flint, “An Investigation of Real Time as Evidenced by the Structural and Formal Multiplicities of Iannis Xenakis’ ‘Psappha’,” 53-54.

phrases, in order to execute them with a sense of direction, confidence, and musical shape. Within the etudes, the length and shape of these phrases are far from consistent, and at times overlapping between groups of instruments, so any markings I chose to use for them merely suggest an approach for learning them.

The Score

Xenakis chose to write the work as stark and “unadorned”¹⁸ as possible, which effectively focused on presenting rhythm in its “purest” sense while a study in the simplest approach to timbre. His score provided him with the means to graphically convey his processes—both mathematical and intuitive—and enabled theorist Ellen Rennie Flint to complete her thorough, theoretical analysis of the work.

In *Psappha*, Xenakis used the Fibonacci sequence and the Golden Mean/Ratio, as well as processes of addition and subtraction of either complexity or velocity, all while working through the various arrangements of attacks on different instruments through permutations, or as Xenakis calls them: Sieves. It is not necessary to fully understand these processes to learn the work,¹⁹ but they are evident in the many permutations and gradual development of ideas and material.

Xenakis’s compositional approach in *Psappha* avoids the use of exact repetition of any thematic content within a musical phrase or section. Sometimes Xenakis recycles ideas, but always with unanticipated twists—usually in how they begin and end, or in the arrangement of stress (accents) in different places. He also uses retrograde for thematic

¹⁸Maurice Fleuret, “Xenakis - A Music for the Future.” *Music and Musicians* 20, no. 8 (April 1972): 26; Emmerson, “Xenakis talks to Simon Emmerson.” *Music and Musicians* 24, no. 9 (May 1976): 24.

¹⁹Jan Williams, “Iannis Xenakis, Persephassa.” *Percussive Notes* 25, no. 4 (Spring 1987): 9.

elements, as well as exaggerated contrast in dynamics to introduce or interject seemingly new ideas. Often there is a static rhythmical concept²⁰ that determines flow of attacks between instruments, which make up the “pitches” of the piece as well as the irregular punctuation of accents.

The accents go beyond merely syncopating the music—effectively rendering the material devoid of a regular sense of meter, the interplay between strong and weak beats one often expects to hear in music. Such permutations of accents between various sonorities are like the permutations of fingerings or emphasis over those fingerings found in the methods for every instrument, just as sticking permutations are found in percussion methods like Leigh Howard Stevens’ book, *Method of Movement*. In this way, learning *Psappha* is an example of developing technique through repertoire.

Need for the Study

Psappha is physically and mentally difficult enough to play even when the unusual notation has been mastered and the musical language of the composer absorbed. In order for *Psappha* to be learned by a wider range of performers, there must be a streamlined learning process which takes into account the wishes of the composer but accomplishes the sonic experience he desires. One must also overcome the challenges of an apparent lack of determinism in the score. *Psappha* demands respect for its length, craftsmanship, historical significance, and the efforts of many over the years to bring it to the stage.

Furthermore, since a consensus cannot yet be found to approach multiple percussion, a clearly defined method, rooted in multiple percussion’s origins and influencing all that has come since, would be beneficial to many percussionists. Since

²⁰Ellen Rennie Flint calls these “gestures.”

the score offers many options for personal interpretation, a percussion student exposed to *Psappha* early in the developmental process, making a concerted effort to try out many of the possibilities allowed within a performance of the work, could achieve a fundamental level of proficiency as a multiple-percussionist. Flexibility of one's mind and mastery of the physical space is critical for any working percussionist.²¹ What makes *Psappha* different from so many other pieces is the fact that Xenakis gives the performer a purely rhythmic language, not rooted in a particular culture or genre of music,²² which can be used for unlocking a world of possibilities.

Limitations of the Study

This study is limited to presenting and solving the pedagogical challenges associated with learning to play *Psappha* for percussion solo, specifically related to notation. The other works Xenakis wrote for only percussion, including *Okho* and his other solo work *Rebonds*, are referenced only as means for discussing similar musical and notational issues. There is also some discussion of the overall contributions to the canon of percussion music within the context of their placement in its history.

About Xenakis and His Works for Percussion

The facts of Greek composer Iannis Xenakis's life are well documented, as are his methods for composing music since settling in Paris in 1947. It is important to note that he was opposed to the use of either serialism or aleatorism in his own work, which at first might seem at odds to some "freedom" found in the score to *Psappha*.²³ Both approaches

²¹Engleman, "Percussionists in the West - Coping with Change," 12.

²²Emmerson, "Xenakis Talks to Simon Emmerson," 24.

²³Michel P. Philpott, et al "Iannis Xenakis." In *The New Grove Dictionary of Music and Musicians*, 1st ed., ed. Stanley Sadie. London: Macmillan Publishers Limited. 1980, 560; Schick, *The Percussionist's Art: Same Bed, Different Dreams*, 26.

are tightly controlled either by formula in the former or the process of applying chance techniques in the latter. Even Xenakis was interested in how formulas could explain complex phenomenon, as in the field of stochastic mathematics. While these might have provided the larger framework for a piece, he approached his work more freely, making choices intuitively based on how the interaction between individual notes sounded to him. Xenakis reflected on this in the following way: “The solution is not really calculated or computed, but is a thought out, intuitive approach to the rhythmic problem, but with all previous experience as an aid.”²⁴

His first large-scale musical work, entitled *Metastasis* (1953-54), written for orchestra, was based on ideas he gathered through the process of designing the Phillips Pavilion for the 1958 Brussels World Fair. This work set a precedent for Xenakis translating his own ideal score into more traditional notation—from the visual representation of the work as an illustration or some form of a graph—as the conductor Herman Scherchen advised him to do in late 1955.²⁵ It is unclear why Xenakis never made that step before giving the score for *Psappha* to the percussionist Sylvio Gualda, but it represents one of the only occasions where his first full version of the score became the piece and once it was premiered, he would not go back and revise his scores.²⁶

Xenakis passed away in 1998, having written his last composition—interestingly, a short work for percussion solo and small orchestra—called *Omega* (1997), for the Scottish percussion soloist, Dame Evelyn Glennie. His canon of works for percussion is extensive yet largely underappreciated by the community of musicians and music

²⁴Emmerson, “Xenakis Talks to Simon Emmerson,” 24.

²⁵Matossian, *Xenakis*, 88.

²⁶*Ibid.*, 291.

scholars. In the course of his lifetime, Xenakis contributed over 20 pieces that prominently feature percussion, representing around 15% of his substantial output. That figure is impressive by any standard for composers in the 20th century, especially since he was not a percussionist himself. His major works for percussion include *Persephassa* for percussion sextet (1966), *Psappha* for percussion solo (1975), *Pleiades* for percussion sextet (1979), *Rebonds a/b* for percussion solo (1988), and *Okho* for djembe trio (1989).

Solo Repertoire Prior to *Psappha*

The role of a percussionist expanded throughout the 20th century to include a host of instruments and a plethora of styles with which one was expected to become familiar. As a result, the methods for teaching these various aspects of percussion slowly begin to solidify. The exception to this is the somewhat ambiguous (and maybe for this reason) multiple percussion category which has far fewer available methods for learning how to play this literature.

John Cage was among the first to write for the percussion soloist, in a piece called *27'10.554" for a percussionist* (1956). This early effort followed his work with Lou Harrison and subsequent "Constructions" for percussion ensemble, which often included "found objects," a legacy which composers and performers recognize today for expanding sonic possibilities. For *Zyklus Nr 9* (1959), Karlheinz Stockhausen wrote a score that could be played starting on any page, with the score positioned right-side up or upside-down – resulting in either "forward" or "backwards"—and used graphic notation to signal the performer to sound each of the indicated instruments, including marimba and vibraphone. Similarly, Charles Wourinen's *Janissary Music* (1966) also requires the use

of pitched percussion as well as an equally extensive set-up. Wourinen, however, employed extensive use of serialistic principles which Xenakis and others later rejected.

In several instances composers sought to present percussion as a vehicle for theater, as in the case of Peter Maxwell Davies's *Songs for a Mad King* (1969), Vinko Globokar's *Toucher* (1973), and Stockhausen's *Music im Bauch* (1974). In the aftermath of such experiments, composers began to stretch—or in some cases eliminate—certain boundaries of control, giving them over to the performer. Graphic notation was common during this period of exploration. Eventually, however, composers changed the demand as to the scale of their work for percussion. Paul Griffiths, music critic for *The New York Times* put it this way: “And there is a general tendency among composers to use simpler percussion setups, in contrast to the highly elaborate collections of instruments that have been assembled for the works of the 1950's and 1960's, like those of Pierre Boulez and Jean Barraque.”²⁷

From this standpoint, even *Psappha* is compact. Although in performance, large drums, which cover substantial physical space, are often used. Xenakis, in his writing for multiple percussion, actually tended to limit the number of instruments. *Psappha* consists of 16 different instruments, but at no time are there more than eleven instruments in use during a given passage, and several of the etudes require nine instruments or fewer. Later, in *Rebonds “b”* (1989), Xenakis scores for ten instruments, and this is only during the last few measures of a six-minute movement. During the rest of that movement, he calls for only five drums, and in the entire “a” movement, he uses only six.

²⁷Paul Griffiths, “Percussionists Step Into the Spotlight as Soloists.” *The New York Times*. New York, NY, January 23, 1998.

CHAPTER II

INTRODUCTION TO THE STUDY

In this chapter, I discuss the general aspects of what appears in the score for *Psappha* and then explain how I adapted these into the etudes. On average, each etude lasts about a minute in length and contains a particular set of technical and musical challenges. The length of each etude is influenced by significant changes in type and number of instruments, dynamic contrast, rests, or tempi, which had an effect on the resulting texture. I relied heavily on the work of those before me to make these decisions, but I came to some unique conclusions. Barry Larkin broke the piece into seven sections, based primarily around changes in tempi, and these are similar to Flint's "sections" in her analysis, although she breaks the material down further into subsections and what she calls "modules of rhythmic activity."²⁸ I divide it even further into 16 sections.

Definitions and General Considerations on the Notation for *Psappha*

Everyone who has written about *Psappha* chooses different ways to label the measurements of time (beats, pulse, etc.) that Xenakis's uses in the score. A logical way to do this, since quarter notes get the beat in my transcription, is to simply refer to the beat on which an event occurs by its corresponding number, as David Yoken did when directly interviewing Xenakis; or as "Boxes" (Smith); "measures" (Larkin/Palter); "bars" (Schick); or some other equivalent. However, I chose to refer to the beats the same way

²⁸Barry Larkin, "A Performance Analysis of *Psappha*." *Percussive Notes* 30, no. 6 (August 1992): 65–66; Flint, "An Investigation of Real Time as Evidenced by the Structural and Formal Multiplicities of Iannis Xenakis' 'Psappha,'" 53.

as Flint, who uses “T” to represent “time units” (Bill Sallak altered this to lowercase “t”), since hers is the most comprehensive analysis of the work.²⁹

Tempi

With regard to the printed tempi, one only needs to listen to a few versions of the work to know that the piece is usually performed much faster than written. From the very beginning Sylvio Gualda challenged Xenakis on the tempi, convincing him that when played much faster, the experience of listening to *Psappha* would be even more dramatic.³⁰ Gualda maintains that although he plays much faster than anyone else, he keeps the relationships consistent between all of the tempi throughout the piece. Morris Palter compares the opening tempi of several available recordings and notes that nearly everyone of them plays the piece at close to 1/3 again as fast, or 200+ time-units per minute (T.p.m.), and several, like Gualda, played it faster—up to 246 T.p.m.³¹

For someone learning the work, it is good to remember that Xenakis was clearly satisfied with the tempo indications he wrote and kept them in the published score, although he left room for going faster. These original tempi make the piece longer than most professional recordings, but there is actually a good argument for keeping them. Before the premier of *Psappha*, Xenakis told Simon Emmerson that these tempi were important for understanding the phenomenon of “inside time” and “outside time”

²⁹David Yoken, “Interview with Iannis Xenakis.” *Percussive Notes* 28, no. 3 (Spring 1990): 54–57; Alyssa Gretchen Smith, “An Examination of Notation in Selected Repertoire for Multiple Percussion.” Dissertation, Columbus, OH: Ohio State University, 71; Flint, “An Investigation of Real Time as Evidenced by the Structural and Formal Multiplicities of Iannis Xenakis’ ‘Psappha’,” 72; Bill Sallak, “Informed Indeterminacy: Guidelines for Instrument Choice in Iannis Xenakis’s ‘Psappha’.” *Percussive Notes* 40, no. 2 (April 2002): 56.

³⁰Rosen, “An Interview with Sylvio Gualda Concerning Psappha,” 36.

³¹Palter, “The Solidification of Performance Practice Issues in Solo Percussion Performance,” 11–13.

structures,³² which can simply be understood by sounds happening in rhythm versus the memory of that perception of time when silence follows. Ellen Rennie Flint is the only theoretician who has fully analyzed *Psappha*, and she believes that the specified tempi are correct. In her research, she found scientific evidence suggesting that silences longer than 10 seconds represent the space it takes to “forget” the previous perception of time.³³ The point is that it is not especially important to play the piece fast, since even at the written tempi (and maybe because it is in line with his original concepts), it will be effective in presenting the sonic phenomenon Xenakis intended.³⁴

Meter and Rhythm

I chose a notation scheme that is as close to the original as possible. Instead of boxes equaling one measurement of time, I chose to use the quarter note as the “pulse,” which keeps the integrity of the constant (or lack of) downbeat every quarter-note beat. There are no barlines in the entire piece, which not only avoids any metric associations³⁵ but is cleaner to read than having vertical lines occur every “beat” as is in the score. Even attempting to emphasize to the 10 beat numbering in the score would have gone directly against Xenakis’s desire for the absence of conspicuous meter.³⁶ At the beginning of the process, I tried using a regular meter like 4/4, as Xenakis employs in *Rebonds*,³⁷ as well as alternating simple and complex meters in a manner that fits the musical phrases. The

³²Emmerson, “Xenakis Talks to Simon Emmerson,” 25.

³³Flint, “An Investigation of Real Time as Evidenced by the Structural and Formal Multiplicities of Iannis Xenakis’ ‘Psappha’,” 193.

³⁴Yoken, “Interview with Iannis Xenakis,” 56.

³⁵Rosen, “An Interview with Sylvio Gualda Concerning Psappha.” 32.

³⁶Emmerson, “Xenakis Talks to Simon Emmerson,” 25.

³⁷Iannis Xenakis, *Rebonds: pour percussion solo*. Paris: Editions Salabert, 1988.

problem with that was these “phrases,” or strings of rhythmic material, he composes often begin and/or end off of the beat. Other times, I attempted to figure out exactly where a phrase began and ended in the middle of longer, uninterrupted passages. However, the result created ever-changing meters, which seemed in direct opposition to the aim of this project: to render the material more accessible while maintaining the overall approach of the composer. Ultimately, these longer passages could be broken into an infinite number of combinations. In this case, simpler is better.

In my realization of the work, I chose to keep the score as similar to the original as possible. Each etude lasts between thirty seconds and one minute, depending on the tempo at which they are played. This allows the player to put maximum focus into the practice of smaller “chunks”³⁸ of information, which promotes efficiency and accuracy in practice in addition to creating clear goals in the process of learning and/or memorizing the piece.

For the “in-between” rhythms, or off-beats, I used eighth-notes. The visual relationship of quarter-notes and eighth-notes seems more appropriate for several reasons. First of all, whole-notes and half-notes are problematic, since they have open note-heads, and the “dots” on the original score are solid. Furthermore, since my score eliminates any vertical lines separating one beat from another, stems are needed to show vertical demarcation for each unit of time, or “measure” in the music, as well as for connecting attacks that occur in unison. Another advantage is that a single beam attaching two eighth-notes presents clear rhythmic relationships and often helps establish connection across the staff, especially between the high and low extremes, as well as when attacks occur successively. This can be especially helpful for the percussionist,

³⁸Schick, *The Percussionists Art: Same Bed, Different Dreams*, 125.

since it shows the direction of movement within the staff, and can be helpful in making sticking choices, i.e., when the beam slants upward, it can be played L-R, and when slanting downward, can be played R-L. I specifically chose not to indicate any precise sticking combinations throughout the piece, since the entire set-up is different for everyone and could even be completely reversed by someone coming from a drum-set background or Germanic approach to timpani—both played highest to lowest, from left to right. Before getting too far into the project, I experimented with using eighth-notes and sixteenth-notes instead, but the result was visually cluttered compared to the quarter note and eighth note version, so that settled the matter for me.

The “staff” used in the score is variable and changes throughout the piece, depending on the number of instruments utilized in a given section. While eliminating the vertical intercept lines of the score in favor of stems and beams, I decided to keep the horizontal lines of the score as close to what is written as possible. Specifically, I chose to maintain the relationship between individual groups of three instruments, as well as C3 when it is alone, and E which is alone throughout the piece. The only time I deviate from this is in etude e, when C3 is the only “C” instrument in use. In Xenakis’s score, he includes lines for C1 and C2, which enter later, in what I call etude f.

In Part II of the piece, eleven instruments are used. There are many other approaches to notating pitch or instrument-type relationships in a multiple-percussion score, including the use of a traditional grand staff, or its derivatives; however, Xenakis clearly wanted to group the instruments into “families” of three voices, which meant a customized approach, and this is quite effective. The notation I use makes it possible to

return to the original score for study and analysis, as well as learning and performing the work, for those who wish to do so.

I specifically avoided notating in a way that would require the percussionist to set up *Psappha* “chromatically,” like a keyboard. The potential benefit of this is that one can set up the instruments in a type of keyboard configuration, which is well known to most percussionists. Examples of this are found in Michael Udow’s articles and method book (along with Chris Watts),³⁹ as well as works by David Hollinden.⁴⁰ The problem with this approach is that, in addition to the fact that it was never broadly accepted by percussionists and composers, it means that the notes must alternate between the lines and spaces (which Xenakis avoids when possible in other places such as *Rebonds*) and that accidentals are attached to the notes in “black key” positions. The resulting score is cluttered with unnecessary visual information, serving to further confound the percussionist when the instruments are purposely un-pitched.⁴¹

Another composer who did something similar to this is Maki Ishii in *Thirteen Drums*. His score is simply thirteen lines—one for each drum. In that case the lines were all spaced the same since the instruments were all to be of a similar type. Because most of the instruments are broken into families of three instruments, it was completely logical for Xenakis to add an extra space between each family, even when there is only one

³⁹ Michael Udow, “Visual Correspondence Between Notation Systems and Instrument Configurations.” *Percussive Notes: Research Edition*, 19, no.1 (Winter 1981): 19; Michael Udow and Chris Watts. *The Contemporary Percussionist: 20 Multiple Percussion Recital Solos*. Ft. Lauderdale, FL: Meredith Music Publications, 1986, 4.

⁴⁰The following pieces all use this notation: *The Whole Toy Laid Down* (1988), *Cold Pressed* (1990/1994), *Slender Beams of Solid Rhythm* (1991), and *Surface Tension* (1993).

⁴¹David Yoken, “Interview with Iannis Xenakis.” *Percussive Notes* 28, no. 3 (Spring 1990): 54–57; Emmerson, “Xenakis Talks to Simon Emmerson,” 24.

instrument shown from the family. He uses a grand staff in *Rebonds b*⁴² to distinguish drums (lower staff) from wood blocks (upper staff), which would have made for an interesting look and would seem even more clearly traditional; however, since Xenakis approached each instrument in the score at times like an independent “voice,” I found it helpful to view his original as a miniature orchestral or choral score, where each line represents a staff for an individual instrument, like strings, brass, woodwinds etc., and even part numbers are distinct but are grouped into sections and families. The ultimate consideration was what could be achieved given the limitations of the notation software I used, Finale 2009. With enough time and experimentation, the software presented few limitations. Since the instrumentation never changes within each etude, I give only an indication for families and instruments before their corresponding lines at the beginning of the first system of the score.

Instrument Choice

As mentioned before, most of the scholarship surrounding *Psappha* deals with how to choose instruments, and at times, even which instruments to *avoid* using. I do not wish to rehash these, but I will make some general statements about them, since the “note explicative” is in the score and is always the proverbial “elephant in the room.” Even with all this discourse, there are still ways that everyone who learns *Psappha* has to approach it as if it were brand new, like it was to Sylvio Gualda in 1976. Not all schools and professional players own the same equipment or have access to a place to keep the instruments set up at all times, so logistics have to be considered. To this end, the following is an additional set of performance notes which takes the discourse into

⁴²Xenakis, *Rebonds: pour percussion solo*. Paris: Editions Salabert, 1988,11-12.

account, and offers a consensus on what has been written. Although the score seems to suggest a wide range of instruments and plenty of leeway for choosing them, the words of Xenakis, Gualda, and others seem to suggest that those choices are a lot narrower.

NOTE EXPLICATIVE

<p>Un accent peut signifier à l'intérieur d'une séquence</p> <ol style="list-style-type: none"> 1) intensité plus forte 2) changement brusque de timbre 3) changement brusque de poids 4) ajout brusque d'un autre son et le jouer simultanément avec celui du temps non accentué. 5) combinaison simultanée des significations précédentes. 	<p>Sont seulement indiqués les sonorités globales souhaitées, qui définiront les structures et architectures rythmiques de cette pièce. Ce sont elles qui doivent être mises en valeur par des équilibres des puissances et des timbres choisis hors des sonorités banales.</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Registre de hauteurs</td> <td style="text-align: center;">Gradations dans les registres</td> <td colspan="2" style="text-align: center;">Catégorie de timbre ou de matériaux</td> </tr> <tr> <td style="text-align: center;">↓</td> <td style="text-align: center;">↓</td> <td style="text-align: center;">PEAUX</td> <td style="text-align: center;">BOIS</td> </tr> <tr> <td style="vertical-align: top;">aigu A</td> <td style="vertical-align: top;">1 2 3</td> <td style="vertical-align: top;">Bongos suraigus Tablas, Tom-toms à deux peaux à deux peaux dissaccordés mais en sympathie, Timbale très grave, Grosse caisse très large.</td> <td style="vertical-align: top;">Troncs d'arbres, Simantra, Blocks japonais, ronds.</td> </tr> <tr> <td style="vertical-align: top;">medium B</td> <td style="vertical-align: top;">1 2 3</td> <td></td> <td></td> </tr> <tr> <td style="vertical-align: top;">graves C</td> <td style="vertical-align: top;">1 2 3</td> <td></td> <td></td> </tr> </table>	Registre de hauteurs	Gradations dans les registres	Catégorie de timbre ou de matériaux		↓	↓	PEAUX	BOIS	aigu A	1 2 3	Bongos suraigus Tablas, Tom-toms à deux peaux à deux peaux dissaccordés mais en sympathie, Timbale très grave, Grosse caisse très large.	Troncs d'arbres, Simantra, Blocks japonais, ronds.	medium B	1 2 3			graves C	1 2 3			<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Registre de hauteurs</td> <td style="text-align: center;">Gradations dans les registres</td> <td style="text-align: center;">Catégorie de timbre ou de matériaux</td> </tr> <tr> <td style="text-align: center;">↓</td> <td style="text-align: center;">↓</td> <td style="text-align: center;">MÉTALUX</td> </tr> <tr> <td style="vertical-align: top;">moyen D</td> <td style="vertical-align: top;">1 2 3</td> <td style="vertical-align: top;">Barres d'acier Trompe, sonnet, Bati d'acier, Plaques épisses Tom-Toms ou Gongs frappés sur la tranche avec une balle métallique ou un marteau.</td> </tr> <tr> <td style="vertical-align: top;">neutre E</td> <td></td> <td></td> </tr> <tr> <td style="vertical-align: top;">très aigu F</td> <td style="vertical-align: top;">1 2 3</td> <td></td> </tr> </table>	Registre de hauteurs	Gradations dans les registres	Catégorie de timbre ou de matériaux	↓	↓	MÉTALUX	moyen D	1 2 3	Barres d'acier Trompe, sonnet, Bati d'acier, Plaques épisses Tom-Toms ou Gongs frappés sur la tranche avec une balle métallique ou un marteau.	neutre E			très aigu F	1 2 3	
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Musical Example 1. Psappha, Note Explicative by I. Xenakis.
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Here are some additional guidelines when selecting instruments:

- For Group A, the following instruments are most common: bongos, woodblocks, and simantra.⁴³
- For Group B, the following instruments are almost always used: congas.⁴⁴
- For Group C, use double-headed drums, up to 20" in diameter, for C1 and C2. The deeper the better.⁴⁵ Pedal-operated bass drum can be used exclusively for C3,⁴⁶ although the larger the better;⁴⁷ and a concert bass drum can also be used when an attack using C3 occurs alone or otherwise

⁴³Schick, Gualda, Auzet, Mortensen, as well as most students or other professions use some combination of these instruments.

⁴⁴Nearly every recorded performance uses congas for all of the B Group. In his interview with Simon Emmerson, Xenakis mentions he likes these. One notable exception is Steve Schick who uses two congas for Group C: one for C1 and the other C2.

⁴⁵David Yoken's interview with Xenakis, and Michael Rosen's interview with Gualda affirm this.

⁴⁶Schick, *The Percussionist's Art: Same Bed Different Dreams*, 199.

⁴⁷Sound is described as "large, profound, flaccid..." in the score at ... which is cannot be achieved using a smaller bass drum.

not part of a three-note “chord” and to double attacks at extremely loud dynamics.⁴⁸

- For Groups D, E, and F, use “rough” metals and avoid using instruments with strong cultural associations or definite pitch.
- For Group D, use resonant to slightly dead metals whose “pitch” are somewhere in the range used for Groups A-C.
- For Group E, use non-resonant metals of a lower “pitch” than Group D.
- For Group F, use loud resonant metals with a “pitch” that is in the high range of Groups A-C or higher. Possible instruments include metal pipes, Chinese opera gongs, brake drums, or Sixxen bars.⁴⁹
- Avoid using instruments which are prone to break easily and/or have a strong association with a particular culture.⁵⁰
- Use real skin heads as much as possible for drums in Groups A, B, and C.⁵¹

⁴⁸Iannis Xenakis, *Psappha: percussion solo*. Paris: Editions Salabert, 1976, 3.

⁴⁹Sylvio Gualda, *Percussion*. LP. Vol. 2. Paris: Erato, 1978; Kroumata Percussion Ensemble, and Gert Mortensen. *Iannis Xenakis*. Compact Disc. BIS recording BIS-CD-482. Stockholm, Sweden: BIS, 1990; Schick, *The Percussionist's Art: Same Bed, Different Dreams*, 199.

⁵⁰Djembes, doumbeks, darboukas (Palter), Timpani (Xenakis mentioned them in Simon Emmerson's article), Almglocken/cowbells (Xenakis, in David Yoken's article), Chinese drums, and Japanese Taiko (Sallak) all strongly tied to the cultures from which they come. Bongos have very thin, skin heads, prone to breakage (which Gualda mentioned in his interview with Michael Rosen), and I am against using them since the heads are small enough in diameter that performers often strike the rim or bearing edge of the shell when they miss the center. The resulting sound is a wooden “crack!” Tabla are mentioned in Xenakis's score, but are far too delicate to be used. Woodblocks are also prone to break, as are temple blocks, which are also undesirable (as noted in Sallak's article) because of cultural association. Congas sound very different when played on with sticks than they do with hands, which might explain why Xenakis mentions a preference for them (Simon Emmerson interview).

⁵¹Rosen, “An Interview with Sylvio Gualda Concerning Psappha.” *Percussive Notes* 27, no. 4 (Summer 1989): 36.

- Instruments in each family and group should span a wide range in terms of pitch and variety.⁵²

Set-up

As for how one arranges the instruments in physical space, there are nearly as many approaches to this as there are performances of the work. I will say little on the matter of set-up except the following:

- Congas should be in the center of the set-up – directly in front of the performer – since they are the most frequently used instruments throughout the piece.
- Placement of the least-often used instruments (C1 and C2) should be farthest away from the performer.⁵³

In every performance video available, the performer stands to play *Psappha*, which always seemed odd to me since over half of the piece is spent playing a foot-operated pedal bass drum for C3. During a lecture/performance at the University of California-San Diego, Steve Schick mentioned that due to his many performances of this work over the course of several decades, his right hip doesn't work the way it should anymore.⁵⁴ In addition to preventing injury, doing so from a seated position allows one to play without “hiccups” in the pulse, due to resting too much or too little weight on the playing leg,

⁵²All sources agree on this point.

⁵³The video recordings by both Steve Schick and Roland Auzet show that they place these at the far left of their set-up, out of the way of the metals D and E, which also should be to the left of the performer since percussionists are more accustomed to playing notes written on lower staves with the left hand (i.e. bass clef on the marimba).

⁵⁴“Contemporary Percussion Music with Steven Schick,” Steven Schick, *To Be Musical*, Episode 1, aired January 31, 2013 on UCTV.

especially during the final passage of the work,⁵⁵ where balancing on the other foot can be uncomfortable.

Implements

There are no indications as to the type or number of sticks or mallets anywhere in the work; however, Sylvio Gualda describes the one type of mallet to be used throughout as: “It is a wooden mallet with a thin wool covering.”⁵⁶ I make indications in the score that reflect the possibility of using between two and four sticks/mallets. Either way is acceptable, but playing with more than one stick in each hand makes negotiating multiple percussion pieces easier in some ways and harder in others. The reason I personally choose to use two sticks is that there are only 11 places where three attacks occur simultaneously, and because it is far more likely to presume that most will not have mastered four-mallet technique for other instruments.

Accents

In his dissertation, Morris Palter ended the discussion on exactly how Xenakis intended accents to be interpreted only in the first of Xenakis’s indications in the Note Explicative.⁵⁷ Inasmuch as it was possible to do so, I kept all of Xenakis’s indications for accents consistent to the score, so that if and when the percussionist returns to the original score for study or performance, the indications will look as familiar as possible – such as placing accents over the note-heads of the instruments to which they are attached, as

⁵⁵There are no documented performances of anyone doing this, but I have started to perform Psappha from a seated position specifically for those reasons. Furthermore, doing so places a limit on just how big some of the instruments can be and forces me to find the most efficient way to arrange the instruments which an important consideration for any working percussionist.

⁵⁶Rosen, “An Interview with Sylvio Gualda Concerning Psappha.” *Percussive Notes* 27, no. 4 (Summer 1989): 35.

⁵⁷Palter, “The Solidification of Performance Practice Issues in Solo Percussion Performance.” Dissertation, La Jolla, CA: University of California, San Diego, 2005, 10.

Xenakis did in his score. There were a few instances where the notes were so close together that it became necessary to place the accent for the lower instrument beneath, rather than above, the note-heads. Fortunately, these occur infrequently. It is important for the performer to remember that Xenakis wanted accents to speak amid the cacophony. He even mentions having considered that the percussionist might need to play softer than what is indicated at the beginning of the work to make this relationship apparent.⁵⁸

The next consideration was how to pair accented notes with unaccented ones, since Xenakis's score actually does this pretty clearly by always placing accents over the top of the note he desires to be emphasized. Sylvio Gualda's approach of treating the softer notes as grace notes before the accented ones has an important, twofold effect: hearing the softer note while the louder one sounds stronger. I chose an approach similar to a style of rudimental drumming where the non-accented notes are always played as "grace notes" at whatever dynamic is indicated and where accents are played at least one level above that. Therefore, when an unaccented note occurs simultaneously in my score with an accented one, a written grace note will be interpreted at the same level as all of the other unaccented notes.

This approach was influenced by listening to Sylvio Gualda's recording,⁵⁹ where he produces what rudimental drummers call a "flam." When one plays a flam, the grace note barely precedes the accented, or principal, note by an extremely small fraction of the beat. The advantage to this approach, instead of making the notes sound at the exact same time (as the original score indicates), is that the softer note can clearly be perceived instead of being covered up by the accented stroke.

⁵⁸Yoken, "Interview with Iannis Xenakis," 55.

⁵⁹Gualda, *Percussion*. LP.

Dynamics

Xenakis made separate indications for dynamics immediately before each instrument, every time they change. Once an instrument is labeled with a dynamic, the player should maintain that dynamic until it changes, similar to how accidentals generally carry through a measure when using a traditional key signature in music. Only in this case, Xenakis treats the whole piece as one open-ended measure. This is an interesting solution and allows for the partitioning of dynamics between individual instruments as well as between instrumental families. However, this also creates a problem for the performer. While pages of the original score can go by without a change in dynamics for a particular instrument, it is still important for the performer to remember at what dynamic they must play. Further compounding this quandary is that my personal score is more compact than the published score for *Psappha*, so that the staff itself becomes cluttered when the dynamics appear for each instrument.

Whether or not I specifically wanted to change this aspect, I had no choice but to indicate the starting dynamics for each etude, since I encourage learning them in any order that seems appropriate to one's skill level or interest in a particular section. This was already a significant change from the original. As I began to re-notate the sections into what would become etudes, it was clear that the dynamics remained somewhat constant throughout each one. In the few instances where the dynamics changed in some but not all voices, I made indications for certain instruments to remain at the previous dynamic level. This will be addressed in greater depth in the next chapter.

Phrasing

All “phrasing” indications are mine and could have been placed in an infinite number of different configurations. They are represented by a vertical dashed line where a barline normally would occur. As with the choosing of the “études,” this was done by careful consideration of the overall flow of the piece, obvious changes in tempi, dynamics, interesting compositional devices, and the introduction or removal of an instrument or group of instruments. At times I group phrases by the technical similarities they contain, rather than by the theoretical divisions used by Flint in her analysis, or by the compositional framework Xenakis may have used.

CHAPTER III
STUDY GUIDE
The Etudes

In this part of the project, I create a guide to learning the material from *Psappha* and explain the process of transcribing each etude in a notation scheme I believe remains true to the composer’s intent yet is readily accessible to any percussionist who has studied traditional, Western, musical notation. Whether one uses my solutions for preparing a performance of *Psappha* or simply to expand their facility as a multiple-percussionist, each etude offers corresponding “moments” of progressive complexity.

Etude a (1-120T)

In this first etude, Xenakis establishes the “motor” of the piece—the sense that time is ongoing, even when the music periodically pauses throughout the work. Flint calls this steady, on-beat motive the “first gesture.”⁶⁰ The opening phrase uses all three B instruments, alternating between single attacks and double-stops in the hands, with accents only appearing in B1 and B3. At first the unisons only occur between B2 and B3.



Musical Example 2. Psappha, 1-10T by I. Xenakis, transcr. O. Rockwell.
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It is important to keep in mind that all unaccented notes should be well below the accented ones.⁶¹ While it is important for this first statement to be strong and

⁶⁰Flint, “An Investigation of Real Time as Evidenced by the Structural and Formal Multiplicities of Iannis Xenakis’ ‘Psappha’,” 86.

⁶¹Yoken, “Interview with Iannis Xenakis,” 55.

declamatory, the player should allow room for much louder passages later in the piece. This indication to play rather loudly actually represents the middle, or most common, dynamic of the piece. The second phrase introduces accents in B2, and the third phrase introduces the double accent—achieved by stacking two accents over a single attack—in B1. This last indication seems like a misprint or other errata, except that it recurs throughout the piece. Xenakis used them quite extensively later in *Rebonds*, so it is clearly his intent. A second double-accent occurs three beats later, in B1 and B2, and at this time, it is split between the two voices in the score, so I did the same here. In notating the accents, it might seem redundant to place one above and one below, but I preferred to keep Xenakis’s original indications present in this version as much as possible, as it allows for seamless transfer to using the original score in practice or performance.

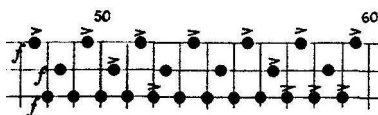
One of the most technical passages in the entire etude—not to mention the piece—occurs on the first system of the first page of the original score at 47T. Not only does Xenakis introduce notes played in between the “beats” or lines on the staff, but he also includes accents in the A voice where they appear. Flint calls this doubly quick motive: “gesture two.”⁶² The musical concept is simple, even if the technique needed to play it is not. The B instruments continue in gesture one and fill the role of accompaniment, while A simultaneously features a faster moving passage “above,” almost like a melody. Here, the faster-moving passage features a repeating permutation of four attacks: A1, A3, A2, A3. Meanwhile, the accents are constantly being displaced in both the A and B families of instruments, creating one of the densest passages in the whole work.

⁶²Flint, “An Investigation of Real Time as Evidenced by the Structural and Formal Multiplicities of Iannis Xenakis’ ‘Psappa’,” 86.



Musical Example 3. Psappha, 46-61T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

That this phrase occurs so close to the start of the work suggests yet another reason some might choose to abandon the work: Even when translated into a new notation, it remains a challenge and must be practiced slowly⁶³ if one is going to be able to execute the correct order of instruments as well as the contrast between accents and grace notes. This particular permutation of “gesture two” in the A instruments returns throughout the piece, near the start of etude e (using a different pattern of accents), and is embedded in the F instruments during the final passage of the piece—without any accents. The A instruments can be played in one hand (most often the right hand), carefully observing the printed accents. While every A1 attack is accented, the accents over A2 and A3 are less predictable.



Musical Example 4. Psappha, 47-60T by I. Xenakis. Copyright 1976, Éditions Salabert, Paris, France.

Further complicating matters is the fact that the player is required to play two notes at a time on the B instruments, sometimes with accents on one note, while this second gesture is played simultaneously (see Example #2). It seems reasonable that one would hold two sticks—in at least one hand—to execute this, as nearly every performer does. Playing it this way, however, creates a set of problems of its own. Attempting to

⁶³Rosen, “An Interview with Sylvio Gualda Concerning *Psappha*,” 36.

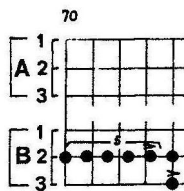
play an accent and grace note in the same hand will inevitably mean sacrificing the intensity and clarity in each attack. Most often on recordings where this is done, the accents are softer and the grace notes louder than when the B instruments are alone later in module d. To be fair, the time spent to achieve greater control between the two mallets in one hand might not be a complete waste, since there are applications to marimba playing, where the mallets are emphasized differently to bring out a note or line in the music.

However, even in the best recordings, where the performer uses four sticks, there is often a noticeable drop in intensity of the B group while the A group is played, which increases again once A returns to silence. In some cases this might be a purposeful attempt to bring out the A instruments, but the effect is not what is implied by the score and is an unnecessary effort, since the higher pitched instruments will nearly always project through the performance space adequately enough to be heard. Electing to use only two sticks—one in each hand—means that this time could be spent perfecting other tricky (and longer) passages in the piece. Where two grace notes appear against an accented one has two possible solutions: play one grace note before and one after the accented note; or, since one grace note is always B2 against an accented B3, leave B2 out. At faster speeds, the latter is really the only choice if the accents are all to speak as they appear.

The next phrase features a rarity in this composition: an overt polyrhythm. A lone quintuplet suggests another motive or “gesture” featured prominently in etudes m and n. This gesture Flint calls “repeated attacks.”⁶⁴ Almost immediately after executing this

⁶⁴Flint, “An Investigation of Real Time as Evidenced by the Structural and Formal Multiplicities of Iannis Xenakis’ ‘Psappa’,” 122.

polyrhythm, at 76T, both B2 and B3 are accented in unison, creating a new version of the double accented attack.



Musical Example 5. Psappha, 70-74T by I. Xenakis.
Copyright 1976, Éditions Salabert, Paris, France.

Following the dramatic quintuplet gesture, the next phrase features another interesting device: a palindrome in the B instruments from 85T to 112T, with the midpoint between 98T and 99T. The palindrome is slightly obscured by the fact that the accompanying accents follow a different, more intricate pattern. Double accents are introduced between B1 and B3 for the first time in the middle of the palindrome. Overlapping the end of this phrase is a shorter palindrome that begins on 107T and ends on 117T, just three beats prior to the end of the etude. In my version, I choose to split up the material as seen below (Example #5), since the first palindrome would not fit completely on one line. The final stroke is unison between B2 and B3, which has been a unifying and grounding sonority throughout this etude. This gives a sense of conclusion to the etude; even while the relationship between them has progressed from B2 as the weak attack and B3 as the strong attack, they finish as dynamically equal. Therefore, it is important that these unison attacks, whether both are accented or not, be struck together, with the same velocity starting at 76T, to the end.

The image shows a musical score for three staves. The first staff is labeled with measure numbers 80 and 90. It contains a sequence of notes with accents. The second staff is labeled with measure number 100 and contains a sequence of notes with accents. The third staff is labeled with measure numbers 110 and 120 and contains a sequence of notes with accents. The notes are primarily quarter notes and eighth notes, with some rests.

Musical Example 6. Psappa, 80-120T by I. Xenakis, transcr. O. Rockwell.
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Etude b (121-219T)

In this etude, silence (rests) begins to periodically interrupt the action as Xenakis further explores the permutations as well as combinations of instruments and accents. The first two attacks, 122-123T, represent the first time that only two double-accented “chords” occur successively. The technical challenges presented in this module are only slightly different from etude a. While there the patterns or types of figures were consistently accented, now there is greater inconsistency of applying accents in now-familiar structures. In etude a, the permutations of instruments are continually altered, while certain structures are accented in a similar way. However, in this etude, the instrumental permutations are familiar while the accent patterns are constantly shifting. Hands can easily alternate between drums in whatever sticking pattern the performer chooses. The first of two grace notes in the entire etude occurs at 194T and for the first time is featured in B2 along with an accent in B1.

At 203.5T, “gesture two” returns with a new set of permutations based on a series of looped ascending figures, coupled with the first idea expressed within etude a. As before, the accents are displaced throughout, so that a pattern is not readily apparent. These notes can all be executed with one hand. This time, the rhythm in the B instruments is punctuated by pauses and only ever requires the player to play more than one note at a time in that group, which fully eliminates the need for three or four sticks. The second grace note occurs at mm. 209T in B2 and is connected to an accent in A3. As before in etude a, careful treatment of unison accented or unison unaccented notes should be controlled appropriately and in this case, sound exactly together.



Musical Example 7. Psappa, 201-214T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

At this point it is important to draw attention to the note Xenakis places beneath the staff in his score. He makes an indication for the performer to gradually drop the pitch of the B instruments. This is another of the places where, clearly, what Xenakis had in mind cannot be reproduced on the instruments he prefers.⁶⁵ As a matter of fact, there is no recording that I am aware of that takes this into account.⁶⁶

Etude c (220-379T)

As with the previous etude, more silence is added in etude c—this time up to eight beats in length. Similar use of permutation and combination of instruments continues,

⁶⁵Yoken, “Interview with Iannis Xenakis,” 54.

⁶⁶Flint, “An Investigation of Real Time as Evidenced by the Structural and Formal Multiplicities of Iannis Xenakis’ ‘Psappa,’” 193.

but accents are slowly eliminated. Up to this point, *forte* has been the only dynamic and applies to all instruments. In this module, Xenakis begins to introduce dynamic contrast between the A and B instrument groups. B remains *forte*, but A is different each time it enters with “gesture two.” The first such entrance at mm. 275.5T is *mezzo-forte*, while the second entrance at mm. 327.5T is *fortissimo*, and the final entrance at mm. 358.5T is at *mezzo-piano*. Also interesting to note is that at this point, there are more dynamics explored than in all of Xenakis’s *Rebonds a* or *b*, making *Psappha*, by comparison, a far more expressive piece.

The relationship between these “gesture two” phrases is that the latter two are fragments from the first. 327-336T is basically the restatement of mm. 288-297T, minus an eighth note in A3 at 327T and A1 at 331.5T and with different accompaniment strokes in B instruments. Meanwhile, 358.5-362T is the same as 288.5-292T, which is, of course, the same as 327.5-331T, minus any accompaniment from B. The entire first phrase is used throughout the next etude: d.

290

ff * (if using 2 sticks lay A3 as grace note before or after the beat)

330

ff * (all B1-3 until changed)

360

(mp)

Musical Example 8. Psappha, 287-297T, 325-337T, and 353-366T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

At any time during this etude, the player can begin to move the opposite hand (usually left for lower instruments) to the A instruments, since B instruments are used sparingly, and into the next etude (d), as well. Paying close attention to the beam direction can be helpful in determining a sticking to use. I suggest that, as much as possible, when the beam goes up that it be played LR, and that when the beam slopes down that it be played RL (assuming set-up is lowest to highest, left to right). Also present are two vertical sonorities of three voices which feature no accents. Since the A2 and A3 (respectively) are at *mezzo-forte*, there is an implied accent on both B1 and B2 (in both cases). This can be realized by placing the principal (accented) notes slightly before or after the grace note, whichever feels more natural to the performer.

Xenakis's deliberate use of all six possible permutations of three instruments can be seen clearly in the B instrumentals throughout the etude. These permutations, as well as longer strings of them which have been used extensively in the first two etudes, are among the most useful attributes of the piece and are valuable to the development of dexterity around the set of instruments. While there has been some additive processes at work throughout the first two etudes, there has also been a process of deconstruction at work since the first rest appeared in etude b. That deconstruction has also been affecting the A instruments, which will be nearly eliminated in the following etude.

Etude d (380-518T)

Etude d is particularly interesting, given that the process of subtraction from the A instruments has fully taken hold, and a whole new process is in play concerning permutations of accents and individual notes in the A instruments. The entire etude utilizes "gesture two" and features fragments of the larger phrase in the previous etude, as

well as phrase ideas unique to this etude. The entire etude contains an uneven crescendo then diminuendo, making it a feat of expression. This crescendo is, in itself, a visual and aural representation of how the piece travels through a variety of additive and subtractive processes; in this case it primarily affects dynamics.

380 390

A

B

pp *cresc...* * (applies to all A1-3 throughout entire etude)

Musical Example 9. Psappha, 380-399T by I. Xenakis, transcr. O. Rockwell.
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What is also interesting about this etude is that the B instrumental group carries the dynamic of *forte* throughout the entire first three etudes, but in practice, everyone performs them relative to the growth or decline of the dynamic in the A instrumental group. Again, as before, sticking which follows the upward (LR) or downward (RL) direction of the beam is generally clear, with a few exceptions, such as when paired with an attack on a B instrument. Several of these are treated as grace notes, since those occur together with an accented attack in the A group. There are no occurrences of three-note vertical sonorities present in etude d.

From the perspective of pedagogy, Xenakis effectively doubled the speed at which attacks occur, relative to module a, which rounds out a complete idea of interplay between three instruments in two groups. Both right and left hands will have executed both accented and unaccented notes at various speeds, over nearly every possible permutation of successive attacks. After a few minutes, the player is fully warmed up, and technique is dialed in.

Etude e (519-640T)

At this point Xenakis introduces the first—and arguably the most defining instrument in the C instruments: C3, whose sound Xenakis describes in the score as “of very large proportion, profound, crushing.”⁶⁷ To indicate its separateness and lowness of pitch, I placed it on a line below the B group of instruments, with a space in between, exactly as Xenakis does in his score. At this point the staff begins to take shape as being more complex than a traditional grand staff, suggested by the previous etudes. To emphasize this new “voice,” Xenakis chooses an extremely loud dynamic (*fff*), and C3 will nearly always be the loudest voice present throughout the remainder of the piece. Flint calls the singular sonority the “iambic foot,”⁶⁸ representing the long notes in the iambic poetry of Sappho, grounding the overall architecture of the solo from now until the end of the piece. As if giving the listener time to absorb the massive impact, Xenakis pauses for five units of time before echoing the first iteration of “gesture two” from etude a. The accents are ordered differently than before, but they, along with rhythmic motion of “gesture two” and the dynamic of *piano*, quickly link it to the preceding etude.

Musical Example 10. Psappha, 519-532T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

Following another massive impact at 533T and three time units of silence, the B instruments return with “gesture one.” This time it is rhythmically augmented by a ratio

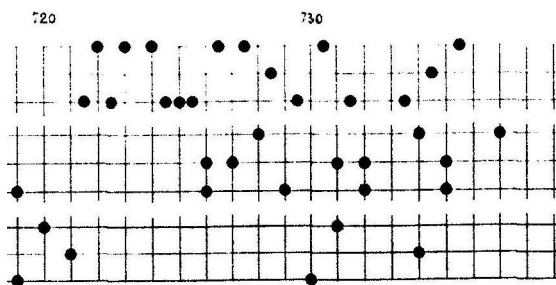
⁶⁷Xenakis, *Psappha*, 3.

⁶⁸Flint, “An Investigation of Real Time as Evidenced by the Structural and Formal Multiplicities of Iannis Xenakis’ ‘Psappha,’” 113.

of 2:1, which actually relates to the proportion between certain sections that Flint details in her analysis. There is no need to mark phrases, since the interplay between the iambic foot, B instruments, and A instruments is clearly delineated and separated by a rest each time. For the purposes of this project, I alternate between gestures for each system in the score. The etude ends with a phrase introducing the seamless interplay between all instrumental families to preview the material found exclusively in the next etudes. Another longer silence (three beats this time) signals the important shift to come.

Etude f (641-739T)

In etude f the remaining C instruments are finally utilized. C1 is introduced at 655T, and C2 enters in a clear statement of all three beginning at 666T. Gestures one and two are featured most prominently in this etude, as is the first significant use of repeated attacks gesture in several instrumental groups throughout the second half. The real value of having the eighth-note groupings becomes apparent in this etude. The nine instruments are now separated by a perceivable distance. Unison or successive attacks between the extremes of the staff are much easier to see, process, and execute when beams connect them. This is especially true in places like the example which follows, where it can be difficult to tell which notes sound successively (729-730T) and simultaneously (734T).



Musical Example 11. Psappha, 719-739T by I. Xenakis.
Copyright 1976, Éditions Salabert, Paris, France.

The only notable silences in etude f occur after the final stroke on B1 at 737T and during the last two units of time (738-739T), which serve as a transition to the opening of etude g. No phrase indications are necessary, as each system of the score represents more or less a complete idea. The last two of these are particularly dense and disjunct and require the most attention by the performer because of many resulting unisons, due to the layering of gestures one and two, between and spread out over three groups of instruments. The fourth system can be further broken into several smaller combinations of just a few time units each: 697-701T; 702-704T; 705-708T; 709-714T; and 715-718T. The fifth and final system features just a few, but longer combinations of between 5 and 9 time units each: 719-723T; 724-732T; and 733-739T. It is important that the flow between these combinations and throughout the entire etude remains constant, since there are virtually no silences purposely interrupting the action, as in the previous etude (e).



Musical Example 12. Psappa, 719-739T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

More than any previous etude, it is important for the performer to refine the physical motion between instruments and instrumental groups in this etude. Steven Schick speaks about “soft-triangles” he envisions connecting his pathways between instruments in the set-up for *Bone Alphabet* by Brian Ferneyough.⁶⁹ Developing efficient motions between instruments in the set-up eliminates tension for the performer and

⁶⁹Schick, *The Percussionist's Art: Same Bed, Different Dreams*, 111.

distraction for the audience, since Xenakis was also clear about not making the piece a theatrical spectacle, beyond the normal motions needed to execute the piece.⁷⁰

Etude g (740-989T)

From a compositional standpoint, etude g features a canon based on the opening passage of the piece but layered (mostly) at different speeds at a ratio of 5:7:11, measured in 1/2 time units, between A, B, and C respectively. It begins on the third “stroke” of the etude, or 747.5T, and creates a very long polyrhythm, although one which Xenakis manipulates at will, especially in the B group of instruments, where he occasionally spaces the attacks anywhere between 3 and 4.5 time units apart, instead of strictly adhering to the 3.5 time unit cycle.

The texture is a result of the first 41 beats of the piece appearing as “gesture one” at these different speeds, which creates fragmented and disjunct relationships Xenakis called “rarified.”⁷¹ It is difficult to read at the given tempo of 272 beats per minute, or greater, especially when spread out over three staves in each system. The challenge for any percussionist is to maintain one’s place as the resulting interplay between the instrument groups contains nothing even resembling patterns at the phrase level, since the aggregate rhythm and placement of instruments in them changes constantly. The absence of any meter in this section further compounds the sense of relentless, frenetic energy and randomness that suggests modern military action that Xenakis witnessed throughout World War II and subsequent unrest in Athens.

⁷⁰Emmerson, “Xenakis Talks to Simon Emerson,” 25.

⁷¹Flint, “An Investigation of Real Time as Evidenced by the Structural and Formal Multiplicities of Iannis Xenakis’ ‘Psappa’,” 109.

Despite wanting to stay true to Xenakis's wishes that the piece feel unmeasured, I decided to highlight the periodicity embedded in this etude, since it would not only make it easier to keep one's place in the music, but one would also feel the sense of grounding that even a more traditional canon inherently possesses. The aural experience of hearing the etude is one of focus changing from the low C family of instruments at the start to the higher pitched A group at 772.5T. Since the higher instruments cut through the texture even when group B enters at 790T, the regularity of attacks occurring every 2.5 time units (or $5, 1/2$ units) in the A instruments suggests the feeling of meter, and it was possible to fit the entire etude into this regular pattern. Xenakis only manipulates the spacing of the "strokes" in the B instruments in two places (822.5-837.5T and 860-865T), and each time he merely anticipates the "stroke" by one time unit, and adds it back later, so that 2.5 full time units is essentially maintained.

From the start of etude g, a period of 5 time units is projected between the first and second attacks in C instruments. The relationship between the second and third strokes is at a ratio of 1:2, or half the distance between the first two strokes, which anticipates the "tempo" of the A group of instruments to come. Once the instruments in A enter, it is so steady that it almost suggests downbeats, in spite of Xenakis's insistence that meter be completely absent from the composition. At first it seemed that since eighth-notes represented each of these $1/2$ time units, the etude would fit best into $5/8$ time; however, this proved to be erroneous. The visual result of that was even more frenetic than etudes a-f, with barlines breaking up the flow of the work. Also, it removed the visual continuity of time units, represented by quarter notes in mine, from which Xenakis never deviates in the score, except through changes in tempo.

Musical Example 13. Psappha, 740-769T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

It was clear that shifting the “meter” to reflect the resulting groups of activity between rests made the etude even less comfortable to read. The next logical place was to imagine the work in a larger feeling of 5/4 but not explicitly notated by a time signature. This way, every other attack in the A group of instruments becomes a “downbeat,” which each time unit necessarily suggests throughout the entire piece, but because of the register and regularity of the A group sounds, neither “downbeat” nor “upbeat” attack ultimately suggests a greater sense of importance to the listener. For the player, though, this regularity provides a visual pattern amid the resulting effect of chaos.

Musical Example 14. Psappha, 770-799T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

To project this to the performer, I first tried to use phrasing indications (slurs) over every 2.5 time units. When that seemed overly cluttered visually, I tried placing slurs over every 5 time units, and that was hardly an improvement. Finally, I arrived at the solution to use dashed lines to indicate the start of each “measure” of five time units, having used them in earlier etudes to indicate the division of phrases, since they are somewhat less intrusive than any of the previous experiments. I ultimately chose to keep this through the entire etude so that the five beat “cycle” becomes a stabilizing force for

the performer. The benefit of this notation is further reinforced when unisons occur between instruments on different “staves” are now connected by stems to one another, and eighth-note beams make it possible to see connection and direction between the families, as well as the instruments themselves.

There is nothing polite about this music, and the dynamic of *fff* is consistent over all of the instruments. However, it is the *density* of instrumental attacks in the middle of the piece which further increases the intensity—not necessarily the performer needing to hit them any harder.⁷²

Etude h (990-1203T)

From a technical standpoint, etude h is the least rhythmically active in the entire set/piece. The only real change I made in notation, beyond the use of quarter notes and rests, is placing numbers over the rests to indicate how many there are in between attacks. This makes it possible for the performer to more easily remember, if memorizing, or to shift visual focus away from the score, if reading, and not appear to be “counting rests.” Even if the performer has played the piece at greater than 152 b.p.m through etudes a-g, so that a tempo of greater than 110 b.p.m. is to be used in etudes i-k, one should not compress the rests in etude h, since the effect Xenakis intended was to fully obscure the sense of tempo in the silence between each “episode” of attacks.⁷³ Most of the spaces between the pair of C3 and A1 attacks should be about 10 seconds long to fully achieve the desired effect. For example: 60 seconds divided by 110 b.p.m., multiplied by 18, makes 9.8181... seconds, or very close to 10 seconds of silence.

⁷²Schick, *The Percussionist's Art: Same Bed, Different Dreams*, 201.

⁷³Flint, “An Investigation of Real Time as Evidenced by the Structural and Formal Multiplicities of Iannis Xenakis’ ‘Psappa’,” 193-194.

The long-short (low-high) gesture and the “iambic foot gesture” (bass drum specifically) together become a unifying element in the second part of the piece, of which this is the first etude. What one does in between these gestures is a matter of personal taste; however, the performer need not use any extraneous movement in between beyond what is necessary to produce the *ffff* dynamic on each instrument. This again is in keeping with Xenakis’ preference that one must not use artificial or otherwise dramatic actions to telegraph the music.⁷⁴

Musical Example 15. Psappha, 990-1030T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

Etude i (1203-1410T)

In etude i, Xenakis begins to fuse together several compositional devices (iambic foot, gesture two, and repeated attacks), along with the introduction of D1, D3, and E. At nearly two minutes long (using Xenakis’ original tempo), it is one of the longest etudes, although it could have been broken into at least two.⁷⁵ As with the addition of each new family of instruments before, new “staves” are added. The resulting score is made up of 11 lines, with four extra spaces, one each between groups of instruments. Although only eight instruments are used in this etude, it is important for the player to get used to reading between the staves, since the next etude (j) uses all 11 and is thickly scored. B1

⁷⁴Emmerson, “Xenakis Talks to Simon Emerson,” 25.

⁷⁵Flint breaks this material into two of what she calls “modules,” creating a “modular grouping.” Her division occurs right in the middle of a phrase and between two groups of instruments (B and D) at 1302.5T, which is awkward not only for counting, but also for continuity. Moving the division backward or forward in the score was problematic because Xenakis is constantly developing over similar material throughout the piece. Therefore, I kept all of the material present in the period listed above, within this one etude.

and B3 return at the start of the etude using gesture two, followed by the iambic foot in C3 along with repeated strokes in A1. This pattern of gestures is repeated at 1226T and followed this time with the entrance of metals D1 and D3 at 1248T—in concert the B instruments using gesture two. At this point Xenakis begins to use different ordering of these same gestures until 1290.5-1291T, when the first unison of the etude occurs. Xenakis then gradually begins to reduce the number rests separating the gestures, ultimately eliminating them in favor of longer passages of material between the metals and B instruments. The single instrument in “E” enters at 1321T, and the last rest of more than 1.5 time units occurs at 1325.5-1329T. The material used in the remaining 80 or so time-units in the etude is nearly continuous and features seven unison attacks, which is also in preparation for etude j to follow. Throughout the remainder of etude i, all instruments are to be played at a consistent *forte*, except for C3 and E, which are to be played at *ffff* and *ff*, respectively.

The image displays a musical score for the piece 'Psappha' by Iannis Xenakis, specifically measures 1310 through 1350. The score is presented in two systems of staves. The first system covers measures 1310 to 1320, and the second system covers measures 1330 to 1350. The notation includes various rhythmic patterns, rests, and dynamic markings. A dynamic marking of *(ff)* is noted as applying to all 'E' instruments throughout the entire etude. The score is transcribed by O. Rockwell.

Musical Example 16. Psappha, 1307-1354T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

Etude j (1411-1538T)

From the start, etude j is a return to the continuous layering of gestures one and two found in etude d, along with periodic entrances by C3, the iambic foot. The wood/skin instruments feature gesture one, while gesture two is found in the metal instruments. Also embedded within the texture is the new long-short gesture based on the isolated C3 and A1 attacks from etude h. This is also suggested between any accented notes followed by unaccented ones throughout the entire piece to this point, and found in augmented form at the end of etude i in B3. As elsewhere, it is important that the accents sound noticeably louder than unaccented ones, so grace notes are used again in my score to visually represent this contrast. There are no rests throughout all of etude j, just like in etude a. At 1415T, there is an accented stroke and at 1416T, an unaccented stroke in B3. This occurs immediately again in 1417-1419T, where the three strokes going forward or backwards create short-long, and then the long-short gesture with the accent in the middle belonging to both. Etude j also includes three attacks where three instruments sound simultaneously in the hands. As before in etudes a, b, and g, the performer has to decide whether to pick up additional sticks at this point or play one or more of the strokes as grace notes and one or more principal strokes. One of which is found in the following:

1420

A 1
2
3

B 1
2
3

C 1
2
3

D 1
2
3

E 1
2
3

ff * (all E through entire etude)

f * (everything except C3 and E)

* (if using 2 sticks play A2 before or after B3 & D1)

fff * (all C3 through entire etude)

Musical Example 17. Psappha, 1411-1428T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

The continuous flow of information makes this one of the trickiest places in the piece to maintain one's concentration. It occurred to me to try to fit the material into a meter, or even shifting meters, and that indicating measures would have helped to break the information into easier-to-digest "packets." Using a common meter of 2, 3, or 4, the music implies a strong sense of downbeat, and I found no good rule for where to divide "measures" of differing lengths. Even if approached intuitively—breaking the material into more complicated time signatures—the constant shift between uneven meters adds a new layer of complication that had not previously been used, nor would it be used elsewhere. I did, however, make indications between what I felt were "phrases," where something was added or changed. One example of this is at 1441T, where D3 returns after being silent since the start of the etude. That, combined with the accented stroke in A1 seems to signal a clear structural change. Sporadic entrances of C3 and the entrance of B1 at 1476T are also prime examples of this.

From a technical standpoint, a player can approach the etude as melody with accompaniment, even isolating the hands: on metals in one and woods/skins in the other. The benefit to stems and beams in my score is fully realized in etudes j and k, as unisons and successive attacks spread out over several inches are connected and organized visually. Xenakis's score made following the movement visually intelligible in either gesture one or two within each instrumental group, however, putting them all together in real time is almost impossible without getting caught up in one or the other since it bears no resemblance to traditional notation on a familiar staff. There is simply too much information—like having all of the letters in the words for a story written right to left, but still reading the sentences left-to-right.

Musical Example 18. Psappha, 1410-1463T by I. Xenakis.
Copyright 1976, Éditions Salabert, Paris, France.

Etude k (1539-1609T)

Etude k is a continuation of the layering of gestures one and two, but starting at 1539T, the gestures switch instrument families so that the woods/skins now have the quicker moving line and metals provide a contrasting line at half-speed. Conspicuously absent are accents and, therefore, grace notes with them. It is about half as short as j, and the two could have stayed together by the similar use of these two gestures in both, as I did with k, but the change in each technique from across the set-up to the other side seemed important enough to separate. In fact, Flint separates these, and even the material at the end of etude k, between the rests, has its own short “module.”⁷⁶

The dynamics in etude j remain the same as in etude k: *forte* in all instruments except C3 and E, which are *ffff* and *ff*, respectively. There are four instances of three notes sounding simultaneously, however, two involve the pedal bass drum and for the other two, indications were added to treat some instrumental attacks as grace notes, if using only two sticks. In the first instance, the A2 and D3 instruments should be played as grace notes together, followed by B2. A2 can very quickly shift to B2 since they are

⁷⁶Flint, “An Investigation of Real Time as Evidenced by the Structural and Formal Multiplicities of Iannis Xenakis’ ‘Psappha’,” 139.

usually in the same general area in the set-up. In the second instance, A1 and D1 should be played like grace notes since they are at a lower dynamic level (*f*) than E (*ff*) and because D1 is close to E, making that quick shift possible.

Musical Example 19. Psappha, 1539-1557T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

Etude I (1610-1746T)

Etude I features an accelerando from quarter note (1T)=110 to quarter note (1T)=134. The prevailing feature of this etude is a series of gestures that grow increasingly longer, separated by a varied number of rests. In her analysis, Flint considers each gesture its own module;⁷⁷ however, I opt to place them all together in one etude, considering how short each one is. The etude could end around 1720T, where the indication of tempo of 134 b.p.m. is fully established and where a dynamic of *piano* is introduced in A1, as Larkin does in his analysis, or at 1724T, where Flint does in hers; however, there is not a clear change in instrumental texture until 1747T. This is yet another example of a place where the theoretical divisions and the technical and aural experience are at odds with one another. As with most cases in this project, I choose to defer to the sense of musical change, which performers use to cue a change in their approach to playing. Furthermore, the final statement of etude I includes iambic long-short gestures in B3 as bookends to the material between 1718T and 1741T.

⁷⁷Ibid., 142.

1720 ♩ = 134

1730

1740

p *(all A1 through remainder of etude)

f *(all C3 through remainder of etude)

Musical Example 20. Psappha, 1717-1746T by I. Xenakis, transcr. O. Rockwell Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

During this etude, Xenakis periodically changes the dynamic for C3 from *ffff* at the start to *ff* at 1665T and eventually to *f* at 1727T. Although E remains at *fortissimo* throughout the etude, the change to C3 has the effect of gradually signaling the easing down from loud dynamic levels consistently used during the middle third of *Psappha* (etudes e-k) to the prevailing *piano* dynamic level in etude m.

It is interesting to note that neither A2 nor B1 is heard throughout the etude, and B2 is heard only once, so that the etude is effectively scored for just eight instruments. Most of the action centers around the movement in the D-E instrumental groups (gesture 2), isolated strokes in B3 (iambic short-long), alternating single strokes in C3 (iambic foot), and repeated attacks in A1 and A2. There is a transitional passage which begins at 1715T where iambic short-long idea is passed between D3 and B3, which culminates in the aforementioned change to a softer dynamic (*p*) in A1. As if to punctuate the arrival in the new tempo, the forward energy is punctuated by silence at 1730T, again at 1735, and finally at 1742T.

Etude m (1747-1892T)

Etude m features the development of the repeated attacks through the simultaneous, but shifting layering of two instruments—a gesture Xenakis called “sound

ensembles of timbre.”⁷⁸ This new gesture begins at 1793.5T and continues throughout the next etude (n). While the concept of this etude is relatively simple to grasp, executing it is another matter. Striking a combination of surfaces successively, when that steady rhythm is broken in one voice or alternates between them—especially when having to shift one or both in opposite directions and at different distances or velocities—is difficult on any percussion or keyboard instrument. Reading these figures in the original version is even more complicated when the eye has a tendency to become fixated on an individual string of attacks spread across the 11 lines and many spaces of the score. The use of stems helps connect the attacks vertically, while the use of eighth-note beams helps to connect their motion from one line to another. This makes etude m and the one following it the most contrapuntal playing yet seen in *Psappha*.

Musical Example 21. Psappha, 1784-1805T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

In this etude, the underlying dynamic is *piano* in all of the instruments except C3, which, while starting at a robust *forte*, continues its descent from the previous etude to a dynamic of *mezzo-forte* at 1787T. While C3 is eventually returned to *forte* at 1847.5T, it is still well below the *ffff* indication first seen at 1000T, at the beginning of etude h. Since this etude also continues to highlight the iambic short-long (or vice versa), when two quarter notes appear (accented or not) in B3, they are played at *forte* for emphasis. I

⁷⁸Ibid, 158.

choose to use a “stems-down” approach in order to project this distinction. Each of the passages where B3 features the repeated attacks gesture carries the indication of *piano*, like everything else (except C3).

The musical score for *Psappha* (1747-1764T) by I. Xenakis, transcribed by O. Rockwell, is presented for five instruments: A, B, C, D, and E. The score is divided into two sections by a double bar line. The first section is marked with a piano (*p*) dynamic, and the second section is marked with a forte (*f*) dynamic. The score includes various musical notations such as stems, beams, and accents. The first section is marked with a piano (*p*) dynamic, and the second section is marked with a forte (*f*) dynamic. The score includes various musical notations such as stems, beams, and accents.

Musical Example 22. Psappha, 1747-1764T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

Meanwhile, Xenakis changes the dynamic for E at 1861.5T from *forte* to *mezzo-forte*. Every one of the eleven instruments found in most of Part II of *Psappha* sounds in this etude. Only two sticks are needed through the entire etude, since there are two instances of three instruments being written simultaneously, and each time C3 is one of them.

Etude n (1893-2022T)

As in etude l, the line separating etude m from etude n is negotiable from a purely musical or sonic perspective. All of the instruments in group A sound at *forte* beginning 1865.5T, signaling a coming change in etude n. A rhythmic palindrome in the exchange between C3 and A1 from 1875-188T could have begun the next etude, just the same as the palindrome in the rhythm and accents found in B3 between 1887T and 1894T, or in between either. However, Flint indicates that a new “module of rhythmic activity” begins at 1893T. The “reverse” side of this second palindrome begins an extended, and mostly uninterrupted, passage of “ensembles of timbre” gesture (with the exception of a single rest at 1985T) that stretches all of the way to where etude o begins at 2023T, when

the final new gesture, “percussive rolls,” is introduced (etude o). These two moments effectively frame the etude, which is why I choose to follow the point of division Flint placed here. The material in etude n features the continued development of the repeated attacks gesture, both in and out of “ensembles of timbre,” which began in etude m.

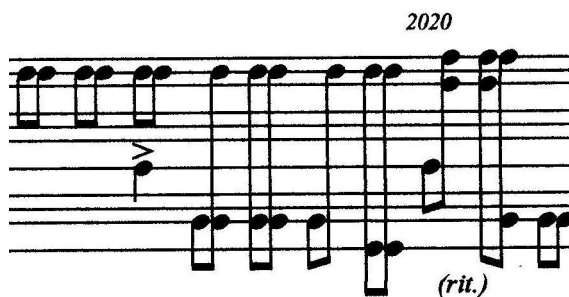
Musical Example 23. Psappha, 1983-1917T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

In the final passage of etude m, during the statements of the two palindromes, the dynamic for all instruments is raised to *forte*. At the opening of etude n, Xenakis makes indications for all instruments to rise to *fortissimo*, with the exception of B3, C3, and D1, which enter at *forte*. These last three are each raised to fortissimo—first D1 at 1930T, then B3 at 1947T, and finally C3 at 1979T.

I add the (rit.) symbol below the staff at 2020T, which is one of the only examples where a specific performance practice issue made its way into my score. The choice is purely an editorial decision. I observed that the performers on nearly every recording—professional as well as those found on the website YouTube—slowed down the tempo dramatically, at times even pausing after 2022.5T, in preparation of the “percussive rolls”⁷⁹ gesture beginning at 2023 in the A1 voice. This appears nowhere in the score or in any of the discourse surrounding the work, by Xenakis or anyone else, but is

⁷⁹Ibid, 163

effectively standard performance practice, since its use is nearly ubiquitous, even among the available professional recordings.



Musical Example 24. Psappha, 2013-2022T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

Etude o (2023-2174T)

In etude o, Xenakis changes the entire character of the piece by introducing the “percussive attacks” gesture in A1. The technical vocabulary for the performer is entirely different from all that has come before it. Percussionists are able to execute tremolos, or rolls, from the earliest stages of learning to play, since it is the only way to create the effect of sustained sound on most percussion instruments. These generally appear as three slashes over each of the repeated attacks/ensemble of timbre gestures carried over from etudes m and n. These same three slashes can indicate measured 32nd notes, as well; however, Xenakis indicated “2 to 3 points (attacks)” per half time unit above the staff at 2023T in the score. I choose to notate the slashes above the attacks in keeping with how they appear in Xenakis’s score and because that way, they do not interfere with dynamic indications, which I always place below the staff.

Even at the indicated minimum tempo, the desired effect is virtually impossible to achieve. Playing two equally spaced strokes on two instruments, sounding simultaneously and continuously, requires a technique which is beyond even the most

seasoned professional. Some performers favor the approach where a second set of identical instruments placed somewhere above and/or angled to the side of each of those in instrumental groups A, B, D, and in E, so that the performer can strike on the down-stroke, as well as on each upstroke in each hand. Others use single stroke rolls which are played as rapidly as possible between whichever two instruments at a time. While the performer will not have time to strike either instrument in the second way more than an average of 1-1.5 times for each repeated attack, the combined effect of having the hands alternate rapidly translates aurally to an attack every 2-3 times per half time unit.

This is also the only instance where Xenakis mentions the use of two sticks in each hand as another solution for achieving the desired effect. In his interview with David Yoken, Xenakis briefly mentions it as a “possible” solution.⁸⁰ This is technically feasible if the set-up is extremely compact, as with Steven Schick’s version,⁸¹ where the performer only ever has to spread the sticks of one hand a short distance. In this scenario, the percussionist plays one instrument with either the two “inner mallets”—the sticks held between the player’s thumb and index fingers in the right and left hand—the other with the two “outer mallets”—the sticks held either the index and middle or middle and middle and ring fingers—or one of each on each instrument. Another way four mallets can be used, is by placing them “around” an instrument such as the metal pipe,⁸² or wood block/wooden slat/simantra—one stick over and one stick under, held in the same hand. However, even Mr. Schick, who, when performing uses four mallets throughout nearly the entire work,

⁸⁰Yoken, “Interview with Iannis Xenakis,” 55.

⁸¹“Contemporary Percussion Music with Steven Schick,” Steven Schick, *To Be Musical*, Episode 1, aired January 31, 2013 on UCTV.

⁸²Roland Auzet, *Music by Gerard Pape and Iannis Xenakis*. DVD. Roland Auzet: Percussion[s]. New York, NY: Mode Records, 2007.

does not utilize this method.⁸³ I have yet to see it done with any degree of success, since it places the player's arms in awkward, to the point of contorted, positions that do not allow for a smooth, powerful stroke.

In the best possible scenario, the percussive effect can be achieved, but at the expense of the extreme dynamic of *fff*. The solution to mount a second set of instruments has a similar dynamic limitation, since one must place the instruments close enough to catch the rebound upwards and because a forceful down-stroke is always easier to achieve than in the upstroke, which acts against gravity. It is also a practical and logistical decision, which depends on the availability of instruments and means to mount them that is just out of the way during the preceding 10+ minutes of the score. All things being equal, the choice every player must make here is between heightened dynamic intensity through greater force in striking the instruments or through the layering of simultaneous strokes at a more rapid pace.

In reworking this section of *Psappha*, I keep the notation more or less the same, except during the first two time units, since the original places slashes over A1 and not the simultaneous repeated attacks in E. It is possible that this is erroneous on the part of Xenakis or the publisher. Consensus between various recordings of the work is inconclusive. Those who favor using a second set of instruments play each repeated attack on E singly, while using the other hand to strike in between two identical A1 instruments. Other players who favor the rapid strokes alternating between the two different instruments indicated in the score often play 2023-2024T the same as the rest of the etude. In either case, I choose to lead with the E voice, since that allows it to sound clearly on each half time unit, while the performer can choose to play as quickly as

⁸³Schick, *The Percussionist's Art: Same Bed Different Dreams*, 202.

possible on A1, sometimes overlapping, or to play rapid double or triple strokes in that hand. By 2025T, the selected approach is solidified for the remainder of the etude.

Xenakis used C3 (iambic foot) increasingly throughout the preceding two etudes, and by the end of etude o, it begins to function as the steady, sometimes accented pulse from the beginning of etude a at the start of *Psappha*. I add a “down stem” beneath each attack in C3, in addition to an upward stem in connecting them to the other instruments when sounding simultaneously as “percussive attacks.” This is done in order to emphasize that important role as well as to visually connect the accents placed over some of the attacks.

The image shows a musical score for five instruments (A, B, C, D, E) from measures 2030 to 2040 of the piece *Psappha*. The notation is dense, featuring many simultaneous notes and complex rhythmic patterns. There are two dynamic markings: *fff* (everything except C3 and E until changed) and *(fff)* (all E throughout remainder of etude).

Musical Example 25. Psappha, 2023-2049T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

The technical challenge of performing the “percussive attacks” gesture superimposed over ensembles of timbre must have been evident to Xenakis, since he seems to understand that the percussionist still only has two hands and one foot being employed at any one time. At 2108T, as well as in all other instances where two instruments sound using “percussive attacks” simultaneously are “interrupted” by a single stroke on another instrument, Xenakis leaves out one instrument for a half time unit and resumes the figure during the next one (first on A3 then all others on a B instrument—assuming C3 must always be utilized by the foot). The only exception to this is at 2133T and it may be an example of one of very few instances of errata in Xenakis’s score.

Musical Example 26. 2120-2149T by I. Xenakis.
Copyright 1976, Éditions Salabert, Paris, France.

Beginning at the next occurrence of this, 2140T, through the remainder of the etude, Xenakis always removes whatever is in the A group of instruments, and keeps the percussive attacks gesture going in whatever is in the D group of instruments at that time. As with the attacks on C3, these isolated “interruptions” function as an iambic foot, so I choose to emphasize them visually in the same way by attaching a “down-stem” below each. I also make one editorial choice in the way I notate each of the “2-3 attacks per point” indications when they occur with “interruptions.” Each time they occur, I used stems down to indicate their “separateness” from the “percussive rolls” in A, B, D, or E.

Musical Example 27. Psappa, 2120-2149T by I. Xenakis, transcr. O. Rockwell.
Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

The dynamic level for all of the instruments throughout etude o is at *fff*, with the exception of C3 and E, which both start at *ff*. However, since accents are used periodically, it is important not to overplay.⁸⁴ E is changed to *fff* at 2045T, and so is C3 at 2050T.

Etude p (2175T-end)

At the beginning of etude p, a solo passage on C3 recalls the steady, driving, pulse from the beginning of *Psappha*. Since both accented and unaccented attacks occur, it is important to make a clear distinction. Like Steven Schick, I opt to use a large, pedal-operated bass drum throughout the piece for C3 and find that without amplification it will never be as loud as it needs to be at this point in the piece. Therefore, I used No. 4, from the “note explicative” concerning accents in the score which says to “suddenly add another sound and play it simultaneously.”



Musical Example 28. Psappha, 2175-2197T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

The opening dynamic is *ffff*. Since I do not recommend the use of a concert bass drum, the pedal operated bass drum should be struck as loudly as possible on every beat, while striking instruments C1 and C2 on the accents. If a performer chooses to alternate and/or double C3 with a concert bass drum, that concert bass drum can be used instead. Either way, the pedal-operated bass drum should provide a consistent sound and steady pulse, since it will have to continue once the F instrumental group enters at 2266T at *fff*.

⁸⁴Ibid, 201.

The material featured in F 1-3 throughout the remainder of this etude is the material from etude d, but in retrograde and without accents. I choose to continue to notate C3 with “stems-down” from etude o, which makes it possible to place accents over the notehead, and to notate attacks for the F group of instruments with “stems-up.”



Musical Example 29. Psappha, 2260-2285T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

The beams which connect each one of these attacks follow the direction of the motion and are used for making sticking choices in the following way: Upward slanting beam=LR, and Downward slanting beam=RL. The performer may eventually choose an alternative sticking which feels better to them; however, this is at least a point of departure for an initial reading through the etude. The etude, and thus the piece, ends with a proverbial “bang:” the return of a double-accent over C3.



Musical Example 30. Psappha, 2378-2396T by I. Xenakis, transcr. O. Rockwell. Copyright 1976, Éditions Salabert, Paris, France. Used with permission.

Order for Learning the Etudes

I have presented the etudes in the order they appear in the score, however I recommend that they be taught in the following order of increasing technical and instrumental demands:

- c, b, a, d, p, e, f, g, i, l, k, j, m, n, o, h.

Once the individual etudes are learned, then group them into larger sections (these correspond to Flint's divisions) of similar material and learn them in the order they appear in the score:

- A (a, b, c, d)
- B (e, f)
- C (g)
- D (h, i, j, k, l)
- E (m, n, o)
- F (p)

Then they can be grouped into two "movements" (also corresponding to Flint's divisions):

- I (A, B, C)
- II (D, E, F)

CHAPTER IV

CONCLUSIONS

The most important thing is for *Psappha* to continue to be played by performers at a variety of skill levels. At one time it was seen as a difficult—even impossible—piece to learn, a sentiment reinforced once a percussionist began to read the score to this and even some of Xenakis’s other works.⁸⁵ Much of the ambiguity in performance practice has been clarified by the contributions of many performers and by the composer himself. This new version of the score is designed to further facilitate the learning process and gives every reason for performers at any level to undertake parts of the work, if not the whole. On the subject of having his music performed by anyone, Xenakis is quoted as saying:

...if you have the frame of music, powerful and intelligent and deep, then sometimes bad performers are not so important. We can see that when you have the things you know like Mozart or Beethoven – the past that is music – you know the structure of it. Even when you criticize the performance of the piece itself it is saved in your mind.⁸⁶

Surely, Xenakis hopes that performers will endeavor to present excellent performances of his pieces, but it shows that he understands that the point of having the music *played* is the most important thing. Since *Psappha* is recognized as having integrity of structure and form, the music will be evident despite even a flawed interpretation.

Making an effort to re-notate the score can only help in the learning process, establishing connections between attacks scattered across wide distances of time, register, or physical placement within passages found throughout the piece. My own realization is

⁸⁵Jan Williams, “Iannis Xenakis, *Persephassa*: An Introduction,” 11.

⁸⁶Roger Reynolds, “Xenakis, Reynolds, Lansky, and Mâche Discuss Computer Music.” Delphi Computer Music Conference/Festival, July 4, 1992: Part II.

certainly not the only possibility and may not ultimately be the “right” one, but it is a step toward learning the piece more efficiently. The point was not to recreate the work in a new form for use in the performance of the whole work, but for the performer to be immersed in the language of the piece in the clearest possible way, and to do so from the beginning of the process.

While he was definitely trying to inform the audience’s perceptions of time, it does not seem that Xenakis is necessarily trying to change the way pieces are notated, by writing *Psappha* the way he did. As a matter of fact, in an interview about *Psappha*, he spoke of a desire to establish an “aural tradition”⁸⁷ for his works in which reading any kind of notation is unnecessary. However, performance practice of the work still depends on musicians learning from the printed score.

He never used a similar Cartesian diagram⁸⁸ in any works before or since. In fact, all of his other works for percussion are scored much more conventionally, sometimes using a single staff with traditional notation, even when they include dense polyrhythmic layering, as in *Rebonds*—and sometimes in a very similar fashion to the way I have done—in *Okho*, for djembe trio.⁸⁹ In the following example, the “treble” sounds played near the edge of a djembe appear on the top “staff,” and the “bass” sounds produced by striking the center of the drum appear on the bottom “staff,” which bears strong resemblance to my version of *Psappha*.

⁸⁷Emmerson,, “Xenakis Talks to Simon Emmerson,” 25.

⁸⁸Roland Auzet, *Music by Gerard Pape and Iannis Xenakis: Notes*, 204.

⁸⁹ Iannis Xenakis, *Okho: pour trios djembes et un peau africaine de grande taille*. Paris: Editions Salabert, 1989, 1.



Musical Example 31 Okho, mm.4-6, by I. Xenakis.
Copyright 1988, Éditions Salabert, Paris, France.

Much of the piece may be clear without an alternate format, but for some, the mere presence of standard notation provides a familiar point of departure and could help the percussionist focus on gaining a greater understanding of the motives and material through preparing the work for performance.

APPENDIX A

Greater Than or Equal to $\text{♩} = 152$

Psappa: a

Iannis Xenakis, transcr. O. Rockwell

10

A:
B:

f

20

30

40

50

60

70

5:4

80

90

100

110

120

*if using 2 sticks grace note(s) could be played before or after accented note(s)

Greater Than or Equal to $\text{♩} = 152$

Psappha: b

Iannis Xenakis, transcr. O. Rockwell

Musical score for Psappha: b, measures 130-210. The score is written for two staves, A and B, in a key signature of one flat (B-flat). The tempo is marked as Greater Than or Equal to $\text{♩} = 152$. The score is transcribed by O. Rockwell from the original by Iannis Xenakis. The music is in a complex, rhythmic style, featuring many rests and accents. The dynamic marking *f* (forte) is present at the beginning of the first system. Measure numbers 130, 140, 150, 160, 170, 180, 190, and 200 are indicated above the staves. The score ends with a double bar line at measure 210.

Greater Than or Equal to $\text{♩} = 152$

Psappa: c

Iannis Xenakis, transcr. O. Rockwell

220 230 240

A:
B:

f *(all A1-3 throughout entire etude)

250 260 270

280

(mf) *(all B1-3 until changed)

* (if using 2 sticks play A2 as grace note before or after the beat)

290

300 310 320

* (if using 2 sticks lay A3 as grace note before or after the beat)

330

340 *(ff)* *(all B1-3 until changed)

(6) 350 (6)

360

(mp)

370 (8)

Greater Than or Equal to $\text{♩} = 152$

Psappha: d

Iannis Xenakis, transcr. O. Rockwell

380 390

A:
B:

pp *cresc...* *(applies to all A1-3 throughout entire etude)

400 410

mf *cresc...*
f *(all B1-3 throughout entire etude)

420 430

f *cresc sempre...*

440 450

460

470 480 490

500

fff *dim...*

510

p

Greater Than or Equal to ♩ = 152

Psappha: e

Iannis Xenakis, transcr. O. Rockwell

520 530

A
B
C

p

ff (all C3 through entire etude) 540 550

ff (all B1-3 through entire etude)

560

f

570 580

590

ff (all A1-3 through remainder of etude)

600 610 620

630 640

Greater Than or Equal to ♩ = 152

Psappha: f

Iannis Xenakis, trans. O. Rockwell

650 660

A:
B:
C:

ff *fff* *(all C3 throughout entire etude)

670 680

690

700 710

720 730

Greater Than or Equal to $\text{♩} = 272$

Psappha: g

Iannis Xenakis, transcr. O. Rockwell

Musical score for Psappha: g, measures 740-920. The score is written for three staves (A, B, C) and includes a dynamic marking of *fff* at measure 740. The tempo is marked as $\text{♩} = 272$. The score is divided into measures 740-760, 770-790, 800-810, 820-830, 840-860, 870-890, and 900-920. The notation features complex rhythmic patterns and dynamic markings.

930 940 Psappa: g (cont'd) 950

960 970 980

Greater Than or Equal To $\text{♩} = 110$ Psappa: h Iannis Xenakis, transcr. O. Rockwell

990 1000 1010 1020 1030

A₁ (9) (18) (18)

B₂

C₃

fff

1040 1050 1060 1070 1080 1090 1100

(20) (20) (21)

1110 1120 1130 1140

(14) (13)

1150 1160 1170 1180 1190 1200

(18) (13) > (14)

Greater Than or Equal To ♩ = 110

Psappha: i

Iannis Xenakis, transcr. O. Rockwell

1210 1220 (14)

A 1
B 2
C 3
D 2
E

f * (all B1-3 and D1-3 throughout entire etude) (mf) * (all C3 & B1 until changes)

1230 1240 1250

1260 1270 (7) 1280

1290 1300

f * (all A1 through remainder of etude) (mf) * (all C3 through remainder of etude)

1310 1320

(mf) * (all E through entire etude)

1330 1340 1350

Psappa: i (cont'd)

The musical score is presented in three systems, each consisting of two staves. The first system covers measures 1360 to 1370, featuring a continuous eighth-note melody in the upper staff and a supporting bass line in the lower staff. The second system covers measures 1380 to 1390, with the upper staff continuing the eighth-note pattern and the lower staff providing harmonic support. The third system covers measures 1400 to 1410, showing a change in the upper staff's melody and the lower staff's accompaniment. Measure 1405 includes an accent (>) over a note in the upper staff.

Greater Than or Equal To $\text{♩} = 110$

Psappha: j

Iannis Xenakis, transcr. by O. Rockwell

1420

A 1
2
3

B 1
2
3

C 1
2
3

D 1
2
3

E

ff **f** *(everything except C3 and E)
*(all E through entire etude)

*(if using 2 sticks play A2 before or after B3 & D1)

ffff *(all C3 through entire etude)

1430

1440

1450

1460

*(if using 2 sticks B3 & D2 as grace notes before E)

1470

1480

1490

1500

*(if using 2 sticks play B1 & D3 as grace notes before D3)

Psappa: j (cont'd)

Musical score for Psappa: j (cont'd) on two staves. The first staff has measures 1510 and 1520 marked. The second staff has measure 1530 marked. The music consists of rhythmic patterns with accents and slurs.

Greater Than or Equal To $\text{♩} = 110$ Psappa: k Iannis Xenakis, transcr. O. Rockwell

Musical score for Greater Than or Equal To Psappa: k on five staves labeled A, B, C, D, and E. The tempo is marked as $\text{♩} = 110$. The score includes measures 1540, 1550, 1560, 1570, 1580, 1590, and 1600. Performance instructions include *f*, *fff*, and *ff*. Specific instructions are: *fff* *(all C3 through entire etude), *ff* *(all E through entire etude), and *(if using 2 sticks play A2 & D3 as grace notes before B2). A circled number (6) appears above measure 1590. Another instruction at the bottom is *(if using 2 sticks play A1 & D3 as grace notes before E).

Accelerate from $\text{♩} = 110$ to $\text{♩} = 134$

Psappha: 1

Iannis Xenakis, transcr. O. Rockwell

1610 1620 1630

A 1
B 2
C 3
D 3
E 3

f *(all A1-3, B1-3, and D1-3 throughout entire etude, unless changed)
ff *(all E through entire etude)
fff *(all C3 until changed)

1640 1650

1660 1670 1680

fff *(all C3 until changed)

1690 1700 1710

1720 $\text{♩} = 134$ 1730 1740

ff *(all A1 through remainder of etude)
f *(all C3 through remainder of etude)

Greater Than or Equal To $\text{♩} = 134$

Psappa: m

Iannis Xenakis, transcr. O. Rockwell

1750 1760

A 1
B 2
C 3
D 2
E 3

p *(everything except C3 until changed and B3 quarter notes)
f *(all C3 until changed) *f* *(all B3 quarter notes through entire etude)

1770 1780

1790 1800

(*mf*) *(all C3 until changed)

1810 1820 1830

1840 1850

f *(all C3 through remainder of etude)

Psappha: m (cont'd)

1860 1870

(*mf*) *(all E through remainder of etude) (*f*) *(all A1-3 through remainder of etude)

(6) 1880 1890

f

The musical score consists of two systems of staves. The first system contains measures 1860 to 1870. Measure 1860 begins with a treble clef and a key signature of one flat. The music features a complex rhythmic pattern with many beamed notes. Dynamic markings include *mf* and *f*. The second system contains measures 1880 to 1890. Measure 1880 starts with a sixteenth rest followed by a sixteenth note, then a series of eighth notes. Measure 1890 features a sixteenth rest followed by a sixteenth note, then a series of eighth notes. A dynamic marking of *f* is placed below the first staff of the second system.

Greater Than or Equal To ♩ = 134

Psappha: n

Iannis Xenakis, transcr. O. Rockwell

1900 1910

A 1 2 3
B 1 2 3
C 1 2 3
D 1 2 3
E 1 2 3

f * (all B3, C3, and D1 until changed)
ff * (everything except C3, B3 and D1 until changed)

1920 1930

ff * (all D1 through remainder of etude)

1940 1950

ff * (all B3 through remainder of etude)

1960 1970

1980 1990

ff * (all C3 through remainder of etude)

2000 2010 2020

(rit.)

Greater Than or Equal To $\text{♩} = 134$

Psappa: o

Iannis Xenakis, transcr. O. Rockwell

2030 2040

A 1 2
B 1 2
C 3
D 3
E 3

ff (everything except C3 and E until changed)
f (all C3, and E until changed) 2050

ff (all E throughout remainder of etude) 2060

ff (all C3 through remainder of etude) 2070 2080

2090 2100 2110

2120 2130 2140

2150 2160 2170

Greater Than or Equal To ♩=152

Psappa: p

Iannis Xenakis, transcr. Owen Rockwell

2180 2190

F
C

fff *(Double accents on C2 and C3 for maximum impact)

2200 2210 2220

2230 2240 2250

2260 2270 2280

fff *(all A1-3 throughout entire etude)

2290 2300

2310 2320

2330 2340

2350

2360 Psappa: p (cont'd) 2370

2380 2390

The image shows two staves of musical notation. The top staff contains measures 2360 through 2370, and the bottom staff contains measures 2380 through 2390. The music is written in a treble clef with a key signature of one flat (B-flat). The melody consists of eighth notes, often beamed in pairs. The bass line consists of quarter notes. The piece concludes with a double bar line and repeat dots at the end of measure 2390.

APPENDIX B

Print

<https://us-mg5.mail.yahoo.com/neo/launch#4540803923>

Subject: RE: Psappa by Iannis Xenakis
From: Bray, David (David.Bray@umusic.com)
To: owenrockwell@yahoo.com;
Date: Wednesday, February 4, 2015 8:27 AM

Dear Mr Rockwell

Thank you for this message and your chaser. I am sorry, but these things take a long time to clear – it is not a simple matter of getting an answer on the phone.

First, you may of course use the analysis and your practical version of this score in your thesis : there is no problem over this at all. Please credit Éditions Salabert, Paris, France.

Second, as I indicated to you, we are in principle in favour of publishing your edition alongside the original version, but we must have the approval of the Xenakis estate first. Nothing can happen until that is received. We have begun the approval process but I must ask you to be patient until we have a definitive answer in writing that allows us to go ahead. We will contact you as soon as possible.

Many thanks for your understanding and your patience.

Yours sincerely

David BRAY
Chef du service éditorial

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