REPETITION AND THE DRIFT TOWARDS CONSTANT FOCUS IN THE PATTERN-PULSE WORKS OF TERRY RILEY AND STEVE REICH

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PREFACE

In a time when change seems to be the only thing we can take for granted in our existence, it is always hazardous and often unrewarding to speculate about any current state of affairs, especially where it will lead to, if we expect to attain any sort of permanent or absolute point of view. Any attempt to establish a permanent outlook on things would seem to be futile in light of the incredibly rapid as well as constant flux that has so permeated the 20th century. This ever-present flux has even caused a great many in scholarly circles to question the validity of speculation. In the field of history, for example, the growth, development, and influence of critical philosophy of history in the 20th century have come about as a result of contemporary skepticism regarding more speculative approaches of earlier historians. Thus, in the philosophy of history today, two main divisions emerge: speculative and critical. Although one of the primary reasons for the development of critical philosophy of history is often associated with the influence of 19th century Positivism, it would not be inconceivable to assume that the infringing presence of flux may have also contributed significantly; it should have certainly provided a more fertile ground for this development. Similarly, the trend towards critical thought has also occurred in philosophy, especially exemplified in the inception and influence of Logical Positivism of the

Vienna Circle in the development of British Analytical Philosophy--more specifically, Linguistic Analysis or the Ordinary-Language movement.

No doubt, if we are looking for permanence and absolute certitude, there will be definite shortcomings to speculative notions--no matter what field we deal with. However, speculation could prove to be of value, these shortcomings notwithstanding. For one, it could supply a substitute, if not at least a quest, for some kind of certainty. In any event, we would be begging the question if we were to expect certainty in speculation for by nature our views on the past, present, and future would not have the status of being speculative were it the case that they were founded on a high degree of probability and certainty. Secondly, speculation can be valuable in contributing a means by which to gain a foothold on an otherwise treacherous ground where only confusion might prevail and where any kind of orientation, no matter how transient, would be helpful for further thought and action. Thirdly, speculation could possibly furnish a route to new avenues which could, in effect, prevent stagnancy caused by entrenched modes of thought.

In light of the foregoing, it should be first stated that many aspects of this study will fall within the domain of speculation--especially since many of them have not yet been documented, let alone firmly established. When possible, of course, first-hand sources will be used to strengthen

speculative hypotheses. Nevertheless, many conclusions, in particular, will still be dependent upon a high degree of speculation. It is hoped that they will not lose any significance because of their speculative status and that what may be considered liabilities will, in turn, also be acknowledged as strengths.

In general, this study investigates the phenomenon of repetition as found in some recent music--in particular, the "pattern-pulse" works of Terry Riley and Steve Reich. The pervading belief of this study is that there has been a new and awakened interest in the use of repetition. Like many other parameters which have gained special attention in the 20th century, repetition has emerged as a prominent feature in much of the music of the last decade or so. In order to show this trend, a large portion of this study will be a comparison between pattern-pulse, serial, and aleatoric works.

It will be necessary to warn that this study is not an attempt to establish repetition as a necessary or sufficient characteristic of music or, for that matter, an ingredient for "good" music. Interesting and fundamental as they are, these issues, at most only implicit in discussions, lie beyond the confines of this study and might be more adequately dealt with in another study devoted exclusively to them. In general more attention will be given to description. It should also be noted that this study does not pretend to establish principles applying to all of the existent music in the last

decade. Rather, investigation will be applicable only to those works which exhibit a seemingly strong predilection for the use of repetition. This study might suggest, however, that our usual modes of listening, performing, and composing could potentially be enhanced or altered in some way with a new awareness of the fundamental force of repetition.

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CHAPTER I

THE EMERGENCE OF REPETITION IN PERSPECTIVE

Repetition and the Avant-Garde

Composers, as well as musicians at large, may have a tendency to view the history of music from a very subjective and even biased point of view. For instance, it is conceivable that, if asked to cite composers which have been the most important and influential in the 20th century, a composer with a more or less "Germanic" orientation in his music and ideas would probably point to Schoenberg, Webern, or Stockhausen. On the other hand, a composer having more of a "French" orientation may wish to point to Debussy, Varèse, or perhaps Xenakis instead. This difference in viewpoints reflects the longstanding contrast which has existed between the German and French traditions in the history of music[1]--the Germanic preoccupation with tonal, structural, and developmental principles contrasting the French concern with other aspects such as tone color, orchestration, fluidity of expression, and poetic nuance. It is possible, then, that a composer's opinions about music are dependent to a large degree upon his own musical predilections.

Perhaps by necessity, a composer is forced to take decisive stands fervently in order to maintain compositional productivity. His productivity may necessitate a deep and

ardent commitment to a particular point of view--whether it be regarding a minute technical detail or a general philosophical problem. Lack of commitment would possibly result in suspended or arrested activity. Yet, a strong commitment is not without its dangers. It could, in effect, blind a composer to the validity as well as the existence of compositional approaches different from his. It would be especially difficult for him to be open to other composers' works which employ what he himself had rejected as possibilities in his works. Remote from any epistemological concerns, his commitment may even blind him to the validity of his own approach.

In an article which appeared in 1972,[2] Elliott Carter, in a quote, points to repetition as one of the distinguishing features found in much of the avant-garde music of this century. If there is any legitimacy to what has been said concerning composers' attitudes, it would seem significant that Carter speaks of repetition for two reasons. First, repetition is not a notable characteristic of his works. Secondly, he has been an advocate and defender of complexity in music. And since repetition, as will be shown later, simplifies rather than complicates, its utilization would appear to be antithetical to complexity. In the article he also speaks about his own predilections:

> But repetitiveness, in itself, is the basic avante-garde ploy. And, since, I, personally, have been concerned with progression and change, my music does not sound like most avante-garde

> music. I've been more interested in how things act: how they change and develop and shift and contrast. In this rather simple way, my music is related to the historical past - to Bach, Beethoven, Mozart, Wagner, Brahms (even in Mahler there was an attempt at constantly progressive change) - rather than to the sort of neo-primitivistic thing avante-garde composers are doing.[3]

Assuming, then, that composers could be biased in their views due to their commitments, Carter's recognition of repetition in avant-garde music despite his own musical preferences would seem to indicate strongly that repetition has emerged as a significant force in recent music.

It would be difficult for anyone in touch with recent musical developments not to notice the deliberate and striking use of repetition in some of the music of the last decade. Pattern-pulse[4] works by composers such as Terry Riley and Steve Reich, exhibiting repetitiveness conspicuously, have been too unique to be overlooked. In a sense, they have, despite their novelty, already become monuments of a very individualized approach to musical syntax and rhetoric. Carter surely must have had these works, although not mentioned specifically, in mind when speaking of repetition. He does mention Satie, Stravinsky, and even Stockhausen and Cage as having been concerned with repetition. Certainly, the use of periodicity by Stravinsky and the static quality of some of the music by Satie and Cage support this notion. Yet, with the appearance of pattern-pulse works, repetition seems to have

gained more importance and status in the hierarchy of musical parameters. There has been no fear or compromise in its utilization and the resulting simplicity which it has caused seems to have countered the increase of complexity which has characterized the avant-garde music of the post-World War II generation of composers.

Repetition in the Context of Change and Pluralism

It may be difficult to see how repetition, a feature looked upon with some disdain by the post-War avant-garde, could, in such a short time, have become an important feature in recent music. This would seem particularly unimaginable in the face of the dominant tendency towards complexity in music highly influenced by serialism and technology. The feverish craze of post-Webern composers to organize and control almost every parameter in music imaginable clearly has exemplified this tendency. Certainly, this tendency has been unprecedented in previous eras. Parallels have been drawn to show similarities between Renaissance and serial music; yet it is quite clear that technical aspects in serial music have still been far more complex and thoroughly organized than those found in any earlier music.

On the other side of the spectrum, understanding the emergence of repetition is further complicated by the equally unique influence of chance in post-War music. The element of

chance in music has eliminated the aspect of organization and control to a large extent; pushed to an extreme, it has raised many basic questions concerning the nature of composition, performance, listening and just music in general. Essentially, the use of chance has destroyed traditional assumptions and habits associated with musical tradition. Hence, because of its association with musical tradition, it would not have been surprising to see the eventual demise of repetition as a viable feature in new musical trends. Instead, however, the reversal has taken place.

Explanations for the return of repetition into the ranks of respectability can be surmised in several ways. Obviously, this return can be seen as an inevitable consequence of change;[5] it would be difficult to deny the reality of change. Although there have been attempts to show that change cannot be necessarily taken for granted,[6] most have agreed that change is an integral part of our reality. A lot, of course, has depended upon one's definition and qualifications of the word "change." This kind of hair-splitting has consequently led to a variety of theories concerning historical change[7]--the cyclical (Greek), linear-progressive (Christian), and spiral (Vico and Spengler) being the most prominent amongst them. To accept change, however, as a general reason for the existence of repetition is one thing; an explanation of why this change has come about is another matter. Without any intention to

establish general rules, two hypotheses, insofar as they apply to repetition, will be advanced here.

The first hypothesis is based on the notion that there is a tendency for artists to strive for individuality and uniqueness. In other words, artists tend to look towards variety and change once styles become established. This view[8] seems to be based on the assumption that artists need a sense of individuality and thus react to what has become common practice.

While this theory offers a good accountability for the existence of divergent styles, it suffers from uncertainty that artists necessarily strive for individualization at all times. An artist, for instance, may desire and choose to operate within traditional modes--perhaps seeking to refine aspects of tradition. This attitude is often prevalent in some Eastern cultures where students are expected to master tradition before being concerned about individuality. There are, of course, especially in Western cultures, a number of artists who feel an explicit need for individuality as well as innovation in the creative process. Nevertheless, this kind of attitude cannot be generalized to include all artists.

In spite of its limitations, however, a "reaction" theory can certainly be substantiated if seen in the context of the turmoil, ferment, and polemics which have erupted since 1945. This context is seen clearly when scanning the divergent

thinking that has come from different quarters of the musical intelligentsia.

In his famous essay, Schoenberg is Dead, Pierre Boulez was less than tactful in his indictment of Schoenberg's work. Boulez's main point was that Schoenberg did not carry the implications of serialism far enough:

> What, then, was his ambition, once the chromatic synthesis had been established through the series, or in other words, once this coefficient of security had been adopted? To construct works of the same essence as that of those in the sound-universe he had just left behind, works, in which the new technique of writing should "prove its worth." But could that new technique produce convincing results if one did not take the trouble to explore the specifically serial domain in the structures? And I understand the word "structure" as extending from the generation of the constiuent elements to the total architecture of a work. In short, a logic of engendering between the serial forms, properly speaking, and the derived structures was generally absent from Schoenberg's preoccupations.[9]

Going further, Boulez charged Schoenberg with inconsistency in his use of preclassic and classic forms to organize architectures in the serial language, a language that

> ... was not consolidated by such architectures - but also the opposite happens, which is to say that those architectures annihilate the possibilities of organization inherent in the new language. The two worlds are incompatible, and, Schoenberg had attempted to justify one by the other.[10]

These attitudes of Boulez typified the attitudes of post-Webern serialists. Intending to carry serialism to its furthermost implications, especially those which were

suggested in the music of Webern and by all means beyond those found in the music of Schoenberg, post-Webern serialists expressed their dissatisfaction of the past with an almost evangelistic-like fervor. Sentiments and polemics exemplifying post-Webern serialism were particularly evident in the publication Die Reihe.[11]

On another front, those less enamored with rational control of musical parameters as a means of breaking with tradition found an expression for their dissatisfaction in the thought of John Cage. Often forgotten as a former student of Schoenberg because of his advocacy of chance, Cage represented the anti-rational revolt against tradition. Equally important were his contributions in opening up the world of music to the entire field of sound and the notion that our perception may play an important part in our experiences:

> Wherever we are, what we hear is mostly noise. When we ignore it, it disturbs us. When we listen to it, we find it fascinating. The sound of a truck at fifty miles per hour. Static between the stations. Rain. We want to capture and control these sounds, to use them not as sound effects but as musical instruments.... Given four film phonographs, we can compose and perform a quartet for explosive motor, wind, heartbeat, and landslide.[12]

Cage seems to have implied that any sounds, traditionally excluded from the musical domain, can be considered as music. This consideration would be dependent upon two factors: (1) if the composer allows these sounds to be incorporated into a composition, or (2) if these sounds are perceived as

music by a listener. If we allow that perception can be a determinant of whether or not something is music, it would seem that everything has the potential of becoming music. And further, if everything has the potential of being music, it would seem to follow that even that which is not organized or allowed into a composition can be music.[13] This latter conclusion, of course, opened the doors not only to the entire field of sound but also to the field of chance and probability. In short, the utilization of chance in the compositional process eliminated the predominance of rationalism in music.

Leonard Meyer has viewed the innovation of Cage and his followers as a denial of the reality of cause and effect.[14] He also contends that the "new art" resulting from this innovation represents the notion that man

> ... is no longer to be the measure of all things, the center of the universe. He has been measured and found to be an undistinguished bit of matter different in no essential way from bacteria, stones, and trees. His goals and purposes; his egocentric notions of past, present, and future; his faith in his power to predict and, through prediction, to control his destiny - all these are called into question, considered irrelevant, or deemed trivial. For these artists, writers, and composers - and, however influential they may be, it must be remembered that they represent only a small segment of the world of contemporary art - for these radical empiricists, the Renaissance is over.[15]

Obvious, though, as even Meyer acknowledges, the Renaissance has not been over for everyone. For while many enthusiasts have accepted chance wholeheartedly, others have

been skeptical and outspokenly critical of its validity. Having a concern for moderation and balance, those critical of chance have also been critical of serialism. In 1964, Billy Jim Layton, attempting to describe a new mentality among the younger generation of post-War composers, sharply criticized the previous generation for its "radical and extremist" solutions to musical problems. In addition, making predictions about the future, he also proposed some values that could reinstate some balance:

> What, then, will now replace radicalism? We may expect to see a resurgence of the true conservatives, a reaction by those who would wipe out the whole sorry episode and return to the old proven ways. Such a strengthening of the old guard is probably inevitable but the likelihood that the pendulum will swing instantly to the other side is hardly worth thinking about. The significant effect of the re-emergence of conservatism will be to act as a balance to radicalism. We are now going to hear a great deal of talk about moderation, sanity, tradition, communication, responsibility, sincerity, obligation, compromise, freedom of choice - all the old words associated with the conservative point of view. These words will no longer sound so hollow to our ears. Other words, missing from the vocabulary for some time, will reappear: feeling, emotion, content, expression, meaning, romanticism, love, faith.
>
> But the best hope for the world today, the direction, I am fully confident of, the important, vital music to be written, is that of a responsive and enlightened liberalism. The great central force at this moment in history, to be found in every corner of the globe, the overriding imperative is the drive towards integration. Any other course is suicide.[16]

Finally and most recently, we get a post mortem for the so-called Avant-Garde--the birth of the Post Avant-Garde from David Cope:

> Surprisingly, however, the avant-garde has remained one of the most conservative areas of musical thought: a philosophy in which, indeed, anything does not go. The very nature of the avant-garde concept binds the composer to reject the past and work within a multitude of limitations often surpassing those of the strictest of traditional contrapuntalists.
>
> Sensing the oblivion inherent in such rejection of the past, a number of composers have begun to accept the philosophy projected, but not carried out by the avant-garde; that is, truly "anything goes." Not a statement of rejection, this, but of affirmation: the Post Avant-Garde.
>
> ... It is no longer the new sound, the new device, the new trick, that becomes important, but the new work; no longer the shock value or esoteric meaning, but old-fashioned communication and beauty, on every possible level.17

Thus, it is easier to see the resurgence and revitalization of repetition against the background of these viewpoints spanning only a relatively short period of time. These divergent viewpoints, rich with polemics and often uncompromising in tone, have provided a setting in which the existence of repetition becomes less of a surprise and even an expectation in light of attitudes of Layton and Cope. In all, the morass of variegated and conflicting ideas about music found within the last quarter of a century has indeed supported the notion that much of the change in the arts results from the tendency among artists to react against norms and common practice.

The second hypothesis which might have bearing in the existence of repetition, to be discussed here, is associated with the thought of Leonard Meyer. Basically, he believes that the arts have reached a stage of pluralism.

> Continual change resulting in a multiplicity of styles and techniques has created genuine problems for the public, because each style demands a somewhat different way of perceiving and understanding and, consequently, different criteria for judging. For example, the way of listening to a composition by Elliott Carter is radically different from the way of listening appropriate to a work by John Cage. Similarly, a novel by Beckett must in a significant sense be read differently from one by Bellow. A painting by Willem de Kooning and one by Andy Warhol require different perceptional-cognitive attitudes. And these differences marked and major though they be are slight when compared to the differences between such "elite" art and the popular art of everyday commercialism. A culture which includes James Bond and Robbe-Grillet, the Beatles and Milton Babbitt, Coca-Cola ads and action painting is indeed pluralistic and perplexing.[18]

This pluralism is further characterized as possibly moving to a point when "not only will different contemporary styles be able to grow side by side ... but past styles will be able to coexist with these as valid, viable, and potentially vital constructs."[19]

Essentially, Meyer's notion of pluralism is based on the assumption that the art world may be moving into a period of stasis and stability rather than of continual change. This stasis is due to the cultural stasis brought about by an increasingly global and cosmopolitan world in

this century.[20] Even change will be consumed in a context of stasis.

> Change will be possible. But the invention of new constructs or the revival of earlier ones will not necessarily or even probably, produce cumulative development. Rather, because the constructs are considered to be formal entities theoretically, independent of one another, change will tend to take the form of a fluctuating stasis.[21]

On the surface, the concepts of change and pluralism may seem to be in conflict with each other since pluralism implies stasis rather than change. Yet, change can also be an inherent and even a necessary constituent of a pluralistic state since pluralism also implies the existence of diverse elements--perhaps resultant of change. Change, itself, could flourish more easily in a pluralistic context. Thus, change and pluralism can be profoundly interrelated. Meyer's notion of a fluctuating stasis would seem to be a most appropriate elucidation of this relationship.

Change and pluralism, then, may be seen as part of the fabric of a highly complex background against which the emergence of repetition has taken place. Although these aspects are not complete or definitive accounts, they furnish a general overview for placing in perspective the innumerable and divergent factors that have surrounded this emergence.

Repetition, Serialism, and Chance

Why, among many possibilities, has repetition in particular emerged as an important feature in the last two decades? This refinement of the question of why repetition has emerged in recent music would seem proper and necessary if we were to push our investigation further. Concepts of change and pluralism do not answer this question sufficiently; as was pointed out earlier, they primarily provide a background for the possibility of the existence of repetition. Secondly, they can provide a "raison d'etre" for any feature. We are still faced, then, with the specific question: Why repetition in particular?

In order to pursue this question, it might prove valuable to compare pattern-pulse works to two other influences which have been prominent in the last two decades, namely: serialism and chance. Although several works will be discussed in more detail later, some of the more basic considerations connected with the use of repetition and relevant to comparison will be discussed here:

1. Simplicity versus Complexity

In its most extreme form, the use of repetition in pattern-pulse works has represented a basic simplicity to musical syntax and rhetoric. Literal repetitions of small motivic cells have been so pronounced and clear that this simplicity becomes one of the more obvious characteristics

to be noticed. This characteristic, of course, diverges from the complexity that has been associated with serialism in its most extreme and advanced form.[22] The innumerable applications of serialism have encouraged and influenced composers to work with complexities demanding the aid of computer technology, especially for ease and efficiency in their manageability and organization.

The use of aleatoric procedures has also resulted in complex music. Some of the aspects contributing most significantly to this complexity have been the decreased predictability of musical events, the negation or denial of traditional relationships between these events, and the acceptance of accidents or non-intended events into the musical framework of a given work. It has been pointed out that, despite their difference in methodology, serial and aleatoric works often contain similar results.[23] That is to say, it could be difficult to decipher whether a given work was serial or aleatoric because of complex relationships between events. More specifically, the rigorous organization of events in a serial work may be so intricate, as a result of total serialization, that it would be imperceptible, and thus appear to be mere randomness or chaos. Hence, the dilemma in this situation indicates just how complex music has become as a result of serial and aleatoric procedures.

Complexity, of course, is not a necessary consequence of serial or aleatoric procedures.[24] Likewise, neither are serial

or aleatoric procedures necessities for the creation of complexity.[25] In all, however, given the almost infinite capacities of these procedures and, in addition, the motivation and enthusiasm to utilize these capacities to the fullest extent, complexity of the highest order can easily result. Thus, in comparison, the simplicity of pattern-pulse works has been a most striking trend.

2. Rhythmic Regularity

Closely related to the simplicity that has characterized pattern-pulse works has been the element of rhythmic regularity. Differing radically from the irregular and "irrational" rhythms of post-Webern music in particular, this regularity has been inseparable from concomitant effects achieved by other repetitious elements.[26] In fact, the regularity of rhythm, in most cases a reliance on driving and persistent eighth and sixteenth notes, has reinforced the conspicuousness of other elements. Further, this persistence, combined with gradual displacements and permutations of musical cells, has possessed the potential to induce an arresting and hypnotic psychological state on listeners willing to "stay" with the music.

In comparison, serial as well as aleatoric works have relied heavily on irregular rhythms in order to avoid traditional rhythmic gestures associated with rhythmic regularity. Rhythmic regularity in many of the works of Schoenberg may be, in part, a reason why he has been criticized as being

inconsistent, for post-Webern composers have extended serial principles to rhythm and duration,[27] in consequence, resulting in the creation of highly complex and irregular rhythmic structures. In contrast, the absence of control has been the cause for rhythmic irregularity in aleatoric works. In these works, rhythmic regularity has been obscured by the uncontrolled and random juxtaposition of rhythmic structures, most often, in themselves, being irregular. Thus, in general, rhythmic regularity has not been an element indigenous to the serial and aleatoric language, whereas it has in pattern-pulse works.

3. Implications of Tonality

The emergence of implications of tonality, themselves representing a form of repetition, has been one of the more striking and unusual aspects associated with repetition in pattern-pulse works--especially since tonality was avoided and reacted against fervently by the post-War avant-garde in serial and aleatoric works. It has been pointed out that serialism need not necessarily exclude tonality <u>in toto</u> since the serial principle deals with the ordering rather than with the selection of pitches in a series, therefore implying that serial music can incorporate tonal elements as, for example, exemplified in the music of Alban Berg. And Cage, himself, has not absolutely ruled out the legitimacy of tonal elements in an aleatoric context.

> It goes without saying that dissonances and noises are welcome in this new music. But so is the dominant seventh chord if it happens to put in an appearance.[28]

Nevertheless, there has also been an understanding that, the desire and intention to avoid tonal relationships are inherent in the motivation for the use of serial and aleatoric procedures. As far as serialism is concerned, rules stipulating that a series contain all twelve notes of the chromatic scale and that octaves be avoided are common examples of built-in safeguards for preventing possible encroachments of elements associated with traditional harmony in a serial context.

Pattern-pulse works, then, outwardly employing tonal centers, melodic structures derived from traditional harmony, drones, and other features associated with tradition, seem to have signaled a turn-around from the trend of atonality that has dominated avant-garde music since World War II. They certainly seem to substantiate the "reaction" theory discussed earlier.

4. The "Musical Process"

Composers, in their reliance on serial and aleatoric procedures, have had a consuming interest in the <u>compositional</u> process.[29] On the other hand, composers such as Steve Reich have been interested in the <u>musical</u> process. For him, the "distinctive thing about musical processes is that they determine all the note-to-note (sound-to-sound) details and overall form simultaneously."[30] He also states that he is interested in processes which are perceptible. Hence, the gradual quality is of prime importance.

> The use of hidden structural devices in music never appealed to me. Even when all the cards are on the table and everything, one hears what is gradually happening in a musical process, there are still enough mysteries to satisfy all. These mysteries are the impersonal, unintended, psycho-acoustic by-products of the intended process. Those might include sub-melodies heard within repeated melodic pattern, effects due to listener location, slight irregularities in performance, harmonics, difference tones, etc.
>
> Listening to an extremely gradual musical process opens my ears to it, but it always extends farther than I can hear, and that makes it interesting to listen to that musical process again. That area of every gradual (completely controlled) musical process where one hears the details of the sound moving out away from intentions occurring for their own acoustic reasons, is it.[31]

We can conclude from Reich that the musical process is at the center of the musical experience in the pattern-pulse work. Repetition aids in giving this process a gradual quality--which, in turn, aids in the perceptibility of the process. Finally, this perceptibility can lead to "psycho-acoustic by-product" or so-called "mysteries" of the process. The centrality of the musical process can be diagrammed in the following way:

Repetition ⟶ (Gradual) Musical Process ⟶ Perceptibility

Perceptibility, then, has been very important to the general success of pattern-pulse works. Fortunately, for this reason, it has been much more accessible in these works than it has in serial and aleatoric works. The problem of perceptibility in serialism, for example, is evidenced in the

profusion of writings designed to make serial works more clear, comprehensible, and perceptible to the musician and even to composers of similar mind, let alone the lay listener. Yet, even detailed and comprehensive explanations have not provided a remedy for the problem of hearing the complexities of serial processes and intricacies. No matter what, these complexities have been beyond perceptibility due to multi-parametric serialization.[32] On the other hand, processes and intricacies in pattern-pulse works have been practically laid bare to perception.

5. Change

Despite the abundance of repetition, change can still be seen as a vital aspect in pattern-pulse works. The aspect of change in pattern-pulse works, however, has differed from change in serial and aleatoric works in an essential way: the quantity of change, largely determined by the velocity with which it takes place.

In serialism, the principle of "perpetual" or constant variation is of prime importance since it reinforces as well as insures the equivalence of all constituents of a serialized parameter. In effect, this constant variation causes change to occur at a relatively rapid pace, and as was shown previously, often at a pace rapid enough to make aural perceptibility difficult. Repetition that does exist--mainly in the utilization of transpositions, mirrored forms, and even permutations--is still difficult to perceive since it is primarily confined

to the often intangible serial process. Therefore, unless repetition is utilized in more tangible elements such as "thematic" material if it exists or, for that matter, variations of this material, it will have very little effect on the velocity of change.

The velocity of change is less predictable in aleatoric works since there is obviously less control involved. However, depending upon the number of parameters involved in the compositional framework and the extent of operational rules, it would seem to be likely that, at least in comparison to pattern-pulse works, change would take place at a fairly rapid pace.

Change in pattern-pulse works has taken place at an extremely slow and deliberate pace due to the copious amount of repetition utilized. Obviously, this slow pace has been crucial to the delineation of musical processes which have concerned and interested Reich. In a way, the slow pace has also caused the tendency for each occurring change to be significant, if not at least perceptible, because of its deviation from the established norm, i.e., a context permeated with repetition. In short, change and repetition have been interlocking elements governed by musical processes; in turn, the musical process has depended upon this intimate interlocking.

6. Control and Chance

It might be evident that many of the elements discussed so far have been dependent, in one way or another, upon the element of control. Lest it will be misunderstood that control in pattern-pulse may have eliminated the element of chance or indeterminacy entirely, some mention should be made regarding the amount of flexibility of results in these works. We again turn to Reich for discernment in this matter:

> Musical processes can give one a direct contact with the impersonal and also a kind of complete control, and one doesn't always think of the impersonal and complete control as going together. By "a kind" of complete control I mean: by running this material through this process. I completely control all that results, but also I accept all that results with changes.[33]

It is clear that Reich desires a high degree of control, a by-product of repetition, especially when he speaks of "complete control." Yet, with the qualification "kind of," it is also clear that this control does not produce completely determinate results. And to a degree, like Cage and some serialists, he admits that he is willing to "accept all the results without change," implying that his control goes only so far. This kind of flexibility seems to allow for some chance. Certainly his works have borne this out for while they have contained an economy of means and alternatives, performers have still been able to exert some freedom of choice in determining durations of motivic patterns. Consequently,

the interaction between these patterns have been relatively open-ended and free.

Chance in serial works has been more subtle. Ernst Krenek gives a clear account of this situation when speaking about one of his works:

> It may be stated that whatever occurs in this piece at any given point is premeditated and therefore technically predictable. However, while the preparation and the layout of the material as well as the operations performed therein are the consequence of serial premeditation, the audible results of these procedures were not visualized as the purpose of the procedures. Seen from this angle, the results are incidental. They are also practically unpredictable because the simultaneous progress of highly complex rhythmic patterns at various relative speeds together with the corresponding transpositions of equally complex pitch patterns creates situations that defy precise visualization.[34]

On a basic level, then, chance exists in serial works because the actual unfolding of musical events or what Krenek calls "audible results," cannot be predicted or, most of all, realized synchronously with pre-compositional activity.[35] On another less subtle level, chance can exist in serial works in which sections of musical materials may be organized or chosen spontaneously in any random order, essentially affecting the overall form of works,[36] e.g., Stockhausen's Klavierstuck XI. This latter approach seems to represent attempts to blend serial and aleatoric procedures.

From our discussion here, it can be summarily said that the amount and location of chance in a given work has depended upon the kinds of control present in that work. Even aleatoric works have had stipulated controls. In general, pattern-pulse and serial works have differed from aleatoric works most obviously in the smaller amounts of chance allowed. In a sense, chance in pattern-pulse works and strictly serialized works, seems to have been somewhat similar to the extent that these works (for serial ones, during the pre-compositional activity) have contained some unpredictability and flexibility in what will precisely occur in the actual realization and unfolding of structured musical events. On the other hand, when comparing pattern-pulse works to serial works which have incorporated aleatoric procedures applying to larger and more obvious levels, a divergence has emerged regarding the location of chance. For although the lengths of performances have been indeterminate to a degree in pattern-pulse works, sequence of structured patterns or sections have been fixed and determinate. Thus, as has been indicated, chance has mainly existed at the internal-microcosmic level in pattern-pulse works. Quite the opposite, in serial works incorporating change, once realized on paper, musical structures (internal level) have been fixed, while the sequence or order of sections of structures (form) have been indeterminate. This summation might be best seen in the following way:

	Internal-microcosmic	External-macrocosmic
Pattern-pulse	aleatoric	fixed
Serial - aleatoric	fixed	aleatoric

7. Tendency Towards Macro-Gestures

It was seen earlier that for Reich, "note-to-note" details have been important; so have their audibility, facilitated by the gradual musical process. It was also seen that these details (change) have taken on added significance because of the context of all-pervasive repetition. This context, characterized by continuity, sustenance, elimination of phrases, etc., due to repetition, seems to have indicated a tendency towards musical macro-gestures.[37]

In contrast, because of a concern for breaking with traditional elements such as goal orientation and cause and effect,[38] serial and aleatoric works have tended toward micro-gestures characterized by their shortness of breadth. Pointillism has often been a feature commonly associated with these gestures. Closely allied, silence has also been an integral part of the musical fabric. In general, with the absence of traditional continuity, individualized micro-gestures have had significance apart from their connections and relationships to other gestures. This tendency towards micro-gestures has reflected an aesthetic interest in a "moment-to-moment" kind of rhetoric.

Although this "moment-to-moment" aesthetic may seem to be similar to Reich's "note-to-note" concept, they actually differ significantly; for while "moment-to-moment" details in serial and aleatoric works have lacked continuity, "note-to-note" details in pattern-pulse works have had continuity--a continuity which, due to a macro-gestural tendency, has engendered a breadth of expression. In essence, pattern-pulse works have expanded and revitalized traditional concepts of continuity and goal orientation.

Summary and Conclusions

Repetition has attained a regained status in recent music. Avoided or virtually guarded against in serial and aleatoric procedures, it has, on the other hand, been a primary feature in pattern-pulse works. Features concomitant with or influenced by its utilization have been: simplicity, tonal implications, rhythmic regularity, musical processes, gradual audible change, a distinctive balance of control and chance, and a tendency toward macro-gestures.

Two factors may be attributing constituents of a fertile background for the resurgence of repetition: the reality of change in history and the pluralistic nature of the current art world. At the heart of these factors is the notion that there is a tendency for artists to react against common practice in order to attain individuality and uniqueness.

Regardless of whether or not this is absolutely true, pattern-pulse works have been unique and attractive contributions representing yet another direction among the many that have arisen since World War II.

Because there has been a return to some traditional musical features such as the concept of tonality, rhythmic regularity, and goal direction--one might contend that pattern-pulse works have not really been new or progressive contributions to post-War musical developments. For instance, one might argue that works such as Terry Riley's In C are, in essence, no different from traditional Indonesian gamelan music because of their basic and heavy reliance on heterophony. Moreover, one might even suggest that pattern-pulse works represent a nostalgic regression to outmoded and moribund values associated with the past.

Indeed, if one were to focus solely upon what kinds of elements utilized, these contentions might be valid. On the other hand, a consideration of how these elements have been utilized might be equally important, revealing some kind of novelty. Secondly, because of the possibility that all novelty has already been explored, at least superficially, up to this point in time--it may be that pattern-pulse works have represented attempts to reevaluate and refine what has already taken place. These processes of reevaluation, refinement, and even novel utilization may be comparable to

what Wittgenstein spoke about when dealing with the problem of what counts as achievement and progress in philosophy:

> Imagine that we had to arrange the books of a library. When we begin the books lie higgledy-piggledy on the floor. Now there would be many ways of sorting them and putting them in their places. One would be to take the books one by one and put each on the shelf in its right place. On the other hand we might take up several books from the floor and put them in a row on the shelf merely in order to indicate that these books ought to go together in this order. In the course of arranging the library this whole row of books will have to change its place. But it would be wrong to say that therefore putting them together on the shelf was no step toward the final result. In this case, in fact, it is pretty obvious that having put together books which belong together was a definite achievement, even though the whole row of them had to be shifted. But some of the greatest achievements in philosophy could only be compared with taking up some books which seemed to belong together, and putting them on different shelves; nothing more final about their positions than that they no longer lie side by side. The onlooker who doesn't know the difficulty of the task might well think in such a case that nothing at all had been achieved. The difficulty in philosophy is to say no more than we have put two books together in their right order not thereby put them in their final places.[39]

Footnotes

[1]See Eric Salzman, Twentieth-Century Music: An Introduction (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1967), pp. 11-12. Joan Peyer divides her book, The New Music (New York: Dell Publishing Co., Inc.) into three sections, two of which refer to the Austro-German and the Franco-Russian traditions.

[2]Lester Trimble, "Elliott Carter," Stereo Review, Vol. 29, No. 6, December, 1972, pp. 65-66.

[3]Ibid., Carter quoted.

[4]Works by Riley and Reich will be referred to as such since musical patterns and regular pulse can be seen to be very characteristic features.

[5]See Leonard Meyer, Music, the Arts, and Ideas (Chicago: The University of Chicago Press, 1969), pp. 87-88.

[6]See Robert L. Heilbroner, The Future as History (New York: Harper and Row Publishers, 1960), pp. 195-196.

[7]A good overview on historical thought can be found in Ideas of History, 2 volumes (New York: E. P. Dutton and Co., Inc., 1969). Volume I covers speculative approaches while Volume II is a compilation of critical approaches.

[8]Seen in Thomas Munro's "What Causes Creative Epochs in the Arts," Journal of Aesthetics and Art Criticism, 21 (Fall, 1962), pp. 35-48.

[9]Pierre Boulez, Notes of an Apprenticeship, trans. by Herbert Weinstock (New York: Alfred A. Knopf, 1968), p. 272.

[10]Ibid.

[11]Bryn Mawr, Pennsylvania: Theodore Presser Co., 8 Volumes, 1958-1960.

[12]Silence (Cambridge, Massachusetts: The M.I.T. Press, 1967), p. 3.

[13]Following this kind of logic, one could ask if something would be music if it were not perceived as such. This question could have serious ramifications for it could be pointed out that, if perception were considered to be the main determinant, a piece of music may be organized and,

better yet, intended to be a piece of music and yet not be perceived as music. Would then this piece not be music? In part, this issue would seem to be dependent upon one's position on epistemological issues--specifically in the area of the "empirical" controversy of whether something exists irregardless of whether or not it is perceived.

[14]Music, the Arts, and Ideas, p. 77.

[15]Ibid., p. 83.

[16]"The New Liberalism," Perspectives of New Music, Vol. 3, No. 2 (Spring-Summer, 1965), p. 140.

[17]"A Post Avant-Garde," The Composer, Vol. 3, No. 2 (Spring, 1972), p. 61.

[18]Music, the Arts, and Ideas, pp. 87-88.

[19]Ibid., p. 153.

[20]Ibid., pp. 134-135.

[21]Ibid., p. 153.

[22]Although the word "serialism" does encompass all degrees of serialism, for convenience, it will be used primarily, from here on, to represent the extreme degree commonly referred to as "total-serialism," i.e., multi-parametrical serialization. Technically, works with more than one parameter serialized will be considered "totally" serialized.

[23]George Rochberg, "Indeterminancy in the New Music," The Score, No. 26 (January, 1960), pp. 11-12.

[24]There has also been a kind of radical simplicity found in the "happenings" or "events" of the post-Cagean vareity. In a way, they could be seen as reactions against complexity as well as rationalism.

[25]This is instanced by Elliott Carter's music which, though complex, has not depended on serial or aleatoric organization.

[26]Regularity itself can be considered a form of repetition.

[27]Boulez's Structures Ia for two pianos is a classic example employing this procedure.

[28]Silence, p. 11.

[29]The proliferation of writings, too many to mention here, dealing with technical aspects attest to this fact.

[30]Steve Reich, "Music as a Gradual Process," Source, Vol. 5, No. 2 (1971), p. 30. Later in this article, Reich does see a relationship between drug-oriented rock music and the perception of minute details. Yet he does not see this music as a process.

[31]Ibid.

[32]See Meyer, Music, the Arts, and Ideas, pp. 276-293.

[33]"Music as a Gradual Process," loc. cit.

[34]"Extents and Limits of Serial Techniques," Problems of Modern Music, edited by Paul Henry Lang (New York: Norton and Co., Inc., 1962), p. 83.

[35]It might be argued that, by nature, pre-compositional activity cannot be considered a part of a composition. However, for purposes here, pre-compositional activity will be seen as part of a composition since the compositional process seems to be important in serialism. In many serial works, process and product seem to be very closely related.

[36]Although not known to be serially oriented, some of the music of Witold Lutoslawski has combined control and chance. He has expressed interest in "aleatorism of form" and "aleatorism of texture." See his essay About the Element of Chance in Music found in Three Aspects of New Music; included are other essays by Gyorgy Ligeti and Ingvar Lidholm (Stockholm: Nordiska Musik Förlaget, 1968), pp. 47-53.

[37]For a discussion on gesture in music, see Chapters Two and Three of Music and Meaning by Wilson Coker (New York: The Free Press, 1972).

[38]See Eric Salzman, Twentieth-Century Music, loc. cit., pp. 158-169.

[39]Ludwig Wittgenstein, The Blue and Brown Books (New York: Harper Torchbook, Harper and Row Publishers, 1965), pp. 44-45.

CHAPTER II

REPETITION, TELEOLOGY, AND THE CONCEPT OF TIME

The emergence of repetition as exemplified in pattern-pulse works can be seen to have contributed a unique way of delineating or "filling up" time. Since time is a subject important and closely related to music, and since it is a subject of immense dimensions--this entire chapter will be devoted to the concept of time as seen in music. Specifically, this will be done by continuing comparison between pattern-pulse, serial, and aleatoric works via a discussion of how they have embodied, represented, or related to concepts of time as discussed and defined by various thinkers. Hopefully, this comparison will make more clear how the utilization of repetition has been uniquely influential in the domain of music and time.

The subject of time has been a source of puzzlement, confusion, and debate down through the centuries in a large number of fields--most notably in philosophy, physics, and psychology. The paradoxically obvious yet elusive qualities of time have engendered a number of divergent views about the nature of time. Although it will be impossible and, in any event, gratuitous to discuss all of these complex and intricate views in detail here,[1] there will at least be an attempt to sketch some in general, especially those which might have a relationship to music.

Objective Time

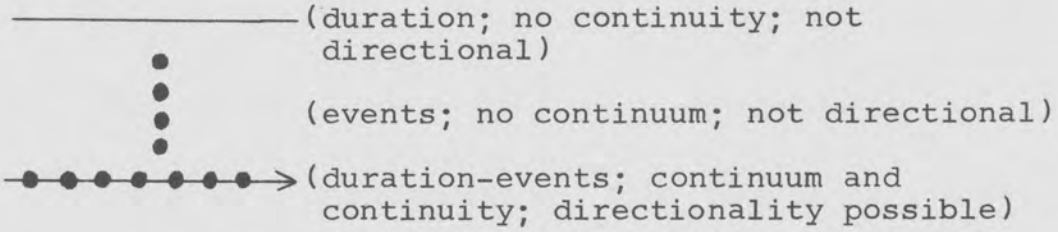
Time as an objective phenomenon has been described in two general ways. On one hand, it has been described as space, dimension, "pure" duration, staticity, mere continuum, permanence, and changelessness. These varied descriptions, generally of the durational quality of time goes far back to the thought of early Greek philosophers--namely Parmenides, who denied the existence of change, and Zeno, who, with his famous paradoxes of motion, attempted to show that time is motionless. The later nineteenth century philosopher Emmanuel Kant also aligned himself in one way or another with the durational viewpoint. On the other hand, time has been described as change, transition, movement, moment-to-momentness, past-present-future, and novelty. These descriptions, contrasting with durational ones, have emphasized the event-series aspect of time. We are able to find origins of this viewpoint again in early Greek thought. The notion, from Heraclitus in particular, that everything is in flux--in a state of perpetual change--has usually been cited in this regard. Henri Bergson is considered to be a later exponent of this view.

Although both of these viewpoints may seem to be incompatible and while there has been a tendency for each to be adopted exclusive of the other by many, a case can be made

for accepting both as complementary and interdependent. H. G. Alexander gives a clear statement of this possibility:

> To note in somewhat more detail the interdependence of these concepts, moment, as a completely durationless instant, either demands a durational continuum in which to be placed, or else negates duration altogether, in which case it ceases to have position and becomes almost completely meaningless. Duration on the other hand, even as a mere continuum, needs a recognition of some kind of continuity, which in this case means a perception of before-and-afterness. But before-and-afterness implies transition or successive differences, which in turn demands recognition of moments of different states, so we arrive back at moments by way of transition. Extreme permanence, or perfect staticity, loses any basis for continuation which requires, as we have said, an awareness of succession or change. Extreme transition is likewise absurd when pushed to the limit of absolute novelty; for there also all continuity is lost in a series of fragmented episodes which are not properly even a series.[2]

It is plausible, then, by way of synthesizing both extremes (time as duration or event-series) to adopt a position based on their interdependence. This interdependence could instill a directionality to time as a result of continuity. This operation may be illustrated as follows:



This is certainly not to say that, with this synthesis, the problem of explaining time will be resolutely solved, for it could be argued that a "Hegelian" dialectic, i.e.,

thesis-antithesis-synthesis, may not be applicable and, for that matter, that synthesis does not guarantee the best or correct answer. For present purposes, there will be no intent to make final judgment concerning this problem. The synthesis described here will merely be given as one of perhaps many other alternative explanations of time.

Subjective or Psychological Time

Viewing time as a psychological or subjective phenomenon is yet another matter. In fact, an explanation of time as a subjective phenomenon is yet another alternative to "objective" explanations.

In order to speak of time as a subjective experience, some philosophers and psychologists have started by questioning the existence of time in the "real" world. Many have held that time is merely an experience; it is our "flowing" consciousness that experiences duration and events in a series. According to them, then, time should not be considered to be a property of the real world.[3]

Skepticism regarding the reality of objective time is seen further indirectly in the question of whether or not the "present" in the past-present-future continuum exists. Some have contended that the present is a durationless point, which at most merely separates past from future. The moment we experience the present--the "now"--it is already the past and

for the future--it just continues to rush into the past. Lois Heath, in The Concept of Time, sums this up nicely:

> The nature of time is such that when the present is, the past has been and is no longer, the future will be, but is not yet, while the present which is, turns out on analysis to be not a part of time but only the boundary between past and future.[4]

Those not agreeing with this reasoning have relied on a psychological explanation of the experience of the present. Referring to William James, Christian states:

> James, at last, is on the right path. What we call the "present" is by its very nature a psychological event, rather than a mathematical or physical (real) event. As a psychological event involving perception and consciousness it therefore possesses duration. The notion of time as a timeless instant is fallacious. Experiencing takes time; it has width. An experience involving intricate psychophysiological processes "stretches out" and lasts a while and could never occur in a "timeless instant."[5]

Hence, we may gather that the present as a psychological event, rather than being a point or boundary between past and future, is a time-span and has, therefore, a width.

It can be assumed, then, that the concept of psychological time is related to questions and skepticism regarding the existence of the "present" as well as "objective" time itself. Perhaps psychological time is understood more clearly in the context of some empirical observations. Experiments[6] have shown that, when comparing the interval of time between two unfilled taps and an equal interval of time between two taps filled with other taps, the unfilled interval will seem

to be shorter. Further, when comparing two filled intervals--both equal in length, the first filled with interesting activities which do not arouse anxiety, the second filled with an anticipation of feared events or anxiety--the first will seem to be shorter. Similarly, an interesting or stimulating situation will seem shorter than the "never-ending," boring situation. Concerning experiential time in a musical context, Karlheinz Stockhausen suggests that "the more surprising events take place, the quicker time passes; the more repetitions there are, the slower time passes."[7]

Thus, a strong case can be made for the reality of psychological time because of the different, unusual, and easily affected ways we experience time. Whether or not this justifies a denial of the existence of an objective time is questionable, however. It could simply be the case that we experience (psychological time) an objective time outside of ourselves. It might even be argued that it is psychological time that is illusory and unreal, at least at fault, when compared to objectively stable and consistent measurements of time such as physics or the clock. Again, there will be no attempt to settle these questions here.[8] It is important, however, to see the concept of psychological time as a way of thinking about time--certainly as an added contribution to our understanding of the phenomenon.

Music and Its Relationship to Conceptions of Time

1.

It may be evident by now that some of the variegated conceptions of time discussed so far have been embodied or represented in pattern-pulse, serial, and aleatoric works. Music, of course, has been thought of as being an essentially temporal art.[9] Thus, it may not be especially revealing to say that music reflects time; it may even be tautologous and superficial to do so. Yet, upon deeper investigation, we can find different ways in which time unfolds in different pieces of music. Surely the slow tempo and almost static--"timeless" movement of Japanese Gagaku create an unfolding of time different from the unfoldings in a Dufay mass, Mozart sonata, Italian art song, Bartok string quartet, Balinese gamelan music, or even Japanese Kabuki music. In other words, each genre, moreover, each individual work will have some variance in the way time is handled. It is no wonder that music since World War II has dealt with time in a number of different ways. The claim that music reflects conceptions of time has more depth and complexity than immediately apparent.

It could generally be said that, in their relation to time, many twentieth century works differ, oftentimes radically, from traditional works. Differences are especially apparent in regards to the direction of time. In Chapter I

we saw that constant change and moment-to-momentness are important elements in serial and aleatoric works. This stress on individual events and moments in constant flux can be said to be related to the concept of time as event-series. In this stress on events, however, directionality (teleology) is often absent or nebulous because of the high degree of unpredictability--especially heightened by the interweaving of many parametrical "strands." In other words, in many of these works, there is no purposeful movement towards any goal or end.[10] Thus, with this negation of teleology, the resultant lack of continuity among already emphasized events gives the event-series representation of time added prominence.

It is quite a different matter in traditional works for teleology is a major force behind form and syntax. It would seem fair to say that in traditional music, teleology is present in order to insure some kind of unity as well as to give the listener a means of identifying with the music since teleology--short or long term--can be seen as a basic and meaningful experience for human beings.

2.

Tangentially, it should be noted that, while traditional works have generally been teleological, they have at the same time operated and depended on what could be called the principle of return. This principle is clearly exemplified in

the "returns" found in binary, ternary, and sonata-allegro forms. Thus, if the temporality of music is delineated by musical events, it would seem plausible to say that within the teleological context of these works, there is portrayed, as a result of returns, a reversibility of time.

It could be argued here that while there is, in a work, a return of earlier events--this return takes place at a different location in the unfolding of the work; thus there is not an exact return to the beginning. Moreover, the listener is in a different state of mind as the return comes so it could be perceived differently. These discrepancies, then, would seem to diminish the strength of a reversibility notion. While these arguments certainly contain some truth and refine the issues, however, it could still be contended that returning elements might portray an imaginary, if not illusory, return to the past, i.e., a previous point in time. To this extent, the reversibility notion can be valid, especially since music itself can be considered an imaginary embodiment of time. This sort of return, of course, enters the realm of psychological time but it can still influence notions of objective time.

In effect, the principle of return links present and past--certainly a means by which unity of a work, as has been often accepted, can be achieved. Moreover, because of the teleological context, even the future of an unfolding work may be linked to the past and present since a teleological process may engender expectations and anticipations of future events.

Because of its association with traditional values and syntax, the principle of return is frequently avoided in serial and aleatoric works and safeguarded against largely through the negation of teleology present in these works. In effect, this absence of teleology leads to an amorphous or almost static situation. Even if teleology is present,[11] it is obscured or difficult to perceive. Hence, under these conditions, any kind of a return to the past (reversibility of time) is non-existent.[12]

In contrast, pattern-pulse works--like traditional works--are teleological because of their musical processes. The principle of return is often an integral part of these processes. However, the principle of return here has somewhat of a different kind of role and importance than that found in traditional works. The traditional principle of return is used as a unifying device or a means of relating past, present, and future. It seems that the principle of return in pattern-pulse works, while contributing some unity, may be essentially a natural consequence or completion of a process set in motion without having any special role in the unifying process. Put another way, unity in pattern-pulse works is not dependent upon any kind of a return and is perhaps inconsequential since the gradual musical process carries such import. When the principle of return is present, it merely emphasizes the circularity and natural outcome of a process rather than the unity of that process.

This point might be further understood if we recognize that memory is closely allied to the effectiveness and success of the principle of return for it is by memory that the listener is able to recognize a return in a traditional work. In comparison, memory required in a pattern-pulse work is relatively shorter-termed and thus less important. The abundance of repetition coupled with the gradual musical process gives listeners the opportunity to relate and follow events in a more successive fashion, thereby decreasing the necessity for long-term memory. Thus, when there is a return, it is not so much the fact that there is a recapitulation of some previous event that is important, but the fact that an on-going teleological process is taking place.

3.

In retrospect, we see that serial and aleatoric works have the tendency to emphasize the event-series aspect of time because of the lack of continuity and directionality (teleology) in the sequence of constantly changing as well as unpredictable events. In contrast, it can be concluded here that pattern-pulse works tend to emphasize the durational aspect. In spite of "note-to-note" details in a continuous barrage of musical events (patterns), the durational aspect is stressed, almost to a point of seeming static, primarily because of repetitive-ness and the concomitant gradualness of change. Yet, this

durational aspect is reinforced and enhanced by the existence of continuity and teleology; in a way, they add breadth to duration.

Of course, teleology is possible primarily because of the existence of events delineating a directionality. So, although pattern-pulse works might emphasize the durational aspect of time, it is not a "pure" duration lacking direction that is being emphasized. This qualification is important for it might also be the case that pattern-pulse works, though strongly durational, represent an interdependence between events and duration in time. In the same way, though primarily emphasizing the event-series aspect of time, serial and aleatoric works, could paradoxically represent the durational aspect since the absence of continuity and teleology among unrelated events tend to give the impression of staticity or "pure" duration. Interdependence, then, can also be seen in this case.

Thus neither pattern-pulse, serial, or aleatoric works can be said to represent one aspect of time to the exclusion of the other. These works incorporate both aspects of the time continuum and thereby can only be distinguished from each other in the degree to which they emphasize one aspect more than the other.

4.

With respect to psychological time, one important distinction seems to emerge. Assuming that the perception of time can be a highly subjective matter, it could also be assumed that our experiences of time have the potential of being illusory.[13] Thus, in accordance with Stockhausen,[14] it is plausible to believe that time in pattern-pulse works is perceived to move at a slow pace because of the slow rate of change involved in these works. Time in serial and aleatoric works, on the other hand, is perceived to move at a faster pace because of more rapid changes unless staticity, due to the absence of continuity and teleology, becomes overly prominent.

The word "move" as used here is perhaps confusing and may seem a bit spurious because, with its usage, some sort of obvious movement would seem to be implied. Since it has already been pointed out that the concept of time as static and "pure" duration is present to some degree in these works, using "move" would seem contradictory. Its usage, therefore, will need some qualification and clarification here.

First, as was pointed out earlier, works under discussion are not entirely "pure" duration and static. The presence of events prohibits such a situation. Further, a teleology governing these events might also be present. Thus,

it would seem that a sequence of events (no matter how unrelated) and teleology can give the impression of movement.

Secondly, the perception and cognition of movement of time may not necessarily deal exclusively with the motion of discrete events. In speaking about the movement of time, we may be referring also to the length of a particular time span. Thus, when we say that time has moved by fast, we may mean that the span of time that has transpired has been seemingly short. We have already seen earlier[16] that equal spans of time can be perceived differently depending upon the number and kind of events present in the spans. When speaking of time "moving," then, it may be similar as well as equally proper to speak of the amount of time that has transpired. With this latter qualification of the word "move," it seems plausible to assume that time can be felt to be movement even in a static, "pure" durational situation. This would seem to be especially possible when dealing with psychological time where subjective experiences matter most.

Hence, in pattern-pulse, serial, and aleatoric works, "movement" of time can still be perceived despite the aspect of staticity in them. In comparison to each other, granted that they can all be considered static to a degree, speed of movement will then be primarily dependent upon the rate of change in each work, i.e., fast change, fast movement; gradual or slow change, slow movement. Of course, whether musical

events are interesting or boring could also affect a listener's perception. In this case, a time-span filled with interesting events would probably seem shorter than one filled with boring events. Consequently, perception of movement is affected not only by factors related to change but by unpredictably subjective evaluations of the listener as well.

5.

Assuming that the movement of time will probably seem slow in pattern-pulse works, due to repetition and gradual change--it would seem that retardation of the passage of time could have an effect upon the experience of the "now" or "present" in the time continuum. More specifically, the repetition of events may extend or "stretch" the subjective experience of the "present" for the listener. Time not only moves slowly but has, in addition, a "present" with the expanded width spoken of earlier. In consequence, the listener is given an opportunity to focus on, as well as savor, every "note-to-note" detail.

The fact that these works have a potential of thoroughly engaging the attentive listener, then, may be one of the reasons why they might be properly considered to be psychologically oriented. That is, in these works, the effect on the listener may be just as important as the properties of the music itself. Steve Reich's own interest in the <u>perceptible</u> musical process already implies the importance of the listener's

involvement in the musical encounter. Anyway, placing pattern-pulse works in the psychological domain would not be remote but, rather, closely related to the fact that music falls within the empirical domain of our world. Music is experienced, and experience naturally involves psychology.

6.

In summary, it might be generally concluded that works discussed have reflected both the event-series and durational aspects of time. None of these works have included one aspect to the exclusion of the other. Rather, all works have relied on some interdependence, relationship and interaction between these conceptions. Thus, distinctions between each work have depended upon the degree to which one conception has received more emphasis than another. The following chart summarizes the similarities and distinctions discussed:

Works	Time
Serial-aleatoric	Event-series but also durational, especially when teleology is absent; essentially irreversible
Pattern-pulse	Durational but partially event-series; teleological and possibly reversible

In regard to psychological time, distinctions between these works are mainly seen in the differences regarding how fast time is perceived to "move":

Works	Movement of Time
Serial-aleatoric	Fast due to constant change
Pattern-pulse	Slow due to repetition and gradual change; extended "present" concomitant result

As a result of the extended "present," pattern-pulse works can give the impression of being relatively static in quality. This tendency to seem static may provide a commonality between these works and serial and aleatoric works--however, only insofar as it represents a general deviation from essentially teleological traditional music, for staticity in serial and aleatoric music is a result of constant unrelated change rather than of an extended "present." Thus, the extended "present" seems to be exclusively associated with the use of repetition in pattern-pulse works. In general, it contributes a unique approach to the problem of time.

Footnotes

[1]A good overview of the problem of time can be found in The Philosophy of Time, edited by Richard M. Gale (Garden City, New York: Doubleday Anchor Books, 1967) and Man and Time by J. B. Priestley (New York: Dell Publishing Co., Inc.--Laurel Edition, 1968).

[2]Hubert Griggs Alexander, Time as Dimension and History (Albuquerque, New Mexico: The University of New Mexico Press, 1945), p. 15.

[3]James L. Christian, Philosophy (San Francisco: Rinehart Press, 1973), p. 15.

[4]Ibid., Quotation, p. 194.

[5]Ibid., p. 195.

[6]See C. M. Wyburn, R. W. Pickford, R. J. Hirst, Human Senses and Perception (Toronto: The University of Toronto Press, 1968), pp. 173-175.

[7]"Structure and Experiential Time," Die Reihe, Volume 2--Anton Webern, edited by Herbert Eimert and Karlheinz Stockhausen (Bryn Mawr, Pennsylvania: Theodore Presser Company, 1959), p. 64.

[8]It seems that the more one thinks about time, the more "mind-boggling" it becomes.

[9]In this chapter, the simple analogy of events and duration in music to events and duration in time will be taken for granted; it will therefore not be dealt with.

[10]Leonard Meyer makes a point of this in Music, the Arts, and Ideas (Chicago: The University of Chicago Press, 1967), pp. 72-73.

[11]Teleology could be present in the compositional processes of a work. We are, however, referring here to teleology as a perceptible feature--more specifically, a feature present in a work after it is realized on paper.

[12]It should be noted that this aspect of serial and aleatoric works is consistent with the dictum that time is irreversible in contemporary physics. See Hans Reichenbach, The Direction of Time (Berkeley: University of California Press, 1971), pp. 20-21.

[13]Reichenbach distinguishes time as subjective from time as illusion, "illusion" probably having a perjorative connotation.

[14]"Structure and Experiential Time," loc. cit. Also--see Fritz Winckel, Music, Sound, and Sensation (New York: Dover Publications, Inc., 1967), pp. 79-80.

[15]"Passes" and "goes by" included.

[16]See Wyburn, Pickford, Hirst, loc. cit.

CHAPTER III

SOME REMARKS CONCERNING REDUNDANCY AND INFORMATION THEORY

This chapter deals with information theory for two primary reasons. First, this influential theory has frequently served as a handmaiden for serialism. Early post-Webern composers in particular saw a rationale for the serial process and product in this theory. In particular, concepts germane to this theory were accepted to be applicable to the increase of complexity in serial music. Since we have compared pattern-pulse works to serialism, this theory deserves cursory treatment here. Secondly, the craze for "information" and complexity in music among the ranks of composers employing serial procedures has led to a diminishing status of redundancy in music. This situation may have been stimulated by the somewhat negative connotation that redundancy has acquired in information theory. This being the case, it will be necessary to place redundancy in a wider perspective since pattern-pulse works have relied so heavily upon its utilization. In doing so, perhaps a justification for its utilization, apart from its mere existence in the context of change and pluralism, will become evident.

The Concept of Information

In the already classic work The Mathematical Theory of Communication,[1] Warren Weaver warns against confusing "information" as used in information theory[2] with "information" as used in ordinary usage. Specifically, information should not be confused with meaning. In other words, information theory does not concern the semantic content of messages as much as it concerns the quantity and the correct transmission of these messages. This out-of-the-ordinary definition of information is illuminated more clearly with Colin Cherry's distinction of three levels of information: syntactic, semantic, and pragmatic.[3] According to Cherry, these levels may be defined and distinguished in the following way: 1) syntactic--signs and their relations to other signs, 2) semantic--signs and their relations to their designata (outside world), 3) pragmatic--signs and their relations to users. Among these levels, the syntactic would be the closest to that which information theory would concern itself. Semantic and pragmatic levels, on the other hand, would not fall within the scope and interests of this theory.

Quantity of information is often related to one's freedom of choice:

> Because of the need, for our present purposes at least, to steer clear of meaning, "information" in this context is merely a measure of one's freedom of choice when one selects a message from

> the available set, many of which may well be devoid of meaning. If there are in all, say, n messages to select from and, if, each message is on a par with every other in that it is as likely to be chosen as any other, then the number n itself could be used as measure of the amount of "information" present in the ensemble of messages available for transmission.[4]

Weaver indicates that the amount of information or freedom of choice is calculated by the degree of probability:

> ... If there are many, rather than two, choices, then H (information) is largest when the probabilities of the various choices are as nearly equal as circumstances permit--when, one has as much freedom as possible in making a choice, being certain choices which have more than their share of probability. Suppose, on the other hand, that one choice has a probability near one so that all the other choices have probabilities near zero. This is clearly a situation in which one is heavily influenced toward one particular choice, and hence has little freedom of choice. And H in such a case does calculate to have very small value - the information (the freedom of choice, the uncertainty) is low.[5]

It follows, then, that high probability (high degree of certainty) will yield little information. Subsequently, it may be said that uncertainty or unpredictability, due to low probability, will yield a greater amount of information.

Dealing with information theory and music, Abraham Moles speaks of information as "a measure of complexity."[6] Essentially, information can be thought of as complexity since the degree of information determines the degree of complexity. Moles also links information--what is unpredictable--with originality, the foreseeable--what is

predictable and lacking information--with banality. The fact that originality and banality are posited as polar opposites and, further, that banality usually has a pejorative and negative connotation indicate that Moles is venturing into the realm of value judgments. In other words, for Moles, complexity (information, unpredictability) not only has positive value, it is also preferable, for example, to simplicity, which would minimize information and which could also be considered banal. This judgment is especially evident when Moles compares originality with intelligibility:

> Originality is thus among the fundamental values of the theory. In the perception of forms, originality opposes intelligibility, because only forms are intelligible and they reduce unpredictability, hence originality and intelligibility makes intelligibility the operational synonym of banality in the message. The etymological meaning of the word intelligibility, inteligere, justifies the assertion that what is most intelligible has the most bonds (liaisons), and is thus what is most encountered in the networks of thought. The most intelligible is at the same time the most banal; the position of the mind between intelligibility and creativity is only a transposition of its position between banality and originality. The concept of originality appears necessary to the human mind as one of its central concepts, the existence of which structuralism postulates and Belin Milleron has pointed out. It is understandable that development of this concept should give rise to a great scientific theory.[7]

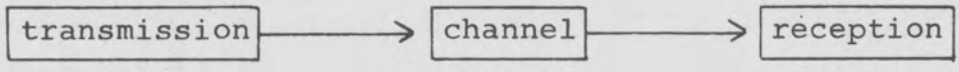
Given that complexity and, in particular, unpredictability are factors innate to the definition of information, it can be stipulated in general that information is another way of speaking of change or variance, for implied in

complexity and unpredictability is the presence of change. Simplicity and predictability would seem to involve little or less change. Consequently, we can conclude that amount of change would be another determinant for amount of information, as George A. Miller clearly states:

> The similarity of variance and the amount of information might be explained this way: When we have a large variance, we are very ignorant about what is going to happen. If we are very ignorant, then when we make the observation it gives us a lot of information. On the other hand, if variance is very small, we know in advance how our observation must come out, so we get little information from making the observation.[8]

Redundancy

Since the definition of information in information theory includes change, it would be natural and logical to conclude that redundancy would be on the opposite end of a spectrum from information. Technically, however, redundancy in information theory has a function in the transmission and reception of messages. In order to see this easily, the following diagram of the communication process in its barest form will be useful:



In a situation where "noise" (interference) interferes with faithful and correct transmission of messages, redundancy can be utilized to combat and reduce interference. Essentially,

this "syntactical" redundancy[9] is crucial to the comprehensibility of messages, for without redundancy, messages could be perceived as chaotic or unnecessarily complex as a result of excess interference. To this extent, then, redundancy can have a positive value. This utilization of redundancy, however, leads to an unusual dilemma and could require a delicate balance:

> ... The most obvious recipe for reliable transmission in the presence of noise is repetition of the message a sufficient number of times to ensure reliable reception. One could, for example, repeat each symbol in a signal an odd number of times and decide at the receiver by a majority vote what was transmitted. Naturally, the more numerous the repetitions the better the reliability. But too many repetitions for too high a reliability bring their own nemesis in that total reliability entails almost total extinction of transmission. There are, no doubt, a large number of halfway houses that secure a measure of reliability by an appropriate amount of repetition or redundancy. But the essential dilemma of reliability through redundancy remains--that the more we have it, the less is the associated rate of information flow. It is precisely because Shannon's second theorem resolves this dilemma albeit only theoretically, that his feat is a tour de force as beautiful as it is unexpected.[10]

Thus, while redundancy does make reliability of messages more probable, it does at the same time limit and reduce the amount of information transmitted. This very weakness may be at the base of Moles' association of intelligibility and predictability, certainly concomitant results of redundancy, with banality--thereby giving complexity, change, and unpredictability a higher premium.

Not everyone would view redundancy in the same way as Moles. In Entropy and Art, Rudolf Arnheim lucidly indicates the function of redundancy in an artistic context:

> Any predictable regularity is termed redundant by the information theorist because he is committed to economy: every statement must be limited to what is needed. He shares this commitment with scientists and artists; its meaning, however, depends on whether one chops up patterns with elementary bits or whether one treats them as structures. A straight line reduced to a sequence of dots for the purpose of piecemeal analysis or transmission can be highly redundant; in the drawing of a geometrician, engineer, or artist it is not. The processions of almost identical human figures on the walls of San Apollinare Nuovo in Ravenna are not redundant. They are intended to impress the eyes of the beholders with the spectacle of a multitude of worshipers united in the same religious function. In our own day, Andy Warhol has presented one photograph in rows of identical reproductions in order to explore connotations of mechanical multiplication as a phenomenon of modern life. Structural redundancy does, of course, exist; but it depends entirely on how much repetition is required by the visual nature of the total pattern. The effect and meaning of the single unit varies with the number of repetitions.[11]

Still further, others have issued warnings concerning the dangers of too much information, and, in general, the application of information theory to music.[12] Having distinguished what might be termed physiological perceptual capacities--those which many serialists have tested and used to justify complex compositional constructs--from cognitive perceptual capacities, Leonard Meyer seems to be making a plea for restraint in the amount of complexity used in music:

> ... Perception in any meaningful sense is not the naive act of an empty, primitive neural receptor; it is an act of learned discrimination. The world is not presented to us as a set of intelligible relationships and processes. We have to learn to see even such primitive shapes as circles, triangles, and the like. Thus while it is commendable for composers to be concerned with the limitations of the senses, it is well to remember that music is directed, not to the senses, but through the senses and to the mind. And it might be well if more serious attention were paid to the capacity, behavior, and abilities of the human mind.[13]

The perception of complexity, then, is not merely a matter of sensual capacities but also of cognitive ones as well. And cognition is heavily dependent upon the intelligibility of messages transmitted. Consequently, linking intelligibility to banality would be problematic, for if communication is important in the arts, some kind of intelligibility would be necessary. Organization based solely or heavily on statistical and mathematical principles could prove to be hazardous to the communication process. Certainly applicable to the arts, Naom Chomsky's remarks concerning this danger in the field of linguistics are illuminating:

> ... Despite the undeniable interest and importance of semantic and statistical studies of language, they appear to have no direct relevance to the problem of determining or characterizing the set of grammatical utterances. I think that we are forced to conclude that grammar is autonomous and independent of meaning, and that probalistic models give no particular insight into some of the basic problems of syntactic structure.[14]

Thus, since concepts with which information theory makes its most significant contributions are based on probability and statistics, it could be said that the application of this theory to the arts has its limitations.

Regarding redundancy, then, we can say that, apart from its function as a combatant of noise in the communication process, it could have value and strength per se in the organization of syntactic as well as semantic constructs, especially in the arts. Indeed, as a vehicle for lending emphasis, as evident in pattern-pulse works, it is obviously effective. Negative and pejorative connotations that redundancy has obtained may be in many cases unjustified, unsupportable and even inconsequential when considering aspects outside the domain of information theory. The tendency and desire to exalt information as a prime value over and above other values in the arts could inadvertently lead to an elitist art, consequently limiting its communicability not to mention accessibility to a wide and diversified audience.

Redundancy and Pattern-Pulse Works

In Chapters 1 and 2, it has been shown that aspects such as change, complexity, and unpredictability are qualities rather common to serial as well as aleatoric works. From discussion in this chapter, it is obvious that these same aspects are implicit in the concept of information. Hence, it should

also be obvious that the relationship between information theory and serialism would be complementary and positive in nature.

In contrast, pattern-pulse works would seem to have, if any at all, a negative relationship to information theory since change, complexity, and unpredictability are not prime features in these works. Moreover, while redundancy has such an important function in these works, it has only a specific and limited function in information theory. A discussion of three considerations might further clarify this negative relationship as well as augment an understanding of what lies behind the utilization of redundancy.

First, as was proposed in Chapter 2, pattern-pulse works represent attempts to explore the perceptual-psychological side (reception) of the communication process. In general, these works seem to exhibit a strong concern for the subjective realm in music in contrast to a seemingly strong concern for the objective realm seen in serial works. What takes place in the listener seems to occupy more, if not at least as much, attention than what takes place in the music; towards this end, the persistent employment of redundancy seems to be an effective means.

Secondly, it can be assumed that the conveyance of information is not intended to be of prime importance in pattern-pulse works, nor, perhaps, in a lot of music in general. This point needs to be stated, however, because of the unusual

amount of redundancy employed in these works causing whatever information there is to be limited and controlled. In Chapter 1, it was noted that, for Reich, it is the gradual musical process that primarily interests him. It seems that, for him, information would be secondary and only valuable in that it aids in delineating the musical process. Thus, criticizing a pattern-pulse work on the grounds that it lacks information would be begging the question.

Finally, it would be presumptuous to believe that audiences listen to music primarily for receiving information. Indeed, information has import in musical experiences; without a minimal quantity of it, boredom and tedium could result. Nevertheless, to presume that it is for information exclusively that music is listened to is shortsighted for music has the capacity to affect the emotional as well as the cognitive side of human experience. People listen to music for a variety of reasons, one of which may even be purely sensual. People also listen to music on different levels. Audiences at a rock concert will listen to music on a different level from concert-goers at a symphony orchestra concert or, for that matter, music students in a classroom. Further yet, differences will be enlarged when dealing with attitudes in diverse cultures.

To claim, then, that musical experiences are primarily intellectual (or information-gathering processes) would be equally absurd as claiming that they are primarily emotional.

The listening process, to say the least, is a very complicated matter, dependent upon a variety of factors. This complexity characterized by a generalized cognitive-emotive dichotomy seems to be typified by the longstanding classic-romantic and Apollonian-Dionysian dichotomies. The perennial nature of these conflicting dichotomies seems to denote the fact that neither side has reigned supreme. At most, certain eras have been known to look upon one side more favorably than the other. Still yet, there has been no finality in the conflicts. Thus, the general stalemate that characterizes these dichotomies may further indicate the possibility that conflicting sides could be complementary or at least equally valid modes of describing musical experiences.

In all, the utilization of redundancy in pattern-pulse works seems to reflect an inclination for a more or less "romantic" and Dionysian approach to music. This is to say that while informational content is not entirely neglected in these works, it is controlled, minimized, and mainly aids in the delineation of the musical process which, in turn, seems to possess an extraordinary and potent capacity to arouse the listener emotionally. Consequently, information in these works can be seen as subservient to emotion-producing factors. Redundancy, on the other hand, is a primary as well as positive feature necessary for the realization of these factors.

Footnotes

[1]Claude E. Shannon and Warren Weaver, The Mathematical Theory of Communication (Urbana, Illinois: The University of Illinois Press, 1964), p. 8.

[2]Also referred to as the Mathematical or Metrical Theory of Communication.

[3]On Human Communication, 2nd edition (Cambridge, Massachusetts: the M.I.T. Press, 1966), p. 228.

[4]Jagjit Singh, Great Ideas in Information Theory, Language and Cybernetics (New York: Dover Publications, Inc., 1966), pp. 12-13.

[5]The Mathematical Theory of Communication, loc. cit., p. 15.

[6]Information Theory and Esthetic Perception (Urbana, Illinois: The University of Illinois, 1966), pp. 196-197.

[7]Ibid., p. 197.

[8]The Psychology of Communication (Baltimore, Maryland: Penguin Books, Inc., 1969), pp. 15-16.

[9]See On Human Communication, loc. cit., p. 182.

[10]Jagjit Singh, loc. cit., p. 37.

[11](Berkeley, California: University of California Press, 1971), p. 17.

[12]See J. R. Pierce, Symbols, Signals and Noise (New York: Harper Torchbooks, 1961), Chapter 8.

[13]Music, the Arts, and Ideas (Chicago: The University of Chicago Press, 1969), p. 271.

[14]Syntactic Structures (The Hague, Netherlands: Mouton and Co., 1969), p. 17.

CHAPTER IV

REPETITION AND THE DRIFT TOWARDS CONSTANT FOCUS

A claim that repetition is of central importance in music may seem somewhat superficial as well as obvious and elementary for repetition is entwined in the fabric of our reality; it is an experience common to all and therefore normally just taken for granted. Repetition is necessary for order; without some type and amount of it, everything could appear to be mere disorder. The importance of repetition is seen clearly, for example, in the domain of language where finite symbols having finite meanings are used in frequent repetition. Differences and variations in expression and meaning come not from an infinite number of newly devised or changed symbols, but from the various ways a finite number of symbols is utilized and ordered. Far from being empty and meaningless redundancy, repetition of these symbols makes comprehensibility and communication possible. Therefore, a statement that repetition is a necessity[1] for some kind of comprehensibility in the communication of music could almost be taken for granted and therefore not be considered particularly revealing.

In the previous chapters, we have seen that in spite of its association with tradition and negative connotations that it has acquired, repetition has emerged as a prominent feature in pattern-pulse works influencing many aspects of music, one of the most unique being the aspect of time. The way repetition

has been utilized in these works is unprecedented in the history of Western music. In light of this prominent emergence, then, the broad function of repetition, contrary to being a superficial matter, emerges to be a relevant and significant aspect deserving attention and investigation.

Repetition, of course, has not been totally absent from twentieth-century music, for while there has been a tendency for it to be avoided in serial and aleatoric procedures, it has still been utilized in ways other than that found in pattern-pulse works. Its prominent and unique utilization in pattern-pulse works, however, seems to indicate that an evolution has taken place in its function: from merely providing unity to increasing and sharpening focus in music. The task to be undertaken in this chapter will be that of elucidating this evolution. This will be done by further investigation into the broad relationship between repetition and music--in particular, the function of repetition as a unifying factor, a means of attaining temporary focus and emphasis, and most recently, a means of creating a kind of constant or "ultra" focus.

Repetition as a Unifying Factor

The utilization of repetition for purposes of unity is best seen in some traditional means of organizing music.[2] Passacaglia, chaconne, binary, ternary, variation, and

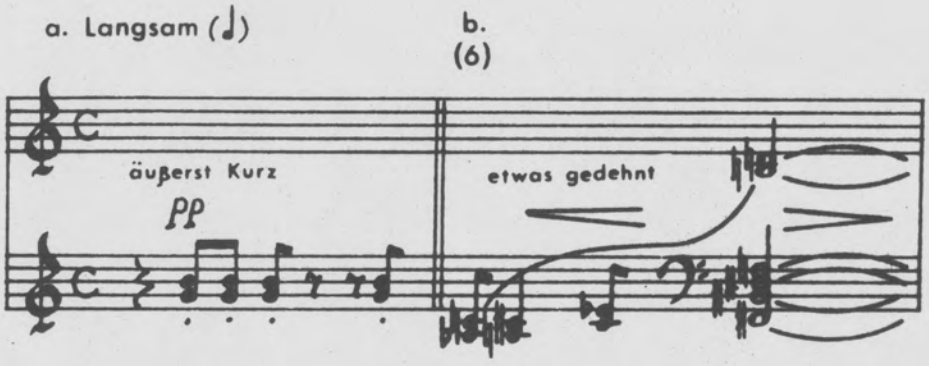
sonata-allegro forms, to name a few, provide us with good examples of unity on a large scale achieved through repetition. Contributing a form of repetition, the principle of return spoken of in Chapter 2, in one way or another, is the main unifying factor. Essentially, returns simply provide a means by which constituent sections in a work can be easily connected and related to each other. Unity, then, is achieved because of the exact likenesses or similarities of sections occurring at different locations in the time continuum.

On a more detailed level, unity in a work can be achieved through motivic repetitions. These repetitions range from more literal imitational and fugal ones to less literal developmental ones where motives are varied and permuted in some way while still maintaining a basic identity. While their contribution to the principle of return is in part a reason for their effectiveness, the capacity of these repetitions to produce continuity and short-termed unity is their main strength. Taken together, then, large scale structural and smaller scale motivic repetitions can cover and unify the entire time continuum of a musical work.

In spite of their absence in serial, aleatoric, and generally avant-garde works, the traditional uses of repetition as a unifying factor have still been present in works composed during the earlier part of the twentieth-century or in works which have had a more or less traditional orientation. Neoclassic works of Stravinsky, Hindemith, and Prokofiev would

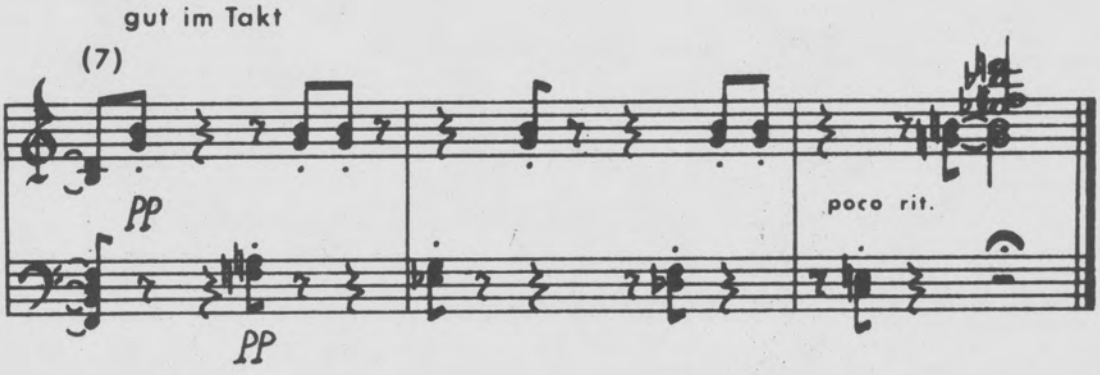
most certainly be examples cited in this regard. In addition, the utilization of repetition for unification can also be seen in less traditional works. Two examples will be briefly discussed here: No. 2 from Six Short Pieces for Piano, Op. 19 by Arnold Schoenberg and Intégrales for small orchestra by Edgard Varèse.

In Schoenberg's short piano piece, repetition is evident in the basically ternary structure: A (measures 1-3) B (measures 4-6) A' (measures 7-9). Although measures 7-9 are not exact repetitions of measures 1-3, material is basically the same and differentiation is minimal when compared to measures 4-6. Measures 4-6 are clearly differentiated from surrounding measures because of more development of material and the cadences in measures 3 and 6. More obvious and perhaps more interesting, however, is the conspicuous repetition of the G-B diad in the left hand throughout the entire piece. In measures 1-3, repetition is evident since the diad is in a rhythmic pattern (Ex. 1a) which is played three times. Only until measure 6 does any real deviation from this diad take place. At this point, development away from the G-B diad, after very slight deviations in measures 4 and 5 (the inclusion of a C-E diad in each measure), reaches its peak (Ex. 1b).



Ex. 1

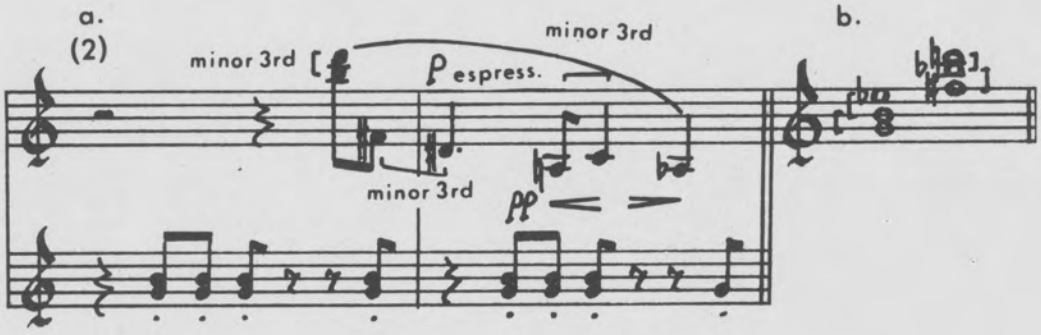
After this, the G-B diad returns and remains until the very end of the piece, this time, however, in the right hand with a different rhythmic pattern from that found in measures 1-3 while the left hand plays a sequence of descending thirds (Ex. 2).



Ex. 2

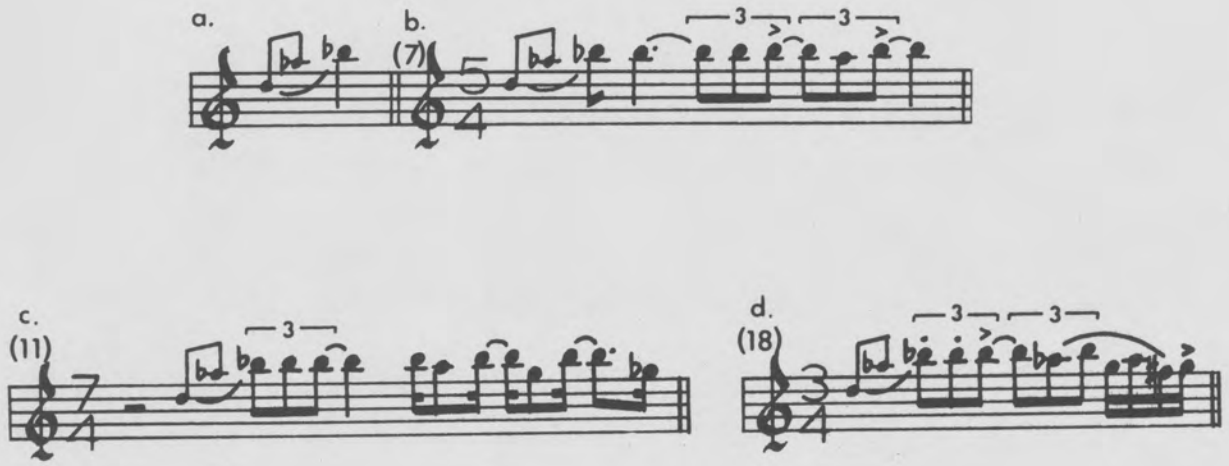
Apart from the establishment of tonal implications, it seems that the pervading presence of this diad through mere repetition is the primary unifying force in this piece. In one sense, this presence could be considered an abstraction of the melodic "ground" of the traditional passacaglia for it

basically establishes a foundation over and by which musical materials are generated. For instance, in terms of intervallic consistency, the G-B diad establishes the major third, if not at least thirds in general, as the primary interval in the piece. Except for the almost equally influential minor third (Ex. 3a), the major third seems to be the most important source from which musical materials are derived as seen in the descending thirds in measures 7-9 (Ex. 2) and the last chord of the piece (Ex. 3b). Repetition, then, is utilized to unify details as well as the overall structure of the piece.



Ex. 3

In Intégrales by Varèse, we are able to get clear examples of repetition on a motivic level; this is readily evident in measures 1-29. Basically, repetition is based on a motivic cell first stated by the Eb clarinet (Ex. 4a). This motivic cell is extended, permuted (Ex. 4b, 4c, 4d), and repeated continually (12 times) in relatively close proximity to each other.

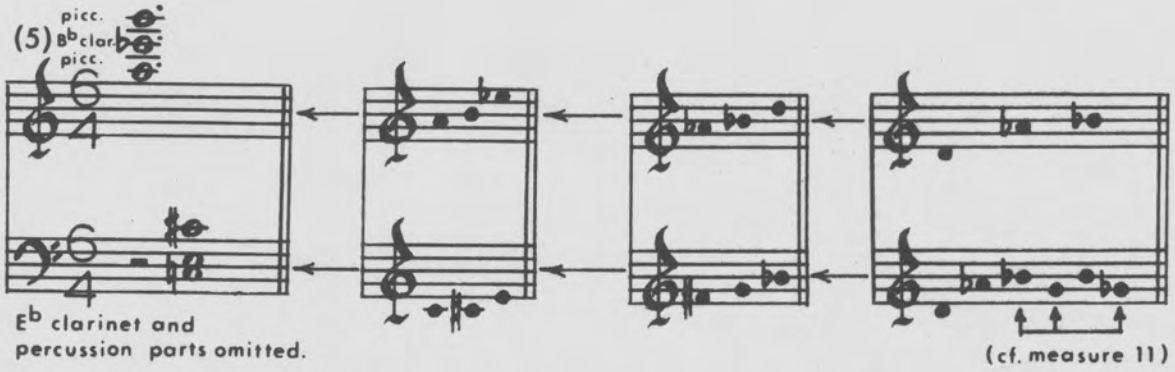


Ex. 4

In general, linear groups of pitches give the impression of being more or less fixed because of a minimal amount of permutations and the fact that the basic motivic cell, although permuted, is never transposed. Called "planes," these linear groups contrast as well as contribute to the "sound-masses" which Varèse was so fond of:

> When new instruments will allow me to write music as I conceive it ... the movement of sound-masses, of shifting planes, will be clearly perceived. When these sound masses collide the phenomena of penetration or repulsion will seem to occur. Certain transmutations taking place on certain planes will seem to be projected onto other planes, moving at different speeds and at different angles.... In the moving masses you will be conscious of their transmutations when they pass over different layers, when they penetrate certain opacities, or are dilated in certain rarefactions.[3]

Vertical sound-masses are often derived from motivic cells or permutations as shown in Ex. 5:



Ex. 5

It can be said that sound masses have little or nothing to do with harmonic relationships and functions in the traditional sense, i.e., chords and progressions. Rather, they are densities and sonorities, or "crystals" as Varèse often called them, in which texture, color, and dynamics are what matter most. Thus, unity is not so much achieved through pitch or harmonic relationships as much as through the interaction of unified planes and sound-masses which are delineated, sustained, and made more perceptible through the use of repetition. In Intégrales, as might be the case in other works of Varèse, then, repetition can be seen to be the foundation for unity since the existence and effectiveness of planes and sound-masses depend upon it so much.

Hence, with Intégrales as well as Schoenberg's piano piece, there seems to be a significant departure away from the utilization of repetition as represented in traditional forms. On the whole, repetition in these works becomes more

prominent and noticeable. In the piano piece, repetition is more than just a traditional "ground" which moves and repeats in a fixed unit; rather, the persistence of the G-B diad creates an almost static foundation instead. In Intégrales, repetitions of nearly fixed linear shapes based on the opening motivic cell in close proximity seem to possess less movement or progression than that found in motivic repetitions governed by traditional harmonic functions. Although sound-masses are "moving" due to the rhythmic propulsion generated by planes, they maintain a kind of fixed identity because of repeated elements, and so attention is instead drawn to the interaction of sound-masses and of the elements inside of them. Thus, here too, a tendency towards more staticity seems to be evident. This tendency manifested in both of the works discussed here can be seen as representing a major step away from a relatively broad overall focus to a more concentrated form of focus.

Repetition and Temporary Focus

The move towards more focus is understandable when seen against the background of the once-and-for-all demise of tonality in much of the avant-garde music after World War II. With the absence of tonality came the concomitant loss of an element that had ruled musical syntax for many centuries past. In a way, apart from its governance of music and its contribution to unity, tonality gave focus to music. In consequence,

the loss of tonality left a void which had to be filled. The emergence of aleatoric procedures, of course, provided a viable alternative to the necessity of focus--primarily with a denial of the necessity. For in aleatoric music, focus was negated, often purposely, because of lack of control and the existence of unpredictability. The problem of focus, then, was shifted to the level of aesthetics and value judgments. The problem itself of how to attain focus, however, still remained for those not desiring the aleatoric alternative.

To a large degree, another alternative was available in serialism. In the serial technique, the series and its mirrored forms became the primary sources from which pitch material was generated and organized. Since tonality was absent in the series, intervallic relationships and the general "gestalt" became the most important identifying characteristics. For composers with more "thematic" inclinations, the "gestalt" of the series became the "thematic" property that gave a work unity and identity. Earlier composers such as Schoenberg and Berg even relied upon traditional means of organizing the series, i.e., traditional rhythmic structures and phrasing. So by virtue of its importance and characteristics, the series became the central source of focus in serial works.

Focus, at least equivalent in degree to that given by tonality, was not easy to come by, however. With the exception of those used in an obvious and simple thematic manner,

the series, let alone their "gestalts," were not easily perceived. For one, the generally complex nature of these works, as discussed in previous chapters, made perceptibility difficult. Secondly, the post-Webern avoidance of thematicism, often characterized by the prevalence of pointillism, made the original shapes of these series obscure and unrecognizable. It is no wonder that parameters other than pitch began to receive more focus and attention. Even so, however, due to multi-parametric serialization, solid focus on any parameter was still problematic. Intricate complexities often merely gave the impression of unfocused meanderings. Thus, for those desiring more clarity and focus, serialism as just described was not necessarily the best alternative. It could be surmised here that for this reason, many composers began to stray from diehard serial attitudes.

In part, the problem of the incapacity of serial or even generally atonal music to achieve focus easily was solved with an increasing tendency for collective textures to gain focus. Textural focus was probably a natural outcome of the tendency for elements in a multi-parametric situation to be perceived as a texture rather than as discrete elements. That is to say, because of the complex networks resulting from serial procedures, it was probably easier for the listener to group elements into textures rather than to separate them into individual elements. This focus on texture seems to have been a step towards the use of repetition for temporary focus,

for with more emphasis on texture, changes on the discrete-element level lost some importance. In effect, this opened the doors for repetition to be utilized. For one, if changes taking place on a discrete-element level in a texture were almost imperceptible due to complexity, then non-change of the texture didn't matter much, at least in terms of the serial principle of constant change. Secondly, textures could be repeated so as to allow more time for discrete elements to be potentially perdeptible and, as a consequence become more effective. Thus, this developing interest in collective textures led to compromises of strict serial methodology and, therefore, to some decline in the status of serialism as a continuing tour de force in post-war music. For some, the use of serial principles became merely a pragmatic tool--a means to efficiently organize complexities in textures, and, at most, a means to insure consistency in pitch organization or a generalized atonality.

The point to which this "post-serial" development of textural focus led is clearly seen in the "Polish" scores which came into special prominence in the 60's. In these scores, textural change and differentiation become the prominent structural features; in fact, changes are mainly noticeable on the textural level. In general, these works tend to be composed of juxtapositions of blocks or sections of sounds rather than of discrete sounds. In order to sustain textures as well as to differentiate them from each other, there is

heavy reliance on stasis and on repetition of elements within a texture, often via repeated loops. Many of the works of composers such as Krystof Penderecki and Witold Lutoslawski have explified this approach. The first movement of Lutoslawski's Jeux Vénitiens, for instance, is comprised of only nine different blocks of sounds or textures which are placed in "counterpoint" with each other.

It should be noted that the tendency to employ pitch clusters and novel instrumental sound-effects as much as normal pitches in many of these works can be related to the fact that collective textures became more important than discrete elements. For, as a result of the diminishing perceptibility and importance of these elements, the quality of texture became a primary concern, leaving room for almost anything to be included in a collective texture. Thus, it could be presumed that the fascination with new instrumental effects was a direct result of attempts to create new and interesting textures which, as a result, would be more easily distinguished from each other. The use of pitch clusters in large part, instead of pointillism, seems to have been a mode of effecting clear and vivid perceptibility--clusters being more readily perceptible than the complex relationships between pointillistic elements. Clusters, in contrast to pointillism associated with micro-gestures, also seem to complement the macro-gestural tendencies in these works.

In general, like pattern-pulse works, Polish scores seem to reflect a concern for the effect that music can have on the listener. Lutoslawski's attitude indeed typifies this concern.

> As a result of recognizing the psychological aspect of art as being paramount, I am opposed to all those who consider the existence of a work by itself, independent of its being perceived, as the main aim of its being created. The score or recording are quite certainly necessary for the existence of a piece of music. However, they are not in themselves the actual musical work but only a stage in its realization, which is experienced by the listener. I understand the process of composing above all as the creation of a definite complex of psychological experiences for my listener, the fulfillment of which is on the whole extended throughout the greater number of performances of the same work.[4]

Certainly, because of their reliance on basically block-like and sectional construction, i.e., mere juxtaposition of different textures which may not even be related, these works can be criticized for their simplicity and insufficiently developed material.[5] Yet, this relative simplicity seems to be a purposeful means of affecting listeners psychologically.

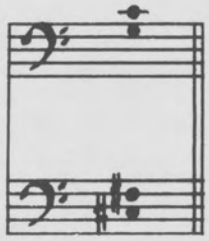
Hence, the utilization of repetition seems to be quite appropriate for the intent behind these works. In summarizing why it may have a capacity to enhance the psychological impact of these works, a threefold reason emerges. First, the rate of information flow is slowed down, making a limited number of elements more perceptible. Second, the listener is concomitantly given more time to perceive musical events.

This increase in time also affects the perception of psychological time, its movement becoming seemingly retarded or suspended. Third, as a result of the retardation of information flow, repetition contributes a substitute for the demise of tonality and thematicism. That is to say, repeated textures become entities providing a focus that replaces the focus given by tonality or thematicism.

Focus, then, and its capacity to get listeners involved psychologically, seems to be the culminating product attained from the use of repetition in these Polish scores. It will be maintained here that this kind of focus can be called a temporary focus, i.e., it constantly moves to different elements, in this case, textures. Its function is to provide the listener with something to "hang on to" at different points in the musical continuum.

Temporary focus has also been in scores other than the Polish variety. It can, for example, be found in Karlheinz Stockhausen's Klavierstück IX. The existence of this focus is particularly significant in light of the fact that Stockhausen was such a prominent figure and leader during the early years of the post-Webern movement. Furthermore, among his early piano works, this one is especially distinctive because of the conspicuous use of repetition.[6] Repetition is immediately apparent in the opening 16 measures of the work where the chord comprising of two juxtaposed fourths (Ex. 6) is repeated

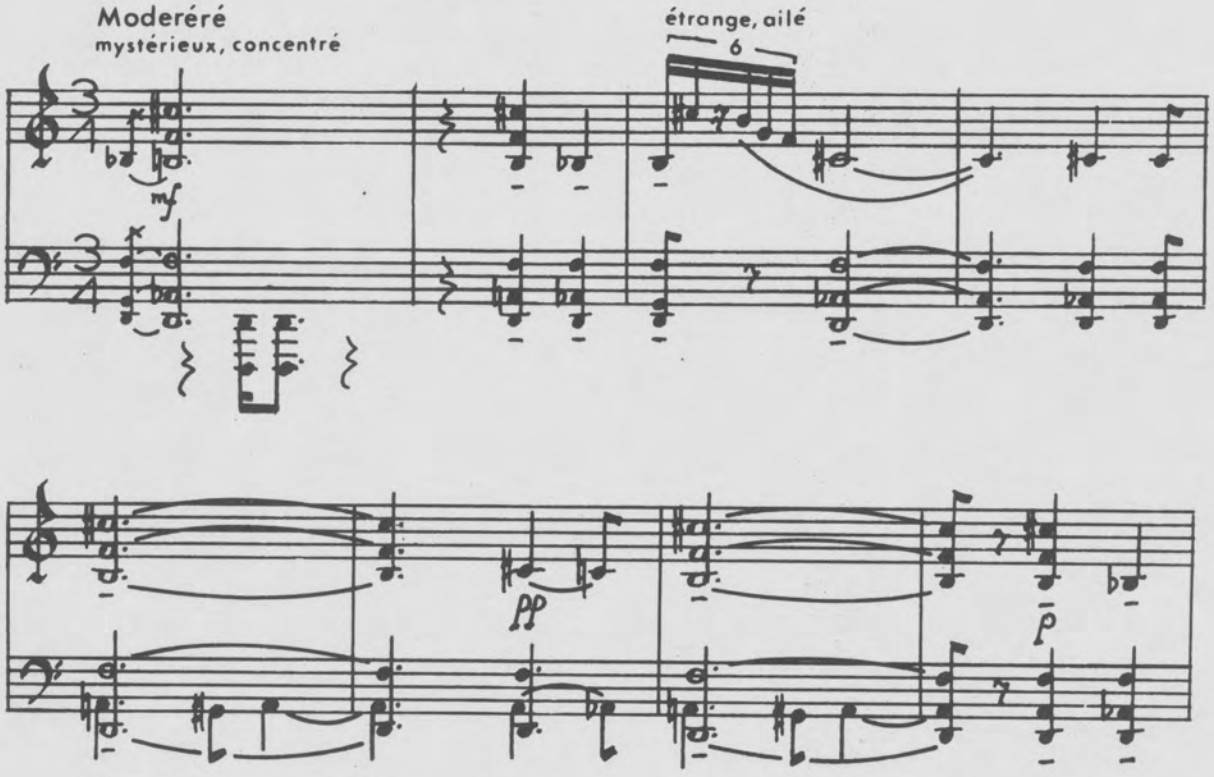
consecutively a number of times in regular eighth-note rhythm. These repetitions are grouped for the most part by interrupting rests. The following is the sequence of the number of times the chord is played in each group: 139, 87, 21, (1), 8, 5, 2, 3. Separating these groups are a cessation of rhythm for a duration of a dotted-quarter value, a $\frac{42}{8}$ measure consisting of a ascending chromatic line beginning on middle C, and the following sequence of measures of rest: $\frac{2}{8}, \frac{8}{8}, \frac{3}{8}, \frac{1}{8}, \frac{13}{8}, \frac{5}{8}$.



Ex. 6

Focus, in a sense, is horizontally "sculptured" in order to produce a gradual disintegration of focus on the chord while more information is introduced; this is in part done by the gradual lessening of repetitions.[7] Thus, focus changes gradually and is never completely stationary. In the context of the entire work, however, repetitions of the chord do give a concentrated and powerful focus to the first part of the work. For the remainder of the work, this focus is never as powerful even though remnants of it intermittently return interacting with other foci.

Temporary focus can also be found in works dating farther back than Stockhausen's. In Alexander Scriabine's rather static-like Sonata No. 6 for piano (1911-1912), there seem to be a number of temporary foci. One instance of focus is certainly found in the opening measures where, despite rhythmic changes, a basic chord structure with slight permutations is constantly repeated (Ex.7).



Ex. 7

Slightly different from repetition in Stockhausen's work, repetition here is more subtle due to more differentiation of rhythm and pitch movement. In terms of effect and function, however, there seems to be little difference, for

repetition of the limited number of pitches in a more or less fixed vertical structure causes a kind of staticity and, as a result, focus is created.

Thus, while the works of Stockhausen and Scriabin discussed in this section do not exhibit repetition of textural "loops" as do the Polish scores, they still contain the same kind of temporary focus due to very controlled short-termed repetition for temporary focus in all these works can be seen as exhibiting a still more concentrated form of focus than that found in Schoenberg's Op. 19, No. 2 or Varèse's Intégrales.

As far as unity is concerned, it can be said that this concentrated temporary focus contributes to the unity of a work--but not necessarily to the kind of unity associated with traditional formalism. That is not to say that this kind of focus is excluded from traditional forms, for works with temporary foci could be organized with overall traditional structures, e.g., ternary form. However, in these works, unity becomes dependent upon subjective as well as objective factors. That is, the fact that focus can aid a listener's perception and can possibly affect him psychologically becomes significant for unity as perceived by the listener. Unity, then, is not based solely upon formal structures but also upon a listener's involvement with the music: more specifically, whether the music is able to "carry him along."[8]

In other words, if the music "loses" him, then he may not perceive any unit. Going to an extreme, we could even say that if unity is considered to be one kind of focus, then unity as an operative concept could approach inconsequentiality since focus can become a substitute for it.

Repetition, Constant Focus, and the Expanded Present

In a way, the concept of unity is transcended and loses importance in pattern-pulse works. In these works, the musical process becomes a prominent feature, its perceptibility aided by an extremely concentrated focus. Unity thus becomes taken for granted since it is subsumed by the musical process, i.e., by nature, a musical process is unified. With repetition and gradual change controlling and delineating the musical process, a resultant focus literally becomes the "center of attention."

This concentrated focus seems to be just one step short of what might be termed a "singular" focus[9] or focus on just one seemingly unchanging thing. Focus is "singular" to the extent that the "present" seems to be prolonged or stretched out. Yet, changes of focus occur due to gradual and slow changes in the musical process. In contrast to the often interrupted and discontinuous foci caused by abrupt changes in works having temporary foci, this focus in pattern-pulse works which changes in a smooth and continuous fashion can be called

constant focus. In order to see the nature of this focus more clearly, we turn to a discussion of three works representative of pattern-pulse procedures: Piano Phase (1967) and Four Organs (1970) by Steve Reich, and In C (1964) by Terry Riley.

Steve Reich's Piano Phase is probably one of the simplest and shortest works in the pattern-pulse repertory. It is scored for two pianos and utilizes an economy of musical material, namely a 12-note pattern comprising of only five different tones (Ex. 8). This pattern is the basis for the entire work.

Ex. 8

The following are the performance instructions given by Reich:

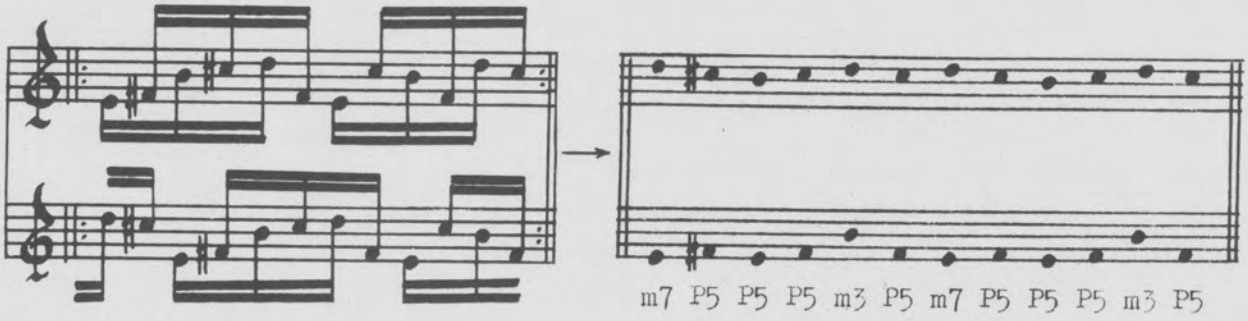
> One pianist starts and the other joins him in unison.... The second pianist increases his tempo very slightly and begins to move ahead of the first until (say in 30 to 60 seconds) he is one sixteenth ahead.... This process is continued, with the second pianist gradually becoming an eighth, a dotted eighth, a quarter, etc., ahead of the first until he finally passes through all twelve relations and comes back in unison ... again. The entire process may be repeated as many times as desired.
>
> Either pianist may have the stable or moving role and these may be reversed if the process is played through more than once. A performer may find it easier to gradually decrease his tempo and bring about the change of phase that way. In any case, a gradual movement should be attempted - the slower the better. The tendency to move directly

> from one "rational" relationship of sixteenth note difference ... into the next, should be resisted and performers should attempt to move smoothly and continuously, spending due time in the ... "irrational" relationships.[10]

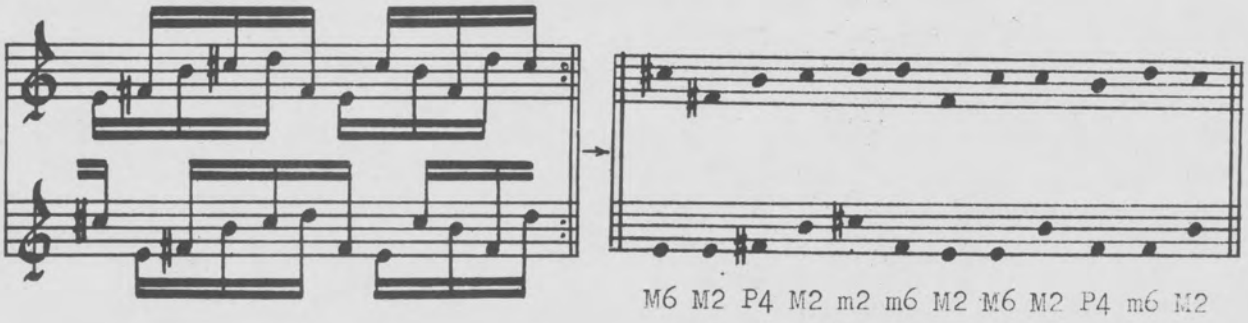
Simply stated, the musical process can be described as a gradual movement through all of the twelve possible phase relationships obtainable from the interaction of the pattern with itself. This process is extremely continuous due to the fact that there is also a very gradual movement between each phase. Further, continuity is firmly established by economy of pitches, persistent and almost unchanging rhythmic regularity, and a constant dynamic level.

In addition to being continuous, focal changes in the musical process are evenly paced and distributed. Information, of course, is extremely limited due to slow and gradual change, but, moreover because changes occur within a framework of a limited number of pitches in a fixed pattern. It is even possible, then, that a listener could merely focus on the pattern without being fully attentive to changes. However, changes are rather evident because of the rhythmic irregularities, or "irrational" rhythms as Reich calls them, that occur between phase shifts, and because differences between phases regarding lines and interval content seem to be rather noticeable, as seen when comparing the eleventh and twelfth phases reduced to resulting upper and lower lines (Ex. 9).

Phase 11



Phase 12



Ex. 9

From this comparison, two aspects, apart from linear ones, concerning intervallic content become obvious. First, both phases contain different intervals, consecutive and parallel fifths giving the eleventh phase an added distinction from the twelfth. Secondly, no interval is present in both phases. In other words, the groups of intervals (thirds, fifths, and sevenths in the eleventh phase and seconds, fourths, and sixths in the twelfth phase) are mutually exclusive of each other. (It should also be noted that they are inversions of each other.) Upon further investigation of all phases, we find that these two groups (with the addition

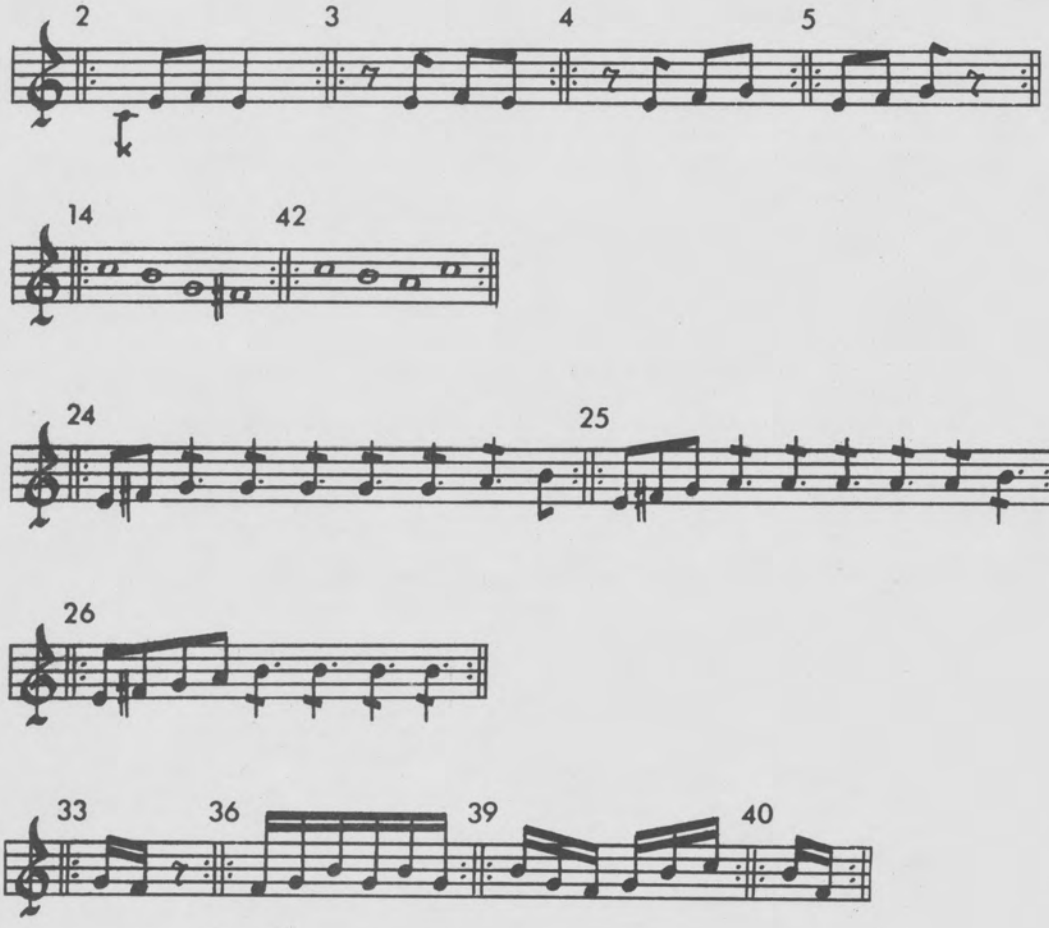
of the unison to the group of thirds, fifths, and sevenths) are separated throughout the entire work. Moreover, there is an alternation between them. This occurs in the following way (unison = 1):

Phases	Intervals
1	1 1 1 1 1 1 1 1 1 1 1 1
2	2 4 2 2 6 2 6 2 4 6 2 6
3	5 5 3 5 7 5 5 5 3 5 7 5
4	6 6 4 6 2 4 2 2 2 2 6 2
5	7 1 5 1 3 1 7 1 5 1 3 1
6	2 2 2 2 6 6 6 6 4 4 2 2
7	1 5 1 5 1 5 1 5 1 5 1 5
8	6 4 4 2 2 2 2 2 2 6 6 6
9	5 1 3 1 7 1 5 1 3 1 7 1
10	2 6 2 6 6 4 6 2 4 2 2 2
11	7 5 5 5 3 5 7 5 5 5 3 5
12	6 2 4 2 2 6 2 6 2 4 6 2

Change in this work, then, can be very evident for the attentive listener. These changes do occur in a limited framework, however, so they seem mainly to contribute to a quasi static entity in which internal elements just shift from place to place without much effect. So, in effect, given that focus becomes very acute because the work does have a limited and static framework, then focus on changes within this framework becomes even more acute.

In Terry Riley's In C, constant focus is brought about in a different manner. This work calls for any number and type of instruments, except for a piano which provides a steady pulse of continuous octave eighth-notes (top C-octave) throughout a performance. The score is comprised of fifty-three

figures (or patterns) in a fixed order, each figure differing from the other in pitch, rhythm, or length. In spite of differences, however, figures are closely related motivically. This is seen in the similarities between figures as seen in Ex. 10. Furthermore, figures are also related because of the tonal cohesion throughout the work: C to E to C to G.



Ex. 10

Performers, entering in staggered fashion, are instructed to play all fifty-three figures in their given order and in synchronization with the pulse provided by the piano. How

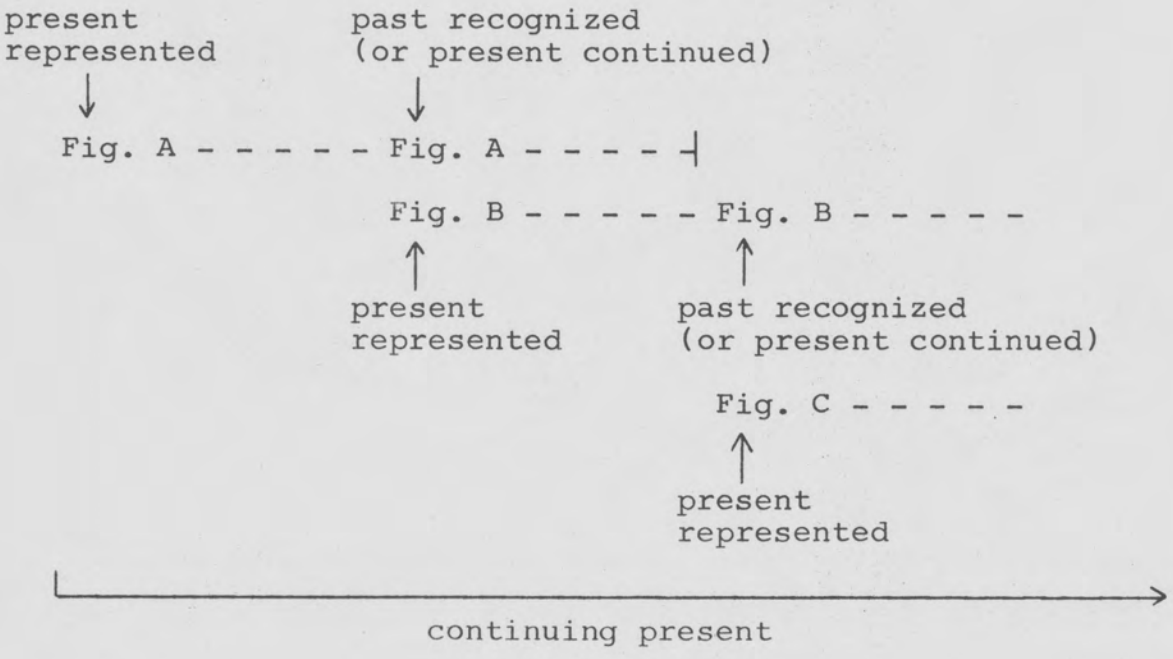
long a performer plays each figure before going to the next and how long he rests between figures, if he wants to, are his choices. A performance, which should last anywhere from forty-five to ninety minutes, ends after every performer has played all fifty-three figures.

Compared to focus in Piano Phase, focus in In C obviously involves more change. In accordance with the musical process, focus on an overall level shifts from the tonal areas of C, E, C and G, respectively, in contrast to focus on one tonal area established by the pattern in Piano Phase. For this reason, the element of teleology is more conspicuously perceptible in In C. Pitch and rhythmic differentiation, let alone motivic or pattern variety, also increases focal changes. Due to these changes, continuity seems to be more apparent since changes give it more embodiment and therefore more tangibility than the subtle and almost static continuity in Piano Phase.[11]

In spite of these differences, both works are alike insofar as they generally have expanded "presents" in the time continuum due to repetition and very gradual changes. Psychological time in both cases, then, is slowed down.[12] It could be said that, due to more changes in In C, time would be perceived to move faster in In C than in Piano Phase. Yet, because each figure can be played very long and, because its length or "life" is further extended due to the fact that many instruments are playing it out of phase with each other,

the movement of time in In C can seem to be somewhat equal to that in Piano Phase.

There might be one small difference between In C and Piano Phase regarding time, however. In In C, differentiated figures become overlapped because performers are playing out of phase with each other. In effect, this overlapping could be taken as a symbolic placement of the past and present into the same locale in the time continuum. That is to say, if the "present" is identified with a newly emerged figure, then the overlapping of this figure with another newly emerged figure could be interpreted as a symbolic merging of past and present. This occurrence could be diagrammed in the following way:



This kind of occurrence exists in Piano Phase to an extent, of course, since one piano is stationary while the other moves on; yet it is not quite so noticeable due to less differentiation of material.

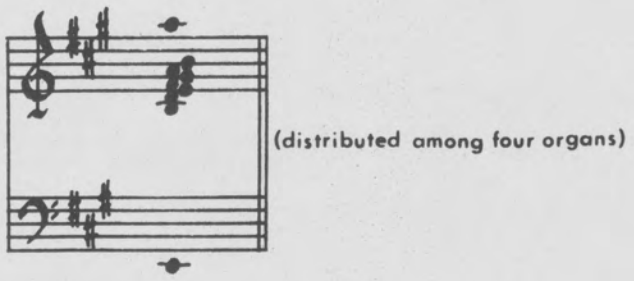
Certainly, this notion of a merger of past and present approaches a level of abstraction which may be too remote from what actually (and practically) takes place in a listener's perception. Nevertheless, it does contribute another explanation as to how and why the "present" can be perceived to be expanded. It also reveals a "vertical" aspect of the continuity in both works.

The "present" is even further expanded in Reich's Four Organs (1970). To see this, we first turn again for an explanation of his work:

> Four Organs was composed in January 1970. It begins with a short pulsing chord which gradually gets longer and longer in duration. As the chord stretches out, slowly resolving and unresolving, a sort of slow motion music is created. The maracas lay down a steady grid of even eighth notes throughout, enabling the performers to play together while mentally counting up to as much as 200 beats and more on a given cycle of sustained tones.
>
> Four Organs is the only piece of music I am aware of that is composed exclusively of the gradual augmentation (lengthening) of individual tones within a single chord. From the beginning to end there are no changes of pitch or timbre; all changes are rhythmic and simply consist of gradually increasing durations.[13]

Like Piano Phase, this work contains an economy of material (see Ex. 11). Changes thus occur within a limited framework. Unlike Piano Phase, this work depends on both

durations and rhythmic attacks rather than just on rhythmic attacks to bring about changes. The overall musical process in this work is also more clearly perceptible than that in Piano Phase since it is less homogeneous in terms of rhythm and duration. However, as durations become longer, resulting in less attacks, the rate of change slows down and becomes less perceptible in a texture of held tones. Consequently, in Four Organs, there seems to be a steady and progressive decline of change.



Ex. 11

In light of this decrease of change, then, the "present" can be perceived to expand gradually within the work. Moreover, this expansion is especially reinforced by the fact that the short duration of the chord (possibly representing a short "present") at the beginning of the work gradually becomes longer (possibly representing a longer or expanded "present"). In contrast to the "presents" in Piano Phase and In C, the

gradually expanding "present" in Four Organs seems to be more obviously a part of the musical process if not itself a way of describing it.

Thus, the musical process and changes of focus in Four Organs are not just perceived through motivic and tonal relationships, but also through the way movement of time seems to become increasingly slower, largely caused by an expanding "present," as the music unfolds. This "present" no longer is the rather unchanging and evenly distributed "present" in Piano Phase, or In C,[14] for that matter. And focal changes become defined not only by concrete changes that take place in the music but also by the way a listener's psychological state and perception changes. In Four Organs, then, we may have the best and clearest example yet of how what happens in the listener can become included and important in descriptions of music.

Epilogue

The drift towards constant focus in pattern-pulse works seems to represent an attempt to reinstate a focus that had become diminished or lost due to the demise of tonality and thematicism in avant-garde music since World War II. Taken to an extreme, this constant focus has led to an expansion of the "present" in the psychological time continuum. For this reason, pattern-pulse works can be seen to have a strong

psychological orientation. The price payed has been high, however, for with the attainment of a kind of "ultra-focus" has come the concomitant decrease of information. If anything, this decrease could be considered a liability as well as a strength in these works.

For one, although listeners may not necessarily listen for information in music all the time (as was mentioned in Chapter 3), they certainly can be affected by it; moreover, listeners, especially those in the Western world, have been accustomed to information in music. Of course, there have been varying degrees of information in different types of music, so it is rather evident that not everyone has been accustomed to the amount of information present in much of the avant-garde music since World War II. It is obvious that the average listener has been more accustomed to music with less information as exemplified by much of the popular music of the day. However, the degree to which, as well as the means by which, information has been reduced in pattern-pulse works have reached extremes that can be considered equally dangerous as the degree to which information has increased in many serial works; the dearth of information in pattern-pulse could merely cause boredom in the listener.

Secondly, the reduction of information has given way to the musical process which has been given primacy by Reich in particular. It seems that an attempt to give the musical

process priority over other aspects could be harmful, for listeners may not necessarily be interested in this particular aspect. Even if a listener were interested, the slow and gradual quality of the musical process may create a barrier for him since he may not possess the kind of patience or "staying power" required for the appreciation of the musical process.

In short, if the involvement of the listener is a desired and intended goal in pattern-pulse works, the extreme measures taken to reinstate focus could be considered somewhat counter-productive. There will be no attempt, however, to pursue and solve this issue here--mainly because it is probably too early to come to any definitive conclusions or even too early to make predictions about how people will listen to this music in the future. True evaluation can only come with a longer passage of time. Thus, this issue and the problems surrounding it will be left in abeyance and, for now, it will just be said that pattern-pulse works have represented a unique as well as viable approach to the complex and often problematic domain of music itself.

Footnotes

[1]This statement should not be confused with a claim that repetition is a necessary property in music, i.e., a claim that in order for something to be considered music, repetition would have to be present. Philosophic thought since Wittgenstein concerning aesthetics has cautioned against set definitions of art or against giving certain features the status of being necessary for art. See, for example, Paul Ziff, "The Task of Defining a Work of Art" in Contemporary Studies in Aesthetics, edited by Francis J. Coleman (New York: McGraw-Hill Book Company, 1968), pp. 94-111.

[2]Tonality can be viewed as a form of repetition because of its hierarchical ordering of pitches. The tonic and returns of the tonic could be viewed as repetitions contributing to unity in music. However, for present purposes here, tonality will not be given attention. It will merely be taken for granted and left for discussion in the next section.

[3]Lecture given at Mary Austin House, Sante Fe, 1936. Quoted in "Varèse: A Sketch of the Man and His Music" by Chou Wen-Chung, The Musical Quarterly, Vol. LII, No. 2 (April 1966), p. 157.

[4]Witold Lutoslawski, "The Composer and the Listener" in Lutoslawski, edited by Ove Nordwall (Stockholm: Edition Wilhelm Hansen, 1968), p. 121.

[5]Of course, these criticisms could be considered "Germanic" and therefore not be considered applicable since Polish music does not seem to have come out from that tradition. If any, Penderecki and Lutoslawski have been much more influenced by Bartok than any "Germanic" composer as evidenced in their earlier scores. It should also be noted that Penderecki's music has drawn more criticism than Lutoslawski's--probably because Lutoslawski's music in general has used more variety and relied less on cluster-type composing which has begun to sound like "formulas."

[6]Some of his later works have used quite a bit of repetition, e.g., Mantra (1970) for 2 pianists. It should also be mentioned that many of the later works of Luciano Berio have had conspicuous repetition. Most striking uses are found in Sinfonia for 8 voices and orchestra. This trend of increasing repetition found in works of one time post-Webernites seems to indicate a definite move away from serialism.

[7]There seems to be the use of a Fibonacci series here. Although not in order, numbers belonging to the series are merely juggled around. For example, measures with events, i.e., 142 87 42 13 21 1 8 5 2 3 8' 8' 8' 8' 8' 8' 8' 8' 8' 8' can be derived from the following series and its adjustments: 1, 2, 3, 5, 8, 13, 21, and 13 + 42 + 87 = 142. Likewise, measured rests, i.e., 2 8 1 5 2 3 8' 8' 8' 8' 8' 8' seem to originate from the series. The use of the Fibonacci series seems to indicate a concern for perception and focus, for the capacity of series to generate perceptible differences is often a reason why composers rely on it.

[8]With the inclusion of subjective factors into the definition of unity in these works, one is tempted to say that works employing temporary focus approach a kind of "new romanticism" in contrast to, for example, a kind of "classicism" represented in serial works.

[9]This "singular" focus might be seen in the music of La Monte Young who has been interested in lengthy durations of single notes or intervals, where the apparent non-change sharpens one's perception by making one become aware of existent microscopic changes, whether they be in the music or oneself.

[10]From Notations by John Cage (New York: Something Else Press, Inc., 1969).

[11]A minor point of clarification might be necessary here. In stating that continuity is more tangible, it is not the same as stating that there is more continuity. For it could be said that Piano Phase has a higher degree of continuity due to less differentiation of musical materials. To state that continuity is more tangible in In C merely indicates that continuity is more perceptible.

[12]Of course, subjective evaluations enter into the picture here, which makes more specific description difficult. A listener, for instance, could find one work more interesting and therefore "faster moving" than the less interesting one.

[13]From record jacket of Three Dances for two amplified prepared pianos by John Cage and Four Organs for four electric organs and maracas by Steve Reich (Angel S - 36059).

[14]There is, in a way, a kind of flexible "present" in In C due to differentiation of figures ranging from ones with motion to relatively more static ones.

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Dennis Koon Ming Kam was born in Honolulu in 1942. He has attended, in addition to the University of Illinois, the Oberlin College-Conservatory of Music (Bachelor of Music, 1964), East-West Center at the University of Hawaii (Master of Fine Arts, 1966), Mozarteum in Salzburg, Austria, and Toho School of Music in Japan. His composition teachers have included Joseph Wood, Cesar Bresgen, Armand Russell, Yoshiro Irino, Ernst Krenek, and Salvatore Martirano.

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Ditto Varianti, his doctoral project, is his fourth work employing the orchestra. This work is based on the interrelationship between repetition and change.