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## ABBREVIATIONS

|              |  |
|--------------|--|
| <i>SoM</i>   | <i>Stockhausen on Music</i>                    |
| <i>Texte</i> | <i>Texte zur Musik, Bände 1–10 (1963–1998)</i> |

## In Place of a Foreword

*R. M.: Would you care to enlarge on the tendency of commentators to look for external reasons for what you do?*

Kh. S.: It is apparent to me that a number of different authors have attempted to explain ideas, choices of subject, and forms of my music as the outcome of events in my life. I am totally opposed to the widespread belief, which one might call the Pavlov attitude to human behavior, affecting the whole of Western education and philosophy, whereby everything, even the arts, is interpreted as a result of something that has happened before. It is totally contrary to my own concept of history and of the evolution, not only of mankind, but of all things. From my own work I know that everything is fundamentally the result of inspiration, of inner visions, of the desire to *make* something of these visions, and of subsequently living them out, in daily life as well as in my work.

If there are events in my earlier life, or factors in the environment, which you can later on relate to aspects or elements of my work, then I think it is rather that the same spirit is manifested in both. Or even, since the relationship is perceived through me, through my work, that it is not the environment that informed me, but that I have given form to the environment.

My parents did not choose to make me what I am, nor did the country in which I was born. Rather, they are chosen,—identified,—in me: in that “me” which is known in my works. And the same is true for what I am able to do as a composer as for who I happen to be at a particular time. My skills as a composer are the fruit of many lives’ training in musicianship. How else can it be that we are so different?—that my little son Simon for example can compose much better than other children? Certainly not “because of

his parents": he might have been born with many talents, but that doesn't account for his unquestionable technique, which allows him to write music without thinking twice about it. There is a very profound antecedence in each one of us, which has led to this present life.

*R. M.: You are saying that the approach that I and perhaps others represent is too deterministic?*

Kh. S.: Yes: it starts on the surface and remains on the surface; it does not really reach the more profound sources of art and music, which are not based on psychology, and can never be the object of psychological analysis, because they have nothing to do with the psyche. You see, the psyche of a human being and the soul of a human being are two entirely different things: the psyche will die with the body, is limited to a single life, though it may be tuned in like a crystal to wavebands of a higher intelligence that beam constantly into our human atmosphere. But the real reason for important events in the life and work of an artist is to be found in realms far beyond the psyche, and of a different quality: from the awakening of a higher kind of mentality, and from an existence that transcends the individual psyche. The spiritual in man is something very concrete, and not identified with the psyche. It follows that psychology can only help us a little: only the surface can be explained, you see.

*R. M.: I won't justify what I agree is an inadequate approach. However, as an intermediary between yourself and your music, and a public who thinks in terms of making connections, I have to ask myself, if such and such an aspect of your music is strange to me, is it really utterly strange or could I not recognize it in some other context? Which is not to claim that there is a causal connection between the two, but to show that what may seem strange is capable of being understood.*

Kh. S.: Yes, but what I am saying is that in my experience it is by emphasizing the strangeness, and not trying to do away with it or diminish it, that you are more likely to reach the truth. For the moment you try to explain things that appear to be strange, and you think you have explained them, then you have completely missed their message and their importance. I think it is more important than anything else to draw attention to the strange and inexplicable, for only that is truly original.

*R. M.: It is also beyond words.*

Kh. S.: Certainly: as the Chinese say, like understanding the hole in the middle of the wheel, which you reach by discarding everything which is explainable and deducible. I mean, I could have made any number of analyses of Bartók: the point was afterward, because of the analyses, to do something really different, so that I myself should have as little in common with what I knew. I think every experience I have gone through has been a

means of elimination, a systematic shedding of influences in order to arrive at the original kernel of my being,—however little it may be,—which has come down through the centuries along with my identity, and which I now want to formulate in a very personal way. You would help my music much more, I think, if you would give equal attention to that, as to those surface features which can be explained in terms of prior influences and experiences.

*From an interview with the composer recorded in 1981.*



## PREFACE

The present commentary continues a conversation that began in 1964–1965, in the composer's composition class in Cologne, and continued with the publication in 1976, and in revised and enlarged form in 1990, of my *Works of Karlheinz Stockhausen*. The issue in 1976 was whether contemporary music could be discussed intelligently, and more generally, whether it was music at all. At that time it seemed to me inevitable that future generations would eventually be able to talk much more easily, and in a common language, about composers as different in their outlooks as Stockhausen, Boulez, and Cage. The problem was to discover appropriate terms of reference and a new approach. If that could be shown to work for the music of the most difficult and controversial composer now living, it might also change our perception of the history and development of Western music in general. To a certain extent that has since happened. The digital revolution has made the conceptual bases of post-1950 avant-garde music much more transparent and intelligible, as well as greatly improving conditions for information sharing.

In the meantime, however, the philosophical debate has shifted ground. The composer continues to maintain, with emphasis, that no third party explanations of his work could possibly be meaningful, and that even he himself cannot explain why he does what he does. In my introduction I have tried to represent his position, which is argued with great force and sophistication, with the respect and sympathy it deserves. My own feelings are more complicated. As the aesthetic and technical consistencies of Stockhausen's musical evolution become clearer, a latent philosophical agenda has also begun to emerge. This subtext of meaning cannot be described as inadvertent. Among other issues, it addresses the status of the artist in modern society, the historic aspirations of German nationalism, and more

specifically a defense of the role of post-Enlightenment European culture in the wider world. That such an agenda may be a necessary ingredient of genius is open to consideration, and certainly deserving of further inquiry. That it entails maintaining attitudes and beliefs that are not always easy to deal with in today's world, is also true.

For an English-language readership, however, by far the greatest obstacle to understanding the composer and his music in context has been the lack of essential documentation in reliable English translation. Much of the evidence on which the present text and its conclusions are based has come from sources such as the ten volumes of Stockhausen's collected *Texte*, not to mention essential writings of such key players as Herbert Eimert, Pierre Boulez, Pierre Schaeffer, Olivier Messiaen, and Werner Meyer-Eppler, materials that even after forty years either remain unobtainable in English, or worse, have been rendered in an English incomprehensible to most readers. Given the absence of relevant material to discuss, a lack of vigorous debate is hardly surprising. I have done my bit, I trust, to draw the reader's attention to a fascinatingly rich and under-appreciated resource.

Serialism, its companion issues of directed and negotiable form, and the competing aesthetic claims surrounding live, electronic, and concrete music, can now be seen as elements of a grander aesthetic and intellectual enterprise, beginning in the late eighteenth century, concerning the nature and evolution of language, and its implications for post-revolutionary democracy. Music is implicated in this enterprise because the art of music has to do with how inflected sound is able to express refinements of objective meaning in everyday speech, as well as revealing inner subjective emotions. For both language and music the critical task began with the decoding of the Rosetta Stone nearly two hundred years ago. It gained momentum throughout the nineteenth and twentieth centuries, aided by the invention of ever more sophisticated machines for recording and reproducing the dynamics of human behavior. The renaissance we celebrate in Stockhausen's electronic and instrumental music is a culmination of that process, building on the reduction of musical expression to pure essentials by Webern and others, and advancing the corresponding task of formal renewal that such an achievement entails.

## ACKNOWLEDGMENTS

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## INTRODUCTION

### On Telling the Truth

*Was hilft die Wahrheit?*

*Es ist nicht bequem.*

*Nur wer im Wohlklang lebt*

*Lebt angenehm.*

PATRIMONIO UC (after Brecht)

In 1932 Schoenberg's son-in-law, the violinist Rudolf Kolisch, figured out the note-row to the composer's Third String Quartet, and wrote to tell him. Schoenberg responded:

You have rightly worked out the series in my string quartet (apart from one detail: the 2nd consequent goes: 6th note, C sharp, 7th, G sharp). You must have gone to a great deal of trouble, and I don't think I'd have had the patience to do it. But do you think one's any better off for knowing it? . . . This isn't where the aesthetic qualities reveal themselves, or, if they do, only incidentally. I can't utter too many warnings against over-rating these analyses, since after all they only lead to what I have always been dead against: seeing how it is *done*; whereas I have always helped people to see: what it *is*! I have repeatedly tried to make Wiesengrund [Adorno] understand this, and also Berg and Webern. But they won't believe me. I can't say it often enough: my works are twelve-note *compositions*, not *twelve-note* compositions. In this respect people go on confusing me with Hauer, to whom composition is only of secondary importance.<sup>1</sup>

When I first spoke to Stockhausen in London, in 1972, about embarking on the original *Works of Karlheinz Stockhausen*, he promised his cooperation and said to me, "You must tell the truth." I am a composer, not a musicologist. I think Schoenberg is right, even though it is convenient for me to



say so, since I have no aptitude for row-counting and am lost in admiration for the latter-day Talmudists who do (even if they do grumble a lot). Of psychology all that I know is that it has manifestly failed to discover any common ground between music and people who like music; and of philosophy, a dedication to the proposition that music is essentially meaningless. So: no Neo! And no “-ologies” either. So, what then? The music continues to exist, making statements, affecting listeners, in need of explanation—if only for the sake of giving the willing executant a sense of direction.

In 1978, with the composer’s fiftieth birthday approaching, I went to the BBC with an idea for a television documentary based on Stockhausen’s lectures filmed by Robert Slotover during the composer’s successful tour of Great Britain in 1971. It was to be a concise account of Stockhausen and his music, given *entirely in his own words*: nobody else saying anything, no interpretation, no possibility of bias or recrimination. After two years’ preparation, the late birthday offering, directed by Barrie Gavin and titled “Tuning In,” was finally transmitted in 1981 to friendly notices even from the London tabloid press.

All of the 1971 lectures are exciting events, and the composer is in excellent form. Toward the end of the documentary, in a clip from the lecture “Questions and Answers on ‘Four Criteria of Electronic Music,’” it seems as though an idea suddenly comes to him to say: “Liking is remembering.” This is the actual transcript of what he said:

You are always referring to *my* music, *my* music. What does it mean, *my* music? It’s just something that has come into my mind and I am working all the time and that’s it. So: I am a *myth*, I am a name, and if I go away then they just attach on something that vibrates within yourself, where you are confronted with this so-called music. It has a name so in order to identify it. That’s all. Like “Beethoven.”—who was he? He was a very miserable person, I must say, as a human being. And he is a myth for something that we are, that is within ourselves. We are echoing: Beethoven is part of us or he doesn’t exist. And in that sense I think it [music] is only a means, it’s like a spiritual food, and it will be used by certain people who discover a certain identity of what they are and what there is vibrating. They choose more of it, they like it—*liking means*, as I always say, *remembering*: when I like something, then I discover something that I have been before, that is profoundly already within me. It resonates, like a piano that you hit.<sup>2</sup>

It is in every sense an “inspired” remark, the sort of remark that reminds a listener that Stockhausen is not only an imaginative thinker, but that he also has a philosophy (the thought actually derives from Plato).<sup>3</sup>

Stockhausen’s thought is predicated on language: the notion that words are not just labels that we attach to ideas for the purpose of talking, but that words actually embody ideas, so that when we use words we are actually committing to the ideas they embody in preference to any ideas we might think we have. (This transfer of meaning is implicit in the statement itself, in that by liking one is necessarily identifying with a meaning more

fundamental than one might have thought.) To an English reader, his remark is a play on the meaning of the terms *like*, *liking*, and *likeness*, which is intriguing coming from Stockhausen because while there may be something in the notion of seeing oneself in the things one likes, it puts the listener rather too readily in mind of Freud, perhaps, for a view coming from an avowed antipsychologist. The word *likelihood* also suggests anticipation, implying a Janus-like opposition of forward- and backward-looking.

The artist has long been regarded as an individual who reflected the spirit of his time. I think there have always been different kinds of artists: those who were mainly mirrors of their time, and then a very few who had a visionary power, whom the Greeks called augurs: those who were able to announce the next stage in the development of mankind, really listen into the future, and prepare the people for what was to come.<sup>4</sup>

In German we encounter the same parallelisms: the word *ähnlich* means “like” in the sense of a resemblance to something; *es gefällt mir*: “I take pleasure in it;” whereas *erinnern* and *bedenken* are words for remembering. *Bedenken* not only means “remembering,” but also “doubting” or “hesitating;” the word *er-innern* is a construct signifying “to internalize,” while the verb *fallen* in the phrase *es gefällt mir* is used of sensory impressions: “it struck me” or “it fell to me,” in addition to “I like it”—the German passive voice is interesting here, implying an absence of conscious intention. As with *likelihood* in English, the word *Ahnung* in German implies a presentiment of the future, as when he says that certain visionary artists are *augurs*; but *ahnlich machen* means “to assimilate” while *Ahnenprobe* signifies “proof of noble ancestry,” something once sought after as a requirement for entrance to the elite schools. All of this makes sense in terms of who Stockhausen is and what he finds meaningful: the conjunction of opposites; the dualism of subject-object, anticipating-remembering, same-different; finally, that same urge to possess that Stravinsky identified in himself as “probably a rare form of kleptomania.”<sup>5</sup>

Philosophical wordplay has a long history, especially in Germany where they are adept at finding meanings even where they don’t exist. In England, Shakespeare’s puns are witty and done for comic effect: nobody for an instant believes they are literally true. In Europe, however, the accidental conjunction of meanings in a pun may be interpreted with great seriousness as a spiritual revelation, even when in reality it is merely a distortion of meaning for the sake of reinforcing a particular point of view. The very idea that a basic misinterpretation of words can be justified by appealing to some notion of a deeper truth might appear ridiculous, if it were not so widespread. A case in point is the 1962 indictment, by physicist John Backus in the new American journal *Perspectives of New Music*, of the music periodical *die Reihe*, edited by Stockhausen and Herbert Eimert, in which Backus draws attention to a systemic misuse by contributors of terminology having precise mathematical and scientific meaning. This unusually vituperative piece was reprinted in the English periodical *Composer*, which

later published a rejoinder by Hugh Davies, at the time an assistant to Stockhausen in Cologne. An Oxford graduate in philosophy, Davies argued in effect that "it had yet to be shown that an incorrect use of language could not all the same communicate correct information," a logic almost as baffling as Backus's in his original article. That the American author had misquoted *die Reihe* in the first place was not noticed by either side of the debate.

Wordplay is not just a recreation for philosophers: it is also deeply embedded in continental European culture, including educational theory. Stockhausen is the son of a schoolmaster and studied to become a teacher both under the Nazi regime and again after the end of the 1939–1945 war. Teaching plays as vital a role in the composer's mission as it did for Gropius, Klee, and Schoenberg at the Bauhaus, and Messiaen at the Conservatoire. The following passage from an influential early treatise on the education of the child is representative of a prevailing aesthetic (it is hardly a philosophy) that colored the most fundamental precepts of German teaching and learning. The author yokes together words that have no meaningful connection in order to establish an absolute moral imperative:

The inner being is organized, differentiated, and strives to make itself known (*Kund thun*), to announce itself (*verkündigen*) externally. The human being strives by his own self-active power to represent his inner being outwardly, in permanent form and with solid material; and this tendency is expressed fully in the word *Kind* (child) *K-in-d*, which designates this stage of development.<sup>6</sup>

Elsewhere in the same manifesto the author (Friedrich Froebel, the pioneer of kindergarten education, and of whom more later) would have his readers believe that the word *Sinn* (sense) is a combination of *S-* (meaning "self") and *-Inn* (meaning "inwardness" or "inner being"). This is not very different from me claiming that the word *Identity* is the same as saying "you are what you eat" (in German, presumably, "man ist was man isst"), since it divides into the syllables *I-* and *-dentity*—of which the first undoubtedly corresponds to the first person singular, and the second is clearly a reference to teeth.

That wordplay of this sort acquired a mystique among middle-class intellectuals in the nineteenth century is certainly true, though why is not altogether clear, considering the damage that can be caused by the manipulation of language for effect. We can still take pleasure at false relations in comedy, and admire the same in poetry where a reader is conditioned to, as they say, "rich text," and poetic meaning is enhanced. Modern advertising is the legitimate domain of wordplay, where secondary implications are often of vital commercial significance, as in the famous case a few years ago of a new model compact car with the name "Nova" that had to be renamed because in Latin America it means "it doesn't go." In dealing with language at this level the literal meaning of words in print is not the only consideration; how they actually sound when spoken on the radio or on television introduces an additional dimension of meaning that has to be taken

seriously into account.

Nineteenth-century society was drawn to wordplay as a fashionable recreation that indicated that the speaker was literate as well as aware, and perhaps envious, of the special relationship of word- to knowledge-acquisition exemplified, for example, in Linnaeus's classification of living things, in Darwin's account of the origin of species, and the achievements of Champollion and others involved in the decryption of the mysterious Rosetta Stone. For language itself to be subjected to exacting Darwinian scrutiny and reveal a connected history of derivations and mutations, as it came to do for the generations following Champollion, must have seemed totally baffling to some members of literate society. To an educated bourgeoisie believing in Bishop Usher's account of the Creation as a spontaneous act of divine will in the year 4004 BC, Darwin's evolutionary hypothesis represented a challenge not only to received religion but also to the holistic visions of nature associated with Goethe and Wordsworth. This disturbing new dynamic of biological interconnection caught the public imagination through a range of parlor games and entertainments, from charades to crossword puzzles, based on word-formation and perceived or intuited relationships.

Hence a fashionable eagerness among educated people to plunder everyday language in a vain quest for hidden pearls of meaning. Decoding the ancient pictograms of Egypt found a popular echo in the *rebus*, a puzzle message concealed in a fanciful montage of unrelated images. Making the leap from a harmless recreation of deciphering messages concealed in pictograms, to discovering meaning in the dreams of the emotionally disturbed as a profession, is the story of psychoanalysis in a nutshell; but in making a corresponding leap, from puzzle-games to surrealism, the object of analysis changes from isolated individuals in distress to society as a whole, as is seen in the response of art and poetry, in the years leading to the First World War, to the industrialization of international conflict that threatened the whole of Western civilization with collapse.

Musical codes have always been a recognized element of rebuses and spelling games, though their implications are normally relatively benign: themes based on BACH or DSCH, the ABEGG Variations of Schumann, Berg's *Lyric Suite*, Boulez's *Messagesquise*. We can do this too. On the surface, the name "Karlheinz Stockhausen" is just that; but if we examine its spelling more closely, a secret message is suddenly revealed:

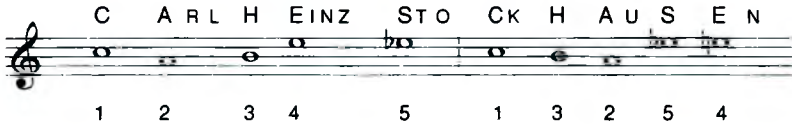
k a r l h E I N z   s t o c k h A U S e n

To the cabbalist, this is a profound and awe-inspiring mystery. What does it mean? In German, "ein" and "aus" are what you do when you breathe: you breathe *in* and *out*. That these two words are found in the composer's name is undeniable: that they pertain to the act of taking and releasing breath, for German speakers, is self-evident. That the presence of these words in his name is as a consequence of parental choice may be true, but is unlikely; that they signify divine pre-ordination, merely fanciful. For the hidden words to confer meaning on the composer's life and work is for the composer



himself to decide and of no concern to anybody else. All the same, they are something to think about, a charming poetic discovery, to be recalled when we listen to the ending of *Hymnen*, or read the opening page of "*Atmen gibt das Leben . . .*"

The composer's name also translates, Schumann fashion, into a five-term, quasi-serial grouping:



—which one is genuinely tempted to interpret as a Beethovenian "*Muss es sein? Es muss sein!*"—a motto to which the composer is certainly entitled. But is it "true?" The motif of a five-note permutatable set is very apt; the connection with Tchaikovsky's *Slavonic March* is perhaps less flattering, or some might think.

Just how much thought Stockhausen gives to words and their derivations can be gauged from a typically scrupulous footnote to the essay "Erfindung und Entdeckung" (Invention and Discovery):

In the first version of this text I employed the word *Formentwicklung* (form-development) in relation to "punctual form," "group-form" etc. This was not a reference at all to specific forms, but to processes that lead to an indefinite variety of similar forms, hence to the origin of form on the basis of a "punctual," "group-moderated," etc. preconception. Recently I read *La Genèse des Formes Vivantes* by Raymond Ruyer, in which I found the word *formation* to mean "origin of form," "achieving form," "the process of forming"—as distinct from forms that are the result of the action of forming. The form-principles named in my text belong in the domain of *morphogenèse* rather than *morphologie*. The concept of formation in the sense that I use it, is different from the word as it is understood in German. Originally I wanted to write *Formung* or *Formentstehung* [coming-into-being-of-form] or *Formbildung* [growth-of-form]. However there were composite terms already in use, such as *Reihungs-Formbildung* [note-row formation], or *Moment-Formbildung* [moment-formation] that I found equally unsatisfactory. Finally, to encompass the cluster of terms *Formwerdung* [form-becoming], *Formentstehung*, *Formung* (or *Formierung*) [formation], *Formbildung*, and *Formentwicklung* [development of form], I chose the word *Form-Genese* [form-genesis]. This should be understood as corresponding to what Ruyer means by *formation*, and to his description in the book of "the passage from an *absence* of structure to a *presence* of structure."<sup>7</sup>

So then, what does "the truth" mean? Since absolute truth is unknowable, we are in the realm of *Wahrnehmung*, which in effect is "taking for granted," or *Wirklichkeit*, which I prefer because it contains the notion of a "working hypothesis." If asked to choose between truth and reality, I incline to reality, meaning the music and how it sounds—and that means, faced

with the question "*Ist das wirklich wahr?*" that I would rather defend the reality of the question than the truth of any one answer. There is a further term in German, and that is *echt*, meaning "genuine" and a term of approbation. In 1960, anticipating public controversy arising from the 34th Festival of the International Society for Contemporary Music, about to take place in Cologne, the music periodical *Melos* circulated a request to a list of composers and writers on music, to ask where each stood in relation to the statement *Musikalische Avantgarde: echt oder gemacht?* which might be rendered as "The musical avant-garde: genuine or manufactured?" (or in today's parlance, "organic or synthetic?"). In reply the composer created a photo-montage depicting, in a mixture of Giotto and John Heartfield, a paradise of younger-generation composers presiding over a netherworld of elderly artists, conductors, and administrators, including Schoenberg, Berg, and Webern, a recumbent John Cage defining the frontier between the two realms. Framed prettily in lace, it looks just like a nineteenth-century Valentine's day card. Stockhausen's message in response to the question? *kein Wort*.

Soon after James Stonebraker opened his Stockhausen website he asked me to contribute, and I did and still do. In an effort to dispel public scepticism over remarks that had been widely misinterpreted in the press, and in a vain attempt (as it turned out) to stimulate discussion, I included a set of hypothetical FAQs, or frequently asked questions, the first being "Does Stockhausen really come from a planet of Sirius?" together with the answer "No, it's a German joke." Now I have to confess having made up the bit about the planet of Sirius. Sirius is a double star: it does not have planets as far as we know. It just seemed a tad more probable to have the composer located on solid ground in preference to the *Feuerofen* of an actual, even if minor, star. This time, the composer's response was swift.<sup>8</sup>

*Dear Jim Stonebraker,*

*I just read the Maconie-text again. Please take it away from the "HOME PAGE". In a "home page" is no space for private opinion. It should be a source of objective information on the scores, discs, concert, books. No gossip!*

*Yours Stockhausen*

Something about the sentiment seemed vaguely familiar, but several years were to elapse before I discovered much the same form of words in an official decree promulgated some sixty years earlier.

*"Decree concerning Art Criticism" issued November 11, 1934,  
by the Ministry of Propaganda.*

"From today, the art report will replace art criticism. . . . The art report will be less an evaluation than a description and appreciation. . . . The art report of the future presupposes reverence for artistic activity and creative achievement. It requires an informed sensibility, tact, purity of

mind, and respect for the artist's intentions." This decree forbade art as a means of public discussion and communication; art was made instead into an aid to contemplation, empathy, and spiritual edification.<sup>9</sup>

In retrospect perhaps it was not surprising that the composer took umbrage, and that in consequence my contributions were banished into electronic limbo and I must bear the stigma of "nihilist" (unbeliever). Since Boulez labelled Cage a "nihilist" I ought to feel rather complimented by the appellation. (Well, yes, I suppose I do.) What grieves me is the misinterpretation of my original message. Surely *anybody* can see that I am not real, that my name is simply an anagram, and that what I actually said to the umpire was: "You *cannot* be serious!"

R J O H N      M a c O N i E  
 ───────────  
 J O H N      M c E N R O e

In his English lectures of 1971 Stockhausen refers to "the truth" only once, but powerfully and poetically; it would be unfair not to mention it. He is speaking of a moment in *Kontakte*,—I think it is Moment XIV, beginning at 31' 08", so toward the end,—where one seems to hear imaginary doors clanging shut, and has the impression of a silence descending. The world, the composer says, is visual in orientation; we believe in what is visible in preference to what we hear. The truth, he says, is in what we hear and not what we see. Art is revelatory. In the spirit of St. Paul, declaring "The substance of things hoped for, the evidence of things not seen, is faith," the artist declares the evidence of his music to be not an illusion, but true.

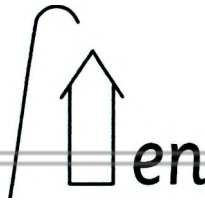
Now I come to my point: when they hear the layers revealed, one behind the other, in this new music, most listeners cannot even perceive it because they say, well, the walls have not moved, so it is an illusion. I say to them, the fact that you say the walls have not moved is an illusion, because you have clearly heard that the sounds went away, very far, and that is the truth. Whether the walls have moved at all has nothing to do with this perception, but with believing in what we hear as absolutely as we formerly believed in what we see or saw. That's what we are struggling with, and that's what will change mankind as gradually more and more people perceive this music in its real terms.<sup>10</sup>

The fragment of conversation standing in for a foreword to this volume is from the tape-recorded question and answer sessions with the composer that came to form the second part of *Stockhausen on Music*. It was not printed then for the very good reason that the composer was referring to the first edition of my *Works of Karlheinz Stockhausen*, published in 1976, and his concerns over my obvious interest in discovering prior influences and alleged resemblances between his music and the music of others. His reaction placed me in a dilemma, because it seemed to me that the proper role of a student or researcher was to situate the object of study within a context that would make it more accessible to an observer. My own training



in English literature, by articulate and eager disciples of F. R. Leavis, Raymond Williams, and William Empson, led me to believe in criticism as a dialogue or debate intended to honor the artist and his (or her) ideas by taking them seriously, and by examination to bring out those features of his (or her) work that deserved wider approbation. To encounter a habit of mind for whom the artist and the artwork are inviolate was quite a culture shock, particularly since I had made it my goal to prove that music of the twentieth century in general, and Stockhausen's music in particular, was both rational and coherent in meaning.

Books by their very nature are a form of colonization of the reader by the author; conversation books can also suggest a spiritual colonization, by



*Stockhausen's signature in the form of a rebus: Stock-Haus-en. The choice of a walking-stick may allude to age, or to Chaplin. From a calligram by the composer on the text of "Engel-Prozessionen," 2004.*

the interviewer, of the one being interviewed. In order the better to understand what Stockhausen might mean by "liking is remembering," and to fathom the composer's seemingly paradoxical perspective on history and the creative process, I made an attempt to tease out what he was saying, but in my own words. Twenty years on I am no longer sure how much of the following is the composer's voice, and how much my own imagination; but I read it today as if it were the voice of a third person explaining just how I got it wrong. What he seems to be saying is this:

—Ideas are not things which you have, exchange, and realize. They are not elements of a trade detached from the minds that trade in them. So the question of inferences, of borrowing ideas, which are then added to or incorporated in my art, like materials or decorations, or which serve to start me thinking, is not the way it is at all. I live in the world and I notice things. Some things I like, and I call what I like "re-cognition"—"re-knowing." And certain things are amazing to me. Now how do I *know* I like these things, or that they are "right?" Sometimes I am more amazed by certain things I see being done in the name of other people, than those who are doing it. And why is this? When you discover something it is always as though you were looking for it, sometimes knowingly, sometimes without knowing. But it hits you with such force that the discovery is an answer, and you know it is the answer, because *the question is in you*—it has been molded by your previous thoughts. You do not know what molding or thought process has gone on in anyone else for that discovery to have been



images, but it has a purpose of divine revelation. But I will not say what my music shall reveal, only that it was revealed to me and may reveal the divine to somebody else in ways I cannot imagine. So this notion of intellectual property arising from influences of certain images, which suggests I do not think for myself but only assemble bits of other people's thinking, is false when applied to the practice of thought, and certainly not true in my music.

And it follows that since what is revealed *to* me is part of the divine that is revealed *in* me, i.e. is not distinguishable from me, then I am changed by the recognition of part of me that always existed, but I didn't recognize it before. And it is inconceivable that I should not be changed in how I live.

So when you try to relate elements in my work to aspects of previous events, it is that the same *spirit* is perceived in the environment as in my work, and even that you are perceiving the environment in a way which is the result of your having been affected by my work. It becomes a case of projecting my work onto my environment, not the other way round. Extending this argument would mean that I am also responsible for my background, my cultural milieu, even my parents, insofar as what is known of them in my work is only known through what I have done. Because without me these relationships would not be meaningful, or even exist. What *am* I? If I *am* the result of many previous lives then I *am* those lives as well, since there is an unbroken genetic connection with the past, and since also the genes and the mind are altered by what I do and how I think. Even my own children are not what they are because of me: my son Simon is not a better composer because of his parents. He doesn't think about things that way. He simply writes music without question. And all of us are what we are "without question" and it is of no consequence to be told that you *are because* of something else. *You are* what you make, and it is *your* responsibility.

### Notes

1. "To Rudolf Kolisch; Berlin, 27 July 1932." In Arnold Schoenberg, *Letters* ed. Erwin Stein, tr. Eithne Wilkins and Ernst Kaiser (London: Faber and Faber, 1964), 164–65.
2. BBC transcript from the lecture "Questions and Answers on 'Four Criteria of Electronic Music'" filmed by Allied Artists, 1971, incorporated in the documentary "Tuning In" directed by Barrie Gavin for the BBC-tv "Omnibus" series, 1981.
3. "Of Plato it may be said that the whole of his philosophical system is centered around this concept [of requiredness] . . . the notion of 'something which ought to be.' 'People feel moral obligations,' he would say, 'they recognize ideals, they speak about truth. Though they are not very clear about such "oughts," there must be some source even for imperfect convictions of this kind. . . . New insight about things as they "ought to be" . . . may happen, although during their actual lives they have never had this particular knowledge before, and even though they are certainly not reading it directly from any facts of outer experience. All

- in *The Score* 12 (June 1955). Reprinted in *The Writings of Elliott Carter* comp. ed. Else Stone and Kurt Stone (Bloomington: University of Indiana Press, 1977), 160–66.
16. Joan Peyser, *Boulez: Composer, Conductor, Enigma* (London: Cassell, 1977), 132–36.
  17. According to Boulez, writing in 1948, quotation is montage in the manner of musique concrète: hence the *trio estatico* in the Berg *Lyric Suite* is “vulgar,” the military march and polka in *Wozzeck* are “stupid jokes,” and the quotation of the Bach chorale “Es ist genug” in the Violin Concerto “a grave error.” “Incidences actuelles de Berg.” *Polyphonie* (1948: 2), 104–8.



## CHAPTER NINE

### Aleatory

At a crucial moment in the Buster Keaton movie *The General* the dauntless hero and heroine entrust their lives to the strength and endurance of the eponymous steam engine (and the integrity of the interstate rail system) in a bid to escape a vengeful Southern cavalry in hot pursuit. Keaton asks for help in stoking the wood-burning boiler; the heroine, clearly a lady of class, hesitates over which log to choose for the fire and, finding one that is not straight, casts it away. In some situations it does not help to be picky. Boulez's criticisms of Stockhausen, which came to a head over the indeterminacy of *Klavierstück XI*, are reminiscent of the fastidiousness of the lady in question. Composed of a number of segments the order of which can be varied at random, Piece XI both challenged and offered itself as vindication of a freedom of choice ethic endlessly debated in Europe (in the context of American music by Cage, Feldman, Wolff and others) but never seriously tested. The response to Piano Piece XI was remarkable. Everybody criticized it: Boulez, Stravinsky, even Cage. When that happens, something interesting is clearly going on.

Boulez was not averse to the idea of a serial music composed of modules that could be shuffled and rearranged in performance, but he was concerned that such a composition be designed so that the pieces would always fit, and the final result invariably make musical sense. This was quite a challenge. Boulez took inspiration from Messiaen's 1944 theory of rhythm, by which composition is more or less freely put together from a repertoire of rhythmic cells that in turn allow for expansion, contraction, and other modification. He was also strongly drawn to the poetry of Stéphane Mallarmé, and especially the structural challenge of Mallarmé's poem "Un coup de dés" (A throw of the dice), an imaginative exercise in statement and parenthetical commentary that can be read in different ways and outwardly resembles the kin

of learned analysis of a haiku in a literary magazine that smothers the original text in editorial overgrowth.<sup>1</sup> By 1950 Boulez, in correspondence with Cage, declared himself committed to a major setting for choir and orchestra of "Un coup de dés."<sup>2</sup> It did not happen. Perhaps Boulez felt preempted by Cage's 1951 *Concerto for Prepared Piano and Orchestra*, in the composition of which a collection of musical syllables or phrases is organized by "a throw of the dice," an effort apt in the circumstances but not very diplomatic, and leading furthermore to musical results both inconclusive in themselves and insupportive of an aesthetic principle that Cage in his innocence had taken to represent no more than a stimulus to action.

Boulez was also powerfully drawn to the conception of open form advanced in Mallarmé's *Livre*, a notional literature capable of being construed in an infinite variety of ways. With "Un coup de dés" the essential meaning of the poem does not change in whatever order a reader chooses to read the text, parentheses, and commentaries; in the *Livre* on the other hand, the poet appears to be envisioning a literary resource whose meaning is subject to change from one reading to the next. That is a very different challenge. It is perhaps a little deflating to realize that what the French symbolist poet had vaguely in mind is probably the equivalent of a present-day computer game. However the possibility of alternative readings of the same information had already surfaced in the late nineteenth century in the form of the detective novel, a literary form in which a number of different possible outcomes are tested before one that fits all the conditions is finally chosen. As a poet, Mallarmé would also have been sensitive to the narrative implications of the new medium of cinema, an invention claimed for France by the Pathé brothers, and one defining, through montage, new possibilities of editorial intervention in the ordering of materials to create alternative readings (a technique perfected in the documentaries of Robert Flaherty).

At an even deeper level however a concern for variable form is a concern for language and grammar. If, following de Saussure, language is founded on vocabulary, then not only conversation but also literature involves the selection and arrangement of words according to rules that guarantee meaning and sanction the communication of new ideas. Semiotics insists on the primacy of *la langue*, intelligence manifested in words that can be precisely codified, but is terrified at the implications of *la parole*, which raise the awful possibilities that meanings evolve and change, are subject to the individual will of the poet, and are open to error. In that sense, in proposing the concept of open form Mallarmé is simultaneously defending the liberty of the poet to say what he chooses.

#### Klavierstück XI (Piano Piece XI)

1956: No. 7 (UE 12654a/b, cd Stockhausen-Verlag SV-56)

Duration: 7– 9' 30.

Piece XI is certainly more closely related to *Gruppen* than to Pieces V–VIII. The gap in numbering arises because the piece is based on the serial orders



originally calculated for the eleventh piece in a cycle of twenty-one pieces and because the position of XI in the cycle is also serial in implication. Its affinity with *Gruppen* is twofold. First, its latent time-structure is based on a magnification of the vibration characteristics of a pitch series. Second, the relationship between fixed and variable time-structures in Piece XI inverts the order of priorities of the orchestral work. Each "group" in *Gruppen* translates the underlying pitch of a tone into a pulsation, and the partial frequencies of the same tone, representing its timbre, into metrical subdivisions of that fundamental periodicity. The same relationship of partial frequency connects the tempi and inner subdivisions of segments of Piece XI to the mean tempo chosen by the performer for the performance as a whole.

Piano Piece XI is nothing but a sound in which certain partials—components—are behaving statistically. There are nineteen components, and their order can be changed at random, except that once you choose a connection from one element to the next, the following element is always influenced by the previous one. . . . As soon as I compose a noise,—for example, a single sound which is nonperiodic, within certain limits—then the wave structure of this sound is aleatoric. If I make a whole piece similar to the ways in which this sound is organised, then naturally the individual components of this piece could also be exchanged, permuted, without changing its basic quality.<sup>3</sup>

Stockhausen's argument is a little disingenuous, since it does not take into account the variation in tempo from component to component. In *Gruppen* the composition of each group (i.e., its allocation of materials) is strictly preordained, but the evolution of partial frequencies within a group (how they play out) is relatively free. In terms of the impulse sequences that create the tone mixtures of *Studie II*, the actual order of the arpeggiated tone-pulses is immaterial to the result. By analogy with formant resonance in music and speech, the vibratory characteristics (but not the frequencies) of a vowel or clarinet aperture remain constant whatever the tone of voice or note of the scale (or even noise) is sounding at the time.

Stephen Truelove's detailed and thorough analysis of the pitch and rhythm content shows that the pitch content is derived from duration-ratios and not from permutations of a twelve-tone series.<sup>4</sup> The rhythmic content in turn is based on elaborations of a rhythmic cell matrix, a procedure ultimately derived from Messiaen. In Piece XI the sequence and "frequency ratios" (relative tempi) of sections is left free. This freedom is theoretically permissible if the piece is supposed to be modeled on the evolution of a complex waveform of unspecified pitch, such as a magnified tam-tam tone. By comparison, *Gruppen's* more orderly note-groups correspond to fixed pitches and timbres. The range of six tempi chosen by the performer for Piano Piece XI thus constitutes a formant structure or "timbre" for the entire performance; the fact that these tempi are associated with passages of variable density can therefore mean that at times certain formants are more pronounced than others. Just as in *Gruppen* an octave transposition of a defining pitch class can be rendered as a change of unit pulsation from



whole- to half- to quarter-note, so in Piece XI alterations of tempo from section to section and performance to performance can be said to correspond to transpositions of frequency within the tempo-octave in accordance with a nontempered but consistent system of tuning. That is not quite what Stockhausen is saying, however.

Objections to the work expressed by Stravinsky, Boulez, and Cage are all variations of the letrist fallacy. Stravinsky did not like the idea of the performer being permitted to determine the piece's "final shape," as if the final shape were a priority (one asks what is the "final shape" of a Calder mobile, for instance).<sup>5</sup> His response is consistent with Stravinsky's own dictum about the role of the performer being to play as the composer requires, and not to interpret, and suggests that the pianist's freedom of choice is an embarrassment. Cage, on the other hand, repeatedly objected to what he perceived as the philosophical inconsistency of determining the piece in every respect save the order of segments; not that the piece was indeterminate, but that it was not indeterminate enough.<sup>6</sup> He ignores the fact that random ordering also changes the way successive segments are interpreted. Indeed, Stockhausen is doing no less than emulating explicitly Cage's covert method of assembling material for his own *Music of Changes*. Piece XI can be construed in this sense as a real tribute to *Music of Changes*, in light of which it seems a little curmudgeonly of Cage not to acknowledge the gesture. Despite being deeply impressed (a contemporary photograph from André Hodeir's book *La Musique Depuis Debussy* depicts him gazing intently at the score),<sup>7</sup> Boulez nevertheless concludes that Piece XI is inherently unstable, because segments do not remain identifiably the same (in duration, tempo, dynamic, and touch) from version to version, unlike his own "Constellation-Miroir," Boulez's corresponding essay in pianistic peregrination from the Third Sonata, a piece in which the mobility principle is reduced to a choice of pathways (like a map of the Paris Métro), and is perhaps a more appropriate candidate for Cage's criticism.<sup>8</sup>

Boulez of all people should have recognized the brilliance and logic of Stockhausen's formal invention. The term "aleatoric" that many ascribe to Boulez, was actually used by Meyer-Eppler in the context of processes investigated in seminars on information theory that Stockhausen attended and that profoundly influenced his musical thinking:

He would give us exercises demonstrating the principles of Markoff series; in one we were given cut-outs of individual letters from newspaper articles, and we had to put them in sequence by a chance operation, and see what sort of a text came out. Then we would repeat the operation with individual syllables, then with combinations of two syllables, and so forth, each time trying to discover the degree of redundancy, as we called it, of the resulting texts.<sup>9</sup>

Research into the effect of randomization of word, syllable, and letter content of a text flourished in the early era of information theory during the fifties. It was serious, it was scholarly, and it was interested in discovering aspects of language that are embedded not in the sense content of a message

but in the texture of the verbal material, qualities for instance that allow listener to perceive that German is being spoken, or Chinese, while at the same time not understanding a word of what is actually being said. These qualities being investigated are essentially musical, and their research would clearly benefit from the input of a musical sensibility. A relevant starting point for such inquiries is wartime code- and cipher-breaking, the rapid advance of which during the war had led to the development of early computing devices and analytical methods of pattern recognition for text and speech intercepts. Cryptic messages addressed to agents in hiding were broadcast into Europe during the 1939–1945 war and the secret significance of such messages is transformed into poetry by Cocteau in the movie *Orphée*. Text encryption, for messages delivered in typescript, involve highly sophisticated randomization procedures and equally ingenious methods of decryption including matching the statistical incidence of individual letters and letter sequences to the language in which it is written.

These procedures both suggested a new and objective rationale for semiology, and also inspired a number of poets and novelists to explore the literary possibilities of deliberately fractured or denatured prose. The movement took hold in France, with Raymond Queneau's amusing *Exercices de Style* (e.g., "Permutations by groups of two, three, four and five letters").

*Jo un ve ur mi rs su di ap rl te . . . Dai sou int nil ell erp nvo aso nen  
isi . . . Ando ilab aill nnad rapi eurs nlla dema ussi disc . . . Ueshe  
quelq lustra uresp erevi rdjel ntlag sdeva intla arena . . . etc.*<sup>10</sup>

There is even a musique concrète connection: Abraham Moles, the mysterious scientific observer to Pierre Schaeffer who peered over Stockhausen's shoulder as he worked on the sine-tone generator in the basement studio of the PTT, incorporates a related sequence of French language texts in a discussion of Markoff processes in his *Informationstheorie und ästhetische Wahrnehmung*, published in France in 1958 and in German translation by the Cologne firm of DuMont, publisher of Stockhausen's *Texte 1–4*.<sup>11</sup>

Quatrième texte : 35%

AINSI E I U TR ELS O D NS UR C BINE DE CA T S  
E LA PR USTION MO IALE DES VUES D LEURS TE I RS A  
DIFFE EN E EPOQ ES DES HOT G AP S NE UI

In the United States, randomization procedures involving Cage and his associates were matched, in the literary sphere, by William Burroughs and his "cut-outs," and in the scholarly domain by the investigations of Lejart A. Hiller and Leonard Isaacson into the probabilistic structure of music sequences, research that led to publication of the *Illiac Suite*, some of the first music composed by computer and a significant contribution intellectually (if less so aesthetically) toward a theory of artificial intelligence.<sup>12</sup>

So talk about randomization processes was not only current and not only in Meyer-Eppler's classes, it was a topic of recognized musical relevance in Europe and America and had also been discussed in the context

Boulez's and Stockhausen's work under Schaeffer. For Boulez, Cage, and Stockhausen not to have been aware of these current developments, when their music was coincidentally so richly influenced by them, is clearly unthinkable. A more plausible scenario comes to mind, of Stockhausen telling Boulez, in great excitement, of his classes with Meyer-Eppler in analyzing texts cut up into syllables and words, and Boulez dismissively responding that yes, he knew all about that from Barrault's stories of Tristan Tzara drawing words from a hat, and that Stockhausen should read Mallarmé, who saw it all coming, and whose poetry is of greatly superior quality—and, by the way, I too am already working on a masterly setting of "Un coup de dés."

The point, surely,—and Mallarmé's point too,—is that Piece XI is about *how a text is read*. After all, the typographic layout of "Un coup de dés" is part of the poem as well: the different typefaces both guide the reader and identify the different parts, the main text, the parenthetical asides, the commentaries. Naturally, you don't *hear* the typefaces when the poem is interpreted. But the equivalent to variant typefaces,—some large, some small—could be enlargement and diminution of tempo, or dynamic indications, which is how one makes distinctions in music between principal and subordinate themes. Again, the fact that the Mallarmé poem can be read in alternative ways does not mean that the reader is *responsible* for the final form of the poem. That would only be the case if the poem were read a single time; but the poem, and Piece XI, like any poem or piece of music, are designed to be read an indefinite number of times, and potentially in an indefinite number of ways, some more satisfactory than others. The only difference is that in order for the full number of possible meanings to be grasped, an indefinite number of permutations would have to be comprehended. They are works, therefore, that are not to be disposed of at a single sitting. If that is a matter for objection, it is surely a novel one.

Far more fruitful is the transformational argument of Piece XI, which connects Stockhausen's conception of formation with Piaget's exposition of group transformation, and in literally more concrete terms with Pierre Schaeffer's formal theories of *musique concrète*. For Boulez, the composer of *Structures*, not to have grasped the structuralist message of Piano Piece XI, is almost as surprising as Cage's refusal to recognize its significance in relation to his own *Music of Changes*. In the following extract Piaget is writing about transformations in geometry, but the musical implications are clear:

The group concept or property is obtained by a mode of thought characteristic of modern mathematics and logic—"reflective abstraction"—which does not derive properties from *things* but from our ways of *acting on things*, the various fundamental ways of *coordinating* such acts or operations, [in accordance with] the following very general conditions:

1. the condition that a "return to the starting point" always be possible (via the "inverse operation");
2. the condition that the same "goal" or "terminus" be attainable by alternate routes and without the itinerary's affecting the point of arrival ("associativity").

Group structure and transformation go together. Groups are systems of transformations; but more important, groups are so defined that transformation can, so to say, be administered in small doses. Thus we can go on to the next "higher" group by letting the dimensions vary while preserving the other properties [angles, parallels, straight lines, etc.]. The various kinds of geometry—once taken to be static, purely representational, and disconnected one from another—are thus reduced to one vast construction whose transformations under a graded series of conditions of invariance yield a "nest" of subgroups within subgroups.<sup>13</sup>

The language of Piaget's general description, and his employment of terminology already familiar in Stockhausen's own commentaries and analyses, invite the reader to consider Piece XI as a structuralist essay, a music both allowing for alternate routes and subject to transformations of varying degrees applied to different structural properties while preserving other. The abstract conceptual basis of structuralism connects, in the practical domain of sounds and their transformational possibilities, with Schaeffer's theory of transformation of the internal structure of a "complex note" and a generation of "a sort of anti-melody" by successive modifications, either of the intrinsic form, or of its relationship to the listener.

Piaget's definition even implicates Messiaen's *Mode de valeurs*, not revealed as an ultimate statement of transformational principles applied to music, one in which every single note is defined as a combination of scalable properties, infinitely modifiable and infinitely connectable. Stockhausen's system of liaison in Piece XI could even have been inspired by Messiaen's organ music: not just in the convention of notating changes of registration which is well-established, but the formal and transformational functions of change of registration in the context of a music of free association. The piece "Chants d'Oiseaux" is an interlude in Messiaen's *Livre d'Orgue*, an ostensible escape from the serial rigors of the other six pieces into the composer's private world of birdsong. In it, however, we discover six identifiable structures (bird songs, link material) are rotated; each has its own subjective tempo; the structures vary in length, and repetitions of the same structure may also vary. Furthermore, at the end of each structure there is a pause while the performer reads and changes the registration of the instrument. The performer pauses to read these instructions, e.g.:

*R: flûte 4, octavin 2, bourdon 16;*  
*Pos: flûte 4, nazard 2 <sup>2</sup>/<sub>3</sub>, tierce 1 <sup>3</sup>/<sub>5</sub>;*  
*G: plein jeu, clairon 4;*  
*Péd: violoncelle 8*

—and then to make the necessary alterations, that have the effect of changing the timbre, the dynamic, and (on occasion) even the transposition of the music to a higher or lower octave. Though composed to a fixed order, the sequence of events in "Chants d'Oiseaux" is intended to give the impression of a random walk,—in this case, a walk through the woods listening to the birds. In the performance of such a work, time is not felt in measure, but as place: each event a self-contained moment of awareness



and the duration of each corresponding to an intensity of awareness.

Group transformation as a structuralist concept founded in geometry refers in the first instance to movement capture in the general sense of Eadweard Muybridge and the early movies, and more specifically in the temporal structures of flight and motion captured in the multiple images of Louis Marey that form the basis for computer animations today. The aim of such a geometry is to formulate the image as a system of joints and weights conforming to a network of relationships that is capable of being modulated to emulate natural motion while at the same time retaining its integrity.

In Piece XI Stockhausen addresses the twin issues of identity and transformability with great skill, building on his experience of the Piano Pieces V–VIII and *Zeitmasse*. The score is an object lesson in notational distinctions, clearly differentiating global (so to speak “register”) changes in value of tempo, duration, dynamic, and timbre (touch) represented by the symbols terminating each segment and influencing the next,—from local deviations of *accelerando*, *ritardando*, pausation, grace notes, and *accen-tuation*, which are “added on” as it were to whatever global values obtain in any given reading. Since the grace notes are always played “as fast as possible” they are a constant foil to the arbitrarily changing tempi of the main structures (and incidentally, act as *aides-mémoire* to the listener to help keep track of the segments as they occur). Grace notes, accents and other expressive variables define a domain of performer freedom of action within the larger-note structural contrasts. In this way a certain balance and reciprocity is obtained between the rigid demands of abstract form on the one hand, and performer freedom of expression on the other.

It has been suggested that the modulations of time, dynamic, and touch that transform each reading of Piece XI into a different experience deprive the work of a proper identity. It is certainly true that recorded performances to date are difficult to “hear” as alternative versions of the same piece. For the piece to work as intended, a performer has to create very clear distinctions separating the six levels of global tempo, touch, and dynamic, to be executed perhaps in imitation of mechanical transformations effected in a studio, for instance, by varying the playback speed, level, and equalization of a tape recording. These global changes influence the relatively sparse larger notations in the score, but leave the grace notes and local accents unaffected. Logically, these latter components in small notation should be played as far as possible with a lighter touch and in a consistent fashion throughout: they correspond to the “real” or internal performer variables that hold the performance together no matter how the external dimensions may vary.

It is worth remembering that art and music have been addressing the principles of transformational theory since the Renaissance. The art of caricature founded in the sixteenth century is an art of manipulating the geometry of an ideal face to express (and in some measure, explain) physical and underlying character distortions in human nature. The art of perspective involves size transformations in the pictorial plane to simulate depth in the visual field. Equivalent processes in music include the sequence, the

movement of a phrase-group within the pitch plane, all other characteristic remaining intact; modulation from key to key; and augmentation and diminution, for instance in a fugue. The identity relationship of a fugue subject and its tonal answer is an early example of the identity question embodied in Piece XI, and raised to a higher power in the plus-minus work of the sixties. After reading the biologist Wolfgang Wieser, Stockhausen was moved to compare his scale transformations to the visually analogous biomorphic transformations of animal species, observing "nature creates divergent species by expanding certain parameters. . . . Parametric transformations, that's what serial music is all about," an observation lending new meaning to the term "species counterpoint."<sup>14</sup>

Piece XI is an interesting challenge to interpret, and I am not at all sure that any of the interpretations issued on record to date do justice to the composer's dramatic conception, which involves a sense of humor. Stockhausen's "species" remark offers a clue. In essence, each segment of music on the page is a statement; the interpretation of each statement is governed by applied tempo, touch, and dynamic indications. Each combination of indications amounts to a dramatic character or personality: a placid temperament, a fiery temperament, a soulful personality. In the days of silent movies, the appearance of the hero, heroine, villain, or mother-in-law was reflected in music expressing the character, not always by a specific theme or motif (though this could occur) but rather as a composition of stylistic traits that could be applied to any ongoing music. In the same way we see the normally blank-faced hero of a Chaplin or Keaton movie transformed into different characters, as a consequence of the vagaries of circumstance, through adopting particular combinations of mannerisms and modes of behavior. The interpretative task facing the pianist of Piano Piece XI may therefore reside not so much in the notated segments themselves, mastery of which is a matter of technique,—in dramatic terms simply the dialogue,—as in the performance indications, which define the characters.

Since it was composed as a rejoinder to Piece XI, a comparison with Boulez's Third Piano Sonata "Constellation-Miroir" may be useful. This striking score is composed of a large number of unequal segments printed in red and green, and distributed seemingly at random over a single large sheet of paper, with arrow traffic signs to guide the performer along a number of optional but predetermined routes. (I recall once departing by train from the Paris Gare St.-Lazare and noticing through the carriage window that the signals at intersections in the marshaling yard were exactly like Boulez's arrows in "Constellation-Miroir.") The two-color score distinguishes "Points" (green) and "Blocks" (red) in alternation; unlike Piece XI however, the music is all projected onto the same temporal plane and segments are subject only to minor internal tempo inflections (one rather wishes the red and green segments were performed in concert by two pianists on pianos of different timbre). In its own way, Boulez's simple formal structure is closer to the Mallarmé ideal, its plain literalism remote from Stockhausen's authentically relativistic conception, despite the structural resemblances they share.

**Gesang der Jünglinge (Song of the Youths)**

1955–1956: No. 8 (unpublished; cd Stockhausen-Verlag SV-3)

Electronic music.

Duration 13' 14.

*Gesang der Jünglinge* is Stockhausen's first work since the early vocal pieces to carry an explicit extramusical message. With his talent for choosing personally appropriate texts, the story of the three young men cast into the fiery furnace by Nebuchadnezzar (Daniel 3) lends itself to be interpreted as a parable of three young composers (Boulez, Nono, and himself) surviving the fires of public incomprehension. Cynics have pointed out that there is only one boy's voice to be heard, but Boulez (*Le marteau sans maître*), Nono (*Il Canto Sospeso*), and himself (*Gesang der Jünglinge*) are the chosen subjects of Stockhausen's "Music und Sprache I, II, III," analytical studies of music and speech developed by Stockhausen for the 1956 Darmstadt courses and later broadcast by Cologne Radio. If not a meeting of minds, an affinity of interest is certainly indicated. Boulez and Nono were among the few avant-garde composers of Stockhausen's generation to compose for the voice, a very difficult instrument to work into an integrated serial matrix. A recent study of the composer's sketches and work notes by Pascal Decroupet and Elena Ungeheuer exposes Stockhausen's serial generative procedures to view, and it is clear that these differ only in emphasis, not in kind, from the instrumental works. Though interesting in themselves, the serial matrices do not explain why the piece is so good, or where it came from, and these are the questions a listener to the music is more likely to ask. Because the work incorporates the sound of a treble singing voice, it was immediately pounced on by the supporters of *musique concrète* as a climb-down by the Cologne purists and an admission that they got it wrong. As late as 1999, even after having considered the entire documentation, Decroupet and Ungeheuer still persist in describing *Gesang* implicitly as a compromise.

In spite of certain bitter opposition due to the use of the child's voice, at the time of its premiere this work gave the feeling that the phase of *études* was over . . . a real turning-point in musical thought, precipitating certain beginnings of a broadening and reassessment of serial thought as it had been formulated in the first half of the decade.<sup>15</sup>

The idea that the work could be construed as a concession to *musique concrète* opinion betrays a misunderstanding of the role played by information theory in the determination of this composition and its serial objectives. The very title "Musik und Sprache" (Music and Speech) provides a clue. Why, one asks, since the title of the work is "Song of the Youths," is Stockhausen's radio series entitled "Music and Speech?" Why not "song?" Stockhausen was studying the fundamentals of language and speech under Meyer-Eppler; the general purpose of such research was to disassemble speech into its basic components, the phonemic equivalent of the syllabic breakdown of a text to which Stockhausen refers in his activities with the cutout newspaper articles. Stockhausen's private reason for taking an interest in speech may



have been to gain insight into the microstructure of communicable sounds but the *institutional* interest in his studying at Bonn University under Meyer-Eppler as a representative of Cologne Radio, resided in the possibility of creating a music of "reconstituted speech" that would contribute to scientific understanding of the defining parameters of speech and enable speech recognition technologies to be developed. Stockhausen has borne a heavy burden of criticism for having incorporated a prerecorded element in *Gesang der Jünglinge*; in an ideal world perhaps the perfect solution would have been one in which the boy's voice (or at least, a voice) is recreated as a consequence of serial analysis and resynthesis. For that to happen, however, electronic music has to extract a vocabulary of fundamental particles of speech from a careful dissection of tape-recorded spoken material.

The core of the difficulty is the complex and variable way linguistic messages are encoded in speech. . . . For a computer to "know" a natural language, it must be provided with an explicit and precise characterization of the language. . . . Although a capacity for understanding language may be the ultimate goal, the enterprise of speech recognition is founded on the identification of words.<sup>16</sup>

As Stockhausen, the Meyer-Eppler group, and all subsequent research has discovered, the audible continuum of speech is not so easily anatomized. Even in today's world of talking computers the analytical task remains impossible. Normal continuous speech cannot be reduced to intact syllables, vowels, or consonantal components. In acoustic terms, they do not exist as discrete entities, only as transitional events within a continuum of action.

The Bell vocoder slices a sample of speech into amplitude modulation: of frequency bands, and the latter can be applied to other dense sound material to resynthesize the voice pattern so the new sound, such as a jet airliner, appears to be speaking. But this is mechanical sectioning and not true analysis, since it does not lead to the isolation and definition of speech particles. Once again the lettrist conception of language fails to translate into speech gesture in the sense of motor phonetics. If Stockhausen set out to create an electronic work in which the sounds of a human voice mysteriously condense out of a plasma of electronically-realized phonemic particles, then it was a beautiful idea but a doomed enterprise. That he did in fact set out with this objective can be inferred from the composer's lengthy writings on the work and its difficulties:

The desired blending of discrete sound elements into a continuum (in hindsight especially in the case of timbres) was unrealizable, as it would be for instruments, for example; simply because in order to manipulate the extremely complex phonetic structures of speech (German in this case) in the terms of serial composition, it is necessary to allow for an indefinite number of transitional stages between (say) one vowel and another vowel, or between a vowel and a half-consonant or consonant. In principle that can only be achieved by electronic means. However, one can formulate the process the other way round, and say that in a particular scale of electronically generated tones certain positions in the

continuum are occupied by [i.e., resemble] sung speech sounds. Only in such a way is it possible to experience a unified family of sounds, where at certain points sung sounds meet electronic, and electronic sounds meet those that are sung. In order for the best possible unification of sung speech sounds (in the sense of individual articulation and formant character) a twelve-year-old boy sang all the required sounds, syllables, words, and occasional word groups on tape.<sup>17</sup>

This is from a technical report, remember, to be read by studio administrators and technical experts like Meyer-Eppler. It is not an aesthetic description of a musical work. Its message is that for the time being, in terms of an assembly process from the smallest units, the synthesis of realistic speech is impossible. The project of creating a music in which a voice magically emerges out of a phonemic flux in that sense cannot succeed. But in a masterly example of lateral thinking Stockhausen goes on to say that all is not lost. Instead of defining the human voice as a set of discrete sound elements that can be synthesized and recombined, the realistic alternative is to generate a scale, or series of scales, electronically, by continuous transformation of serially-derived sound elements (i.e., in the manner of *Studie II*). One then finds certain points in the continuum of electronic transformation where the synthetic sound resembles a singing voice. Since it is impossible to recreate the infinitely subtle gradations of real speech, the more feasible solution is to produce a repertoire of electronic phonemes based on the chosen few that appear voice-like. The piece then becomes an artificial blend, or montage, of sung speech sounds, together with electronic sounds that have been chosen for their resemblance to speech sounds.

There were voice-like sounds already appearing spontaneously in the *Konkrete Etüde*, and more emerged from the serial manipulations of impulse phenomena in *Studie II*. So the issue for Stockhausen is not the simple one of tabulating methods that produce speech-like sounds by chance, as a by-product of serial synthesis, but rather of finding a unified serial rationale for the generation of a comprehensive range of voice-like sounds. When this objective turns out to be inachievable Stockhausen deftly changes the terms of reference while at the same time defining the task in suitably professional terms. Stockhausen's classification of the sound-elements of German speech, for instance, is methodical but necessarily incomplete, dictated by the practical limitations of the studio equipment he had to work with:

- SK = pulsed sine-tone complexes (*Studie II*: quasi-vowels)
- IK = pulsed complexes of filtered noise (equivalent consonants)
- LS = tones and syllables (boy's voice)
- R = noises filtered to a 2% (hertz) bandwidth ([f] [ts] [sh])
- I = single impulses ([t] [b] [k] [d])
- SV = synthesized vowels (*Studie I*-type sine-tone spectra)
- RO = broadband filtered noise 1-6 octaves ([ha] [ho] hi] [hu])
- IO = pulse showers of fixed bandwidth 1-6 octaves ([rr] [zz])
- IA = single-impulse chords

- RA = chords of 2% (hertz) bandwidths, middle-range (*Studie II*)  
 S (A) = sine-tone chords (inharmonic or borderline) (*Studie I*)  
 GA = sung chords (aggregations of sung speech sounds)

Stockhausen adds, "In order to systematize the sound element scale (assimilate the electronic sounds into the family of synthesized sounds) criteria from analytic phonetics were applied (vowels—sine tones; consonants—noise bandwidths; plosives—impulses; various mixture forms)." The vocalized speech sounds so incorporated are extracted from the sung text as follows:

| vowels |     | voiced cons. |         | unvoiced cons. |          | termination |           |
|--------|-----|--------------|---------|----------------|----------|-------------|-----------|
| ju-    | [u] | tuj          | [j:]    | -wig           | [ç]      | jep         | [p]       |
| belt   | [e] | ult          | [l:]    | Preis          | [s]      | Lob         | [b]       |
| dem    | [ə] | -ren, dem    | [n, m:] | Reif           | [f]      | Werk        | [k]       |
| Herm   | [ɛ] | Her-         | [r:]    | -belt          | [t']long | Tag         | [g]       |
| all    | [a] | Wer-         | [v:]    | -ze            | [ts]     | preist      | [t']short |
| ihr    | [i] | -set         | [z:]    | Scha-          | [ʃ]      | Wind        | [d]       |

It is an incomplete series, that is perfectly clear.<sup>18</sup> These are speech sounds that relate to electronic impulse and sine-tone complexes. Had they been produced synthetically, it would be possible to hear them in relation to a scale of comprehensibility from pure tones to filtered noise. But since they are articulated by a boy's singing voice, their relation to the electronic material is virtual rather than real, no different from that of a voice to a piano or voice to violin. (In the sense of exploiting the transformational relationship of speech sounds to instrumental sounds, Boulez's *Le marteau* arguably offers a more serially congruent scheme of timbres, one that also separates the vowel components (melody) from the consonantal components (percussion). As an example of transformational poetics within the alto range *Le marteau* is surprisingly well-conceived, the singing voice timbre mutating by degrees via flute, viola, guitar, xyloimba, and vibraphone back to the voice. Nothing else in Boulez's oeuvre is quite as sophisticated in the instrumental sense, even including his recent dialogue pieces of live instrument and computer, which leads one to wonder whether Boulez talked about this issue with Stockhausen at this time and received any helpful advice.

So formidable a technical description of a composition is hard for a lay reader to resist. At no point does Stockhausen claim to have synthesized human speech, but an impression is created of an electronic music of speech-like qualities systematically produced, which is not really the case. When the theory is set aside and a listener focuses on the musical experience it is obvious that this is a work of exceptional invention and dazzling effects, a work of magic. Like magic, it is produced by richness of invention rather than exact science. There is no doubt that from calculated and heavily worked material, seductive effects can be produced; but with *Gruppen* and *Gesang der Jünglinge* the technical brilliance of Stockhausen's end-product reaches a level where the listener is persuaded that the musical result and the composer's formal specification (as suggested by the work

notes) actually coincide. *Gruppen* is a wonderful feat of musical imagination, but the idea that the music corresponds in the formal domain to a magnification of the microstructure of a *klangfarbenmelodie*,—so that if the whole work were to be speeded up its structure would be audible as a sequence of tones,—is clearly fanciful, since the groups are each only a few cycles in duration and would be heard in speeded-up form as no more than a series of blips. Though presented as science (and certainly informed by a knowledge of speech processes) *Gesang der Jünglinge* succeeds as pure theater. The boy's voice, always praising God, is a compelling dramatic focus, and by whatever means the electronic fires are ignited, the presentation of dramatic and complex effects in an early form of surround sound could not fail to impress any audience, even one familiar with *Déserts* by Varèse, the only comparable work for tape of such grand design. Musically it may not matter that the composer's dream of a grand unified theory of synthesized speech sounds and the acoustical result do not quite match up; but with these two great works an ongoing inconsistency or creative tension between the stated objective and the musical result, an inconsistency that has always been a feature of Stockhausen's works,—is elevated to an aesthetic principle. In a well-deserved twist on convention, the programme note becomes a means of distracting the audience's attention and allowing the music to create maximum impact. In later years, the period of the plus-minus and the intuitive scores, the creative gap between intention and realization becomes even more visible.

Electronic music is fixed, instrumental music is interpreted, and in the case of Piece XI, subject to the the same general kinds of transformation that electronic music explores. *Gesang der Jünglinge* organizes and distributes objects in an acoustic perspective that enlarges and compresses images as well as positioning them in time and space. But because it comes to the listener ready-made, the procedural relationships embodied in the electronic work are easy to overlook. Piano Piece XI represents essentially the same process, but applied in real time to the materials on the printed page. Through observing the transformation processes in action in the piano work the listener ideally learns to recognize, or at least appreciate, the same processes effected in the electronic domain: there is a clear didactic connection between the two.

Stockhausen's treatment of the voice should be distinguished from the relatively naïve dissection process employed by Berio for *Thema: Omaggio a Joyce* (though there is an added correspondence between Berio's tape editing process and James Joyce's multilevel textual wordplay that Stockhausen's biblical text does not allow for). In the Berio work, as for *musique concrète* in general, prerecorded material is progressively degraded at every stage of technical intervention: editing, copying, filtering etc. In Herbert Eimert's *Epitaph für Aikichi Kuboyama*, the progressive degrading of the narrator's speaking voice by ring-modulation and vocoder is dramatically justified as a representation of the effects of radiation on the fishermen who innocently strayed into the radioactive cloud of a nuclear test. *Gesang der Jünglinge* is unique among works of this period in seeking to preserve the original

quality of the recorded voice by a policy of minimal intervention. The young vocalist was recorded singing as closely as possible to the required pitches, syllables and sequences. Those corrections of pitch that had to be made were within the acceptable range of speed change laid down for radio; likewise the number of recopying stages was kept to a minimum in accordance with good recording practice.

Whereas *Studie I* gives an impression of sounds radiating outwardly and *Studie II* introduces a keyboard-like freedom of movement, with *Gesamter Jünglinge*, in many respects Stockhausen's most perfectly contained electronic work, musically and dramatically, the music is clearly focused on the middle range occupied by the boy's voice, just as in *Kreuzspiel* the piano music comes to a focus in the oboe and clarinet melodies. The conception of the work as a sacred ritual, and of its meaning being concentrated in specific timbre, whether a pure voice, a crystalline or metallic resonance, or a coruscating electronic tone mixture, are confirmed in this extraordinary sacred cantata as defining traits of Stockhausen's music.

#### Notes

1. "Un coup de dés." With English translation, in Anthony Hartley ed., *Mallarmé* (Harmondsworth: Penguin Books, 1965), 214–31.
2. Jean-Jacques Nattiez ed., *Boulez-Cage Correspondence* tr. ed. Robert Samuels (Cambridge: Cambridge University Press, 1993), 62, 64. See also Joan Peyser, *Boulez: Composer, Conductor, Enigma* (London: Cassell, 1977), 117–19.
3. Jonathan Cott, *Stockhausen: Conversations with the Composer* (London: Robson Books, 1974), 70.
4. Stephen Truelove, "The Translation of Rhythm into Pitch in Stockhausen's *Klavierstück XI*." *Perspectives of New Music* 36/1 (1998), 190–220.
5. Igor Stravinsky and Robert Craft, *Conversations with Igor Stravinsky* (London: Faber and Faber, 1959), 112.
6. John Cage, "Indeterminacy," in *Silence* (Cambridge, Mass.: MIT Press, 1966), 35–36.
7. André Hodeir, *La Musique Depuis Debussy* (Paris: Presses Universitaires de France, 1961), facing 128.
8. See Joan Peyser, *Boulez: Composer, Conductor, Enigma*, 124–29.
9. *SoM*: 50.
10. Raymond Queneau, *Exercices de Style* (Paris: Gallimard, 1947), 100–103.
11. Abraham A. Moles, *Informationstheorie und ästhetische Wahrnehmung* tr. Hans Ronge mit Barbara und Peter Ronge (Köln: M. DuMont Schauberg, 1971), 67–70.
12. Lejaren A. Hiller and Leonard M. Isaacson, *Experimental Music* (New York: Wiley, 1959).
13. Jean Piaget, *Structuralism* tr. ed. Chaninah Maschler (London: Routledge and Kegan Paul, 1971), 18–22.
14. Wolfgang Wieser, *Organismen, Strukturen, Maschinen* (Berlin: Fischer, 1959). See also Michael Kurtz, *Stockhausen: A Biography* rev. tr. Richard Toop (London: Faber and Faber, 1992), 124, and Jonathan Cott, *Stockhausen: Conversations with the Composer*, 102.
15. Pascal Decroupet and Elena Ungeheuer, "Through the Sensory Looking-

- Glass: the Aesthetic and Serial Foundations of *Gesang der Jünglinge*," tr. Jerome Kohl. In *Perspectives of New Music* 36/1 (1998): 97–142.
16. Stephen E. Levinson and Mark Y. Liberman, "Speech Recognition by Computer." *Scientific American* 244/4 (1981).
  17. "Musik und Sprache III." *Texte* 2, 60–68.
  18. *Texte* 2, 66.





## CHAPTER TEN

### Revolution

Although his wider reputation rested on a combination of inventive daring and formidable technical knowledge, Stockhausen felt ambivalent about science. Hans Gunther Tillmann, a young composition student, came for lessons during the time Stockhausen was taking part in Meyer-Eppler's seminars. After matriculating, Tillmann wanted to become a composer and asked what he should do next. Stockhausen's reply is interesting: either he should study the scientific and acoustic fundamentals with Meyer-Eppler, or continue studying compositional craftsmanship with Stockhausen. Tillmann's decision is also interesting. He opted to study with Meyer-Eppler.<sup>1</sup>

Georg Heike, a composer and violinist, later to become Director of the Phonetics Institute at the University of Cologne, was also a participant in the Meyer-Eppler seminars. "Stockhausen was always listening out for anything that he believed he might be able to incorporate in his music: he followed the proceedings from the position of a composer. Meyer-Eppler was very proud of him, and would mention his name to others as his student."<sup>2</sup> There can be no doubt that Meyer-Eppler's Institute for Communications Research provided a congenial environment, that Meyer-Eppler himself was knowledgeable and interested in areas well beyond the expertise of any music department, and that his teaching and endorsement of Stockhausen's musical modeling of statistical, aleatoric, and phonetics-related processes was immensely helpful both in a musical and in a professional sense. But there was another agenda also at work. The new sciences of communication and information theory that flourished during the height of the cold war attracted scientific minds who were genuinely interested in decoding modern art, in particular surrealism in art, literature, and also music—not just for their own sakes, as for their insight into the artist's mind, perception and decision-making, essentially those arts based on intuitions not reducible



to conventional logic. Understanding the operation of higher forms of artistic communication might aid the development of thinking machines.

In 1958 Stockhausen embarked on a lecture tour of the United States, where he encountered considerable interest in the scientific implications of European new music, accompanied by a certain amount of envious apprehension among musicians. In addition to promoting the work of the Cologne studio, his visit was also destined to generate support for American initiatives such as the new computer-controlled synthesizer, designed by Harry Olson, to be installed at a facility jointly administered by Princeton and Columbia Universities. For a tour of this kind speeches are prepared, and Stockhausen's presentations are especially revealing. Stockhausen the visionary has yet to be revealed, but in plain language free of any special pleading the composer asserts the primacy of a new and self-sufficient musical art, owing allegiance to a principle higher than science, and reflecting the spiritual values of holism.

Even in Stockhausen's own terms, the text "Electronic and Instrumental Music" is a utopian declaration, very much of its time. Though he does not say in so many words, as did Boulez, that Schoenberg is dead, what he does declare is that everything about European music had been brought into question by composers like Schoenberg, who at the turn of the twentieth century had wanted to express themselves in new ways, but had found historical instruments, that had evolved in close relationship with harmonic ("tonal") music, to be unsuited to the purpose.<sup>3</sup> There is a chill to Stockhausen's rejection of the past, echoing the political environment to which he was born, and the doctrinaire musical environment in which he was raised, both of which had rejected the music of Schoenberg and his school. Surprisingly for so radical a figure, Stockhausen's arguments from historical necessity are essentially populist, more in tune with Adorno's reactionary psychology that one might expect. To allege a contradiction between the new formal conceptions and the physical nature of traditional instruments—probably an allusion to their dependence on the tempered scale, though this is only true for keyboards—acknowledges the very prejudices a reader would have expected a young composer in his position to transcend, or at least confront with reasoned argument, since Schoenberg's method was the first to carry through the logic of equal temperament to its ultimate conclusion. Reason however is not the point at issue. It was twelve-tone music, Stockhausen says, that finally put an end to the harmonious relationship that had previously existed between musical materials and musical form: a fairly comprehensive denial of any possibility of new relationships that Webern and Messiaen may have brought to light, that at the same time ignores the contribution of radio (i.e., Schaeffer) and electrical instruments (e.g., Jörg Mager) to the formation of a knowledge base, let alone a methodology, for electronic music. Radical twelve-tone music of the first half of the twentieth century, says Stockhausen, was effectively "impure," since it used existing materials in a nonfunctional way: this is an argument from design, but with overtones of distaste not far removed from the conventional attitude that dissonance in modern music expresses a society in decay. In

twelve-tone composition, harmonic and melodic relationships that obtain for fundamental tones (i.e., the notated pitches) are not in agreement with the relationships that obtain within the microstructure of individual timbres here Stockhausen combines a not too subtle rejection of conservative twelve-tone doctrine as it had taken hold in American universities, with a restatement of the idealist position originally promulgated by Goeyvaerts an aesthetic of uncompromising purity that Stockhausen himself had never hesitated to overrule when it suited him, and that so far had not been shown to work in practice.

How these arguments were received is impossible to know, though no difficult to imagine. Scientists, who in general had not suffered professionally or personally from the war to the same degree as had artists, were fascinated by the musician and his music, impressed by his professional delivery and technical competence, and did not know enough or care to dispute his thesis of historical necessity. Older musicians, on the other hand, were easily intimidated by his confident manner and fluency in an area they had neither the competence nor the experience either to concede, or to refute. That of course was partly the point.

It was not all bad. Stockhausen took pains to promote interest in homegrown American composers who were outside the mainstream or had been sidelined by the musical academic community. We cannot afford to be too hard on him given the historical necessities of 1958. All the same, Stockhausen is rather too hard on Schoenberg.

Schoenberg wrote a *Harmonielehre*, that deals only with the relationship of fixed frequencies; it lay not yet in the perspective of his times to consider the properties of "consonantal" sounds, and bring them into an inseparable continuity with the harmonic, as it applies to meter, rhythm, and dynamics, and as he had done for tone-color. During their lifetime he and his school dealt with the problems of a new pitch composition, for which new laws of equal justification were devised, while at the same time they remained slaves of classical meter, rhythm, dynamics, and instrumental color (*Koloristik*), hierarchies in crass contradiction to dodecaphonic harmony and melody. Schoenberg's irritation at the term "atonal music" can thus be understood; it is a term that introduces a basic change in the conception of musical material.<sup>4</sup>

This, by the way, is the same Schoenberg who composed *Pierrot Lunaire* for a speaking voice and chamber ensemble, the composer whose *Herzgewächse* is a miracle of timbral balance and miniaturization, the composer whose *Moses und Aron* perfectly integrates the textures of speaking and singing soloists and choruses with orchestra, and whose unfinished cantata *Die Jakobsleiter* imagines an apotheosis in which the soul of the blessed, spiraling upwards in a wordless vocalise, is heard from multiple loudspeakers high above the audience. In 1958 neither Stockhausen nor anybody else would have heard much of Schoenberg's music apart from the piano piece and a few songs, and most of that only once. And while that is no excuse, it at least allows a reader today to recognize the rhetorical, indeed, defensiveness

purpose, of these observations. In later years Stockhausen would quietly adopt Schoenberg's ritualistic *sprechgesang* and be discreetly inspired by one or two of his scenic conceptions: *Die Glückliche Hand*, for example. His emphatic denial of Schoenberg is of a piece with Boulez's 1952 polemic "Schoenberg is dead" and that generation's willful obliteration of historical consciousness, denials resting on the vain expectation that no composer or musician of earlier times had ever thought about music in similar terms.<sup>5</sup>

More engaging is the long essay "Musical Impressions of an American journey."<sup>6</sup> An invitation by Leonard Stein and Lawrence Morton, organizer of the Los Angeles Monday Evening Concerts, to visit Los Angeles, direct a concert and give seminars at two universities, grew into a six-week flying tour of the United States and Canada, coast to coast, encompassing thirty lectures and a dozen media interviews in addition to the public concert. The English editions of *die Reihe* were beginning to appear, and there was a great deal of interest in European musical developments throughout the academic community. At Columbia University Stockhausen was pleasantly surprised at the quality of American tape equipment and loudspeakers, the efficiency and hospitality of his hosts, and the first of innumerable cocktail parties, which took some getting used to "but we got to know some interesting people." At Columbia and again at Juilliard, the lecture room was packed with attentive listeners. "I thought how conservative, compared to Juilliard, the situation was in German music colleges, where nobody was interested in finding out about new music." At Harvard and MIT he was astonished at the attendance and interest shown in the work being done in Cologne, by professors in other disciplines: acousticians, psychologists, mathematicians, physicists, architects—an interest shown overall by non-musicians, scientists of all faculties, throughout his tour; "their openness and understanding of electronic and new instrumental music was quite overwhelming."

During a break at Buffalo State he listened to recordings of contemporary American music, among them an unnamed work for orchestra by Varèse's collaborator Chou Wen-Chung, *Four Strict Songs for Eight Baritone*s by Lou Harrison, and *Signs and Alarms* and *Galaxy 2* by Henry Brant. "Brant lives in New York, where he envisions a music theater in which the performers are the actors. His most recent premiere in New York, according to reports, was a musical circus. It was called 'A World Circus' and in all four corners of the hall, in the balconies, and out of windows here and there were groups of musicians singing or playing; some also moving about while they were singing and playing. I was unable to obtain a recording for myself, since it was only available on subscription, but I did get a recording of his *Galaxy 2* for ten instruments, dating from 1954."<sup>7</sup>

But there was also a measure of hostility toward him, especially among expatriate Austrian and German musicians, many of whom were in positions of leadership in American music colleges and music departments,—in some institutions actually outnumbering their American colleagues. To Stockhausen it seemed they represented a conservative influence, one moreover in opposition to everything new that had taken place in Germany since



their departure.

They talk and talk of their musical upbringing at the turn of the century, and are totally set in their opinions; from the day they crossed over they have stopped in their tracks and become Apostles of European music in the land of the Heathen. Some of them display a scrupulous hauteur in remarking on the lack of culture among American musicians.

I met one of these in Madison, a German professor who came up to the podium where I was talking with a group of students and said reprovingly in German, "It is unacceptable that you should come here with these ideas of yours and poison the minds of these materialistic young people, already obsessed with technology. Each one of them has lost contact with the spiritual and eternal values. What have you got to say?" His wife, who was standing nearby, piped up "He has got to answer. What was it he said about the European bourgeoisie? That concerts and operas are a product of a middle-class era? The man's a Communist, I am sure of it."<sup>8</sup>

On his final evening in New York, evidently at his own request (since his guide, John Lewis of the Modern Jazz Quartet, had not been there for some years), Stockhausen visited Birdland to see and hear Count Basie. He had been a jazz pianist himself, imitating the music he heard on the radio openly as a boy, and in secret as a teenager. In his role as accompanist to the magician Adrian, improvised jazz had been his means of captivating and distracting an audience. The music of Cage and Tudor, and his 1958 encounters with American academic musicians, appealed to his sense of adventure and of risk—indeed, a comment from LaMonte Young: "I am not interested in good; I am interested in new—even if this includes the possibility of it being evil"—applies with some emphasis to Stockhausen himself.<sup>9</sup>

White American musicians fascinated him intellectually, to some extent also philosophically, often more than their music, which by comparison could appear desultory, unfinished. Jazz was different: it carried no intellectual baggage, rather, it was an art of movement and interaction of a naturalness and fluency he dearly wished could be reproduced by European musicians, even though the idiom, the musical material (yet again) seemed to him so banal, worn out, and empty. That he identified so strongly with authentic jazz performance and style, with its sense of directed freedom, the ability of black musicians to pick up and go with an idea, and above all the sense of a theater created on the spur of the moment and in real time throws some light on what his music would be destined to expect of performers in the years to come, and the spirit in which his own music theater should be interpreted and perceived.

On my last night in New York, John Lewis, the pianist of the Modern Jazz Quartet, took me to Birdland, a basement where Count Basie plays from ten every night to around five in the morning. John introduced me to a string of famous jazz musicians: Basie, Gillespie (who just happened to be there), and many others. . . . For two hours I listened intently to music being played with incomparable skill. It taught me a lot, both about instrumentation and about playing technique. What

well-known black female vocalist got up from her table right in front of the orchestra, took the microphone, started to sing, and wouldn't stop. Basie, at the piano, signaled his musicians to play along; one of them prompting her, in her ear, line by line, with the words. By the next verse it was apparent that she didn't know any of the words, since she repeated the same phrase over and over, or just sang syllables. She sang herself into a stupor, suddenly dropping the microphone on the floor with a bang, after which I could hear no more of her voice, even though she was only five meters away. Everybody went very quiet, and from afar off I could finally make out her small, husky voice.

One of the musicians picked up the microphone, but it didn't work any more. A Lilliputian, who had been acting as Interlocutor for the evening, scowled in her direction, but the singer, oblivious, descended the podium and began weaving her way around the tables, still singing. At a nod from Basie, the orchestra started up again with a loud number, and I heard no more of her.

During the next break a female friend brought her back to her table. She was terribly ashamed and sat with her eyes downcast for the rest of the evening. I don't remember her name.<sup>10</sup>

### Carré (Square)

1959–1960: No. 10 (UE 14815 I–IV (four scores); cd Stockhausen-Verlag SV-5)

For four orchestras and four choirs.

Orchestra I: flute (alto flute), oboe, tenor saxophone, bass clarinet; d trumpet, high horn, bass trumpet, bass trombone; choir 2.2.2.2; percussion (2 players): 2 tom-toms, bongo, 3 cowbells, snare drum, bass drum, Indian bells, suspended cymbal, hi-hat, gong, tam-tam; strings 4.0.2.2.0.

Orchestra II: flute, cor anglais, clarinet, bassoon; c trumpet, high horn, low horn, tenor trombone; choir 2.2.2.2; vibraphone; percussion (2 players): 2 tom-toms, bongo, 3 cowbells, snare drum, Indian bells, suspended cymbal, hi-hat, gong, tam-tam; strings 4.0.2.2.0.

Orchestra III: oboe, clarinet, baritone saxophone, bassoon; c trumpet, low horn, alto trombone, bass tuba; choir 2.2.2.2; amplified cimbalom; percussion (2 players): 2 tom-toms, bongo, 3 cowbells, snare drum, bass drum, Indian bells, suspended cymbal, hi-hat, gong, tam-tam; strings 4.0.2.2.0.

Orchestra IV: flute, clarinet in a, alto saxophone, bassoon; c trumpet, high horn, low horn, tenor trombone; choir 2.2.2.2; harp; percussion (2 players): 2 tom-toms, bongo, snare drum, Indian bells, suspended cymbal, hi-hat, gong, tam-tam; strings 4.0.2.2.0.

Duration 30' 50.

In view of their juxtaposition on disc and outward similarity of design (multiple orchestras, sounds moving in space, etc.), the listener is easily drawn to the conclusion that *Carré* continues a line of development initiated by *Gruppen*. This is not so: *Carré* is no "son of. . ." it is something else. *Gruppen* represents the climax of a synthetic phase in Stockhausen's music, marked by intense activity, high speeds, and strict hierarchies of space and time. If there is an audible link between these two major works, it is perhaps the moment at figure 119 in the earlier score that, as the composer observed,



. . . led to something I hadn't expected myself—a chord is moving from orchestra to orchestra with almost exactly the same instruments (horns and trombones) and what changes isn't the pitches but rather [the location of] the sounds in space. Each orchestra, one after another, makes a crescendo and a decrescendo; at the moment when one starts fading out, the next orchestra begins to fade in, producing these very strong waves of revolving timbres.<sup>11</sup>

An accidental discovery, arising unexpectedly out of a methodical working-through of a research procedure, and taking on a life and momentum of its own, is the kind of outcome one normally associates with a scientific breakthrough, like the discovery of penicillin; that music can be discovered in a similar way is not something listeners are used to thinking about, even though trial and error is just as natural to the composer and sculptor as to the research biologist. The conventional audience perception of the artwork or musical composition as a complete and finished object reflects an essentially nineteenth-century consumerist attitude, one that ignores the process of making, and the implications of the underlying skills and techniques involved. Stockhausen's music has the merit of confronting an audience with the reality of a work in progress—a "work experience," perhaps,—that cannot be grasped spontaneously as a totality, but has to be lived through in real time, savored, and digested. Traditional and folk musics of every culture incorporate memory aids of various kinds: symmetries, repetitions, regularities of pace and phraseology, that allow a listener to accommodate, remember, and eventually anticipate; but a music lacking these traditional cues, as twelve-tone music eliminates conventional melody and harmony and serial music conventional timing, is an experience for which even a knowledgeable listener is likely to be totally unprepared, like the subjects of Ebbinghaus's memory studies. All the same, the psychological consequences of comprehensive unfamiliarity are invariably illuminating: the listener is laid open to suggestion, so that the concert event, like a séance, becomes an experience impossible to remember, even though it may be preserved in recording and the experience repeated indefinitely.

If *Gruppen* is "about" the (expanded) point, then *Carré* is "about" the line: length, duration. Not for the first time is one reminded of Paul Klee's definition of the dimensions of art as "dot, line, plane, and space." In contrast to the shimmering busy-ness of the earlier work, *Carré* opens into a world of meditative listening, a music of being rather than of doing. In part this is a transference into real time of the detached sound- and temporal world of electronic music, with its instantaneous transitions and vibrant inner life. It is also a change of role for the conductors, who are entrusted with a clearly more interpretative function than in *Gruppen*, where their attention is necessarily largely devoted to keeping time.

*Carré* takes the interior fluctuations of a sound gesture or continuous reverberation as its line of departure; no longer the dynamics of onset and attack, rather the dynamics of response and decay. Gone is the desire to model patterns of impulses after the frequency ratios of complex timbres; in its place a simpler attention to individual sounds or combinations that hav

organized interior rhythms. Many of these sounds are typical of an environment of machines and vehicles in motion, so the sounds themselves move, and are heard to change in pitch, loudness, and timbre as a consequence of that movement: in this respect the heavily disguised city sounds of Varèse's *Déserts* and *Poème électronique* can be construed as distant precursors of Stockhausen's instrumental tone mixtures (Varèse's timing in these works is equally monumental and introspective, perhaps for the same reason).

I was flying every day for two or three hours over America from one city to the next over a period of six weeks, and my whole time feeling was reversed after about two weeks. I had the feeling that I was visiting the earth and living in the plane. There were just very tiny changes of bluish colour and always this harmonic spectrum of the engine noise.

At that time, in 1958, most of the planes were propeller planes, and I was always leaning my ear—I *love* to fly, I must say—against the window, like listening with earphones directly to the inner vibrations. And though a physicist would have said that the engine sound doesn't change, it changed all the time because I was listening to all the partials within the spectrum. . . . I made sketches for *Carré* during that time, and thought I was already very brave in going far beyond the time of memory, which is the crucial time between eight- and sixteen-second long events. When you go beyond them you lose orientation.<sup>12</sup>

*Carré's* poetic of expressive nuance and change within the sound,—effects he had found impossible to achieve in electronic music,—relates the work by default to the electronic speech world of *Gesang der Jünglinge*, in the making of which Stockhausen had come face to face with the impossibility of realizing the infinite gradations of natural speech depicted so clearly in Potter, Kopp, and Kopp's voiceprint images of visible speech: transitional effects that prior to the era of *Montag aus LICHT* could only be produced vocally and instrumentally by human performers.

Once again the orchestras of *Carré* consist of mixed foursomes: four woodwinds, brass, high and low voices, percussion, high and low strings, along with a different "keyboard" for each orchestra: piano, vibraphone, cimbalom, and harp (prefiguring their similar roles twenty years later in Boulez's *Répons*). Whereas the triple forces in *Gruppen* add up to a traditional Mahler or Berg orchestra, in *Carré* by adding voices and reducing the string numbers Stockhausen has lightened the texture and emphasized instrumental color as opposed to weight. That a spatial distribution of forces also contributes to greater transparency of sound, and clarity of complex textures, are factors also brought to light in Henry Brant's original study of sounds in space. However, similar changes in orchestral balance, in particular the lightening of string sections, also deprive the composer of a subtle means of controlling and shifting the center of reverberation, an effect first exploited in the era of Vivaldi. Massed strings, the foundation of the symphony orchestra, were introduced initially to add substance and reverberation to ensemble music performed in secular environments that lacked the natural reverberation of a cathedral or basilica; discovering that the diffuse sound of massed violins could influence the acoustic environment in a

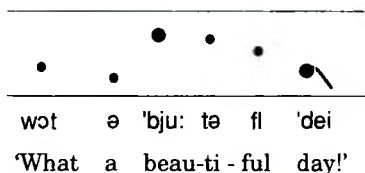
controllable manner independent of the room structure quickly led to the development of a music that modulates from key to key, and effectively changes the acoustic characteristic of the performance space. Stockhausen had discovered in *Gruppen* that directional effects similar to pan-potting in a studio could be simulated with brass instruments, and that effects of such a kind had been exploited by Gabrieli and others in the late sixteenth and early seventeenth centuries. He may have been aware of similar spatial effects being achieved by voices, for instance in the *Spem in Alium* motet for forty real parts by Thomas Tallis. That massed strings, especially violins could also be employed for spatial effect was not so widely appreciated.

By his own admission a well-disposed critic, Stravinsky remarked that *Carré* appeared timeless in the wrong sense when instead of following the score, he merely listened.<sup>13</sup> "In the wrong sense" may be a way of expressing the nonappearance of an effect the listener has been led to expect, like a car that refuses to start. Stravinsky continues, "Stockhausen is most interesting when he is busiest (as in the section after [82X])," a reference to the cascading inserts added at a later stage in the composition (and at 82X, track 78 in the SV cd, marvelously if inadvertently enhanced by the sound of a passenger jetliner).

Just as *Gesang's* austere antiphony is energized by impulse showers that burble like soda filling or poured from a tumbler, so the austere soundscape of *Carré* is invaded from time to time by avalanches of "colored noise sweeping and spiraling among the four orchestras. These statistical effects in both compositions represent the same radical distraction designed to conceal essentially the same problem, which is that sounds originally designed to express some inner life, and move in space, tend in practice to refuse to budge. The dramatic success of the inserts in *Carré*, which consist largely of textured orchestral noise that has boundaries but no strongly-defined harmonic properties, is a significant achievement in itself, but can also be construed as reflecting on the comparative nonsuccess (in performance terms, at least) of the static non-insert material, which I think is what Stravinsky is saying. Of course to make such a judgement presupposes an intention by Stockhausen to simulate spatial transitions by varying their relative dynamics among the four orchestras, as distinct from plain antiphonal oppositions. The evidence of the written score is in fact consistent with such an intention, and of a piece with *Carré's* highly-inflected musical language.

The detailed working-out of the four part-works from the composer sketches (each conductor has a separate score, like a sixteenth-century marginal) was assigned to an assistant, the English composer Cornelius Cardew. By his own account Cardew worked for most of the time with only the haziest notion of what Stockhausen intended.<sup>14</sup> The instrumental score is visualized in an apt space-time notation that acknowledges a debt to Earl Brown and Cage; for the vocal parts Stockhausen adapts the extended alphabet and intonation graphics devised by Daniel Jones and adopted by the London-based International Phonetics Association, a source likely to have been recommended by Meyer-Eppler, and typical of Stockhausen

scrupulousness in researching the best and most apt graphics for his musical needs. Devised by phoneticians for the approximate transcription of prerecorded speech (so not for performance purposes, hence unspecific as to pitch and time), it employs a scaled-down vocabulary of symbols within the limits of a two-line stave. Visually it resembles a primitive form of plainchant; though lacking the priorities required for exact musical reproduction,



it does distinguished stressed and unstressed syllables by larger and smaller dots, and upward and downward inflections by curving extensions (the "nuclear tail").<sup>15</sup> Stockhausen uses phonetic notation in *Carré* as an extension of grace-note notation, and only one size of dot for the time being, until *Zyklus* and *Refrain*.

Although the choir voices occasionally emit recognizable names, among them "E-va!" in an early premonition of *LICHT*, they are employed chiefly as an instrumental resource, just as the speech sounds are treated as a timbre and texture resource. The ambiguous nature of Stockhausen's text materials, not to mention his fondness for childlike alliterative refrains and counting games, has its origin in the composer's encounter with information theory and the wider intuition that such childhood speech play, in addition to its musical interest, is evidence of an ancient culture engraved, like Mayan or Egyptian hieroglyphs, on the mind of humankind—a view unexpectedly reinforced by Noam Chomsky's well-publicized theory of the period that generative grammar is mysteriously programmed deep into the human genetic code.

Stockhausen was simultaneously working on *Kontakte* during the composition of *Carré*, and there is a considerable cross-fertilization of ideas between the two works. *Kontakte* was also originally conceived as a four-channel work in which movement in space of the tape-recorded electronic sounds was to be controlled by four soloists operating potentiometers; this idea was abandoned and subsequently transformed by the introduction of a mechanism (the famous turntable) for rotating the sounds in space. In both *Carré* and *Kontakte* an initial conception of sounds floating and orbiting in the center of the auditorium had to be set aside in favor of a mechanical system of rotating sounds around the periphery. The rotation of orchestral sounds in space around the audience had previously been successfully achieved by RCA-Bell Labs in 1940 for the original Disney movie *Fantasia*, and for electronic and concrete music by an analogous Philips process for the Brussels World Fair premiere of Varèse's *Poème électronique* in 1958. For a composer in the employ of a radio station, in daily contact with audio engineering colleagues, and engaged in research into the projection of sounds in space, it is unlikely that Stockhausen would not have heard of

"Fantasound;" something of the kind seems to have provoked him to discuss with studio officials whether it would be possible to suspend musicians in chairs and spin them round the hall. The orchestra players objected to the idea, surprisingly not because it would make them dizzy, but because they thought it unprofessional to be asked to play music from a position that was moving in relation to the hall acoustic. It seemed too that the German Musicians' Union would also not allow it.<sup>16</sup> In 1990 Disney issued a remastered original music track of *Fantasia* (1940), marking the movie's fiftieth anniversary. Reports at the time in the audio engineering press reflect an admiring consensus on the technical brilliance of this achievement in surround sound in the era of the 78 rpm shellac platter and low-fidelity AM radio. Most of the *Fantasia* music was optically (sound-on-film) recorded under Stokowski's direction in the spacious acoustic of the Philadelphia Academy of Music, home of the Philadelphia Orchestra, and from 1931 the location of many previous test stereo recordings by the same conductor and orchestra for RCA. A Disney colleague recalled:

Stokowski was fascinated by the mixing board—the sound control panel. He said this was the ultimate in conducting: he could dial up the strings, or turn down the others, getting exact mixtures of sounds. With the panel he could control the entire orchestra. . . . Stokowski recorded each section of the orchestra individually: strings, winds, horns, etc., then mixed the nine separate optical tracks that resulted on four master tracks. These tracks were heard by the audience from three sound horns behind the picture screen instead of the usual one, plus sixty-five small house-speakers placed strategically throughout the auditorium.<sup>17</sup>

Stokowski's fascination with the recording process was legendary, and in his memoir he took care to include a reliable description of the technical and scientific principles behind Fantasound:

When the sound waves of all the instruments are combined in a single channel, they often interfere with each other and cause cross-modulation, which makes the music sound distorted. With three separate channels, it is possible to send out the music on each channel from relatively few instruments. This reduces cross-modulation and gives greater purity to the sound of the instruments. Another great advantage of three sound channels is that the tone of the various instruments can be blended in the air after the sound has left the speakers. This corresponds somewhat to the blending of colors in *pointillisme*, the method of painting in which the colors are not mixed on the canvas, but are blended in the space between the canvas and our eyes as we look at the picture.<sup>18</sup>

Especially fascinating is Stokowski's division of the orchestra by tone color into woodwinds, brass, strings, and percussion, the reduction of instrumental numbers this allows, the importance he attaches to (and the feeling of power he derives from) controlling the balance himself from the mixing desk, and his ultimate goal,—to all intents and purposes, achieved,—that the sounds be perceived as moving within the auditorium space, and no



just skirting its edges. In a number of significant respects *Fantasia* reads like a blueprint for *Carré*: it also suggests the intriguing possibility that to record *Carré* in Fantasound,—a technology which after all is not dependent on Tchaikovsky,—could give rise to startling results.

Ligeti and Penderecki were both deeply influenced by the dense orchestral textures of *Carré*, and it is interesting to observe that their employment of related effects is associated with meditative or ritualistic subjects (*Atmosphères*, *Threnody*, etc.) that tend to reflect, in the absence of any underlying serial or structural imperative, a nineteenth-century aesthetic of the beautiful and mysterious in nature (it is a feature of Stockhausen too, but Stockhausen is a lot more than just a pretty surface). Judging by *Pli selon pli*, Boulez seems also to have been impressed by *Carré*'s monumentality, and also its orchestration, in particular the insert material; there are passages in "Don" and "Tombeau" where staccato chords are set against a sustained resonance in contexts reminiscent of *Carré* at 32X and 63X. There are, all the same, intriguing differences. Stockhausen's *tenuti*, of single notes or chords, are always clearly defined in pitch, whereas Boulez's sustained sounds tend to be indeterminate in pitch, often gong or cymbal tremolandi. Stockhausen superimposes percussion attacks on his staccato chords; Boulez leaves his woodwind chords exposed. The combination implies a different attitude to aural perspective, and perhaps a difference of intellectual focus as well. Whereas Boulez invites the listener to pay attention to the staccato foreground, leaving the background a continuous hazy blur, Stockhausen's balance of staccato and sustain seems designed to draw the listener's attention away from the foreground, which the percussion highlights render too bright and dazzling to grasp, out to a more distant horizon.

### Zyklus (Cycle)

1959: No. 9 (UE 13186; cd Stockhausen-Verlag SV-6)

For solo percussionist.

Snare drum, 4 tom-toms, 2 African log drums, guero, triangle, Indian bells, 4 cowbells, 2 suspended cymbals, hi-hat, gong with dome, vibraphone, marimbaphone.

Duration: 10'–16'.

Composed as the official test piece for percussionists for the 1959 Kranichstein Music Competition, an event won by Christoph Caskel (who remains the work's leading interpreter on disc), *Zyklus* is one of three works of this period of an unequivocal genius and perfection: formally, musically, and philosophically; the other two works being *Refrain* and *Kontakte*. One could classify the three as "the Meyer-Eppler set," given that they reconcile so elegantly and explicitly those critical polarities of freedom and determinism, of open and closed form, and of objective and subjective experience, that define serialism in the fifties and its relationship with the sciences of communication. What makes *Zyklus* all the more remarkable is that so audacious a reconciliation of antitheses is achieved in a music for percussion

at a time when so-called "noise" instruments were still regarded with disdain by the generality of classical musicians, and with suspicion by orthodox serialist composers. It is also wonderfully apt for a musical conception of such intellectual sophistication to be realized in a work calculated to give the impression in performance of an uninhibited jazz break. (As it should: in Birdland Stockhausen witnessed for himself an art of mediating between strict and free interpretation, playing with or against the model, raised to higher power in jazz than in orthodox classical music.)

In an introductory note Stockhausen describes *Zyklus* as "a dynamic closed form" in contrast to the open form of Piano Piece XI. In retrospect the two works are very different: Piece XI is a study in depth perspective where objects are constantly shifting in virtual space, and the performer's freedoms correspond to changes in focus or orientation, some objects approaching, others receding, and expanding and contracting in time as well. Temporal sequencing is much more consciously directed in *Zyklus*, however, and the freedoms of choice are now strictly controlled within a notional tempo of reference that remains constant throughout the piece (and is indicated in the score by regular if unspoken barlines).

Stockhausen compared the indeterminate structure of Piece XI to statistical process or "noise" expanded from the micro- to the macro domain. In that respect a comparison with *Zyklus* is also illuminating. The basic "skeleton" cycle of the latter work is modeled on a tape-loop structure of the kind originally synthesized as source material for *Kontakte*, dated 4 June 1958 in the realization score, and reproduced on page 204. In this structure five monotone layers of edited sine-tones, serially differentiated in frequency (60, 84, 105, 160, and 200 hertz respectively), are superimposed "out of phase"—each layer reaching its maximum density at a different point in the cycle,—to comprise a single tape loop or "cycle" to be endlessly copied and speeded up until it became audible as a modulated tone. *Zyklus* is a further example of a siren-based generative process, and a step forward from the simple arpeggio structures of *Studie II*. The tape procedure of editing loops from fragments had proved hugely time-consuming, and Stockhausen may well have taken advantage of the commission to consider speedier procedures for creating and modifying a range of artificial waveforms. Since synthetic waveform is also impulsive in character, it makes sense at least to have a single percussionist imitate the studio process in real time, performing a variety of textures and patterns employing different combinations of instrument and degrees of randomness. At the same time, of course, the exercise could also lead to the creation of a vocabulary of real-time sounds corresponding to speeded-up electronic timbres in the micro domain, a very beguiling objective for *Kontakte*.

At this point one notices a curious, distant affinity, in texture and acoustic character if not aesthetically, with the opening "avant l'Artisan furieux" of Boulez's *Le marteau sans maître*, another toccata-like movement based on a cycle of timbres and coordinated to a rapid pulsation. Discussing the structure of *Livre* for string quartet, Boulez uses language very apt for *Zyklus*:

This oscillation between the austerity of some passages that are deliberately stripped to their essentials, rigid even, and the flexibility of other movements or passages based on very profuse melismata and supple rhythmic structures that give permanent flexibility and a quasi-improvisatory style, makes a contrast that is fundamental to me. . . . Sometimes the music reveals its bare bones while at other times the whole structure is concealed beneath a much more flexible, much more fragile covering.<sup>19</sup>

*Zyklus* is a structure of nine layers of instrumental impulses. Each layer is assigned to a different instrument, and each contains a different number of pulses (so in principle corresponding to a different partial tone). The overlapping cycles of acceleration and deceleration are contained in a fundamental duration divided into seventeen equal periods, drawn to scale and marked to facilitate reading in units of constant duration, 30 per period. The score is sixteen pages, spirally bound, and invertible, so a performer may start at any point and read straight through to end back at the same point, in either direction. Performed in one direction the notation becomes progressively more aleatoric; in the other direction, the performer's freedom of choice is progressively limited (though the music never arrives at total periodicity). Fifteen of the seventeen periods are printed one to a page; periods 17 and 1) the point where free association and determinism meet and merge imperceptibly, occupy the remaining page, which is divided in two by a double black line. That meeting and merging of determinate and indeterminate structures is an act of genius.

A skeletal impulse structure is fixed for the entire work, each layer a symmetry comprising a logarithmically measured *accelerando* over eight periods, a one-period climax of maximum activity, during which the number and distribution of attacks is free, followed by a further eight periods of measured *ritardando*. These fixed structures are recognizable as heavy, fortissimo accents. Successive maxima occur in odd-numbered periods: the snare drum during period 1, the hi-hat during period 3, the triangle in period 5, and so on.

Over this skeletal structure Stockhausen has composed a second cycle of points and groups that also oscillates between complete determinism (this time, conformity with the underlying point structure) and various degrees of indeterminacy (freedom of timing, choice, or sequence within defined limits). This secondary flexible tissue overlaid on the more rigid bones of the work, to borrow Boulez's analogy, is lighter in touch and more supple in articulation, and introduces cycles of increasing and decreasing clarity. The alternate blurring and focusing relationship of secondary and primary structures is beautifully controlled, and oscillates at twice the fundamental period, peaking at the fifth and thirteenth periods, with corresponding nodes of "no interference" in the first, ninth, and seventeenth periods.

It is important for the performer to think of each instrument in the ensemble as related to every other, as a location or absorption line in a continuous spectrum between noise and pitch, defined by its degree of

resonance, and richness of timbre. By analogy with tape impulses, the drier the tone and the higher the pitch, the "faster" the sound. It is another of the hidden beauties of the score that while the entire work is structured as an immensely slowed-down impulse waveform, in performance the "fastest" elements, i.e., guero, vibraphone, and marimbaphone glissandi, are also the most melodic or musical in character, hinting that beyond the speed limit of articulation lies another realm of pure music waiting to be discovered.

Compared with Piano Piece XI, the degrees of freedom available to the performer of *Zyklus*, as distinct from the progression from fixed to statistical notation laid down by the composer, are limited to choices and orders of subsidiary points or groups within invariant divisions of the principal time structure. The compositional rules regulating the size and relationship of subsidiary to primary elements, for instance the influence of the Fibonacci series on subsidiary orders, are comparable to those regulating the graphic note constellations of Piano Pieces V-IX, or of the "Nebennoten" (auxiliary notes) to the "Zentralklänge" (central sounds) of *Plus-Minus*.

This is what I do in music. I go into the deepest possible layer of the individual sound. . . . In *Kontakte*, I composed every sound from individual pulses which I spliced on tape. I made loops of one rhythm with individual electric pulses that I recorded on tape with a duration of one second, for example, and sped the rhythms up a thousand times, . . . so that in the evening I had [a tone of] about 1,000 cycles per second. And one cycle of the 1,000 cycles per second is my original rhythm.<sup>20</sup>

For its era, a time of graphic impoverishment tending to anarchy, Stockhausen's notation for *Zyklus* is a model of exemplary design: clear, functional, and perfectly adapted to a music of "attack" structures. Since a piece for sticks is a piece where only the onset needs to be indicated, Stockhausen is able to employ a scale of note-sizes corresponding to loudness levels, a simplification that would not be possible if the size of a note were to indicate its duration as well. Such a notation has features in common with Paul Kleinschmidt's (the music-inspired graphics, for instance, illustrating "The natural organization of movement") further allowing the various degrees of indeterminacy of timing and internal configuration to be displayed with masterly elegance and economy.<sup>21</sup> (Pianists struggling to grasp the difference between metronome time and "action-time" in Piano Pieces V-XI would do well to study Caskel's recording of *Zyklus* with the score, paying particular attention to the tom-toms. Functional clarity and precision distinguish Stockhausen's graphics from the many derivative and desultory imitations of the time, for instance Roman Haubenstock-Ramati (*Liaisons, Mobile for Shakespeare*) François Bayle (*Points Critiques*) and other fashionable exponents of "musikalische Grafik." For a composer with an established reputation for hard-to-read scores, *Zyklus* marks a significant turning point.

*Zyklus* is the first of three pieces dating from this period,—the other being *Carré* and *Kontakte*,—manifesting a conception of rotation as an enclosure proposed in Stockhausen's *die Reihe V* essay "Music in Space." In *Zyklus* of course only the performer is enclosed in a circle of instrument



whereas in the other two works it is the audience around whom the sounds rotate. Such a concept of in-centeredness leads to meditation, for all the intensity of *Zyklus'* activity; there may yet come a time when, thanks to surround sound, when we may yet experience its cyclic evolutions and revolutions from the still point of the center.

### Refrain

1959: No. 11 (UE 13187; cds Stockhausen-Verlag SV-6, SV-62)

For three players: piano (woodblocks); vibraphone (cowbells); amplified celesta (antique cymbals).

Duration 11'-13'.

The title refers to recurrent disturbances that ruffle the ringing tranquility of the music. These disturbances are notated on a transparent strip that is overlaid on the music, in effect to distort perception of those parts of the music that lie beneath. Although her name is not usually acknowledged in this context, such distortion effects in the visual domain are a feature of the art of Mary Bauermeister, a young student of Max Bill, and daughter of a professor of anthropology and genetics, who in 1959 had moved into a rented studio in the older part of Cologne that quickly became a stopover, concert venue, and meeting-point for local and visiting avant-garde artists. The introduction of transparencies to music rests with John Cage, who while on a visit to Europe in 1958 composed *Music Walk* for one or more pianists, *TV Köln*, and *Fontana Mix*, in all of which transparent sheets marked with reference staves or grids are laid over pages containing dots or lines in seemingly random configurations, allowing the latter in theory to be interpreted musically. At this point, any further comparison comes to grief. The difference between Cage's interesting thought experiment and Stockhausen's adaptation of it is, as we have come to expect, that Stockhausen has fully appreciated the limitations and possibilities of the concept, and produced an intelligent solution that is both beautifully designed and also a perfectly imagined work of music.

Visually arresting, *Refrain* nevertheless makes good design sense and is not difficult to read. The curvature of staves allows the "refrain" strip to be rotated across the page to introduce shimmering disturbances to the placid calm of the music below. The musical conception and audience perception are not affected in any way by changes in location and timing of the refrain itself; indeed one could claim that a listener's sense of a natural event is enhanced by the uncertainty built into the design. As the refrain strip is turned from left to right, symbols change orientation: so a cluster may turn into a glissando, and a slow glissando into a vertical cluster, since the convention of reading vertical alignments as simultaneous still applies. The beautiful graphics, different from *Zyklus* but just as completely appropriate for a music of suspended motion as the notation of *Zyklus* is suited for a music of action, corresponds to a modern interpretation of the familiar "unmeasured prelude" notation of French composers Jean-Henri d'Anglebert



and Louis Couperin: a music where the timing of events is dependent on the sound being produced, and its interaction with a room acoustic. Such passages of music tend to be notated in whole notes of indeterminate length interrupted at times by grace notes or quarter-note figurations played rapidly, features that have already been seen in Stockhausen's *Piano Pieces V–VIII*, and are destined to reappear in the instrumental score of *Kontakte*, where the timing of events is also controlled by external factors (i.e., by the events on tape).

*Refrain* is scored for superimposed keyboard timbres: piano, celesta, and vibraphone, and occupies the mid-range, with occasional excursions into the bass. The “steady state” score, as it were, (without the refrain element alternates chiming chords,—in which all three keyboards play as one, producing subtle interior oscillations that seem to chase one another into the distance,—and grace-note sequences in which the same note material circulated independently, producing kaleidoscopic cut-glass textures that rustle and sparkle, and to which auxiliary percussion and occasional voice attacks add a discreet flavor of ritual.

Introducing Cage's *Music of Changes* to a radio audience in 1957, Stockhausen remarked how pianist David Tudor would sit “almost motionless letting the last sound before a pause die away very gently,” before making his next move “with unbelievable rapidity,” a description of how *Refrain* should be approached.<sup>22</sup> Its clangorous mix of sonorities also bears comparison with Boulez's *Improvisation II sur Mallarmé* (“Une dentelle s'abolit”) of 1958, of which Boulez has written in very similar terms “the work is scored for voice and instruments. I place the instruments on the platform in such way that the three different kinds of sound—fixed pitch, partially pitched and unpitched ‘noise’—blend with one another.”<sup>23</sup> Boulez's chamber ensemble is larger, including tubular bells and harp as well as piano, vibraphone, and celesta; it also incorporates a female voice, which tends to take the limelight and distract attention from the accompanying mixed sonorities, which tell their own story. Half a century on, the glossy opulence of Boulez's sonority is beginning to sound just a little tarnished, its aesthetic somewhat dated; by comparison Stockhausen's drier, denser, and sharper imagery seems to have lost none of its freshness and immediacy.

The phonetic content of *Refrain*, comprising not only the voice attacks but also the woodblocks, cowbells, and crotala (corresponding to “k,” “g,” and “t” consonants respectively), introduce a tactile element absent from the keyboard attacks, which need to sound precise, like musical boxes. While the glottal “clicks” work well in practice, the voiced diphthongs do not liaise as easily with their accompanying instrumental tones, and are now too heavily articulated in a higher-pitched head-tone, with a trailing intonation, after the manner of Noh percussionists.

In 2000 Stockhausen produced a new cd recording, “3 × *Refrain* 200” for teaching purposes. Three versions of the score are introduced and discussed by the composer, and performed in full. Although the performances are musically very clear, something very strange has happened to the music which sounds incomprehensible in stereo, as if the three performer spaces

have somehow been superimposed. (The recording of "Mittwochs-Abschied" from *Mittwoch aus LICHT* dates from this time and is also perplexing in the same way.) The third and final version of *Refrain* in the new recording terminates with a newly-composed, unnecessary and grotesque flourish, completely out of character, intended it seems as a gesture of rejection of the piece itself, and of all keyboard instruments.

### Notes

1. Michael Kurtz, *Stockhausen: A Biography* rev. tr. Richard Toop (London: Faber and Faber, 1992), 68.
2. Michael Kurtz, *Stockhausen: A Biography*, 72.
3. "Electronic and Instrumental Music" tr. Ruth Koenig. In *die Reihe V: Reports - Analyses* (Bryn Mawr: Theodore Presser, 1961), 50-59.
4. *Texte 1*, 144-45.
5. Boulez has persistently denied that it was ever Schoenberg's intention that *Pierrot Lunaire* should be half-spoken, half-sung; but the voice in *A Survivor from Warsaw* speaks to the listener in Schoenberg's own inflection, just as the bass voice in *Sirius* and *Luzifer in Jahreslauf (Dienstag aus LICHT)* are exact transcriptions of Stockhausen's voice.
6. "Musikalische Eindrücke einer Amerikareise." *Texte 2*, 219-32.
7. Stockhausen is reported to have consulted Brant's paper "Uses of Antiphonal Distribution and Polyphony of Tempi in Composing" (*American Composers' Alliance Bulletin* IV/3, 1955: 13-15) while working on the orchestration of *Gruppen*. (See Joan Peyser, *Boulez: Composer, Conductor, Enigma* (London: Cassell, 1977), 132.) Here Stockhausen appears to be referring to Brant's *Grand Universal Circus*, "a spatial theater piece for 8 singing and speaking voices, 32 choristers, and 16 instruments," composed in 1956.
8. *Texte 2*, 224.
9. LaMonte Young: "Lecture 1960." *Tulane Drama Review* 10/2 (1965): 73-83.
10. *Texte 2*, 232.
11. Jonathan Cott, *Stockhausen: Conversations with the Composer* (London: Robson Books, 1974), 200-201.
12. Jonathan Cott, *Stockhausen: Conversations with the Composer*, 31.
13. "Contingencies." Igor Stravinsky and Robert Craft, *Themes and Episodes* (New York: Knopf, 1966), 11-12.
14. Cornelius Cardew, "Report on Stockhausen's *Carré*." In two parts. *Musical Times* 102 (1961), 619-22; 698-700.
15. Daniel Jones, *The Pronunciation of English*. 4th edn. (Cambridge: Cambridge University Press), 1956.
16. *SoM*: 101-102.
17. John Culhane, *Walt Disney's Fantasia* (Reprint. New York: Abrams, 1999), 19-20.
18. Leopold Stokowski, *Music for All of Us* (New York: Simon & Schuster, 1943). Cited in John Culhane, *Walt Disney's Fantasia*, 19.
19. Pierre Boulez, *Conversations with Célestin Deliège* tr. Robert Wangermée (London: Eulenberg, 1976), 53-54.
20. Jonathan Cott, *Stockhausen: Conversations with the Composer*, 76.
21. Paul Klee, *Notebooks Volume 1: The Thinking Eye* ed. Jürg Spiller, tr.

Ralph Manheim (London: Lund Humphries, 1961), 325–29.

22. *Texte 2*, 148.

23. “Constructing an Improvisation.” In *Orientations: Collected Writings* tr. Martin Cooper (London: Faber and Faber, 1986), 155–76.

