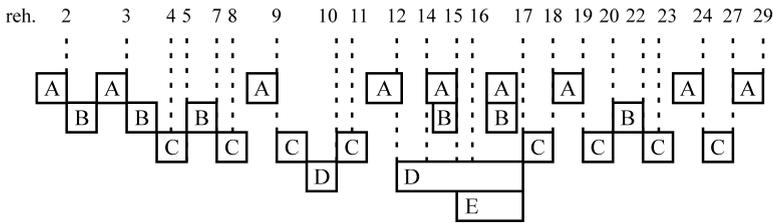# DEBUSSY:

THE ORIGINS OF A METHOD

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Edward T. Cone was the first theorist to identify and analyze the formal discontinuity that characterizes so many of Stravinsky's works. According to Cone, this feature began to appear in *The Rite of Spring*, and could therefore have been initially motivated by extramusical considerations (Cone 1962, 18). Cone goes on to show, however, that formal discontinuity plays a structural role in many of Stravinsky's absolute works. The centerpiece of Cone's article is his theory of stratification, interlock, and synthesis: abrupt changes in musical ideas reveal a stratification between separate musical lines, each of which is continued in rough alternation, necessitating interlock between the separated strands of each line. The ultimate goal of such works is a synthesis between these competing musical lines. With his theory, Cone provided an analytic method to reveal the musical coherence in Stravinsky's works while accounting for their disjunctions as well.

The explosion of Stravinsky scholarship since Cone wrote his article is largely indebted to his identification of discontinuity as a structural principle. Most notable in this regard is the body of literature devoted to Stravinsky's *Symphonies of Wind Instruments*, the work with which Cone begins his study and which he analyzes in the greatest detail.[1] It is curious, however, that while Cone's article is frequently cited, his theory of

stratification, interlock, and synthesis has not been adopted by later writers. Various published critiques of Cone's theory can explain this fact, and our first order of business will be to summarize and refute these critiques. We will then explore the application of Cone's theory to two of Debussy's piano preludes ("Ondine" and "Brouillards," both from Book 2). Aside from showing that Stravinsky was not the first composer to employ this formal model, these analyses show that Cone's theory is easily adaptable to the unique demands of a work, for Debussy's use of stratified form is in some ways quite different from that of Stravinsky. Before embarking on these analyses, however, we will briefly explore Debussy's enthusiasm for the cinema; the similarity between cinematic montage and stratified musical form allows us to posit the former as the inspiration behind the latter.

In his monumental study *Stravinsky and the Russian Traditions*, Richard Taruskin introduced several Russian concepts into the vocabulary of Stravinsky scholarship. The one most pertinent to this study is *drobnost'*: the quality of "splinteredness," or of being a sum of parts (Taruskin 1996, 1451). On a technical level, *drobnost'* describes the elimination of transitional or developmental material which changes music's emphasis from process to state. Taruskin isolated the period during which Stravinsky composed *The Rite* as the point in his career when he came to embrace *drobnost'*. Stravinsky's efforts in this regard resulted, according to Taruskin, in the birth of Cone's "Method" (ibid., 956).

Cone and Taruskin thus agree that *The Rite* is Stravinsky's first work to fully embrace discontinuity. Yet isolated instances of formal discontinuity can be found in earlier works. In fact, the opening section of *Petrushka* ("The Shrove-Tide Fair") openly celebrates the abrupt juxtaposition of musical ideas, each of which serves essentially as a leitmotiv for Admiralty Square and the various characters that inhabit it, including the drunken revelers, the master of ceremonies, an organ grinder, and the two female dancers.[2] Taruskin points out that the relative size of the juxtaposed blocks and the standard pattern they create is similar to rondo form, and therefore distinguishes the formal organization of this music from that of *The Rite*.[3] Nevertheless, so strongly is our attention drawn from one set of characters and their accompanying music to another, that this opening scene has been compared to cinematic montage.[4] Stephen Walsh even describes this scene in cinematic terms: "using his music like a cine-camera, he turns his lens now on this group, now on that, sometimes standing back for a general shot, sometimes moving in for a close-up" (1993, 28). Although Walsh retreats a bit when he admits that this scene "is a more formal affair than this analogy suggests," he goes on to state that "the many brief recurrences of the opening material and the barker's cry are less like formal reprises than accidental intrusions of events going on elsewhere in the fairground" (ibid.) Cone's theory clari-

reh. 2   3   4 5 7 8   9   10 11 12 14 15 16   17 18 19 20 22 23 24 27 29

[A] [A]   [A]   [A] [A] [A]   [A]   [A] [A]
   [B]   [B] [B]   [B] [B]   [B]
        [C] [C]   [C] [C]   [C] [C] [C] [C]
               [D]   [D]
                        [E]

Example 1. Stravinsky, *Petrushka*, formal diagram of
"The Shrove-Tide Fair"

fies the connection between cinematic montage and traditional form that Walsh hears in this music, for this brief passage clearly exhibits both formal stratification and interlock. Cone defines these terms as follows:

> By stratification I mean the separation in musical space of ideas—or better, of musical areas—juxtaposed in time; the interruption is the mark of this separation . . . Since the musical ideas thus presented are usually incomplete and often apparently fragmentary, stratification sets up a tension between successive time segments. When the action in one area is suspended, the listener looks forward to its eventual resumption and completion; meanwhile action in another has begun, which in turn will demand fulfillment after is own suspension. The delayed satisfaction of these expectations occasions the second phase of the technique: the interlock. (1962, 19)

Example 1 demonstrates these two principles at work in this music; each of the musical figures is stratified through its abrupt juxtaposition with another,[5] and all but the second dancer's music is continued through interlock.[6]

The formal construction of *Petrushka's* opening scene leads us toward the main topic of this study in two ways. *Petrushka* was the only Stravinsky score that Debussy praised unequivocally.[7] Most importantly, it was this work that prompted Debussy to either adopt or more fully explore many of the ideas he found most appealing in Stravinsky's music, including octatonic harmony and an opposition between diatonic and chromatic writing. The cinematic aspect of *Petrushka's* formal construction provides the second connection here, since Debussy was greatly impressed by this new art form. Richard Langham Smith has written on the connection between Debussy and the cinema, and he makes a strong case that Debussy's conception of form derived from an attempt to create an *enchaînement* of musical ideas that both defies analysis and is intuitively satisfying (1973, 69). Rebecca Leydon (2001) has more recently clarified the musical means with which Debussy emulated cinematic techniques

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in his late works. Debussy's conscious break with traditional musical syntax was prompted by the composer's love of the visual arts, which was so great that he wrote in a letter to Varèse on 12 Feburary 1911 that "I love pictures almost as much as music" (Lesure and Nichols 1987, 237). The advent of the cinema, which began in Paris in 1895 and developed rapidly, impressed Debussy so much that after viewing Louis Feuillade's 1913 film *L'agonie de Byzance* with music by Moreau and Février, he began to see film as key to the renewal of music.

> There remains, however, one means of renewing the taste for symphonic music among our contemporaries: to apply to pure music the techniques of cinematography. It's the film—the film of Ariadne—which is going to allow us to escape from this disquieting labyrinth. M. Léon Moreau and Henry Février have just supplied the proof of this with great success. (Lesure and Langham Smith 1988, 298)

The years in which Debussy was first exposed to the music of Stravinsky and began to realize the important role cinematic techniques could play in music (1911–13) were also those in which he composed his second book of preludes for piano. It is therefore no wonder that several of these works display a formal organization that can most clearly be revealed through the application of Cone's theory.[8] "Ondine" is the most thoroughgoing of Debussy's works to employ this formal construction; in this regard, it is comparable to Stravinsky's *Symphonies of Wind Instruments*. Before moving on to an analytical discussion of this work, however, it is necessary to consider Cone's theory in more detail.

Alexander Rehding (1998) has recently compared the various methods used by writers including Hasty, Kramer, and Straus in their analyses of Stravinsky's *Symphonies of Wind Instruments*. Rehding begins his article with a critique of Cone's theory that attempts to encapsulate the reasons it has been rejected. Rehding's critique centers around a quote from Stravinsky; ironically, this same quote appears at the end of Cone's article where it is hailed as an authoritative endorsement of his theory. This quote concerns the fugue from *Orpheus*:

> "Here, you see, I cut off the fugue with a pair of scissors." He clipped the air with his fingers. "I introduced this short harp phrase, like two bars of an accompaniment. Then the horns go on with their fugue as if nothing had happened. I repeat it at regular intervals, here and here again." Stravinsky added, with his habitual grin, "You can eliminate these harp solo interruptions, paste the parts of the fugue together, and it will be one whole piece." (Nabokoff 1949, 146)

Since this quote is used to support mutually exclusive positions, a closer examination of this passage is perhaps overdue. Examples 2a and 2b show the third scene from *Orpheus*: the fugue is presented in Example 2a

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Example 2a. Stravinsky, *Orpheus*, scene 3 (fugue)

Example 2a (continued)

Example 2b. Stravinsky, *Orpheus*, scene 3 (harp solo)

without the harp solos; the extracted harp line is then presented in Example 2b. The points of interruption from one line to the other are indicated, and numbers above each passage show the chronological ordering of these events.

A change in texture, rhythm, articulation, and a decrease in general density certainly distinguish the harp solo from the fugue. Both Rehding and Cone agree on this point. I would argue, however, that both writers are wrong to cite this passage as a representative example of Stravinskian stratification, similar in construction to *The Rite of Spring* or the *Symphonies of Wind Instruments*. I hear this scene instead as a continuous whole, albeit with minor interruptions. Several factors lead me to this conclusion. First, although Cone admits that in a stratified score "there is at least one element of connection between successive levels" (1962, 19), the harp is heard throughout this entire scene, which contains five such shifts. Furthermore, the harp always carries the ostinato bass line; its solos simply add the accompanimental figure above this bass line. The construction of this ostinato bass also contributes to the feeling of continuity. In the fugue above, the bass line repeats its D–E–F–G figure only in the measures that surround the points of interruption. The score, however, is written so as to scrupulously avoid any such repetition, and instead represents a prime example of the cellular construction identified by Messiaen and explored by both Boulez (1968) and Barraqué (1954). Finally, the harp solos always appear at the end of fugal episodes and lead directly to restatements of the fugue subject. Therefore, these harp interruptions, rather than representing an entirely different line, fragments of which are interspersed within the fugue, are perhaps best seen instead as orchestrational transitions used to end each fugal episode.[9] Stravinsky was notoriously tight-lipped about his music, and so disputing the quote Cone cited as authoritative proof of his theory in no way diminishes the theory's legitimacy. Yet both Rehding's and Cone's views on this quote need to be interpreted in the context of true Stravinskian *drobnost'* rather than the final scene of *Orpheus*, which only points toward this technique.

Rehding does not dispute the fact that Stravinsky virtually defines stratification with this quote, although he argues that interlock in the *Symphonies of Wind Instruments* does not work in the same way that Stravinsky describes. Instead, Rehding writes that "the material is not so much picked up where it was left, but instead disconnected (or inconspicuously connected) adjacent sections are often modified by their immediate contexts" (1998, 39).[10] Stravinsky claimed that pasting the parts of the fugue together would form a whole piece. The question then is whether a whole piece can be composed of strands of music that are not seamlessly joined. The answer is seemingly no; the breaks would seem to imply transitions. Yet for a composer such as Stravinsky, who according to Taruskin (1996, 956) turned the concept of *drobnost'* "into a high esthetic principle," the

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1. *Title card:* The Great Train Robbery.

2. *Long shot:* Telegraph room. As a train passes window bandits hold up telegraph operator. They hide under a table as the train halts, then knock out and tie up operator. Bandits leave.

3. *Medium long shot:* Train draws up to a water feed. Bandits approach train and assault driver when he attempts to escape.

4. *Medium long shot:* Inside train. Guard surprised by bandits, who shoot him. They blow up the strongbox.

5. *Medium long shot:* Rear view of moving engine. Bandit overpowers driver. Fireman attempts to hit second bandit with shovel, but is overpowered and thrown over the side of train.

6. *Medium long shot:* Oblique view of side of train. Driver is made to get down at gunpoint. The engine is slipped.

7. *Medium long shot:* Other side of train, a less oblique view. Passengers dismount and are held up. One who tries to escape is shot. The bandits rob the passengers and make off.

8. *Medium long shot:* Side view of engine. The bandits, carrying their loot, climb rapidly onto the engine and drive it off into the distance.

9. *Medium long shot:* Side view of engine. Bandits leap from train, with loot, and run off into wooded siding. Camera pans to follow them into woods.

10. *Long shot:* The woods. Bandits move forward between trees, mount horses, and ride away. Camera pans to follow them.

11. *Medium long shot:* The telegraph office. Operator lying unconscious on floor. His little daughter comes in with his lunch, sees him on floor, tries to revive him, unties him, throws water in his face. He revives.

12. *Medium long shot:* Barn dance in progress. After some time it is interrupted by the entry of the now-recovered operator, who leads the whole party out.

13. *Medium long shot:* The woods, a road. Pursuit towards camera with gunfire. One man is shot, falls off horse. Another dismounts to aid him.

14. *Long shot:* The woods. Bandits sharing loot are surprised by pursuers. All bandits are shot and the loot recovered.

15. *Close up:* Moustachioed man. He raises hand holding pistol into view, points it at the audience, and fires.

Example 3. List of scenes in Porter's *Great Train Robbery* (1903). Adapted from Robinson (1981, 39–40).

answer is clearly yes. I will argue that even in the case of a stratified work by Debussy, the answer to this question is still yes. The connection between stratified form and cinematic techniques mentioned above provides the context necessary to make this argument.

The history of the early cinema reveals that early filmmakers, with experience drawn from both photography and the theater, were able to quickly explore the technical possibilities now available to them. These included the traveling shot, exploited in a Lumière film of 1896 made from a gondola sailing down the Grand Canal; extreme close-ups, used in the George Albert Smith film *Grandma's Reading Glass* from 1900; film reversal, so easy an effect that short films were often shown first forward, then backwards for comic effect; enlarging or reducing an image, found in Georges Méliès's film *L'homme à la tête de caoutchouc* of 1901 in which a man's rubber head is inflated until it explodes; and substitution (stopping the camera and changing the scene before restarting it), found in *The Execution of Mary Stuart* of 1895, which contains a convincing depiction of a beheading. As advanced as these camera techniques were, these early films—unsophisticated efforts that were certainly not considered works of art—could not be expected to have influenced Debussy the way that later films did. This is because, as film historian David Robinson notes, "by 1900, the film's visual vocabulary had been recognized. Only gradually was the idea of a syntax appreciated, the notion that the essence of cinema is the juxtaposition of shots into an expressive continuity" (1981, 36).

While advances were being made in camera techniques, film continuity was maintained in the simplest way possible, through a single shot of a single scene. Edwin Porter's 1902 film *The Life of An American Fireman* represented the first step toward the modern conception of cinematic montage. Porter exploited imagery of fire—one of the most popular subjects of the early cinema—and built a film around various scenes of fires and firemen, adding some additional material of his own. From this, he constructed a dramatic film that is little-known today but widely discussed in film history, as it was the first to show that "the meaning of a shot was not necessarily self-contained but could be modified by joining the shot to others" (Reisz and Millar 1981, 17).

Porter became more sophisticated in his use of montage in his next film, *The Great Train Robbery* of 1903, introducing the ideas of parallel and overlapping action. Each of these techniques is revealed by the description of the movie's individual scenes in Example 3. Through the use of montage, Porter was able to convey a complex plot by cutting between the various storylines. While it was technically possible to record the complete chronology of each storyline and cut from one to the other, Porter avoided such a pedantic narrative. Instead, action in Porter's film is continued from one shot to the next, thus creating an illusion of con-

tinuous development that the spectator views as a single continuous event (Reisz and Millar 1981, 18). Most notable in this regard are scenes 10–14: scene 10 shows the bandits' escape, which is interrupted and therefore stratified by scenes 11 and 12, which reveal how the posse is formed. Interlock is felt between scenes 10 and 13, 11 and 12, and 13 and 14: despite the fact that the first of these pairs of scenes is separated and the latter two pairs are successive, there is implied action represented by the chronological break between all three pairs of scenes. Synthesis of these two storylines occurs in scenes 13 and 14, as the posse, having now been formed, pursues and eventually captures the bandits.

It can be dangerous to impose the techniques of one artistic medium onto another. Yet there is a telling connection between cinematic montage and stratified musical form: both developed within years of one another, and both use the same basic techniques of stratification, interlock, and synthesis to insure coherence. Given Debussy's attitude toward the cinema and the overwhelming reaction that *Petrushka* and its latent *drobnost'* made on him, it is clear that both encounters played a role in the development of stratified form in his music. With their shared syntax, it seems reasonable to assume that interlock in cinema and music could be used in roughly the same manner. Porter's films provide proof that, with separate strands of a storyline interrupted by another shot, the second strand need not continue precisely from where the first left off; audiences were sophisticated enough to fill in the missing action. Music is, of course, a language far less explicit in meaning than that used in the cinema, and so it would be significantly more difficult for an audience to infer the missing transitions between strands of a musical line within a stratified texture. This is not to say, however, that composers would have completely avoided this technique. Indeed, the reception of Porter's films provided enough incentive for composers to adopt his ideas in their compositions:

> The film [*The Great Train Robbery*] is naïve enough by our standards; but the enthusiasm with which audiences throughout the world greeted its appearance indicates how momentous were Porter's discoveries. Audiences knew only that the film stirred and excited them more than anything they had seen on the screen before. (Robinson 1981, 38–41)

Cinematic technique was invoked above to refute some of the critiques made against Cone, and cinematic technique will again be cited, now to highlight two perceived weaknesses of Cone's theory. The contemporary reception of Porter's films mentioned above revealed that audiences were more excited by Porter's films than by any film they had previously seen. One explanation of Porter's success involves a technical description of his montage technique that has ramifications on Cone's theory as well: "few [of the audience members] perhaps recognized that

the drama and emotional power were generated by Porter's juxtaposition of shots and images, rather than the individual content of those shots" (ibid., 41).

Porter's films benefited from the techniques of stratification, interlock, and synthesis, which are inherent in the concept of narrative montage. Yet there is still another element that contributed to the effect his films had on its audiences: the cumulative effect engendered by cutting between shots. The same is true for stratified scores. In other words, Cone's graphic sketches clearly reveal the separation of the work into its component musical lines, the coherence achieved through linking the strands of each musical line, and the eventual synthesis of these lines. Reading Cone's graphs event-by-event, however, is little more than viewing the score in shorthand notation. What is almost completely lacking is a method by which the overall shape of the work is formed, not just within each individual line, but through the juxtaposition of successive events as well.[11]

Cone's theory is, in fact, sensitive to the connections felt between adjacent sections: that he reveals these connections in his analytic sketches only through the use of broken lines, barely mentioning them in his analytic prose, is certainly the prime reason that this aspect of Cone's theory has virtually gone without notice.[12] Cone's interest in the connections between both adjacent and disconnected events is apparent in his instructions on how to read his analytic sketches, yet the brief paragraph below represents the only discussion of these connections:

> The thematic material represented by the capital letters is easily identifiable through the corresponding rehearsal numbers in the score; my own notation presents the minimum necessary for following the important lines of connection. These should be read first of all straight across—from the first appearance of A to the second, thence to the third, and so on. If this is done, the continuity of each layer should become immediately clear. When the voice leading is unusual, or when it has been abbreviated in the sketch, paths are made by unbroken lines . . . . Broken lines are used to show connections and transitions between areas, divergences, and elements of unification. (1962, 21)

Cinematic theory involving the temporal duration of shots can help to isolate another shortcoming of Cone's theory. Porter introduced montage into the filmmaker's technical vocabulary, while the films of D.W. Griffith represent further refinement in this area.[13] Griffith's camera technique was most noted for its "juxtaposition of images and the speed and rhythm with which they were cut" (Robinson 1981, 59). This refers to the proportional duration between shots, which applies directly to adjacent events in a stratified score. Cone approaches this topic in his discussion

of tempi within the *Symphonies of Wind Instruments*. Cone notes that if ♩ = 72 is taken as the common measure, the various tempi of this work relate to one another as simple ratios, which helps to unify the work.[14]

Cone's terse treatment of the connections between adjacent events and the proportional duration between events are precisely the points of departure for the theorists cited above (Kramer, Somfai, and Hasty), who have sought to further explain the discontinuity in Stravinsky's *Symphonies of Wind Instruments*.[15] For example, Kramer sees in this work the origins of Stockhausen's concept of moment form, in which

> each individually characterized passage in a work is regarded as an experiential unit, a 'moment,' which can potentially engage the listener's full attention and can do so in exactly the same measure as its neighbors. No single 'moment' claims priority, even as a beginning or ending; hence the nature of such a work is essentially 'unending' (and, indeed, 'unbeginning'). (Hopkins 1980, 18:152)

Thus, for Kramer, form in this work is primarily accomplished through an accumulation of moments governed by the durational ratio of 3:2.[16] Kramer's analysis is ultimately a detailed investigation into the proportional relations mentioned briefly by Cone.

The work of Somfai and Hasty is related in a similar fashion to that of Cone; their investigations into the connections between adjacent events grow out of the broken lines that Cone uses to point out unspecified connections. Somfai goes so far as to claim to find organic coherence in the *Symphonies of Wind Instruments*. As Hasty so eloquently summarized, however, "after following the conventional motivic analysis and numerous schematic diagrams, the reader is likely to be left with the impression that if there is an organic unity here, it is a sadly impoverished one compared to those of the tonal masters" (1986, 62). Hasty instead recognizes the discontinuity in this work and even adopts Cone's identification of musical lines. Yet absolute discontinuity is, for Hasty, an impossibility; he recognizes only the relative discontinuity of this piece, which implies that musical coherence is at least partly achieved through connections between adjacent events. Among the connections that Hasty points out, several are actually found in Cone's analytic sketch: these include the harmonic similarity between the opening "bell motive" and the initial chorale, the synthesis between these two ideas at rehearsal 6, and the transitional material that precedes this synthesis by two measures.

While Kramer, Somfai, and Hasty are all critical of Cone for various reasons, their analyses and Cone's theory are not mutually exclusive. Instead, it is as if these writers pick up where Cone leaves off. This is hardly a surprise, for even nine pages of Cone's penetrating and laconic analysis can hardly do justice to a work as complex as Stravinsky's *Symphonies of Wind Instruments*. Thus, when Cone includes a single sentence of clar-

ification regarding the use of broken lines in his analytic sketches, or a single table of tempi, other writers could devote whole studies to ideas so pregnant with meaning. I would argue that this is precisely the relation between Cone and these other writers.

Kramer's detailed investigations into the proportional duration of events in the *Symphonies of Wind Instruments* is, as noted above, set in the context of moment form. Stockhausen would publish his ideas on moment form only in 1963; the tentative nature of Cone's 1962 exploration in this direction is therefore understandable. It is curious, however, that Cone chose to reveal connections between adjacent musical events—certainly a well-established analytic process—through the use of broken lines only: it is possible that such connections for him fell either uncomfortably close to or entirely under the category of a composer's "absolute decision," which he defines as a choice "so fundamental to the composer's conception of his work as to belong, so to speak, among its basic assumptions. . . . i. e. decisions for which no adequate analytical reasons can ever be adduced" (Cone 1967, 43). Cone's broken lines clearly point out the connections between nonadjacent events, but any further analysis in this direction—any analysis which would seek to find the reasons behind the succession of events notated by Stravinsky—would perhaps have passed in the realm of what Cone readily admitted was beyond analysis. This is a disheartening notion, as it calls into question the limits of music theory and even the validity of certain types of analysis. Cone goes on to recognize, however, "the great debt we all owe to increasingly rigorous methods of analysis." As noted at the beginning of this study, there has been an explosion of Stravinsky scholarship since the publication of Cone's article. Thus, some of what was beyond analysis for Cone in 1962 is certainly no longer so today. This list would include the following analyses of both "Ondine" and "Brouillards," which adopt and modify Cone's theory to show that Debussy was actually the first composer to employ this formal scheme in his works.

"Ondine" was compared to the *Symphonies of Wind Instruments* above since both works represent the *locus classicus* of stratified form for both composers.[17] Yet there is one crucial difference between the formal organization of these works: stratification in the *Symphonies* separates the opening "Bell" motive from the initial chorale at No. 1,[18] both of which share four of five pitch classes, while stratification in "Ondine" separates two harmonically dissimilar motifs. In this regard, "Ondine" is much closer to the *Symphony of Psalms,* which Cone's analysis shows to be stratified into layers separated primarily by their harmonic content. This is, in fact, typical of Debussy's stratified works. There are five separate musical lines in "Ondine," each accountable to a unique group of scales:[19] Line A to D lydian/major, Line B to OCT_0, Line C to E♭ lydian, Line D to WT_1, and Line E to OCT_1. Each of these lines is begun in the

Example 4. Debussy, "Ondine" (Preludes, Book 2),
mm. 1–7 (reduction)

first ten measures of this prelude. The rapid changes of motive, harmony, register, and texture here are typical of the opening measures of a stratified texture. Yet certain aspects of these measures require explanation in terms of Debussy's modifications to this formal model.

The opening seven measures of "Ondine" (Example 4) represent the prelude's first main idea and contain the opening strands of lines A and B. In the first three measures, a dominant major thirteenth chord on A is formed and arpeggiated. This chord is then interrupted in the fourth measure when the octatonic trichord (0,1,7) is stated and transposed by minor third to form a six-note subset of OCT_1, and then transposed again by semitone to break confinement to this collection.[20] The abrupt juxtaposition of these two ideas continues in mm. 5–7. On rehearing, it is clear that the dominant thirteenth chord has the (0,1,7) trichord embedded in it as its seventh, third, and thirteenth. When this trichord then appears independent of the dominant function, the following six chords are contained briefly within multiple octatonic collections. Yet the rapid movement through these collections and their rhythmic grouping, which does not coincide with the harmonic grouping, prohibit octatonic accountability from being unambiguously projected. Instead, these measures can only hint at pure octatonic harmony.

The abrupt juxtaposition of these two motives stratifies these measures into two harmonically distinct lines. Yet at the same time, synthesis between the two lines is felt when the octatonic trichord is heard embed-

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ded within the dominant thirteenth chord. <mark>Synthesis, says Cone, is "the necessary goal toward which the entire composition points," when "the diverse elements are brought into closer and closer relation with one another, all ideally being accounted for in the final resolution"</mark> (1962, 19–20). Although Cone does not forbid the appearance of synthesis so early in a work, it is nevertheless intriguing that a technique used to bring about unification is felt so early in "Ondine." It is as though, in spite of the clear separation of these two lines, Debussy also wished to show that octatonic line B has its origins in diatonic line A.

Another instance of synthesis is heard in mm. 8–10 (Example 5), which represent the prelude's second main idea and contain the opening strands of lines C, D, and E. This new idea consists of nothing more than ascending runs over a bass pedal, although these measures are harmonically ambiguous. The strongest harmony projected is undoubtedly a dominant thirteenth chord on B♭; the bass pedal provides the root and fifth while the boundary pitches of the runs yield the seventh, third, and thirteenth. These last three notes project the (0,1,7) trichord partitioned identically to its appearance in line B (aside from octave doublings). Finally, the runs alone form an almost-whole-tone hexachord, the G alone exceeding accountability to WT_0.[21] Measures 8–10 therefore serve as the opening strands of lines C, D, and E, synthesized into a single musical idea. The careful manner in which Debussy initially stratifies, then synthesizes, lines A and B is perhaps intended to show that the initial stratification of lines C–E is unnecessary. That strands of lines C–E are initially grouped together later in the work is proof of their common source in the prelude's second main idea.

The similarity of material between the strands of lines A and B in these opening measures contributes to the interlock that connects these separate events. Despite the fact that interlock has already begun, a feel-

Example 5. Debussy, "Ondine," mm. 8–10

ing of incompleteness is nevertheless felt after these introductory measures are heard. The abrupt motivic juxtaposition contributes to this effect; equally important in this regard is the harmonic ambiguity of these motives. Line B hints at several octatonic collections while projecting none of them; line D hints at octatonic continuation only by association with its embedded (0,1,7) trichord. Line E implies whole-tone harmony through the melodic projection of a five-note subset, and Lines A and C imply diatonic continuations through the resolution of their dominant functions. While each of the musical lines is harmonically distinct, none is unequivocally stated. Unambiguous harmony arrives only later. Interlock between the prelude's introduction and main body is therefore strengthened by a motion from harmonic ambiguity to clarity.[22] This is an idea found in several other preludes in this second book, including "Les tierces alternées," "Feuilles mortes," and "Feux d'artifice," that is completely absent in Stravinsky's stratified works.

Rehding's critique of Cone's theory—his restriction against any gaps appearing between strands of a single line—was refuted above with reference to cinematic montage: audiences were sophisticated enough to infer implied action between strands of a single storyline in the films of Porter. The same is true in "Ondine," since interlock between strands of each of its five lines is remarkably clear. Several factors help to make this so, including the initial motion from harmonic ambiguity to clarity in each of the lines, as mentioned above. The relative continuity—in other words, the small amount of material Debussy requires the listener to infer—between strands of each musical line further ensures coherence,[23] as can be seen by connecting the strands of each line in the sketch of "Ondine" shown in Example 6.[24] The various strands of lines A and C combine to create a coherent whole; only the gap between the last two strands of line A requires an implied transition. Lines D and E play a less prominent role in this prelude, yet they too form coherent progressions. In the case of Line D, a transition between its opening two strands of music is stated outright, rather than implied, in mm. 30–31. This transitional material is heard again in mm. 42–43 immediately after the final strand of line E. This second transition, however, acts only on a local level, isolating the shared tritone Db–G between octatonic lines E and B. It is therefore the shift in collection from OCT_1 to OCT_0 alone that clarifies this jump between lines. Aside from this passage, interlock between the remaining strands of line B is immediately obvious.[25]

There are, admittedly, several instances where pasting together the separate strands of a given line produce less than a fluid, coherent, whole. For example, line E is heard in three strands: the first hints at the whole-tone scale, the second confirms the appearance of this harmony, and the last projects this scale weakly (scale notes are projected on the strong beats of the hemiola meter, and are connected by chromatic passing

Example 6. Debussy, "Ondine"

Example 6 (continued)

Example 6 (continued)

notes). The last strand does not provide a clear sense of closure to this musical line. This is due in part to the relative sense of motion and closure inherently possible within a whole-tone context. The relation between symmetrical scales, their lack of traditional harmonic progress, and the resulting harmonic stasis that ends only through an abrupt change of material, is in fact the one factor of Cone's theory that van den Toorn singles out to criticize (1983, 62–63 and 466).

Independent lines are frequently synthesized in "Ondine," generally through the projection of a diatonic function in a passage accountable to either whole-tone or octatonic harmony. Such a passage is found in mm. 18–19, which synthesizes lines A and B. Separate strands of these lines appear immediately before these two measures: the opening strand of line B confirms its accountability to OCT_0 while line A provides tonic resolution to the dominant function heard in the introduction. Once stability within each of these lines is established, they are fused together in mm. 18–19, where a return to dominant harmony occurs using the same pitch material as in the previous strand of line B (only the pedal D is non-harmonic to both lines here).

These preliminary instances of synthesis anticipate the final synthesis within "Ondine," which is accomplished in just as clear a manner. Lines C–E stem from the second main idea of the prelude's introduction and are continued only after lines A and B are picked up in mm. 11–31. After this twelve-bar burst of activity within lines C–E, only line D is heard again.[26] Thus, lines C–E are secondary in importance to lines A and B; in tonal terms mm. 32–43, linked by a common E♭ pedal, serve as an upper chromatic neighbor to the D pedal heard when the tonic function is projected within lines A and B in mm. 11–31. These pedal pitches are in fact the key to the overall synthesis of the prelude. The interaction of lines A and B in these measures is unified by chromatic voice-leading: line B projects the pedal pitches E♭–A, while line A resolves this figure to D-A. Similar voice-leading, now between E♭–B♮ and E♭–B♭ pedals, unifies the appearances of lines C–E here. It is precisely this semitone voice-leading, used to unite diatonic and chromatic lines in the body of the work, that appears in the prelude's final measures as the tonic triad is repeatedly altered to a major mediant function and back again. Christopher Hasty has chided Cone on the subject of synthesis: while Cone writes that synthesis between all lines ideally occurs at the end of a stratified work, Hasty thinks that Cone does not demonstrate this type of synthesis in his analysis (1986, 65). Lines C–E are not explicitly accounted for in the overall synthesis; these secondary lines are assimilated into lines A and B through their clear neighboring function mentioned above.[27] The obvious method used to synthesize lines A and B in the prelude's final measures, however, perhaps provides evidence that overall synthesis is indeed possible.

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"Brouillards" represents a different facet of Debussy's handling of stratified form. It shares several characteristics with "Ondine," including the containment of each musical line within a distinct scale collection, a strengthening of interlock by way of a motion from harmonic ambiguity to clarity,[28] as well as an interaction between diatonic and octatonic harmony. "Brouillards," however, also features a continuous, rather than discontinuous, texture, and its overall motion is not from stratification to synthesis, but instead there are repeated motions in the opposite direction. The differences that separate "Brouillards" from "Ondine" represent a refinement in Debussy's conception of stratified form. The means by which Debussy achieved these refinements is related to the unique structure of this prelude.

The compositional idea that lies at the heart of "Brouillards" is an opposition between diatonic and chromatic harmony that is easily seen in the score. With the exception of relatively few measures, the piano's left hand presents a succession of triads from C major while the right hand superimposes over them chords composed primarily from pitches foreign to this diatonic collection. The most remarkable aspect of this prelude is its unification of both diatonic and chromatic harmony without ever losing sight of either of these individual elements. This complex interaction between competing harmonic elements is revealed through the application of Cone's theory when the prelude is separated into diatonic, octatonic, and chromatic lines—lines A, B, and C, respectively. The chords of the piano's left hand create the diatonic line, over which chords in the right hand are superimposed; both hands together form the octatonic or chromatic lines. Accountability between lines B and C is determined by the quality of the *complexes sonores* formed, which corresponds to a routine associated with one of these sets: superimposition of triads related by minor third or tritone are accountable to the octatonic set, and superimposition by semitone is accountable to the chromatic set.[29] The semitonal clashes between each of the members of the chord audibly relate these *complexes sonores* to the chromatic set, despite the fact that a complete aggregate is not formed.[30] Another factor helps to distinguish the octatonic and chromatic lines from one another: a unique tetrachord common to each strand of these two lines. The chromatic *complexes sonores*, or those associated with the mediant, submediant, and dominant functions in the opening refrain, form various sets, although the subset (0,1,7,8)— the clash between root and fifth of the two chords—is shared among them. Appearances of this set in the opening tonic chord of mm. 5–6 (C/G-D♭/A♭) and in the melody of the first episode (G-F♯-D-C♯) attest to its importance. The two octatonic *complexes*, or those that are related to the tonic and leading-tone functions in mm. 1–3 and 5–6, both form set (0,1,3,4,6,7,10). Although the octatonic subset (0,1,6,7) is not heard independently of this seven-note collection until the second episode, a simi-

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octatonic tetrachord (0,1,6,7)   chromatic tetrachord (0,1,7,8)

Example 7. Tetrachords in Debussy's "Brouillards" (Preludes, Book 2)

larity between this octatonic subset and the chromatic subset (0,1,7,8) is immediately apparent. While accountability of the *complexes sonores* in "Brouillards" to either the chromatic or octatonic line is made by the routine associated with these sets,[31] it is clarified by the relationship between these four-note subsets: that of the chromatic set is based on perfect fifths separated by a semitone, while that of the octatonic set is built from tritones related by semitone (see Example 7).[32]

Because of the construction of this prelude, synthesis between the diatonic line and one of the chromatic lines is almost continuously present, which explains the remarkable balance between these opposing elements. Cone's theory also clarifies the relationship between harmony and form: the prelude's refrains hint at both octatonic and chromatic writing, while confirmation of these harmonic sets appears in the prelude's episodes.[33] The transition material in mm. 18–20 is noteworthy in that it synthesizes all three lines simultaneously.[34] The repeated motions from synthesis to stratification mentioned above involve a progression from the synthesis of the three lines and harmonic ambiguity in the prelude's refrains to the harmonic clarity and synthesis of only two lines in each episode. This process toward harmonic clarity culminates in the prelude's final measures, where the chromatic elements of the right hand are almost entirely filtered out.[35] The diatonic line is most strongly projected here, with only brief reminders of the chromatic lines with which it had been synthesized previously. These features are shown in the sketch of "Brouillards" found in Example 8.

Previous analyses of "Ondine" and "Brouillards" isolate the tonal and post-tonal elements in these works and apply the appropriate analytic techniques. The results either ignore one aspect of the work entirely or the complex interaction of the competing harmonic systems. Both Schnebel (1964) and Parks (1980) favor the chromatic over the diatonic in their analyses of "Brouillards": Schnebel sees in this prelude the dissolution of tonality, while Parks' analysis identifies four pitch-class sets as the building blocks of the prelude. Roland Nadeau's analysis of "Brouillards" (1981) differs radically from that of Schnebel and Parks in that it emphasizes the prelude's tonal, rather than post-tonal, element. Nadeau describes the opposition between the piano's two hands as suggesting polyharmony, although he insists that tonality is inferred "no matter how mixed with unfamiliar elements" (Nadeau 1981, 38). The analyses of "Ondine" by Friedmann (1982) and Justin (1988) both treat the tonal and post-

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Example 8. Debussy, "Brouillards"

tonal aspects of this work separately, with little mention of how these two harmonic systems interact to create a coherent whole.

The analysis of these two preludes above reveals that Stravinsky's *Symphonies of Wind Instruments*, composed "à la mémoire de Claude-Achille Debussy" in 1920, was not the first absolute work to employ a stratified form; several of Debussy's own piano preludes from 1913 actually merit this honor. Our knowledge of the origins of Stravinsky's *Symphonies*—originally published as the chorale that would eventually become the conclusion of the entire work—raises the question as to whether the work's stratified form is a conscious act of homage to the originator of this form. The analysis of both "Ondine" and "Brouillards" was also intended to show that Cone's theory of stratification, interlock, and synthesis is sensitive to the complex interaction between these competing harmonic systems and malleable enough to accommodate Debussy's adaptations to this formal model. Cone's unique success in this regard raises questions, especially in light of the preceding discussion and refutation of his critics, as to why his article is so frequently cited while his theory has been largely abandoned.

NOTES

1. See, e.g., Hasty 1986; Kramer 1978, 1981, and 1988; Somfai 1972; and van den Toorn 1983.

2. It is for this reason that Taruskin—borrowing terminology from Stravinsky—describes the formal construction of this music as "*anecdotique*" (Taruskin 1996, 954).

3. Taruskin's rondo form is based on a large-scale repetition of musical ideas, not on the small-scale juxtaposition of musical figures. It is for this reason that his formal reading of the opening measures of *Petrushka* and the one shown below in Example 1 differ so dramatically.

4. Debussy's *Ibéria* is often cited as another example of formal montage, an idea reinforced by Debussy's letter to André Caplet from November 25, 1910 in which he writes, "You have no idea how 'Parfums de la nuit' slips quite naturally into 'Le Matin d'un jour de fête.' *Ça n'a pas l'air d'être écrit*" (cited in Langham Smith 1973, 69).

5. There are passages in which the musical figures are joined in a more seamless fashion. This occurs only rarely, and does not therefore weaken the stratification of the musical lines.

6. The simultaneous statement of figures that appears occasionally during this excerpt fuses the musical lines together. Cone refers to this process as synthesis, and it will be discussed more fully below. On this subject, Anthony Pople has commented "I am inclined to think his use of 'synthesis' . . . more likely to have been a pre-emptive strategy which by evoking ideas of development and unity tried to ensure the credibility of his theory among the community of scholars at which the article was directed." I disagree with Pople's statement for a number of reasons; my main disagreement with Pople, however, is this: it seems that rather than being aimed toward the academy, Cone's theory was instead aimed away from it. By this I mean that Cone's analysis is innovative, logical, and musical, and yet it is in no way technical. And having been written in an era about to witness the explosion of scholarship in atonal and serial theory, Cone's article—conspicuously lacking in details regarding harmony—was overshadowed by scholarship on the music of other 20th century composers.

7. Debussy answered Stravinsky's inquiry regarding *The Firebird* by saying "What do you want, you had to start somewhere?;' he compared *Zvezdoliki* to Plato's Harmony of the Spheres; and he eventually would describe *The Rite* as "une musique négre." For more information on Debussy's reaction to Stravinsky's works, see McFarland 2000.

8. In citing a cinematic influence in these works, I disagree with Rebecca Leydon (2001, 231), who finds cinematic ideas most obviously in *Jeux* and the Etudes for piano, both of which were composed after the Preludes for piano.

9. Stravinsky provides his own reason why he interspersed the harp solo into this fugue when pressed for an explanation by Nabokov:

   I asked him why did he introduce the harp solo. "What's the point of cutting up the fugue this way?" I said.
   He smiled maliciously as if he were introducing me to one of his private secrets. "But don't you hear? The harp solo is taken from another section." He turned the pages to the middle of the score. "It is a reminder of the Song of Orpheus." And he

added thoughtfully: "Here in the Epilogue it sounds like a kind of ... compulsion, like something unable to stop. . . . Orpheus is dead, the song is gone, but the accompaniment goes on." (Nabokoff 1949, 146–47)

10. Rehding here summarizes the more detailed critique of Cone by Kramer:

> If we put these fragments together, we hear a series of similar excerpts linked by smooth voice leading, but surely not an unbroken continuity. There is no musical line uniting the stratum. What Cone seems to mean is that each stratum is created by similarity of material (and tempo) and by voice leading. It is not true, however, that each stratum provides continual resumption of previously suspended activity. Each stratum heard by itself does not make musical sense. (Kramer 1988, 280)

11. Rehding's critique of Cone was discussed above in the context of implied music between strands of a line, yet his critique that "disconnected (or inconspicuously connected) adjacent sections are often modified by their immediate contexts" bears repeating here as it also alludes to this weakness (Rehding 1998, 39).

12. Kramer (1998, 280–81) is the one writer to comment extensively on Cone's connections, disagreeing with many of them based on his assumption that Cone's broken lines reveal voice-leading connections. In fact, only Cone's *unbroken* lines fulfill this function. Kramer's extensive critique of Cone in this regard is therefore based on a misreading.

13. Griffith's films are also heralded for their developments in the composition and framing of images and by the placement and movement of the camera. None of these techniques has a direct correspondence to stratified form in music, however.

14. Cone notes that the following note values are equal to 72 beats per minute: the quarter note in the B stratum; two eighth notes in the A stratum; three eighth notes in the C, D, and E strata; and four eighth notes in the F stratum.

15. Cone also provides a point of departure for the groundbreaking work of van den Toorn (1983). As mentioned above, van den Toorn (339–42) criticizes Cone for failing to discuss the motivation behind Stravinsky's block structures, instead explaining Stravinsky's formal rationale primarily in terms of the pitch relations within each individual block. Van den Toorn finds that the octatonic scale's symmetrical division of the octave and the resulting harmonic stasis (in tandem with contradictions in the rhythmic/metric design) motivates Stravinsky's abrupt block juxtapositions.

16. Kramer's view of Stravinsky's *Symphonies of Wind Instruments* has changed in the course of his publications on this work. In Kramer 1978 he proclaims this work as the first example of moment form. In Kramer 1981 and Kramer 1988, he sees this score as an impure example of moment form, where discontinuity is felt in the work's middleground, while motivic, harmonic, and voice-leading factors produce continuity in its foreground and background. It is Kramer's assimilation of Schenkerian concepts that lead him to question the supposed voice-leading connections indicated by Cone's broken lines, as noted above.

17. For a list of publications dealing with Stravinsky's *Symphonies of Wind Instruments*, see above. A similar list of publications dealing with Debussy's "Ondine" is found below.

18. The terminology for these musical ideas is taken from White (1979, 293–94).

19. Throughout this study, the whole-tone scale containing C will be referred to as WT_0, and its complement as WT_1. The octatonic collection ascending by alternat-

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ing half-steps and whole-steps from C will be OCT_0, from C♯, OCT_1, and from D, OCT_2.

20. The initial appearance of the (0,6,11) trichord in m. 4 (at two separate transpositions levels that nearly complete OCT_1) relates this trichord primarily to the octatonic set. Later appearances of this trichord reinforce this association, although Debussy also exploits this trichord's harmonic ambiguity elsewhere, as discussed below.

21. The D♯ at the end of this run is interpreted here as a chromatic passing tone.

22. It is because of this initial harmonic ambiguity that the scale collection to which each line is accountable is determined in the body of the prelude rather than in its introduction.

23. Christopher Hasty has pointed out the difficulty, if not impossibility, of identifying absolute discontinuity in his study "Succession and Continuity in Twentieth-Century Music." With this in mind, it would be at least as difficult to infer the implied transition between two separate musical ideas. The following analysis is intended simply to point out the audible connections that make separate strands of a musical line cohere.

24. This sketch, based on those of Cone, is not intended as a complete linear or harmonic analysis, but simply to reveal the interaction of the various musical lines. Changes have been made to Cone's notation in order to more completely reflect Debussy's adaptations to this formal model. For example, harmonic ambiguity is indicated through the use of brackets. Synthesis is also represented here by notation of the same passage in each affected line. Only the harmonic interpretation distinguish these lines from one another, as white noteheads signal accountability to the line's scale while black noteheads indicate notes foreign to this scale.

25. The link between the strands of line B in the prelude's introduction and the first strand in the body of the prelude requires some explanation. In mm. 4 and 6, this music ends with the trichord B♭–E–A; m. 7 is a motivic extension of this idea. This line continues in m. 11 with an initial B♭–A gesture, picking up not from the motivic extension, but from the end of mm. 4 and 6 with which it shares its two pitches.

26. This last strand of line D provides interruption between two strands of line B, thus delaying the return of this line's opening material.

27. Cone anticipated relations such as this when he commented that ==synthesis ==“is seldom as explicit as the original stratification, and it almost invariably involves the reduction and transformation of one or more components, and often the assimilation by one of all the others” (1962, 20).

28. Unlike "Ondine," the opening refrain and its harmonic ambiguity return throughout "Brouillards," thus highlighting the relative harmonic clarity of the episodes.

29. The entire black-note pentatonic set is superimposed over the dominant function in m. 4, these five notes partitioned with E♭ in the lowest position; these notes could therefore be classified as an E♭ rather than a G♭ chord. Regardless of root identification—which is difficult when added chordal elements are involved—the semitonal clashes with the root, third, and fifth of the dominant triad and the black-note collection audibly invoke the chromatic set, to which this routine is related. The identification of root in added-note chords will therefore be guided by the relative number of semitonal clashes between chord members.

30. An ideal example of this type of superimposition is found in the opening measures of the first piano étude ("Pour les cinq doigts"), where major pentachords on F♯ and G are superimposed. The chromatic space between the lowest (F♯) and highest (D) pitches is filled, thus forming set 9–1. The major pentachord is motivic to this etude, and thus allows Debussy to completely form a large subset of the total chromatic. In the majority of cases, however, Debussy superimposes triads and seventh chords related by semitone rather than major pentachords; see, for example, the dominant *complexe sonore* in "Brouillards," which also joins G and G♭ chords. As a result, there are often gaps in the chromatic space that is filled; in "Brouillards," the dominant *complexe sonore* lacks the pitches A and C (and sometimes A♭) in the chromatic space between the ambitus G♭ to E♭. Nevertheless, the similarity of compositional thought—an emphasis on the chromatic clashes formed by the two superimposed chords—relates this type of chordal superimposition to the chromatic set in both these passages.
31. Although I have chosen to separate the musical lines based on the interval that separates the superimposed triads, the same stratification can be achieved using the pitch-class set genera approach used in Parks 1989. Octatonic line B stems from set 8–28 and is represented in the prelude by its subsets 7–31, 6–30, and 4–9. The chromatic line stems from the set complex 8–20/8–27 (0,1,2,4,5,7,8,9/10), and is represented by the subsets 7–21, 6–Z19, and 4–8.
32. The formation of various sets through the transpositional combination of small intervals is systematically developed in Cohn 1991. For the application of this theory and its role in aggregate formation in Debussy, see McFarland 2005.
33. The rapid motion between octatonic chords related by tritone and chromatic chords related by semitone in the prelude's refrain clearly contrast with the obsessive superimposition of chromatically-related chords in mm. 9–15 and the unambiguous presentation of the octatonic "Petrushka" chord beginning in m. 29. The refrains are therefore enclosed in brackets, as the chromatic and octatonic chords there are not felt as strongly as they are in the episodes.
34. It is precisely the varying disposition of semitones within the octatonic tetrachord (0,1,6,7) and the chromatic tetrachord (0,1,7,8) that forms the multiple readings of the transitional motive in mm. 18–20. Transposition by tritone of the octatonic tetrachord maintains the same pitch content, so that within this transpositional motive both Neapolitan and dominant functions are represented. The latter reading of this tetrachord explains the strong harmonic motion felt between this transition and the return of the tonic function in the following refrain.
35. As mentioned above, "Brouillards" moves from synthesis to stratification rather than the reverse. It could be argued that the prelude's final measures represent synthesis rather than stratification; Cone did write that synthesis could be accomplished through the assimilation of lines by another. However, the diatonic line in this prelude does not assimilate the octatonic and chromatic lines at all; the diatonic line dominates the final measures only through their absence.

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