THE INFLUENCE OF MYSTICISM AND THE SCIENCE OF SOUND ON RUTH CRAWFORD SEEGER AND *MUSIC FOR SMALL ORCHESTRA* MOVEMENT ONE

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This thesis explores some of the influences on Ruth Crawford Seeger's compositional process in the years between her study with Adolf Weidig of the American Conservatory (of music) in Chicago and her departure for New York in September of 1929 and how they affected the composition of *Music for Small Orchestra* (1926). Many of the ideas that Crawford encountered through her contacts in Chicago formed the artistic basis for the strong compositional style that distinguished her as an American innovator before her studies in New York. *Music for Small Orchestra* is representative of this period prior to her immersion in the rigorous compositional aesthetics of "dissonant counterpoint" and the beginning of her long association with Charles Seeger that began in the 1930s.

Music for Small Orchestra is an example of the "ultra-modern" style championed by Henry Cowell and other American composers in the early part of the 20th century. Crawford successfully combined late 19th century chromaticism with the ideas of her peers in the United States and her own innovations to create the thoroughly original work. The following musical analysis of the first movement of *Music for Small Orchestra* will reveal the musical and conceptual influences on Crawford's creative process and the innovations that she devised in order to compose the piece.

Crawford wrote *Music for Small Orchestra* in what musicologist Joseph Straus refers to as her "pre-Seeger" period.[1] It is difficult to isolate a single, overriding influence on the harmony or the structure of *Music for Small Orchestra*. On the surface, there appears to be an overlaying of ideas garnered from Aleksandr Skryabin, Dane Rudhyar, and Henry Cowell. The piece shows some of the musical and extra-musical influences that affected Crawford in the latter half of the 1920s. Yet the musical experience of the work transcends those influences. *Music for Small Orchestra*, like many other works by Crawford is a highly original and inventive composition.

A striking feature of the first movement of this two-movement work is the occluded, muted quality of the sound. This quality is a result of Crawford's very original style of orchestration that replaces traditional theme and development with the cumulative effect of layers of polyrhythmic ostinati. *Music for Small*

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[1] Joseph Straus, *The Music of Ruth Crawford Seeger* (Cambridge: Cambridge University Press, 1995), 96.

Orchestra was never performed in Crawford's lifetime, and has received little analytical attention, although Judith Tick and Joseph Straus have both examined the work to some extent, and their insights constitute a valuable step towards a broader understanding of the piece.[2] In the foregoing discussion of the historical context and analysis of *Music for Small Orchestra,* I hope to draw attention to Crawford's successful incorporation of extra-musical ideas from her peers Dane Rudhyar and Henry Cowell.

In Chicago, between 1924 and 1929, at the end of her years as a student at the American Conservatory in Chicago, Crawford became a piano student of Djane Lavoie Herz. By Mid-Western social standards, Lavoie Herz was an unconventional person who conducted the lessons with her pupils in an informal manner that resembled the salons of Europe. Lavoie Herz was a French-Canadian who had studied at the Royal Academy in London, where she later became a student of Arthur Schnabel's and met the famous Russian composer and mystic Aleksandr Skryabin. Eventually, Lavoie Herz became Skryabin's pupil and a devotee of his music during a period in his life when Theosophy and the spiritual implications of his theories of harmony were his primary interests.

Through her close contact with Skryabin, Lavoie Herz became a celebrated interpreter of the composer's music and an adherent to the theories of Theosophy. In the 1920s the Theosophical Society was common ground to many intellectuals, avant-garde writers, and artists who found in Theosophy a way to give meaning to their creative explorations. Helena Blavatsky, Colonel William Olcott, William Quan Judge, and others founded the Theosophical Society in New York in 1875. By the late 1920s, and after the death of Blavatsky in 1891, the Theosophical Society was headed by Annie Wood Besant. Under her tutelage, the society became ever more focused on the religions of the east, Hinduism foremost among them.[3]

The idea central to the philosophy of the Theosophical Society was that the "primary object is Universal Brotherhood based on the realization that life, and all its diverse forms, human and non-human, is indivisibly one."[4] The concept of an over-arching universal brotherhood and the implied idea that all artistic expression could be regarded as intrinsically connected had particular appeal to the members of the American avant-garde in the tumultuous years following the First World War. This tenant of Theosophy found its artistic embodiment in the music and theories of Dane Rudhyar and Aleksandr Skryabin, the paintings of Wassily Kandinsky, Piet Mondrian, and Lauren Harris, and the writings of Franz Kupka and T.S. Eliot among others. By the late 1920s the Theosophical Society

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[2] Straus, 60, 78; Judith Tick, *Ruth Crawford Seeger–A Composer's Search for American Music* (New York: Oxford University Press, 1997), 72-74.

[3] Carol J. Oja, *Making Music Modern–New York in the 1920s* (Oxford: Oxford University Press, 2000), 101.

[4] From the primary website for the Theosophical Society, homepage: <http://www.ts-adyar.org/> (accessed December 15, 2005).

had reached its peak of influence in the United States claiming a membership of 7,000.[5]

After her years in Europe, Djane Lavoie Herz and her husband, the music impresario Siegfried Herz, now in Chicago, became a conduit for Skryabin's music and philosophical beliefs. The Herz's established a music salon–a fashion they imported from Europe–at their home. There, Lavoie Herz's students and friends were exposed to Mme Besant's pantheistic ideas by Lavoie Herz and her circle of musical acquaintances. Another composer interested in Theosophy, the young pianist Henry Cowell, (who would ultimately become the greatest champion of Ruth Crawford's music and one of her closest friends), was a regular guest at the Herz apartment. It was there, in 1925, that Crawford first made Cowell's acquaintance. In the same year, also at the Herz's Crawford was introduced to Cowell's friend–the influential Franco-American composer and theorist Dane Rudhyar.[6]

Cowell and Rudhyar had first met at Halcyon–a Theosophical retreat in southern California. Their friendship was forged by a mutual interest in the avant-garde and the music of the world. Partly through their connections with the Theosophical Society membership, and as a result of their own efforts in the arena of performing and publishing,[7] both would come to be very influential on the emerging composers of the era.

Rudhyar gave a number of informal talks at the Herz's home during an extended stay in 1925. As a regular member of Herz's salon, Crawford was frequently in attendance and became his rapt disciple. According to her own diary entries, Crawford began "worshipping him intellectually" and found herself "dazzled by his erudition."[8] Crawford's upbringing as the daughter of a Methodist minister may have primed her for the messianic intensity that Rudhyar brought to the topic of music and its function in society and spirituality. According to Judith Tick, Rudhyar's "passionate espousal of utopian modernism affected her deeply."[9] Reborn through his discovery of Hinduism and Astrology, Rudhyar had assumed the role of the mystical high priest. Rudhyar's primary audience was a close group of modernist composers in California, New York, and Illinois. He delivered fervent sermons about occult principles in music and his hope for the emergence of a utopian society brought about by a kind of cosmic, cultural convergence "born of the union of the two complementary poles of music, the root music of India and the leaf music of America (foreshadowed by the best

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[5] Oja, *Making Music Modern,* 102.

[6] Tick, 48, 50.

[7] Dane Rudhyar's book *The Rebirth of Hindu Music* (Adyar, Madras, India: Theosophical Pub. House, 1928) and his numerous musicological articles and lectures contributed to his influence during the 1920s. Also at this time, Henry Cowell's periodical *New Music* introduced many composers and music enthusiasts to previously unknown composers such as Charles Ives and Ruth Crawford. Cowell's book *New Musical Resources* (New York: Alfred A. Knopf, 1930) was also very influential.

[8] Oja, *Making Music Modern*, 144.

[9] Tick, 49.

European music)."[10] He believed the "best music of Europe" to be Skryabin's and hailed it as "the magical force used by the spiritual Will [sic] to produce ecstasy."[11]

Rudhyar visited Chicago a second time in 1928. Crawford, now graduated from the American Conservatory and on staff as a piano and theory teacher, regularly visited with Rudhyar and attended his lecture "The Meaning of the New Dissonant Music" at the local chapter of Pro Musica. By this time, Crawford had been enjoying some recognition as a young composer and had successfully adapted some of Rudhyar's ideas into her own music. A corollary exists between Rudhyar's theories of harmony based on Astrological and Theosophical concepts and Crawford's harmonic language in the first movement of *Music For Small Orchestra*. Sadly, Rudhyar's attitude toward Crawford (unlike the encouragement given by Cowell) was more ambivalent than admiring. His comment, made in 1984, that "the first interesting music [Crawford] wrote"[12] must have been influenced by the 1925 performance of a set of his tone poems *Moments* (dedicated to Djane Lavoie Herz, and later revised as *Tetragrams*) at the Herz's home, ignores the fact that Crawford had written two well regarded piano preludes before they ever met.[13]

According to Carol J. Oja, "One facet of the ultra-modern's music–especially that of Carl Ruggles, Henry Cowell, and Ruth Crawford [that] has been largely forgotten over time [was] the degree to which they associated dissonance with spirituality."[14] This trend can be at least partly attributed to the labors of Rudhyar. In his writing, Rudhyar drew a parallel between the cultural diversity of his adopted country of America, and the "brotherhood of tones" found in the overtone series. Gongs and their and more complex overtone structures were the musical representation of the zenith of his utopian ideal:

> A tone is a living cell. It is composed of organic matter. It has the power of assimilation, of reproduction, of making exchanges, of growing. It is a microcosm reflecting faithfully the macro cosmos, its laws, its cycles, its centre. ... As the tone of the individual being is one and many, so the tone of a gong is one and many. Touch it lightly at the centre, then farther, farther away until you reach the outer edge. You hear an infinite gradation of sub-tones usually within a limit of a fifth or a fourth (*Sa-Pa or Sa-Ma*)[15] all of which concur to form the compound tone of the gong. ... a great

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[10] Dane Rudhyar, *The Rebirth of Hindu Music, Online second addition* (CyberWorld Khaldea, 2000), chapter 7 <http://www.khaldea.com//rudhyar/rhm/rhm_c2.shtml> (accessed April 24, 2006).

[11] Tick, 48.

[12] Tick, 49. From an interview with Dane Rudhyar by pianist Sorrel Hays (conducted for Judith Tick, March 19, 1984)

[13] Ibid.

[14] Carol J. Oja, "Dane Rudhyar's Vision of American Dissonance," *American Music* 17, No. 2 (Summer, 1999): 129-45.

[15] Hindu terms that can be partially described in European terminology as the root–fifth relationship and root–fourth relationship respectively.

> hieratic brotherhood of tones, each tone an individual being yet all bound in a perfect metallic solidarity, all blending their voices into the great tone-entity, the *Nada*,[16] heard when the centre is struck. In a single tone you have a complete organic symphony. Such a tone is the beginning an end of music, the seed of all music.[17]

What Rudhyar and Cowell shared in common was an interest in the overtone series and the close harmonies implied by the structure of the upper partials. They centered their theoretical writings on the overtone series as a basis for justifying the use of "dissonances" in modern composition. While Rudhyar tended towards the metaphysical in his theorizing, Cowell's focus was somewhat more prosaic. In *New Musical Resources,* Cowell argued for a system of harmony based on "a series of major seconds, both major and minor [derived] from the intervallic structure of the "seventh partial onwards." He pointed out that "the natural spacing of so-called dissonances is as seconds grouped together, as in the overtone series."[18] The fact that the "dissonant" major and minor second intervals of the upper partials were implicit in the totality of a single musical tone posed a compelling contradiction to the favoring of more widely spaced, consonant intervals in the European tradition of tonal music composition. The science of the overtone series provided a convenient analogy that proved useful in promoting the idea of a new kind of American music, free of the strictures the old world model. While Cowell was preparing his manuscript for *New Musical Resources* during the 1920s, he promoted some of his ideas in lectures and writing. In 1927 he wrote this of Rudhyar's concepts:

> …all tone complexes should be regarded as a unit ... in so far as a single tone is made up of a fundamental and its overtones, he does not think it any more a unit than a complex formed by the union of several tones. This would do away with the idea of discord and concord, a complex of sound being judged according to the form taken by its component parts much as molecules can be classified by different juxtapositions of atoms.[19]

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[16] A term originating in "Tantric metaphysics and physiology. …When Desire brings the *na* of Breath and the *da* of Fire together to form *nada* (sound), that primordial *nada* passes upwards through the body until it reaches the lowest *cakra* at which sound becomes material enough actually to be heard: the heart; this corresponds to the chest register of music." Harold S. Powers and Richard Widdess, "India, Subcontinent of, III, 1(ii): Theory and Practice of Classical Music, Tonal Systems., b) The Tonal System of the *Sangita-ratnakara*," *The New Grove Dictionary of Music and Musicians,* ed., S. Sadie and J. Tyrrell (London: Macmillan, 2001), 12, 172–73.

[17] Rudhyar, *The Rebirth of Hindu Music,* chapter 2

[18] Cowell, 114-15.

[19] Henry Cowell, "The Impasse of Modern Music: Searching for New Avenues of Beauty," *Century* 114 (October,1927): 677. As quoted in Oja, *Making Music Modern*, 143.

The correlation between the idea of "universal brotherhood"[20] and the abolishment of a division between consonance and dissonance was emphasized by Cowell's and Rudhyar's unusual synthesis of artistic and scientific means to illustrate and exemplify their cause. In the 1920s, a belief central to Cowell, Rudhyar and other American "ultra-modernist" composers, Ruth Crawford, Charles Ives, Carl Ruggles, and Charles Seeger among them, was that harmony should not be circumscribed by a European approach to composition and orchestration. Embracing dissonance was a way to distance the American avant-garde composers from their European counterparts

Rudhyar's particular conviction was that European musicians and composers had lost touch with a golden era of music centered on the time of the early Greeks, the theories of Pythagoras and an idealized era of early Indian music as described in the Vedic texts. This theme was ubiquitous in Rudhyar's writings from the early 1920s to the time of the lecture at the Pro Musica meeting and beyond.[21] Rudhyar's belief was that the harmonic practice of Europe had evolved in tandem with the negative evolution of society, abandoning the utopian "tribal" dissonant music based on the "resonating" harmonies of the overtone series, for the "feudal" system of the equal tempered scale and musical structure formulated on an overly cerebral system of intervallic relationships and equal transpositions:

> …music tonalism represent[s] what feudalism is in the State. European melodies are expressions of a *system*, i.e., of a "tonality" ... After the individualistic crisis of romanticism and expressionism, we see the recent rise of Fascism ... the State is glorified above the individual, the system above the human being.[22]

Rudhyar stated, as the alternative, that note relationships derived from the overtone series, the upper partials in particular, were "simple relations to the fundamental of the series, their common ancestor. "Natural Intonation [was] the tribal order of music; based, [as it was] on the idea of physical generation, each new octave being ... a generation of brother-tones united together by community of blood and of origin."[23] Furthermore, in an article from 1928 titled "*Dissonant Harmony–A New Principle of Musical and Social Organization*, Rudhyar stated:

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[20] It was, in part, the Theosophical Society's concept of universal brotherhood that eventually led Cowell to his interest in Asian music and Rudhyar to his abortive attempt at founding his "World Music Society" in the 1920s.

[21] Rudhyar's Book *The Magic of Tone and the Art of Music* (Boulder, CO and London: Shambala, 1982), is very much concerned with the same themes that the author was writing about sixty years earlier.

[22] Rudhyar, *The Rebirth of Hindu Music,* ch. 6.

[23] Dane Rudhyar, "The Dualism of Musical Substance," *Pro Musica Quarterly* (March, 1928): reprinted online: <http://www.khaldea.com/rudhyar/musicalsubstance.html> (accessed April 20, 2006).

> Dissonant music is thus the music of true and spiritual Democracy; the music of universal brotherhoods; music of Free Souls, not of personalities [–] it abolishes tonalities[24]

His mission in writing *The Rebirth of Hindu Music* was to re-awaken Hindu musicians to the basis of their own music by explaining to them and other readers the historical roots of the modes or *Ragas*, the *Gramas,*[25] and the connection to the "Zodiacal portals"–the cycle of fifths cast in the role of the 12 signs of the Zodiac. These ideas were founded on Theosophical theories and Rudhyar's own corollaries between Astrological concepts and the science of musical tone. Rudhyar's ultimate, somewhat messianic goal was to revitalize the music of the east, and stimulate the process of music making in America in a radical way that would bring about the aforementioned convergence.

The *Zeitgeist* of the post-World War I period was that another war was sure to come and bring about cataclysmic change. Rudhyar's idea of ushering in a "New Age" by means of an East–West convergence and the intonating of particular musical sounds pivotal to Astrological cosmology was not entirely original. Rudhyar's idol Aleksandr Skryabin had labored in vain to realize his own grand vision of the *Mysterium*–a seven-day event involving music, spectacle and ritual performed at the foot of the Himalayas with no lesser intent than bringing about the dissolution of this world in order to clear the way for a new epoch.

The spiritual ideas, and science-based theories of the ultra-moderns reached Crawford at a fertile time in the development of her compositional style. Prior to encountering Cowell and Rudhyar, Crawford had been exposed to Skryabin's musical language and Theosophical ideas by Lavoie Herz. By the end of 1926, Crawford had finished *Music for Small Orchestra* and had worked as a composer with the visionary poet Carl Sandburg on his *American Songbag*. By 1927 she was well on her way to formulating her own ideas about the agency of spirituality in musical composition as inspired by the writings of Henry David Thoreau and Walt Whitman. Her spiritual compass had begun to point westward–away from the Orient and towards the inspiring American ideas that would be most important to her for the rest of her career.

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[24] Dane Rudhyar, "Dissonant Harmony, A New Principal of Musical and Social Organization," *Seed Ideas* No.1 (Carmel, California: HAMSA, 1928).

[25] *Grama* is an ancient Indian term that refers to two types of scale or pitch collections referenced in the ancient text the *Nat-yasastra*. "The *gramas* are defined in terms of 22 equal microtonal intervals (*Sruti*) and in terms of consonant intervals (*samvada*) between specified *svara*. Each*svara* is considered to comprise both the pitch of the note itself and the interval of two, three or four *srutis* separating the note from its lower neighbour. Representation in Western notation can only be approximate, because the *gramas* included three sizes of scale-step, measuring two, three and four *sruti* [divisions of pitch less than a semi tone]. In practice the three *sruti* steps (*ri* and *dha* in*sdja-grama*, *pa* and *ri* in *madhyama-grama*) may have been rendered as undulating rather than as steady pitches, at least by singers and flute-players." See: *Grove Dictionary of Music* "India, Subcontinent of, III, 1(ii): Theory and Practice of Classical Music, Tonal Systems., ii) Scale types in modern theory.

Still, by the middle of the 1920s, Crawford was at the beginning of the most productive part of her short career and still under the influence of the dominant voices in her milieu. The importance of tone was a primary preoccupation in her writing at this time. Adolf Weidig, her composition teacher at the American Conservatory of Music in Chicago undoubtedly had some influence in this regard. In his text *Harmonic Material and Its Uses*, Weidig states, "A single tone appears to us as such only so long as the mind does not become conscious of its overtones."[26] Rudhyar specifically preached the doctrine of tone–tone as a living entity. In his view a single tone represented multiple dimensions; pitch, duration, timbre. In 1926 he wrote that the modern composer "deals now with *living matter* and no longer with patterns of notes."[27] In *The Rebirth of Hindu Music*, and very likely in the talks he was giving in 1925, Rudhyar placed considerable emphasis on the individual properties of a given tone in relation to musical and extra-musical factors:

> A tone is not a mere mathematical point without dimension or density ... it is a living reality, a sound. It is defined by various sets of characteristics, pitch and quality being only the outer ones. It is situated in time and space, related to the entire universe, affected by season, day, hour, by the magnetic condition of the solar system at the time it is born (i.e., produced by the musician).[28]

In 1926, Crawford had already incorporated concepts about the spiritual and political properties of the single tone and its relationship to dissonance into her compositions. The term "*mistico"* appears as an indication of expression above a single G# in measure 29 of Crawford's *Sonata for Violin and Piano* written a few months before *Music for Small Orchestra.* This indication over a single pitch–a directive intended to induce the performer to align him or herself to a spiritual disposition prior to playing the note–owes much to the influence of Rudhyar.[29] The single repeated tone of F in the piano at the opening of the first movement of *Music for Small Orchestra,* this time with the "*mistico"* directive replaced with a similar, but more vernacular (possibly indicating her return to more of an American focus) direction "Slow, pensive," indicates the level of interest Crawford may have had for Rudhyar's concepts and her early adoption of them (Example1).

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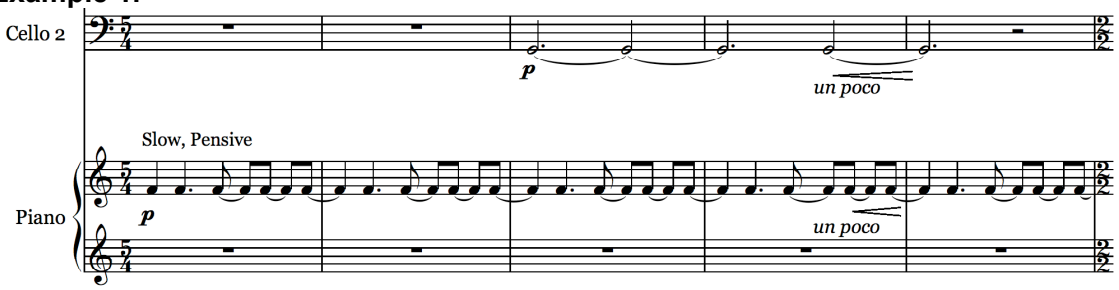
[26]Adolph Weidig, *Harmonic Material and Its Uses: A Textbook for Teachers, Students and Music Lovers* (Chicago: Clayton F. Summy Co, 1923), 421-23.

[27] Rudhyar, 1926, as quoted in Oja, *Making Music Modern*, 103.

[28] Rudhyar, *The Rebirth of Hindu Music*, chapter 2.

[29] It is important to note that in a letter written by Rudhyar to Judith Tick on the 5th of October, 1981 he explained Crawford's use of the single note gesture in these pieces by stating that she "must have read" *The Rebirth of Hindu Music*. While (according to biographers Tick and Guame) it is probable that Crawford would have been exposed to these ideas earlier than the publication date of Rudhyar's book, her inspiration for the gesture could not have come *from* the text.

Example 1.



Nevertheless, Crawford's choice to write the single F note for the piano at the beginning of the first movement of *Music For Small Orchestra* is very likely a result of her exposure to Rudhyar's ideas of tone as a "living" entity. The lone F, sounding rhythmically like a heart beat, and played solo for two measures before the entry of the other instruments is, perhaps, an imitation of the sound of the Indian tambura as it is traditionally played at the beginning of a classic North Indian *Rag*. Rudhyar discussed this specific topic of the fundamental's role in relation to harmony in *The Rebirth of Hindu Music:*

> ... a *rag* is ... the energy aspect of a fundamental. What essentially characterizes a *rag* is that all its tones are direct overtones of this one fundamental, that therefore sonal[30] energy can flow into the musical organism made up of the fundamental and overtones, as blood through a compact body. But the very first thing necessary is to arouse the energy latent in the fundamental of the *rag*. If the *sakti* within the fundamental is not awakened there will be no real *rakti*[31] produced. ... The single tone must be set resonating before the *rag*. ... The tambura ... is a symbol and ... a pretext to spiritual inertia. The mission of the tambura is to sound the fundamental of the *rag* all the while the *rag* is being sung—not only the fundamental but also the fifth or fourth above, which is the heart of the *sakti*. This is the meaning ... of the humming of a *rag* before starting a song. The god of the fundamental must be called upon, the path of his *sakti* must be outlined, [and] then the music may flow arousing the *rakti* fire. [32] When an Indian singer sings with his tambura or an Native American sings while beating his tom-tom, such instrumental accessories

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[30] Presumably, *sonal* is based on the noun *sone*. A *sone* (in the contemporary sense of the word) is a unit of sound intensity/amplitude that is specific to human perception of sound levels at different frequencies. Another way of describing *sone* would be "sound energy." Source: John R. Pierce *The Science of Musical Sound* (New York: Scientific American Library, 1983), 112-13.

[31] '"*Rakti,*" as explained by Rudhyar, is the power within all true *rags*; and *rakti* is the secondary manifestation of *sakti,* which is *sonal* energy. But while *sakti* is the energy of sound within each fundamental, *rakti* is the creative energy in material cyclic manifestation. Rudhyar *The Rebirth of Hindu Music,* (online) ch. 6.

[32] Ibid. It is interesting to note the meticulous way in which Rudhyar details the sexual metaphor inherent in this topic without any direct allusions to the implication of attraction, arousal and the lingam shape of the tambura.

> do not constitute harmonic accompaniment; they, on the contrary, lay an emphasis upon the single tone or keynote of which the melody itself is the cyclic unfolding.[33]

Another reason for Crawford's choice of the note F as the opening of her piece may have also come from Rudhyar. As mentioned, Rudhyar dedicated a considerable amount of writing on the topic of the single tone and the attributes vested in them by the ancients. In *The Rebirth of Hindu Music,* Rudhyar stated that ... "the tone of Nature on Earth is F, ... this tone [is] the synthesis of all earthly sounds."[34] Empirically, the solo F at the beginning of *Music For Small Orchestra* does have a "grounding" effect. It serves as the delicate voice focusing the listener's attention in the midst of a dense, sustained dissonance occurring at the opening of the movement. Expressed in a more concrete, and perhaps more tangible way: the F evolves in its role as the "tambura" at the introduction, to an even more central role as a pivot pitch around which four of the five pitches of an important musical motif in the form of a quintuplet ostinato (initially played by cello 1) revolve. As the piece builds in intensity, the F pedal modulates up a step to a brief G pedal (measure 22). The quintuplet modulates in lock step, transposing upwards 2 semitones, in effect, pivoting around F# (Example 2). It is possible that Rudhyar's theories influenced this aspect of the piece also. In *The Rebirth of Hindu Music,* Rudhyar compares the duality of the sexes with the division of the octave by the third harmonic (overtone).

> In the harmonic series, we see a duality arising out of unity in a graphic way. ...The second octave is divided into two unequal intervals of fifth or fourth. If we start with the fundamental *Sa* [PC 0], we find that it is *Pa* [PC 7], which brings this duality[.] *Pa* therefore symbolizes the creative power, that which brings out the polarization of the asexual unity–i.e., mind considered as energy. The interval of [a] fifth is therefore the symbol of Man, of positive power. The fourth [PC 5], its complement, represents the woman in a mystical sense ... the fifth being full-sounding, open, self assertive, the sustainer of all harmonies, with its center [F# i.e., PC 6] below; the fourth being more concentrated, elusive, mystical, a reaching forth toward its center [F#] above[35]

Elsewhere in *The Rebirth Of Hindu Music* Rudhyar discusses the division of the octave in relation to the overtone series and occult symbolism. He explains that in Astrological terms, the number 11 represents the "heart or the sun," and that F#–as the 11th partial of an overtone series based on C, is thus considered the center of the octave. He refers to F# as "the source of all *rag*s" and "the source of cosmic energy–the heart ... the balance, the pivot of change ... in a sense the Zodiac sign Libra. "The heart [between F and G], beating from the center of the descending series [i.e. below the C fundamental], characterized by F natural

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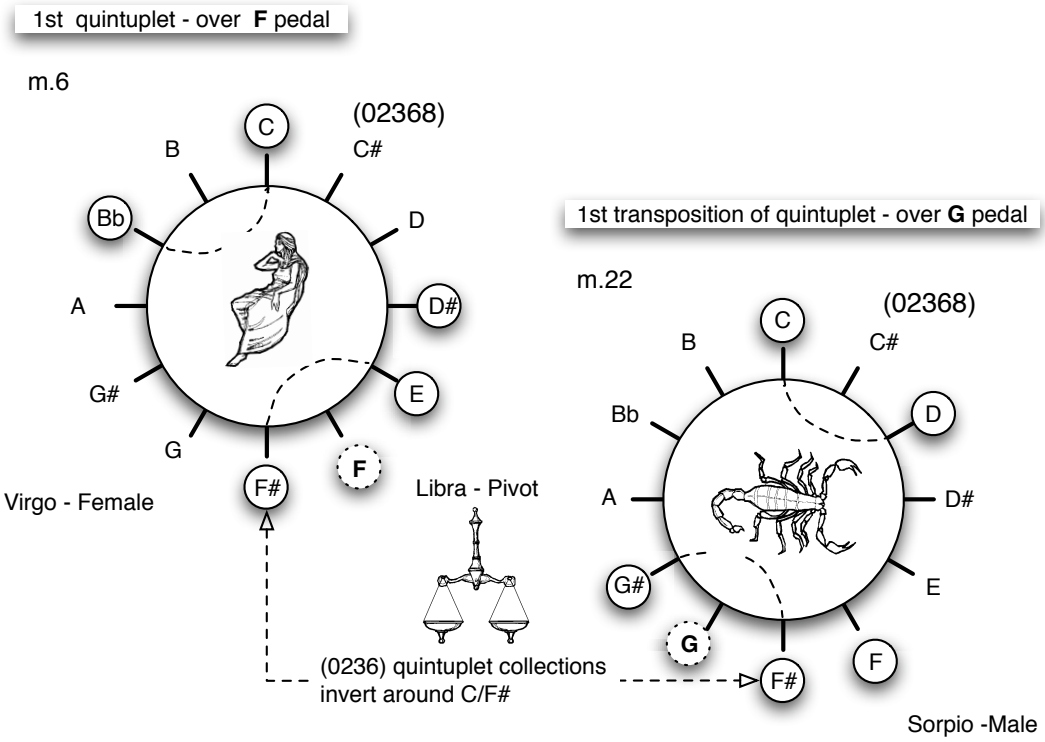
[33] Ibid.

[34] Ibid., ch. 3.

[35] Rudhyar, *The Rebirth of Hindu Music,* ch 5.

(Virgo) to the center of the of the ascending series G natural (Scorpio) [is] equated with Virgo and Scorpio respectively (Example 2)."[36]

Example 2. Pivotal relationship of F# to the F motif at the opening of movement 1 of *Music for Small Orchestra*, and subsequent modulation to G at m. 22:



Crawford's interest in the spiritual dimension and its expression through music persisted through the 1920s, prior to her sojourn in Europe (1930-31).[37] However, the influence of Rudhyar and Skryabin was increasingly subsumed by Crawford's own voice. By the time she wrote her *Piano Prelude No. 9, Tranquillo* in 1928, Crawford had sublimated the spiritual references–keeping the inspiration behind the work for the pages of her diary–stating that the prelude "had a program from Laotze's *Tao.*"[38]

The influence of Lavoie Herz, Cowell, and Rudhyar–and by extension Skryabin–had a broader impact on Crawford than the mere emphasis on tone. As we have seen, parallels between the sound of gongs and cymbals and the aural effect of the piled dissonances, were a feature of Cowell and Rudhyar's music and of Rudhyar's theories. Cowell's "tone clusters" described by him as "chords constructed with consecutive major and minor seconds," and the

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[36] Idem, (online) ch. 6.

[37] Ruth Crawford was the first female recipient of the Guggenheim Fellowship.

[38] Ruth Crawford, Diary, 29th October 1928, as quoted in Oja, *Making Music Modern,* 148.

Skryabin-esque application of stacked fourths in Rudhyar's music are features that find their way into Crawford's music in a wholly original manner.

The "gong-like" figure for the left hand of the piano part in the first movement of *Music For Small Orchestra* is consistent with the ultra-modern's (particularly Cowell and Rudhyar's) fascination with "Oriental" music and the harmony of Skryabin. The chord that Crawford constructed for the bass notes of the piano is a subset of Skryabin's "Mystic Chord," otherwise known as the "Promethean" chord (Example 3a). Here, Crawford has managed to successfully combine the two streams of interest into one effective figure.

As previously mentioned, an interest in the upper partials of the overtone series characterizes the theoretical work of Rudhyar and Cowell in the years after the First World War. Rudhyar's interest was sparked in particular by Skryabin's use of extended harmony in the form of "altered dominant" chords. Rudhyar's, apparently misguided, understanding of the underlying structure of Skryabin's harmonic concept was that it was based on "stacked fourths"–a position that suited Rudhyar's preoccupation with the cycle of fifths, their relationship to the overtone series, and the Astrological affiliations he ascribed to them. However, this inaccurate assertion was somewhat typical of the type of conjecture Rudhyar included in his many essays, often without the necessary analytical rigor to support them. Skryabin's harmonic language is now seen as being based on a fusion of whole tone and octatonic affiliations. Nevertheless, Rudhyar was not alone in his misconceptions. During Skryabin's period of fame as a concert pianist and composer, and for a time shortly after his death in 1915 as a result of blood poisoning, there was a great deal of mystery around his harmonic language and his personal life–in part because of his Theosophical association. One popular explanation of Skryabin's harmony is attributed to Skryabin's close associate Leonid Sabaneiev. Sabaneiev claimed that the aggregate of tritones, fourths and thirds that make up the Skryabin's six–note "mystic chord" (C F# Bb E A D) was formed from the eight, ninth, tenth, eleventh, thirteenth, and fourteenth partials of a given fundamental frequency.[39] This analysis is now seen as inaccurate, for the reason that the 11^{th} 13^{th} and 14^{th} partials are too far out of tune in equal temperament to be wholly useful in a compositional sense (Example 3b). Furthermore, Sabaneiev's assertion would (disregarding issues of tuning) have the "mystic" chord as a whole-tone pitch set, which in fact, it is not.

Example 3a. Skryabin's epic piece *Prometheus, The Poem of Fire* (1909–1910) opens with the "Promethean Chord" consisting of the pitches: G D# A C# F# B. To Skriabyn, the "Mystic Chord" symbolized primordial chaos. Crawford uses a subset of the same pitch-set class set as Skryabin's chords for the gong figure in *Music For Small Orchestra.* ("Wt/Hex" denotes pitch collections with whole tone and hexatonic affiliations)

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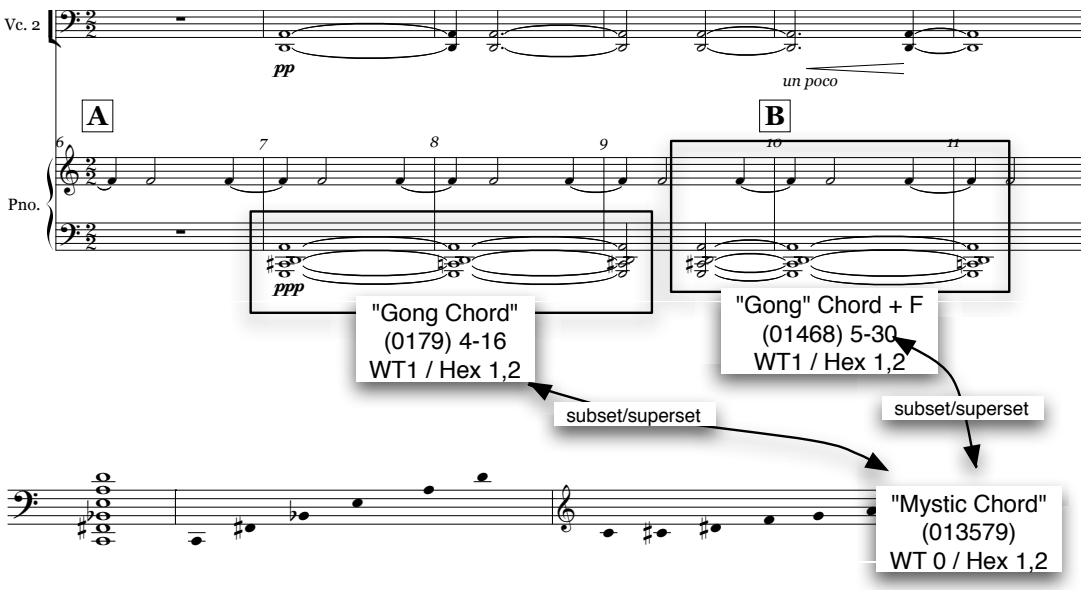
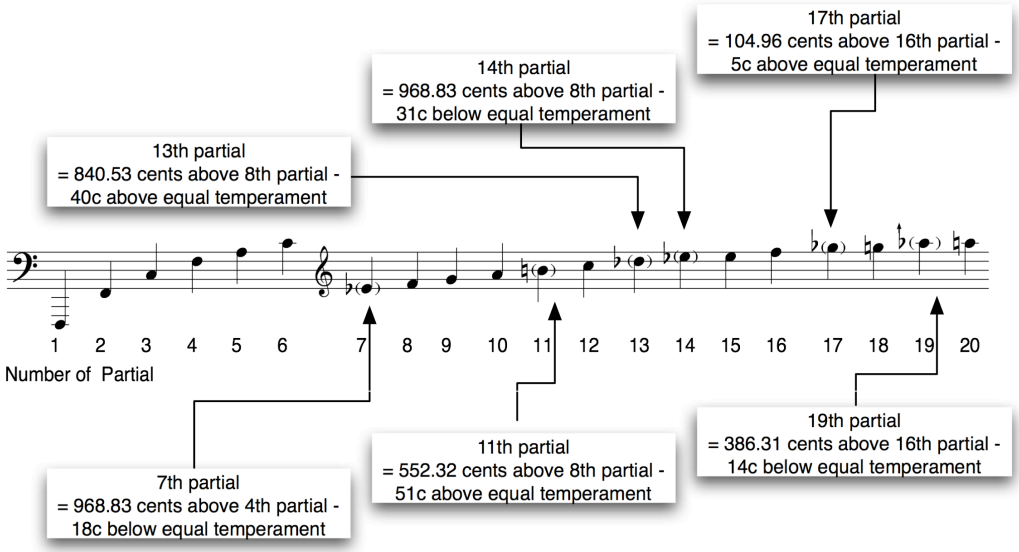
[39] Lowell Cross, "Alexander Skryabin's Prometheus, The Poem of Fire (1909–1910)" Program notes for The University of Iowa Symphony Orchestra Performances, Hancher Auditorium, September 24, 1975, source: <http://www.lowellcross.com/articles/prometheus/> (accessed December 12, 2005).



Example 3b. The overtone series based on a fundamental of F: The bracketed partials are those that are enough out of tune with Pythagorean and Equal Tempered tuning systems to render their use as intervallic pitches negligible.



There were other composers in the 1920s that found inspiration in the exotic tones of Asian gongs and their non-idiophonic analogs. Henry Cowell and Henry Eichman were two composers that went so far as to actually study music from Asian cultures and attempt to implement some of the non-western technique into their own work. A piece by Henry Eichman's (most likely *Malay*

Mosaic) that featured Asian percussion and cymbals was performed at an International Composer's Guild Concert in March of 1925.[40] Dane Rudhyar heard the piece, and later, wrote about it. His excitement, at hearing the complexity of tone emanating from the cymbals is evident in an essay written later that year:

> The shock of the cymbals produces a primary complex tone which at once grows by the cumulative resonance of all the sub-tones of the metallic mass. When this happens the tone produced can be truly said to be *alive*. Otherwise it is dead. Tones which do not grow are dead. This is why Skryabine [sic] piles up chords upon chords built upon the same modal group, Cowell tone-clusters upon tone-clusters; thus is produced the illusion-and at time[s] the reality-of the growth of tones; thus are cumulative resonances dealt with, and not singular, separate entities called notes.[41]

Crawford's method of application for the vertical harmonies in *Music for Small Orchestra* achieves a similar effect. There is a resonating quality–a build up of tone resulting in a massive–but muted ringing sound created by the piano and orchestra. There is also a definite shimmering dissonance to the sound, achieved in her case, not by crashing cymbals or massive chromatic piano chords, but rather with a subtle, ephemeral touch. The gentle swaying of the layered ostinati–so much a feature of this music–evoke the ringing of a gong *after* the impact of the beater and before the final decay of the sound –somewhere at the edge of inaudibility. Vestiges of Skryabin's influence remain in the harmonic language of this piece. Additionally, the gong-like chords and colotonic structure of the first movement owe their existence, in part, to the influence of Crawford's ultra-modern peers and their pursuit of non-western musical knowledge. Nevertheless, it would be a disservice to Crawford not to highlight the fact that her implementation of these concepts is entirely by her own original and musically effective design. There is ample evidence that Crawford's early interest in harmony–during her student days and prior to her exposure to world music by her friend Henry Cowell, or her familiarity with the theories of dissonance embraced by the ultra-modernists–extended beyond the bounds of traditional conservatory training. In her own reminiscences of composition lessons with Adolf Weidig, Crawford attests to "sprinkling sevenths and ninths plentifully and insistently, and observing or breaking the solemn rules of harmony with equal regularity."[42] In1926, towards the end of her studies with Lavoie Herz, Crawford was no longer drawing exclusively on the harmonic language of Skryabin to free her music from tonality. Nor was she in the thrall of Rudhyar or

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[40]Oja, *Making Music Modern*, 103.

[41] Dane Rudhyar, "The Birth of the Twentieth-Century Piano: Concerning John Hays Hammond's New Device," quoted in Oja, "Dane Rudhyar's Vision of American Dissonance," 135.

[42] Matilda Guame, *Ruth Crawford Seeger, Memoirs, Memories, Music* (Metuchen, NJ and London: The Scarecrow Press, 1986), 35.

Cowell. Rather, by combining a variety of influences and applying her own innovations, the structure of movement 1 of *Music For Small Orchestra* attains one of Rudhyar's goals: the ideal of "synthetic resonance" ... "an organization which begins with differences, [but] transforms antagonisms into complementary activities [and] harmonizes dissonances ... exactly as colors spread upon a rotating disc appear white to the onlooker."[43]

The first movement of *Music For Small Orchestra*s is 95 measures in length and can be divided into 3 basic sections prefaced by a short introduction (mm. 1-5) and completed with a sort of recapitulation (mm. 77 to end). The sections in between the introduction and recapitulation are as follows: Section I – mm. 7 to 41 – rehearsal letter J, Section II – mm. 42 to 69 – rehearsal letter Q, Section III – mm. 70 to 76 – rehearsal letter S.

The introduction begins with two measures of a single note F above middle C played on the piano.[44] The hypnotically beautiful, lone F tolls like a bell over empty space for two bars, followed by a lush, dissonant, 3-measures-long chord played by the entire orchestra–except the flute at measure 3. Though not exactly disjunct from the rest of the movement, this short introduction has the effect of a complete phrase, independent of the following material in terms of its rhythmical stasis. The declamatory nature of the introduction is not unlike the ritualized intoning of the melody notes of a *rag* prior to the performance of the entire piece.

The orchestra enters at m. 3 with a beautifully voiced chord: pitch set class (014568) 6-16. This sonority, though created from a pitch set only partially related to the material that shortly follows in Section I of the piece, establishes the mood for the entire movement. The B that is played by the bassoon (at measure 3) is an important note. As the inversional equivalent of the F fundamental (Example 5) and the least "in tune" note relative to this fundamental (the 11th partial is nearly a quarter tone shy of the equal tempered tritone) (see Example 3b above), the B has a sort of distinction of place in terms of instability of pitch and as the polar extreme to the F motif in the piano. The overall effect of the static, "unstable" sonority of this chord, anchored as it is between the two poles in the piano and the bassoon, is stirring and sublime. Crawford crafts this effect and the resultant mood of the piece with a collection of pitches, that relative to the F fundamental, are the least "stable" i.e., most dissonant members of the overtone series. Viewing this piece from within its historical context (i.e., the emphasis given to the overtone series and its centrality to the development of theories of dissonance), we can see (with the F as the implied fundamental) that the harmony enfolding the F motif, consists entirely of odd harmonics from its own overtone series (Examples 4a, 4b).

Concerns of octave placement relative to the fundamental aside, it is apparent that the D# in cello 1 and in the Clarinet equate to the 7th partial of F, G

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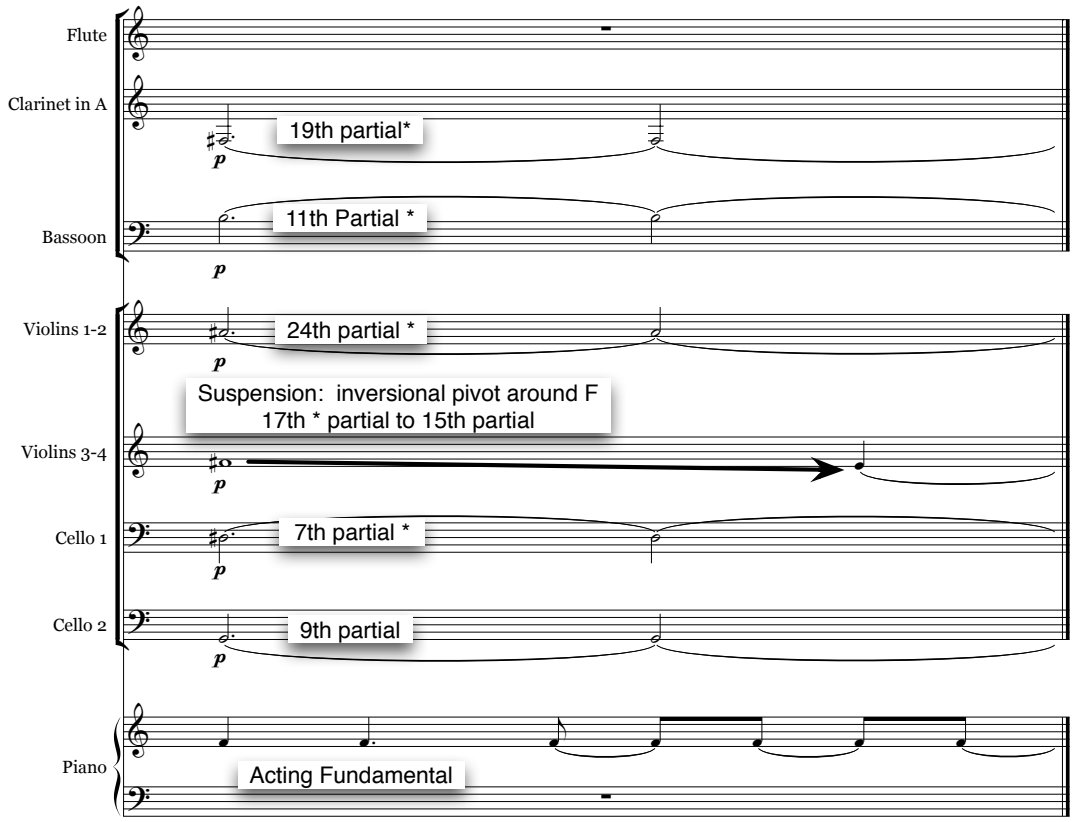
[43] Dane Rudhyar, "Dissonant Harmony" (online), 1.

[44] The connection of this "single note motive" to Rudhyar's theories may seem at first obvious, however the formative influence Crawford's first composition teacher Adolph Weidig's should not be overlooked.

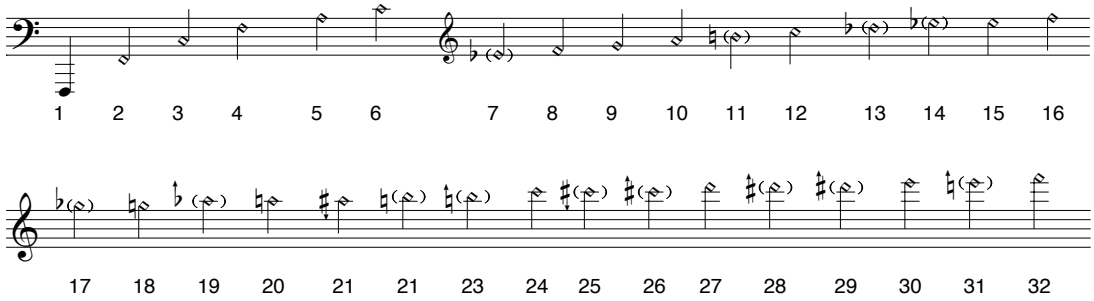
in cello 2 the 9th partial and the B played by the bassoon to the 11th partial. The F# in violins 3-4 functions as a sort of suspension resolving from the 17th partial (F# on a fundamental of F) to the more stable15th partial–E at the end of m. 3.

Example 4a. Opening chord–pitch class set (0123478) 7-6 (m. 3) showing pitch relationships to F overtone series (octave displaced). Fundamental is F.



** indicates a partial that is more than 10 cents out of tune in equal temperament.*

Example 4b. Overtone series from a fundamental of F (notes in brackets are more than 10 cents sharp or flat to the nearest equivalent equal tempered pitch)

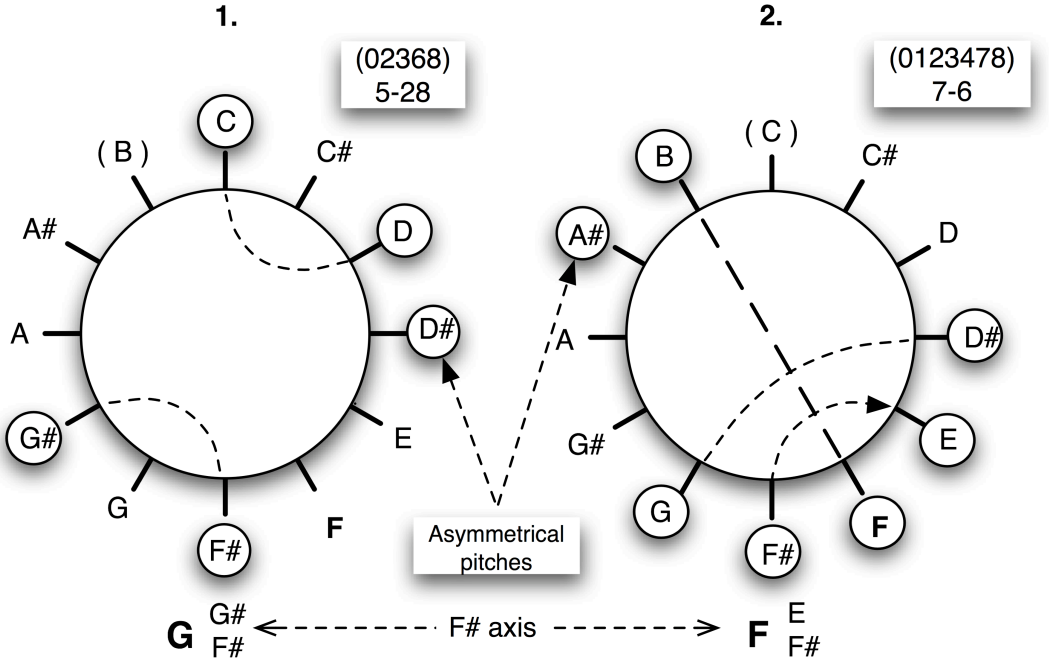


It should be mentioned that all of these partials are quite distant in pitch from Equal or Pythagorean tuning, with the exception of the 9th partial in the second cello and the “resolution” note in violins 3-4 which equates to the 15th partial. Crawford’s choice of these notes may not have been consciously motivated by her contemporary’s preoccupation with the overtone series, but the resulting chord is effective. There is a dualistic quality of integrity and instability to this constellation of pitches suspended in a fragile orbit around F, that is a direct result of their relationship to the F overtone series.

This treatment of the opening material is indicative of how Crawford, contrary to convention, replaces the function of consonant resolution with its opposite. The least rhythmically active, most “at rest” moments in the music have sustained dissonances where one might expect consonant resolution. This is a foreshadow of her move towards dissonant counterpoint in her later work.

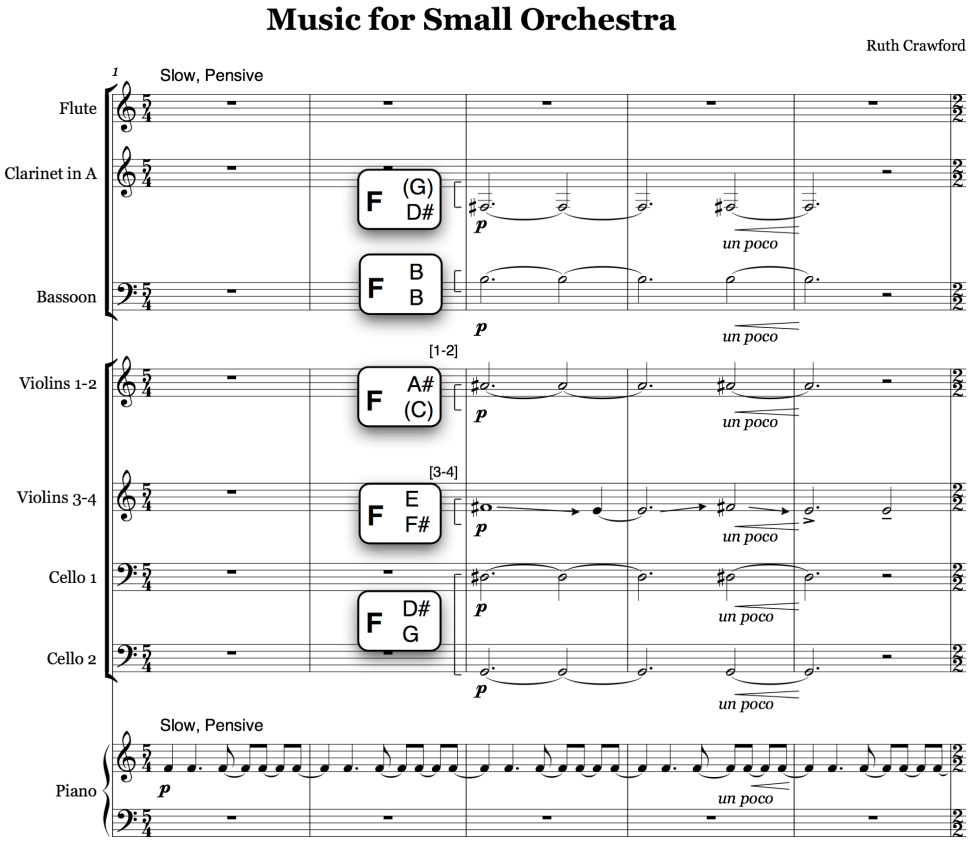
Crawford compensates for areas of sustained dissonance by predicating her chordal structures on symmetrical or nearly symmetrical pitch and rhythm schemes. Crawford often constructs her material with symmetrical, whole tone or hexatonic affiliated pitch collections that she then distorts by the displacement of a single pitch. An example of this would be the *nearly* whole tone pitch set (02368) 5-28 that makes up the quintuplet ostinato at m. 6, another would be the almost symmetrical aspect of the aggregate of pitches (0123478) 7-6 that constitute the harmonic material of the opening 6 measures (Example 5)

Example 5. Two characteristic pitch sets. 1: quintuplet at m. 6, 2: aggregate of pitches mm. 3 to 6. Diagrams show symmetrical and, asymmetrical aspects.

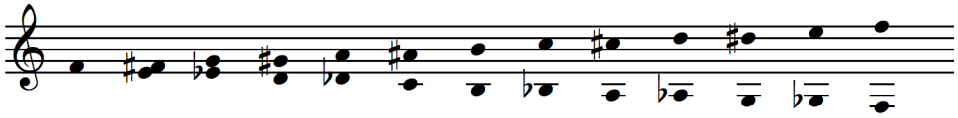


All of the pitches in the chord at m. 3, with the exception of the A# (without the C of its pivotal “resolution” until the first entrance of the quintuplet in cello 1 in

violins 1-2, m. 6, beat 2), have, within the first five measures, an inversional counterpart around an F axis (Example 6a). The D# in the cello 1 and the G in the clarinet invert around F and the violin 3-4's melodic movement in m.3 from F# to E and back is an inversional pivot around the F motive in the piano–a signature shape in Crawford's music according to Joseph Straus (Examples 6b, 6c).[45] It is this pitch centricity and the near symmetry of this dissonant chord that provides the necessary balance to its own inherent instability.

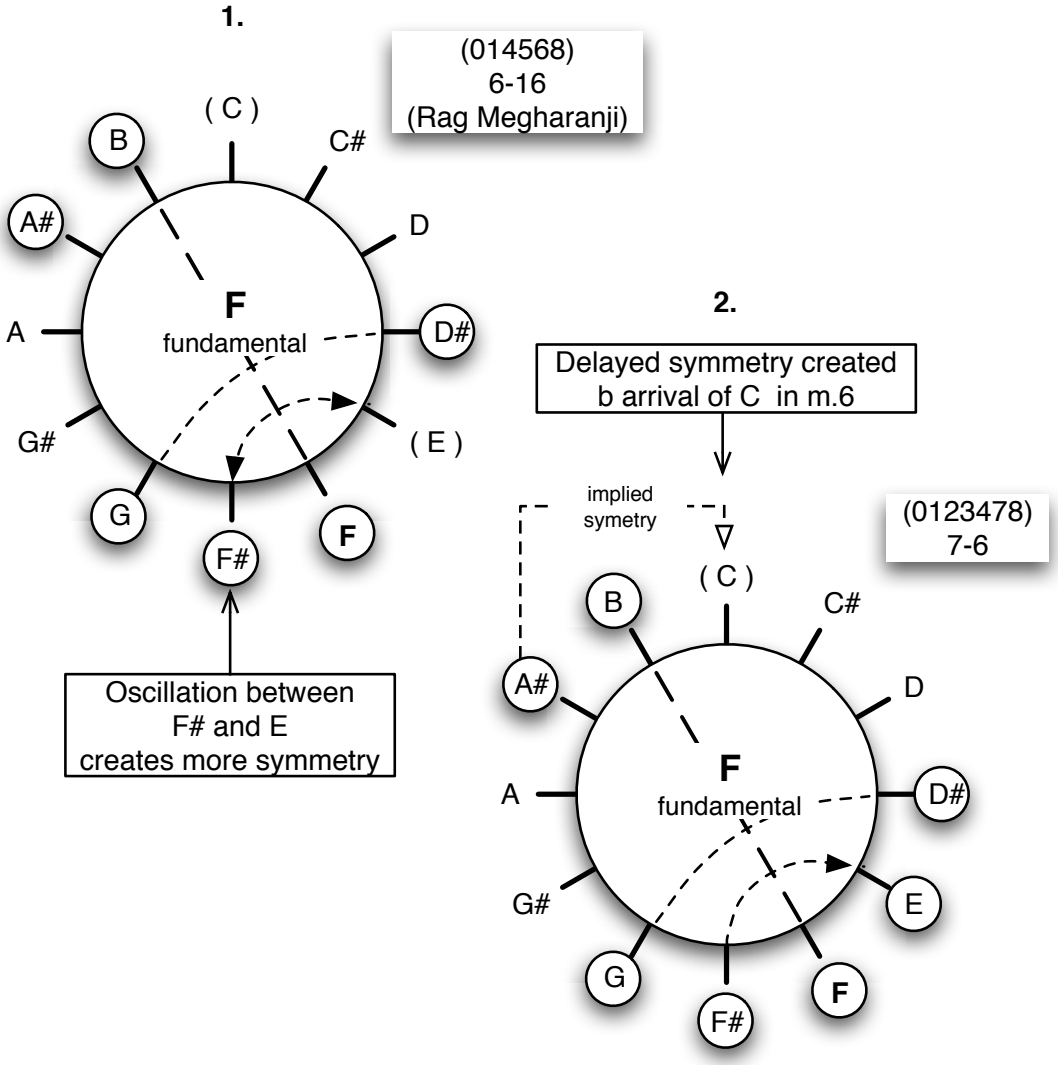


Example 6b. Pitch inversions around F fundamental:



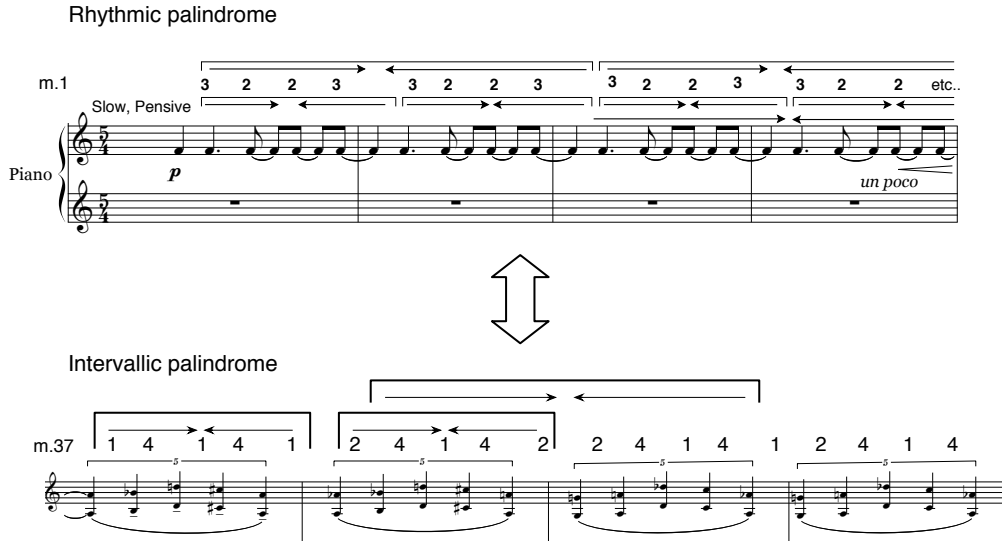
[45]Straus, 91.

Example 6c. Inversional aspects of opening chord–m. 3. Arrow between F# and E show melodic movement in violins 3-4. Figure 1 shows basic shape of chord with melodic movement in violins 3-4 indicated (pitch class set omits E). Figure 2 shows entire collection and the implied momentum of the violins 1-2 towards a "resolution" on C at m. 6, beat 2.



Another application of symmetry in Crawford's musical vocabulary is to rhythm. An example of this is the palindromic rhythm of the single note F motive played by the piano. This palindrome (an often seen feature of Crawford's compositional style) of eighth note values is the first of a large collection of rhythmic and melodic motifs that form the texture of the movement. It is comprised of two sequences of eighth note values: 3,2,2,3-3,2,2,3–the cycle beginning as an offset on beat 2 of m. 1 (the offset being another iteration of Crawford's distortion of symmetry). The "seesaw" rhythm of this phrase is loosely imitated by the collection of quintuplet and septuplet rhythms that begin at m. 6 (Example 7).

Example 7. Nested instances of palindromic figures in opening piano rhythm, and intervallic palindrome in quintuplet ostinato.



I could find no defining evidence that Crawford would have known the theory of north Indian classical music and the various *Raga*s,[46] but it is interesting to note that the pitches that are voiced in the first six measures of this movement are the same pitches used in the *Raga Megharanji* – a north Indian *Raga* that is played at midday during the monsoon season in order to summon cou*rag*e (Example 8). I feel that it is consistent with our knowledge of her milieu to surmise that, at the very least, Crawford may have had enough familiarity with the harmonic structures of north Indian music to absorb some of the harmonic language into her own. Given the pensive, somewhat somber tone of the first movement of *Music for Small Orchestra* the choice of *Rag* seems an appropriate, if not intentional corollary.

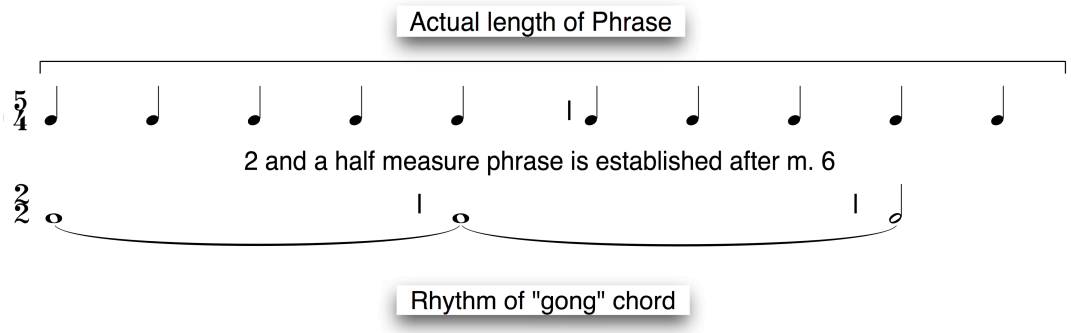
Example 8. *Raga* Megharanji: Pitch set class = (01458) 5-21, Hex 0,1 affiliations:

It is a striking feature of the movement's form that there is a single meter change from the initial 5/4 to 2/2 at the end of the introduction (measure 6,

[46] Rudhyar's book *The Rebirth of Hindu Music* discusses the structure of north Indian Rag only in a general sense. There is little in Rudhyar's writing that indicates that Rudhyar was able to develop a deep understanding of the theory of Indian Classical music. On the other hand, Henry Cowell did study the music of Asian cultures directly and may have had more access to materials and oral tradition than Rudhyar did. In the late 1920s Rudhyar did apply for a grant to study abroad in India but was turned down.

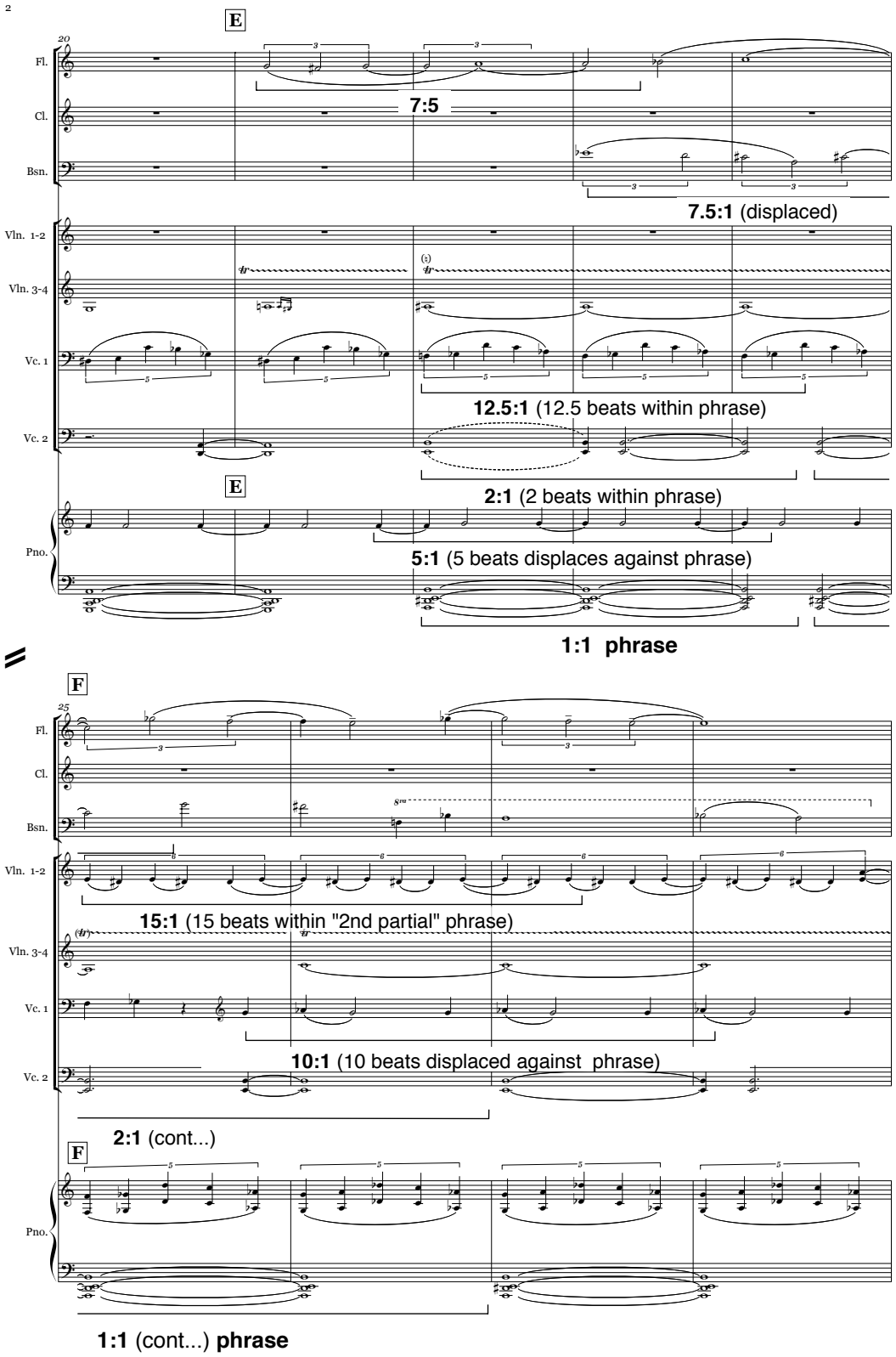
rehearsal letter A). Nowhere else in the movement does the piece change meter. The only rhythmic motion that is prominent in the introduction (until the beginning of Section I at letter A) is the single-note, pianissimo, F above middle C motif played on the piano. I believe that this is Crawford's subtle hint that the bar lines that divide the notes do not, in fact indicate the real *pulse* of the piece. The opening *two-measure* segment in 5/4 meter–consisting of solo piano, is the same *actual* length as the *two and a half bar* phrase in the subsequent 2/2 meter section. It is a foreshadow of the rhythmic phrase that begins at m.6 (Example 9).

Example 9. Foreshadowing of phrase length – 5/4 introduction (mm. 1-6) superimposed on rhythmic motif in the piano bass following m. 7:



The solo piano sets up an over-arching phrase that is continued and reinforced by the bass notes on the piano beginning at m.7. The very regular punctuation of these densely voiced, gong-like notes continue with complete regularity until m. 27, provide a uniform pulse that cycles every two and a half bars. Thus, in relation to this recurring phrase, the layer of quintuple and sextuplet ostinati and the more free melodies in half note, quarter note, and triplet subdivisions that overlay it, are circumscribed by a two and a half bar phrase or period. In effect, the dominating, bar-long quintuplet played by Cello 1 at m. 6 becomes a *twelve and a half beat pattern* within the single "beat" of the "gong" of the piano. This layering happens with varied densities throughout Section I (Example 10).

Example 10. Layering of rhythmical subdivisions over “gong” phrase:



The phrasing of the movement can easily be divided by instrument group to reveal a layer cake of time divisions within the time span of the two and a half bar phrase. The "gong" like sonority (pitch class set (01468) acts very much like the bass gong in a Gamelan Orchestra. In numerous ways, the rhythmic scheme for this movement is closely allied with the colotonic structure of Balinese and Javanese Gamelan music. This "gong" chord; two whole notes tied to a half note, is the longest unit of time in this part of the movement–intoning at a regular pulse that defines the beginning of each new phrase. The next shortest division of time is in cello 2–the D and A double-stops; a whole note tied to a quarter note. And then the piano–half note Fs that carry the bell-like figure of the opening forward. Laying on top of this bed of subdivisions of the two and a half bar phrase is the quarter note quintuplet ostinato in cello 1, that, over the completion of the phrase, end up being an aggregate of twelve and a half notes. By m. 26 this layering of ostinati has increased to include a sextuplet figure in violins 1-2–totaling fifteen notes over the duration of the phrase and a simple meter-four quarter note figure in the first cello–totaling ten notes over the duration of the phrase (the piano takes over the quintuplet at m. 25) (Example 10).

To understand the significance of this layering of polyrhythm, it is necessary to refer to the concepts that Henry Cowell was likely discussing during the early years of his friendship with Ruth Crawford. Cowell's concept of "rhythm-harmony" was developed between 1915 and 1919 while he worked on his piece *Quartet Romantic* and others like it. *Quartet Romantic* remained unpublished until 1964 due to the fact that Cowell considered it unplayable as a result of its rhythmic complexity. However, the ideas behind this piece were developed enough for them to be printed in Cowell's book *New Musical Resources* in 1930.

Cowell described the process behind the germination of his idea in the introduction to the published score of *Quartet Romantic* in 1964; "I was already exploring the possibilities inherent in counter-rhythms–2 against 3, 3 against 4 ... I was struck with the fact that the lower reaches of the overtone series were expressed by the same ratios I had been using to describe counter-rhythms. Could they be somehow the same?" Later on, with the help of some graduate students at Stanford University, Cowell was able to experiment with a pair of tunable sirens. His experiments demonstrated to his satisfaction that if the sirens were "tuned in the ratio of 3:2, they [would] sound an interval of a perfect fifth; if they [were] both slowed down, keeping the 3:2 relationship, they arrive[d] at a *rhythm* of 3 against 2, heard as gentle bumps"… [amplitude nodes] …" but also visible as tiny puffs of air through the holes in the siren–so easily confirmed."[47] These realizations led to Cowell's interest in composing rhythmically complex works where the polyrhythms are directly related to a simple harmonic palimpsest, a choral for instance, that would be a seed for the more rhythmically complex piece. (Example 11)

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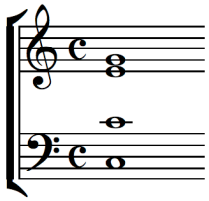
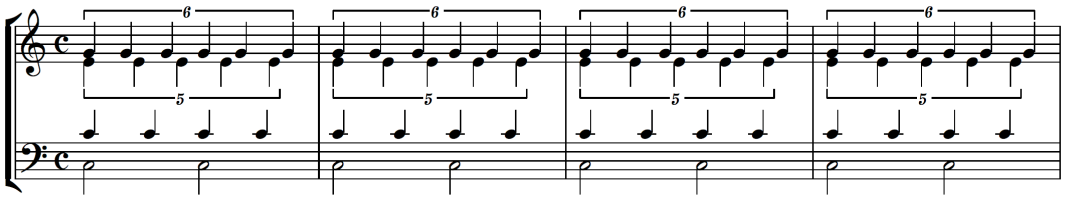
[47] Cowell, Henry, *Quartet Romantic*, *Quartet Euphometric* (New York: C.F. Peters 1964), introduction.

Example 11. Excerpt from the introduction to Henry Cowell's *Quartet Romantic*:

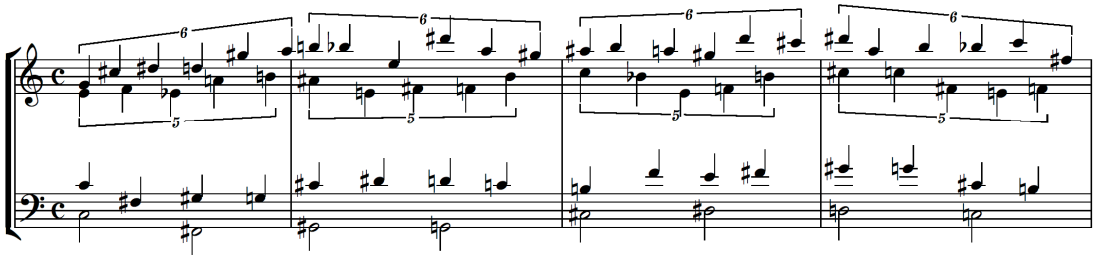
[This four-voice chord (with a fundamental of C)]



would provide the following music:



Another answer would be to apply free pitches to the given rhythms

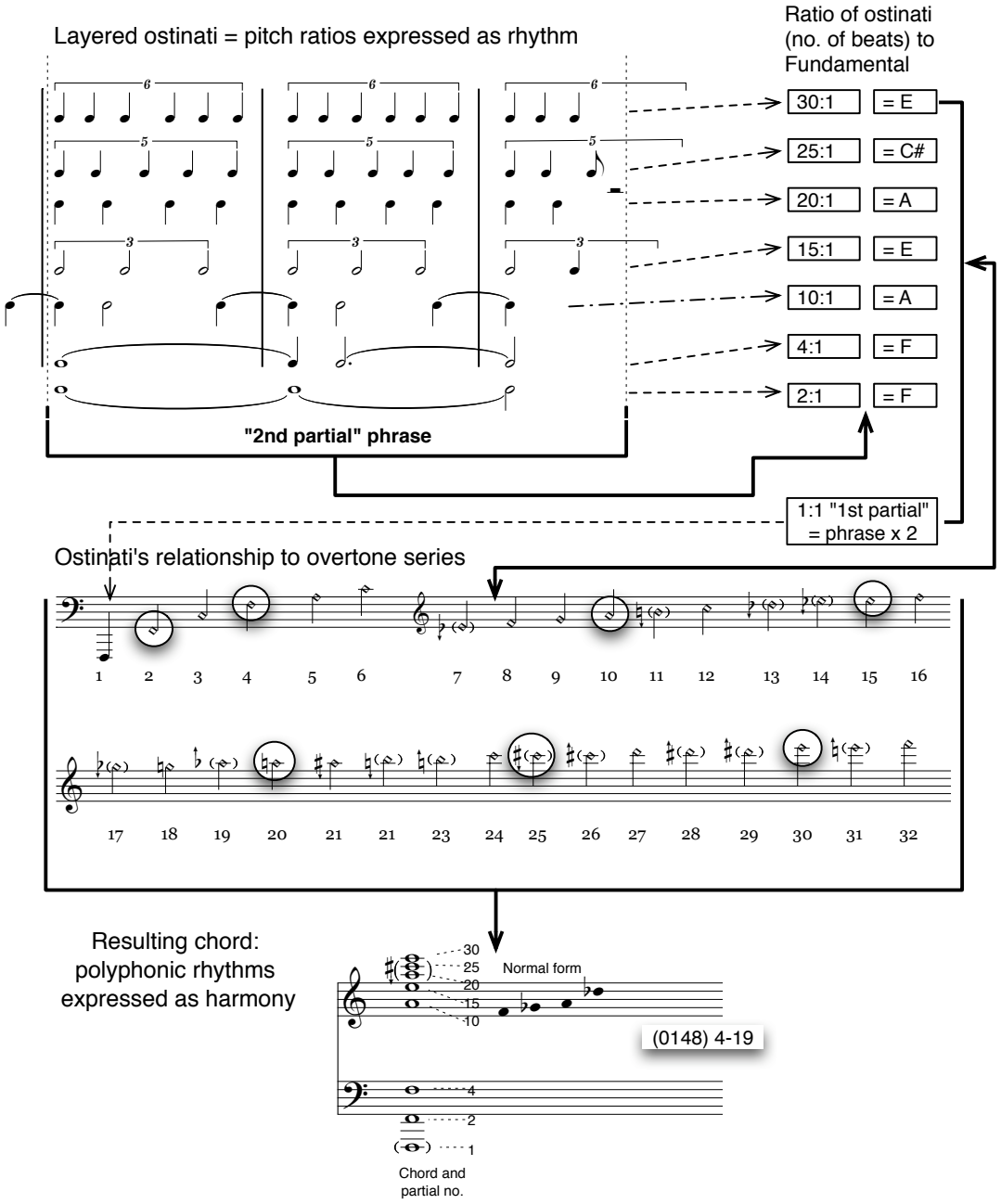


It is quite remarkable how closely Cowell's musical example above resembles the rhythmic structure of *Music For Small Orchestra.* In fact, Cowells' 4:2, 5:4, and 6:5 rhythm relationships are duplicated in Crawford's piece. Cowell's example above demonstrates the concept of "rhythm harmony" by beginning with a simple chord, the intervals of which are represented in the lower reaches of the overtone series. The simple C octave–topped with a C Major triad–that he uses to provide the intervallic ratios that are the basis for the polyrhythm at the end of the example, could be seen as the 2nd, 4th, 5th and 6th partials of the overtone series on C. Examined from this perspective, the dense polyrhythm of Crawford's piece could also be a palimpsest–a harmonic structure hidden in the ratios between the rhythms of the ostinati.

The diagram below (Example 12) details the corollaries that exist in the layered rhythms of *Music for Small Orchestra* and the overtone series based on an F fundamental. The ratios exhibited in Example 10 above, reveal that some of the tuplets, when juxtaposed against the 2 and a half bar phrase do not have whole number ratios. Because the partials in the overtone series must be expressed as whole numbers, it would appear that there is not a direct correlation between Crawford's composition and Cowell's rhythm harmony concept. However, it is evident that Cowell's example uses the *second* partial

rather than the fundamental of the C overtone series as the bass note in the chordal example that begins his demonstration. If then, we consider Crawford's 2 and a half bar phrase to be related to the *second* partial of an F overtone series, and thus, that the "fundamental phrase" is 5 bars in length, rather than the 2 and half bars of the "gong" chord (i.e., all numbers doubled), then all of the ratios generated by her layer of polyrhythm will express whole numbers that map quite easily onto the F overtone series (Example 12).

Example 12. Layering of ostinati and rhythmic motifs over "2nd partial phrase." The box on the right lists total number of pulses for each rhythmic motif occurring within the time span of the fundamental phrase and their correlation to the relative place on the overtone series of F.



There is some justification for the existence of an implied "fundamental phrase" (i.e., rhythmically related to the 1st partial of the F overtone series) of 5 measures. If a 5-measure phrase begins at m. 7 with the "gong" chord, the beginnings and endings of this phrase line up (more or less) with changes in instrumental texture. The "more or less" factor is a result of Crawford's

"dissonation" of events. By extending, eliding and attenuating patterns, she subverts the expectation of obvious musical shifts. Nevertheless, this five bar "fundamental" phrase does seem to cycle with changes in other elements of the piece. The most obviously synchronized event is the arrival, of the end of the 3rd iteration of the "fundamental" phrase, with the first upward modulation (by a major second) of the quintuplet ostinato, one bar after rehearsal letter E.

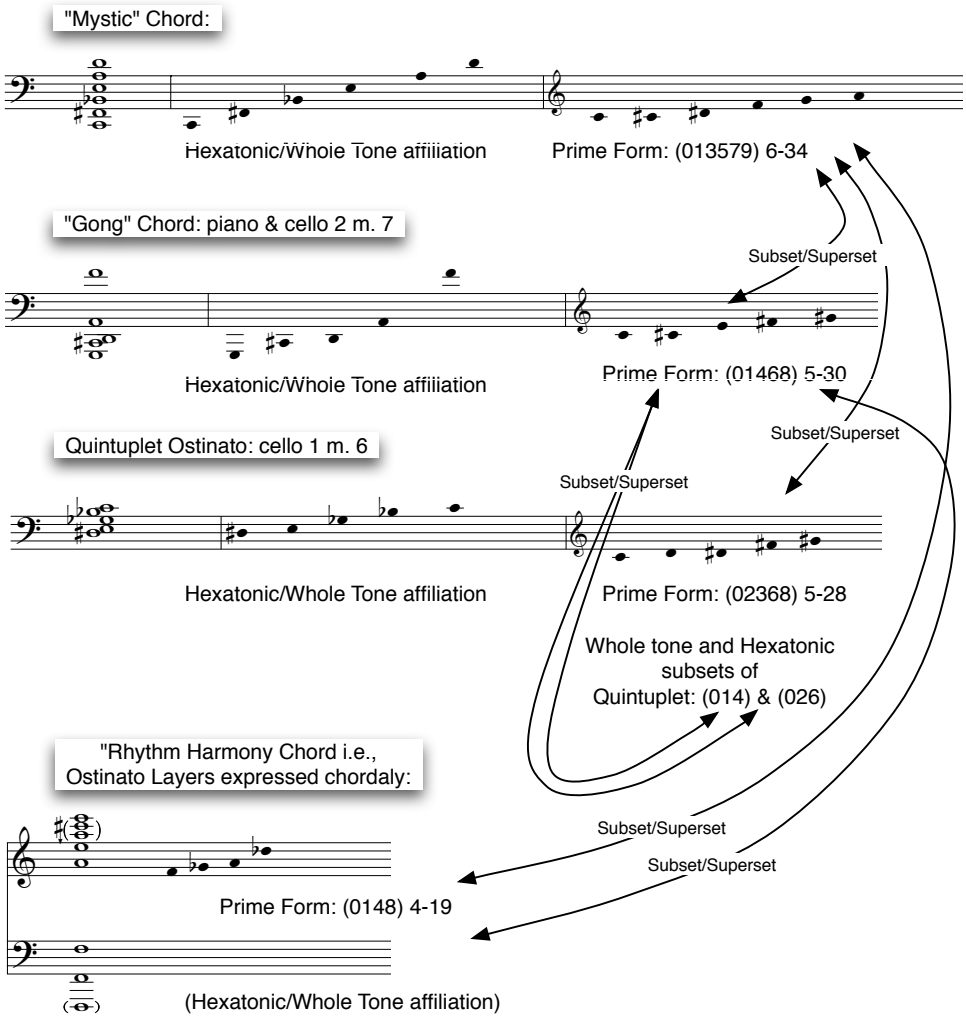
The above (Example 12) is essentially a reverse engineering of the layered rhythms found in Section I. Using Cowell's method in retrograde, we arrive at the chord (somewhat more complex than Cowell's C Major) that could have been the genesis of Crawford's rhythmic concept. Naturally it is impossible to know if any of these factors were primary in Crawford's thinking at the time of composition. Also, by interrupting patterns and extending or shortening phrases, she has taken a fair amount of liberty with the ostinati layers. The melodic role played by the woodwinds is particularly disruptive of any attempts to impose a rigid analytical structure onto the music. Notwithstanding, I feel that the evidence that supports Crawford's incorporation of Cowell's idea is manifold.

Returning to the "gong" chord with the F motif on top in the piano at m.7, we can see that the notes of this pentachord (G C# D A and F), expressed in prime form as (01468) 5-30, loosely resemble the opening (014568) 6-16 collection from measure 3 (with the inclusion of the F in the piano) as a result of hexachordal subsets in both collections. This collection, predominant in the bass voices, asserts itself as the primary sonority in the early moments of the movement by remaining harmonically static until m. 21.

Interestingly, this collection (01468) is a superset of the collection represented by the *harmonic expression of the layered ostinati (i.e., the rhythm harmony of piece)*–pitch set (0148) discussed above. If the rhythms taken from the layering of ostinati in *Music for Small Orchestra'*s movement 1 were translated into pitches relating to the harmonic series of a fundamental of F, the resultant "rhythm harmony" chord would be F, F, A, E natural, A C sharp, and E–pitch class set (0148) (see Example 12 above). Because this resultant "rhythm harmony" chord is so closely related to the "gong" chord that is the harmonic underpinning of the layered rhythm, I feel that is likely that Crawford used chords of similar construction to develop both the harmonic underpinning and the *rhythm* of the piece.

Along with the evident integration of the harmonic and rhythmic concepts of the piece, Crawford has managed to incorporate key influences on her harmonic language while successfully establishing her own, very unique voice. Example 13 summarizes relationships between the harmonic elements of *Music For Small Orchestra*.

Example 13. Interrelationships between harmonic elements within *Music For Small Orchestra*, movement 1:



The quintuplet ostinato that arrives in cello 1 at letter “A” contains 4 pitches from the whole tone collection based on WT0. The D# belonging to WT1 at the beginning of the melody is the exception that renders the motive asymmetrical. This motive, constructed primarily in whole tone relationships, could be a throw back to Skryabin’s love of whole tone harmony, but it is a characteristic building block of Crawford’s piece and of her music in general. The (014), major/minor triad, subset that makes up the beginning of this motive is also a ubiquitous feature of Crawford’s music according to Straus.[48]

The quintuplet’s way of dividing each measure into two discreet halves with the top note of its melodic shape in the center of the bar is a quality that determines the sonic structure of the piece. As gradual layers of ostinati are added, the sensation of a subtle, constant ebb and flow within each bar becomes

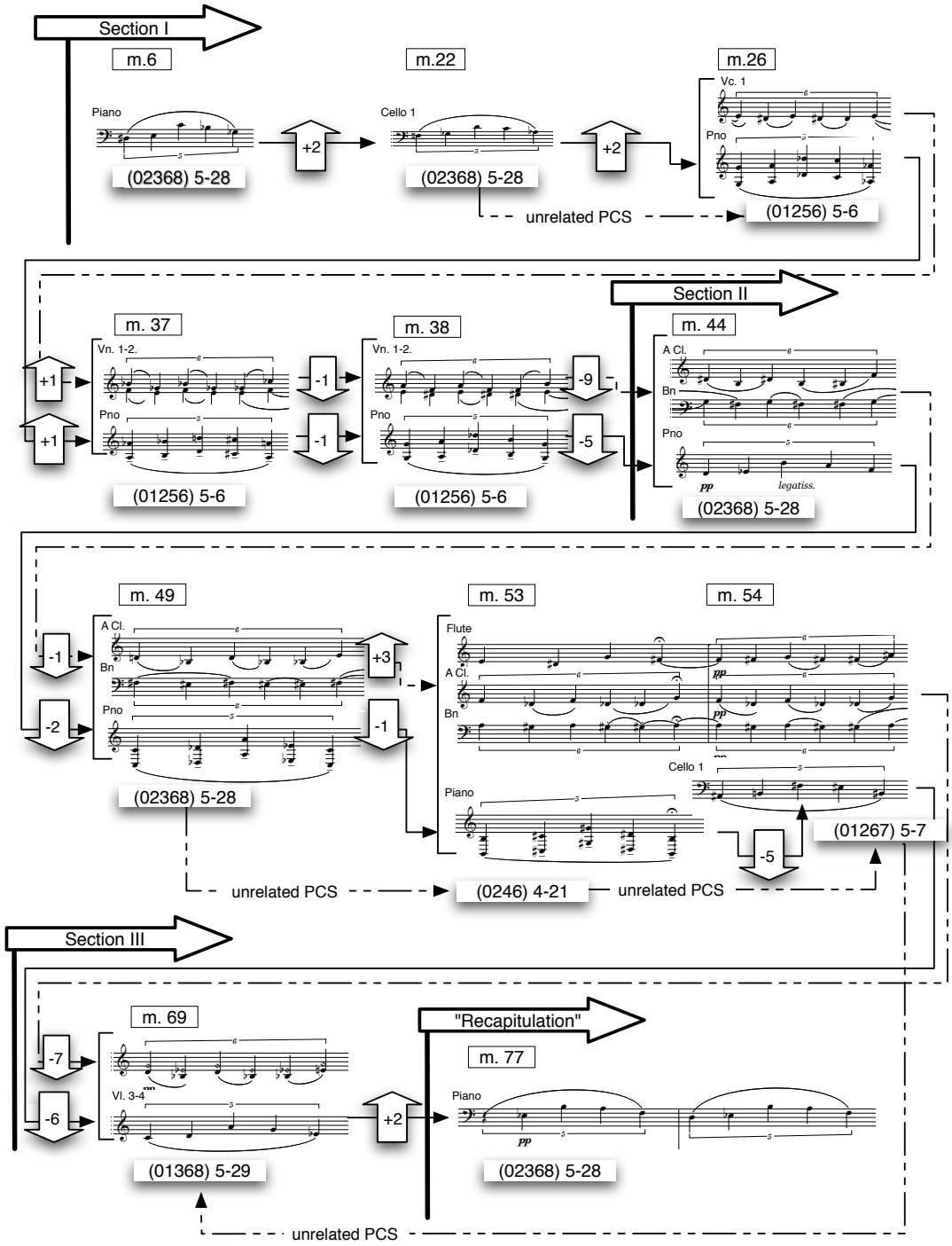
[48] Straus, 97.

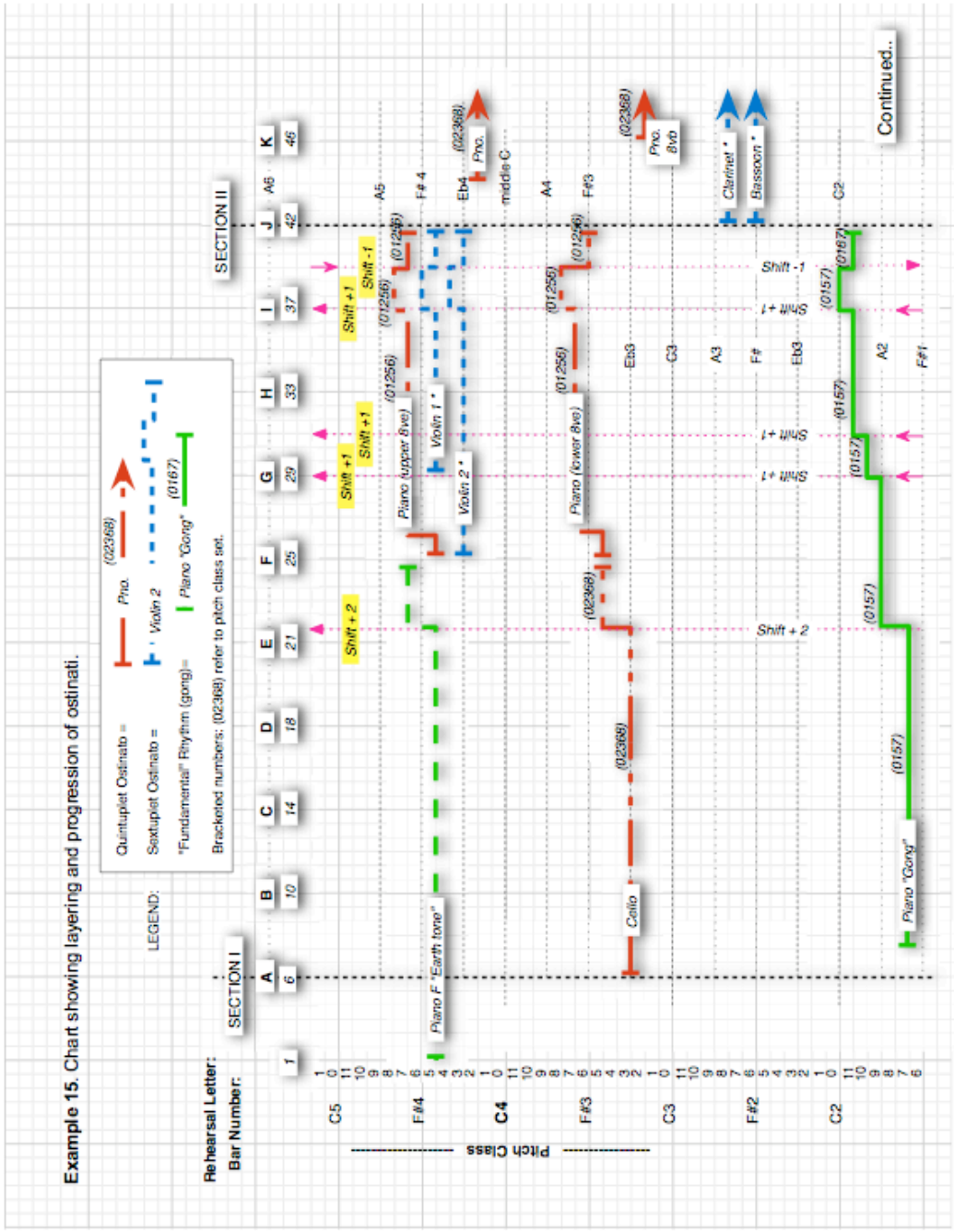
accentuated. Though the division of the bar is less important to the structure of the more free melodic elements and perhaps less important than the "gong-like" two and a half bar phrase, these gentle, one bar arcs inscribed by the nearly symmetrical ostinati lend an ethereal quality to the general harmonic and rhythmic dissonance of the piece. As the first movement of *Music for Small Orchestra* progresses, a shimmering quality that one might associate with the sound of a resonating gong or cymbal emerges from the dense texture of the orchestration. This sound is a signature of Crawford's music, the feature most prominent in the third movement of her *String Quartet* 1931. In her "post-Seeger" writing career, Crawford executed her ideas by adhering largely to the rules of Charles Seeger's "Dissonant Counterpoint." By using characteristically unusual voicing of instruments and "dissonating" the dynamics in the third movement of her quartet, Crawford was able to achieve this shimmering effect. The structured layering of ostinati in *Music for Small Orchestra* achieves a very similar effect four years before her study with Seeger.

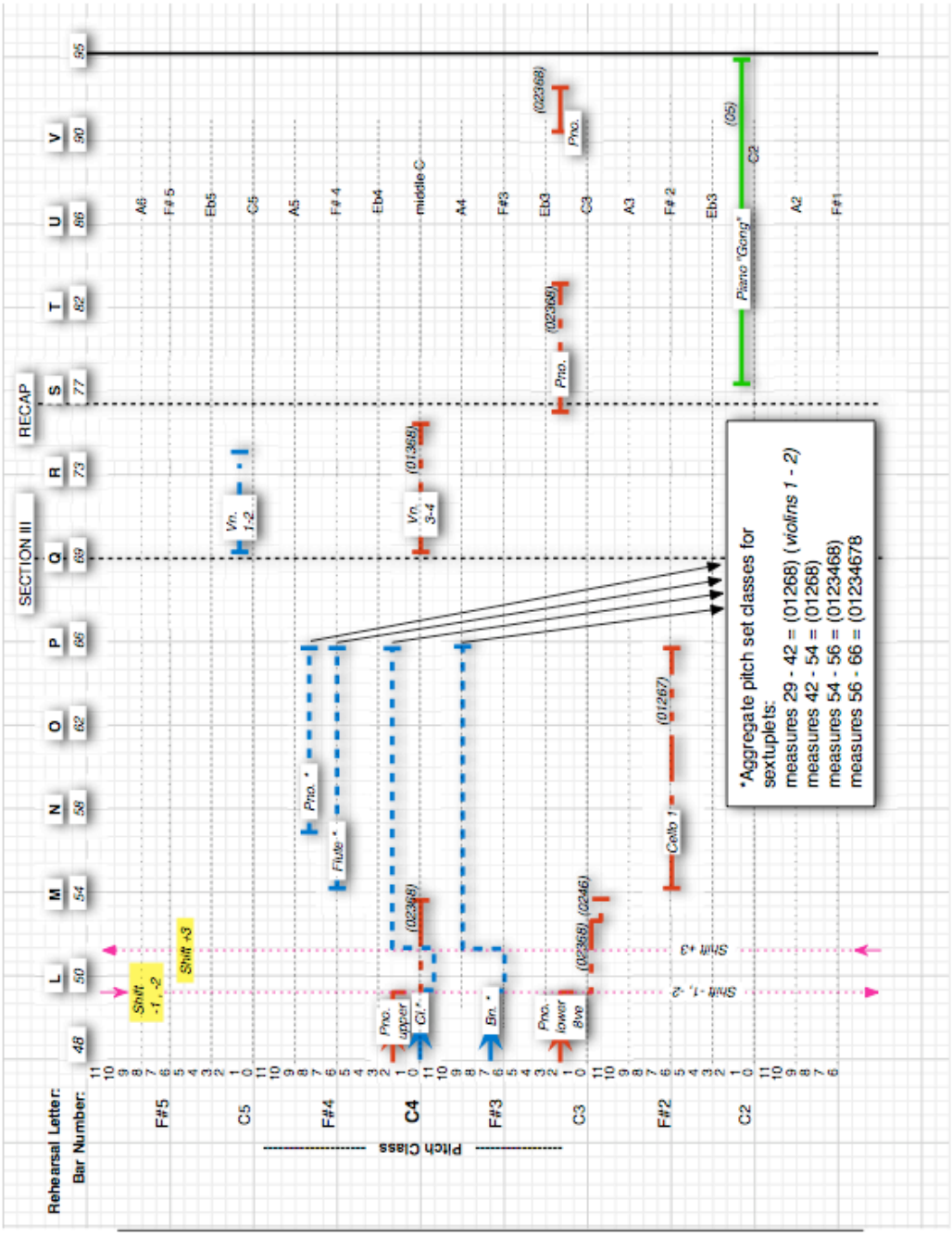
When the sextuplet arrives in both voices (double stops in violins 1-2) at measure 29; rehearsal letter G, it sets up an asymmetric, undulating chord: (01268) 5-15 (the set can *almost* map onto itself at T6 and T6I). The lopsided, *almost* symmetry of this figure accentuates the seesaw feel or shimmering wave motion of the inner rhythm of the piece. The slow, wave-like effect of this motif is a key to Crawford's sound. The motif, as it appears in this piece, foreshadows the layered and opposing dynamic markings in her fourth string quartet designed to create a rippling effect. The teetering melody in the sextuplet figure is one of a many layers of similar action within this piece that conglomerate to manifest a refracted quality to the sound of the work.

Overall, the movement, within a given voice is quite harmonically static. There is not a great deal of movement through pitch space. Instead, Crawford uses a small collection of largely related and re-circulated pitch sets juxtaposed to one another in layers that are transposed variously. Harmonic complexity is achieved by differentiation between the voices with regard to the overall transpositional scheme. Releases of tension are brought about by means of decreased differentiation between voices, thinning of the orchestral texture, decreases of dynamics and sostenuti (Example 14).

Example 14. Detail of transpositions; quintuplet ostinati in relationship to sextuplet ostinati. Level of transposition is in relationship to first played note of figure. All transpositions are expressed as unordered pitch intervals:




Example 15. Chart showing layering and progression of ostinati.
LEGEND:
Quintuplet Ostinato = Pno. (02368)
Sextuplet Ostinato = Violin 2 (01256)
"Fundamental" Rhythm (gong)= Piano "Gong" (0167)
Bracketed numbers: (02368) refer to pitch class set.
Rehearsal Letter:
Bar Number:
SECTION I
SECTION II
A B C D E F G H I J K
6 10 14 18 21 25 29 33 37 42 46
Pitch Class
C5 F#4 C4 F#3 C3 F#2 C2
A5 F#4 Eb4 middle C A4 F#3 Eb3 C3 A3 F# Eb3 C2 A2 F#1
Piano F "Earth tone"
Cello
Piano (upper 8ve)
Violin 1 *
Violin 2 *
Piano (lower 8ve)
Pno. 8vb
Clarinet *
Bassoon *
Piano "Gong"
Shift +1
Shift -1
Shift + 2
(02368)
(01256)
(0157)
(0167)
Continued..


Rehearsal Letter:
Bar Number:
48
L
50
M
54
N
58
O
62
P
66
SECTION III
Q
69
R
73
RECAP
S
77
T
82
U
86
V
90
95
Pitch Class
F#5
C5
F#4
C4
F#3
C3
F#2
C2
A6
F# 5
Eb5
C5
A5
F# 4
Eb4
middle C
A4
F#3
Eb3
C3
A3
F# 2
Eb3
A2
F#1
Shift -1, -2
Shift -3
Shift +3
Pno. upper
Cl.*
(02346)
Pno. lower 8vb
(02366)
(0246)
Fl. *
Bn. *
Pno. *
Flute *
Vn. 1-2
Vn. 3-4
(01368)
Pno.
(02368)
Pno.
(02368)
Cello 1
(01267)
Piano "Gong"
(05)
C2
*Aggregate pitch set classes for sextuplets:
measures 29 - 42 = (01268) (violins 1 - 2)
measures 42 - 54 = (01268)
measures 54 - 56 = (01234678)
measures 56 - 66 = (01234678

As can be clearly seen in the chart detailing the movement through pitch space of the various ostinati in Example 15 above, transpositions occur homophonically until just after rehearsal letter F in measure 25. It is here that two significant changes in texture occur; the single note piano motive ceases and the sextuplet figure in violins 3-4 begins. After this, and up to rehearsal letter I, a number of *independent* transpositions occur–most actively in the "gong" figure of the piano's bass notes. At letter I, there is a short tutti transposition up a semitone, followed quickly by a reversal and cessation of movement in all the instruments, save the sextuplet figure in the clarinet and bassoon. Between letters N and P, it is possible to see (in example 15) that, between the quintuplet ostinato in the cello and the sextuple figure in the woodwinds and piano, the greatest number of the12 possible pitches are being used. Also in this section, we can witness that there is a very wide distribution of notes through pitch space.

Crawford's melodic material is made up of pitches derived from subsets of the orchestral texture. Important notes that foreshadow or intensify musical shifts are voiced most often in the melodic instruments–primarily the woodwinds.

From rehearsal letter C right up to when the first tutti upward semitone transposition occurs, Crawford omits A#. All other possible chromatic tones are voiced. There is a sudden increase in dynamics in m.21 and as the modulation arrives at the downbeat, the 3-4 violins play the omitted note. In the last few measures–mm. 35-38, before the end of Section I, Crawford uses all twelve possible chromatic pitches. These few bars represent the height of the density of occurrences of modulations in the movement (Example 15) and also the return of the opening pitch collection (01256) in the quintuplet figure (now played as octaves in the right hand of the piano). The layering of rhythmic ostinati and disparate pitch collections, coupled with the increasing intensity in the clarinet coincide with density of the harmonic material. When D is taken out of the aggregate following the final modulation of this section (a semitone down at m. 37), the feeling of a release of tension is palpable. The (012568) collection (a superset of the introduction harmony) that ends Section I at the fermata on the last beat of m. 41 is a welcome return to the introduction's pitch space.

Section II begins at rehearsal letter J with the sextuplet (01268) figure in the low woodwinds. The harmonized sextuplet, left alone as a duet of sorts, allows the quasi-diatonic nature of the part to speak for a moment before the quintuplet re-appears in the piano in m. 44. As the movement's climax builds at "K" the simple meter pars in the violins begin to dominate. There is a sweeping quality to the unison voice in violins that accentuates their role. The melody is based on the same whole tone, semitone, and then tritone leaps on which the previous modulations were based. A projection of the form of the piece into the minutiae of the single voice melody. The movement of this melody m.45 -51 is mirrored in the accompanying cellos while the upper voice of violin 1-2 pivots over the repeated harmonies of the sextuple pitches in the clarinet and bassoon. This section has the freest melodic movement, the ostinati having become underpinnings for the soaring melodies of the violins and flute.

The effect of placing harmonics in cello 1 over a muted cello 2 at the beginning of Section III, re-emphasize the importance of the sextuplet figure.

The melody, with its semi-symmetrical character is disturbingly close to a child's taunt. This section has a greatly thinned out texture that allows the simplified sextuplet to speak in the haunting manner of the opening F piano motive.

As the quasi recapitulation begins in m.77 the quintuplet ostinato dominates once again. A modulated and rhythmically altered version of the piano's one note motive returns at the beginning of the recapitulation, this time an E intoned in the 3-4 violins. The symmetrical hexachord (01346) 6Z-13 at V, m. 90 restores a sense of balance. The final Db–Ab perfect fifth ends the piece a tritone away from its G beginning–a sort of symmetrical balancing foreshadowing Crawford's future work with dissonant counterpoint.

In conclusion, it should now be evident that *Music For Small Orchestra* contains many of the features that are usually attributed to Ruth Crawford's 'post-Seeger' days. The sophistication of her concepts and the efficacy with which Crawford absorbed and utilized the ideas of her peers and mentors as exemplified in this work is a testament to her outstanding ability and talent as a composer in her own right. Sadly because of her small catalogue and her early abandonment of composing in favor of musicology, I think that Crawford's work will always be viewed in juxtaposition with her more famous and prolific peers in the ultra-modern movement. There is little doubt in my mind that this movement of *Music for Small Orchestra* should be more thoroughly examined and placed among Crawford's more often mentioned, later compositions.

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