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***MAGIC REALISM* IN MUSIC:**

FOUR ELECTROACOUSTIC COMPOSITIONS

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Declaration

I grant powers of discretion to the University Librarian to allow the written text of this thesis to be copied in whole or in part without further reference to me. This permission covers only single copies made for study purposes, subject to normal conditions of acknowledgement. The scores and tapes containing recordings of the music presented are subject to normal copyright restrictions.

Abstract

The subject of this thesis is not the text contained in this book, but the four electroacoustic compositions presented: *Go*, *Hendrix Haze*, *Triple Concerto* and *Toccata del Mago*.

The purpose of this writing is to put forward a context in which these four compositions may be assessed.

In chapter 1, I choose to present my work taking a lateral approach. Rather than discuss my background as a composer and the reasons or 'necessity' for using the electroacoustic medium to express my musical thinking, I have instead introduced a new idea to provide a wider context: *Magic Realism* in music. I have developed the notion that there is a musical equivalent to *Magic Realism* in literature, and that my work, as well as the work of other Latin American composers, may be seen in this light. Also in this chapter, I put forward the idea that the electroacoustic medium may be the natural environment or 'habitat', as it were, for the *Magic Realist* composer to develop.

Chapters 2 to 5 present a specific framework, that is, the aesthetic point of view and the technical means involved in the creation of each piece. In these chapters, the compositional process is presented, from the first, often abstract ideas that trigger the imagination of a composer, to the decision taken during the final production stage in the studio. It is hoped that this specific framework will convey the necessary information required for a preliminary assessment of the music presented, in terms of the composer's aims and the results obtained. Yet, a piece of music can be a far more complex and richer phenomenon than the composer's aims and intentions, and it must be ultimately assessed in its own terms.

CHAPTER 1

An old tradition we have just invented

A language is a tradition, a way of feeling reality, not an arbitrary repertoire of symbols .¹
(J. L. Borges, 1977 : 1081)

1.1 A perspective

Chapters 2 to 5 of this text are concerned with the discussion of the four compositions which constitute this thesis. In this first chapter, I feel it necessary to give a historical and cultural context within which these works may be more adequately assessed. The apparent discontinuity between electroacoustic music and the serious music of the past may not invite an assessment based on such points of view and perspectives. Yet the immediate European musical past is not necessarily the only or even the most appropriate historical reference to take into account, particularly with composers such as myself who do not have an exclusively European background. It may be that electroacoustic music created by Latin Americans may belong or stem more comfortably from traditions or realities other than those of the preceding concert music of Europe.

I shall therefore not attempt in this first chapter to establish a connection between my music, its origins and the reason for using the electroacoustic medium, in terms of its insertion into the European serious music continuum. In any case, this insertion is not clear or at any rate is questionable, as is the existence of such a continuum. On the contrary I shall try to explain *how I got here*, in terms of a very different and complex cultural background; the Latin American artistic and musical phenomenon of the past forty years.

Ever since Marshal McLuhan viewed the world as a *global village*, it has become increasingly difficult to consider a subject from a perspective based on cultural differentiation. I differentiate between Latin American electroacoustic music and other musics so that I may describe some processes and creative attitudes which I still consider to be culturally dependent. It is not my intention to perpetuate these differences or to belittle the achievements of European electroacoustic music. With the passing of time, all these differences will become less relevant.

I shall proceed from the general, in this first chapter, to the particular in the following chapters, where I will specifically discuss the four works presented in this thesis in relationship to topics brought out in this chapter

¹ All the quotations of Borges in this text have been translated by A.V. from the original Spanish.

and also as independent creations in themselves. I shall generalize, trying to keep in mind the advantages and shortcomings in so doing. To generalize is to brush aside details and to ignore subtle complexities in favour of a quantitative mean as an appraisal of phenomena. Yet it is necessary when we deal with words and ideas. A non-generalized description of phenomena would require infinite space and time and an infinite reader for this thesis.

1.2. Literature and Music: *Magic Realism*

I believe that some Latin American electroacoustic music and in particular the pieces presented here belong, or 'insert' themselves, into a process which has been named '*Magic Realism*' or '*Fantastic Realism*', terms coined (possibly by Europeans) to describe the diverse Latin American literary output of the last 40 or 50 years which in spite of its multiplicity of styles and subjects seem to come across as a unified artistic phenomenon. I feel that this term may now be applied to describe my own musical output and possibly that of other Latin American electroacoustic composers. Further on in this chapter I shall attempt to establish the ideological and 'environmental' connection between *Magic Realism* in literature and Latin American electroacoustic music. As I analyse my compositions in the following chapters I shall give practical examples of this connection and of the way I understand *Magic Realism* in music.

1.3. Questions

There is a considerable number of Latin American composers -from Mauricio Kagel and Mario Davidovsky (b. 1934) to Javier Alvarez (b. 1956) and Ricardo Mandolini (b. 1951) - who work in the electroacoustic field or use related electroacoustic techniques in the creation of their music. The absolute number of Latin American composers working with electronics is in itself surprising but the relative proportion (compared to European composers) is extraordinary enough to warrant an explanation. It should not be forgotten that the technology required for the creation and production of electroacoustic compositions is generally not available in Latin America for obvious economic reasons with the exception of those cases where donations or private funding made possible the creation of a studio for the use of composers at large. Even in these exceptional cases, maintenance alone has proved to be a nearly insurmountable task, since the technical infrastructure of Latin America cannot properly support a high technology venture of this kind. Yet, stunning as it may seem, the Argentinian electroacoustic adventure started as early as 1959 in the Universidad de Cordoba and already in 1963 composers from all over the

continent were visiting Buenos Aires to receive training at the Instituto Ditella in the then incipient electronic art of making music. Let us remember that the first electronic music studios in Britain were not operational until around 1967 at the Royal College of Music and Goldsmiths College (private studios had started much earlier) and that it took considerable time before the authorities fully committed themselves to supporting the exploration of the new electroacoustic media.

Why are so many Latin American composers drawn, against all odds, to the electroacoustic environment?

"A language is a way of feeling reality not an arbitrary repertoire of symbols", I read in Borges's *El Oro de los Tigres* (Borges, 1977:1081).

How and why is the Latin American composer at home in the electronic studio and not imprisoned by the often *arbitrary repertoire of symbols* of an electroacoustic cage?

1.4 The historical background: a critical assessment

*We are mere spectators, that is
why our America is the banal
continent.*

(Macedonio Fernandez ¹)

It is difficult to get a clear idea of what must have been the musical life in the XVII and XVIII century Spanish colonies of Latin America. A picture emerges of a wealthy Church involved in the administration of the colonies, with its choirs, *kapelmeister* and instrumental ensembles at the centre of a musical establishment, which if judged by the large number of documents and scores scattered around churches, museums and historic libraries, was no doubt very significant indeed. Furthermore, a large number of the musicians involved were professionals fully dedicated to their work and paid accordingly. The church in its evangelical work was not particularly or consciously concerned with European musical fashions. This would have allowed some room for experimenting as suggested by the works of composers such as Juan Perez Bocanegra (date of birth and death unknown) and Juan de Araujo (1646-1712), both of them Spaniards living in the colonies. *Los Negritos* (1710), by Araujo, written for voices and orchestra uses Black African rhythms (for

¹ Macedonio Fernandez (1874-1952), Argentine metaphysician who became from 1920 until his death a sort of 'mythological' personality for the Buenos Aires 'intelligentsia'. For Borges and many others Macedonio was like a model; a 'cult' figure who they imitated to the point of plagiarism. Macedonio was renowned for his bizarre sense of humour and his outrageous theories.

some time negro slaves had been brought to the colonies) and even a text written in the precarious Spanish spoken by slaves mixed with characteristic baroque instrumental harmonies and melodies. Bocanegra on the other hand, used the Qechua language in a four part motet called *Hanac Pachap Cussi Cuinin* (1631). Uninhibited experimentation was, it seems, encouraged and the history of Latin American music might have been different, one may speculate, had not the political and economic environment changed so quickly and so drastically.

It is well beyond the scope of this study to analyse the circumstances of this change but suffice it to say that as the Church lost control of musical life, independence from Spain at the beginning of the XIX century brought with it a new ruling class with a desire for a European cosmopolitan life style. Whatever degree of experimentation might have been going on, was certainly abandoned and imitation became the norm. The history of the Latin American ruling class is the history of oblivion. The Latin American ruling class wanted to forget that they were Latin Americans inhabiting the new world. They imported their architects to build their houses. They imported their theatres and opera houses fashioned after La Scala di Milano or the Paris Opera. They imported their whole life style and sealed themselves in it.

A synoptical reduction of the history of Latin American serious music composition after independence, starts with the generalized cult of the Italian operatic style in the XIX century. Composers such as Melesio and Morales (1830-1908) in Mexico, Carlos Gomes and Joao Gomes de Araujo in Brasil, Remigio Acevedo and Eleodoro Ortiz de Zarate in Chile and indeed a whole legion of names throughout the continent, amateurs and professionals alike, with different degrees of talent and technical dexterity, copied the ready made formula of Italian opera without any apparent motivation to carry out their own experimentation beyond the European tradition. It was a case of following the European experiments, fashions and developments as *mere spectators* moving from Italian opera into the orbit of French Impressionism and Wagnerianism in the early XX century (Gustavo Campa (1863-1934) and Ricardo Castro (1864-1907) in Mexico, Gilardo Gilardi and Alfredo Schiuma in Argentina, Eduardo Caba in Bolivia, etc.) leading afterwards to the Nationalist Movement with influences ranging from Franck, Borodin or Rimsky Korsakov to Bartok, Stravinsky and Shostakovich. (In Brazil: Heitor Villa-Lobos, Camargo Guarnieri, Luis Cosme etc. In Mexico: Manuel Ponce (1882-1948), Blas Galindo, Carlos Chaves (b. 1899), Revueltas (b. 1899), Miguel B. Gimenez and a considerable part of Carrillo's (1875-1965) production. In Argentina: Alberto Ginastera - part of his production - and Juan Jose Castro, Luis Gianneo, Ugarte etc.¹ For further information see *Introduccion a la Musica de Nuestro Tiempo* (J. C. Paz, 1971).

¹ I have by and large chosen to illustrate my point those composers who may be known to the European reader. It is not easy to find in London at the time of writing this text the precise information concerning date of birth of the Latin American composers mentioned in it. The author assumes that the context in which these composers are mentioned will suffice to provide the necessary historical perspective.

Most of the music written by the so-called nationalist composers was still clearly rooted in the European tradition in spite of the frequent use of local folkloric rhythms and melodies in an attempt to create a national style. The "Chacarera", the "Malambo", the "Choro" ¹, the pentatonic 'quena-like' melodies of the Indian from the Andes and many more folk dances and tunes were forced into the contrived forms of the symphonic poem, the piano sonata or the string quartet, in the artificial marriage of 'local' colour and the formal technical apparatus of European concert music. Paradoxically, this "nationalist" fashion was itself a direct import from Europe. (Borodin, Rimsky Korsakov, Dvorak, Bartok and even Stravinsky) and as Borges sarcastically pointed out should have been rejected by *our nationalists* for being intolerably foreign.

Argentinian composer and musicologist J. C. Paz wrote in the late 1950's in his remarkably lucid *"Introduccion a la Musica de Nuestro Tiempo"* a sharp mockery of the situation, in his characteristically ironic style:

We thereby had Ravelian Incas and neoclassical collas (Indian from the Andes). Impressionism, neoclassicism, polytonalism, russianism, frenchism, italianism, hungarianism and spanishism stuck out in indiscrete and fastidiously abundant quantities in the output of the many followers of the Latin American vernacular translated into the European language from Ravel to Puccini; from Stravinsky, Bartok, Falla, to even Copland and many more ² (Paz, 1971: 465).

And in another passage from the same book:

Dozens of composers throughout the continent falsified in their own way the folk music of their respective countries or regions, contributing to the spiritual and aesthetic standstill (Paz, 1971: 469).

If some extraordinary talents such as Villa Lobos and Julian Carillo rose during this period, it was due to the outstanding personal qualities of each of them individually, who against all odds had the integrity to struggle in an environment whose academicism was *painfully premature and suicidal*, to quote J. C. Paz once more.

It is interesting to notice that Macedonio Fernandes' sardonic perception of Latin America's immobility (*we are mere spectators*) at the beginning of the century is shared four or five decades later in the late 1950's by Paz's more devastating view of *a spiritual and aesthetic standstill*. Nevertheless, Macedonio was a man of letters and Paz a musician and at the time Paz talks of *spiritual and aesthetic standstill* his perception applies to musical creation but it no longer applied to the

¹ Latin American folk dances. Examples of these popular dance forms may be found in Britain on records by Mercedes Sosa, Quilapayun and Inti-Illimani.

² All quotations from *Introduccion a la Musica de Nuestro Tiempo* were translated by A.V.

realm of Latin American literature. By the late 1950's Borges had already written his *Universal History of Infamy* (1935), his *Fictions* (1944), his *Aleph* (1949); Octavio Paz his *Libertad Bajo Palabra* (1949) and *The Labyrinth of Solitude* (1950); Rulfo his *Pedro Paramo* and *El Llano en Llamas* (1953); Adolfo Bioy Casares his *Morel's Invention* (1940) and *The Dream of Heroes* (1954); Carlos Fuentes, Vargas Llosas, Garcia Marquez, Cortazar and a whole legion of Magic Realists were writing the works that would only a few years later take the literary world by storm. The creative wheels of Latin America had been set in motion by a young generation of writers who refused to be *mere spectators*.

And how could they remain *mere spectators* when European fiction itself seemed to have run into a 'cul de sac' ?

And has not Latin American music (and possibly fine arts) been following the steps trod by literature but lagging two or three decades behind it?

One may be even tempted to extend this idea - linear as it is - to the whole social context of Latin America and in particular into politics where after two centuries of unsuccessfully copying foreign formulas (from the French revolution and the constitution of the U.S.A. to academic Marxism or Milton Friedman) a tiny country like Nicaragua is striving to give an answer to this challenge, and, in a process which defies classification, refuses to be boxed in one of the above mentioned classical European models. Even Cuba with its unfortunate economic Soviet dependency has managed to create a revolution which used to be described in typical Caribbean light humour as *socialism with rumba*. In other words, it is as if Latin America as a whole had gradually woken up from its lethargic copying of European formulas and realized that this just does not work. And how does this manifest itself in the realm of New Music?

Latin American New Music composers - the so called Avant-Garde - were in the beginning as much *spectators* of the European experimental attitudes as the previous generations had been in the XIX and early XX centuries.

The Nationalists were followed by the Modernists in the fashion of Berg (Juaquin Gutierrez in Mexico), Lutoslawski and Penderecki (Villalpando in Bolivia - b. 1940 - and Manuel Enriquez - b. 1926 - in Mexico), Schoenberg, Boulez, Stockhausen and the Darmstadt-derived musics of Europe (Mario Lavista's - b. 1943 - early work in Mexico, Gandini in Argentina, and others).

Latin American music which started by literally copying European music, gradually turning to the vernacular and 'popular colour' for its sources while adhering strictly to European technique and structural forms, proceeded then to embrace the 'universal' (laughable as this claim may seem in 1987) post-Webern modernist language, as clearly a European 'import' as any of the preceding influences.

1.5. The new generations: a passing fashion or a new voice ?

Although a few "Nationalist" composers such as Chavez, Ginastera, Revueitas and Villa Lobos became known in the forties, fifties, and sixties, it is only in recent times that the new music of Latin America has begun to attract the attention of audiences in Europe and other parts of the world. Is this phenomenon a passing fashion, a flair for the exotic, as it was with the Nationalists, or could this be the beginning of a music 'boom' analogous to the one experienced by Latin American literature in the sixties which established it as one of the most important streams of contemporary literary work?

In the last few years Latin American composers have gradually ceased to consider European compositional techniques as *the* exclusive models, uninhibitedly drawing from all available sources to create their own sound world. As Borges said: "*Luckily we don't owe ourselves to one tradition. We can aspire to all of them*" (Borges 1977, back cover).

We find in the younger generations a multiplicity of means, techniques, styles, and instrumental conceptions owed to an assimilation of diverse influences, from serial and electroacoustic music, to indigenous and afro-latin music, rock and the musics of eastern cultures. This eclecticism seems to be not only experimental but affirmative and therefore suggests a clear vision of the sound world composers are trying to put forward. Furthermore, this sound world is not the "Nationalists" artificial marriage of an ethnic melody or rhythm to a European form, but the actual creation of new forms which are the result and consequence of imaginative and coherent use of the chosen material, whatever the origin and nature of it might be.

For the last 15 years or so Latin American music has finally begun to find its own voice, and paradoxically if not surprisingly, it is doing so just as it has given up copying other cultures or plundering mindlessly from its own rural vernacular past. A composition could be based on a vernacular melody and it could be new, fresh and alive or could turn into a galvanized fossil before the composer has even completed the piece, but the result will no doubt have little to do with the material chosen and its vernacular origin. The fundamental question is not where you take your basic material from, but how you take it and what you do with it. Form and structure must be the necessary outcome of the procedures applied to the source material.

The XIX century 'gauchesque literature' of Argentina, with its stories of gauchos, aborigines and life in the pampas, failed to find a place in the literature of the world. Its subject is Latin American enough but literature is not made of subjects as a symphony is not made of tunes alone. Borges's labyrinths of mirrors, nightmares of tigers and infinite corridors have struck the minds of different peoples and cultures around the world and yet the cog wheel precision of his magic is so characteristically Buenos Aires as anything in that town has ever been.

The electroacoustic music from Latin America is not necessarily populated by Indian 'quena' tunes or ethnic drumming but it is no doubt having an impact beyond its own culture which is testimony of a living force which is intellectually and technically independent of its own past as it is from the European tradition and is finding the vehicle to convey its own magic which is the magic of the continent.

It is of course impossible to determine at this stage with absolute certainty whether we are witnessing the emergence of a truly innovative force in music, or simply observing an effervescent eclecticism which will ultimately be the victim of its own contradictions and diversity of sources, diluting itself after a passing fashion. I hope my work will contribute to clarifying this process by putting forward a new perspective from which to look at it.

1.6. My work seen at cultural crossroads

From Mexican and Peruvian antiquity to the Spanish and European colonization, from African slavery to the Nicaraguan revolution, Latin American countries, have developed into modern societies as an amalgam of several different cultures. In spite of its common history and its apparent cultural unity (language and institutions, for instance), Latin American art has grown in many different directions. Literature is a good example of this case. Established as it is, no doubt a unified body, Latin American literature remains a contradictory or even chaotic mixture of styles. It is therefore not surprising to find that it is at cultural 'crossroads' that Latin American art in general develops. My work could be seen as being precisely at these cultural 'crossroads' as is probably most of the electroacoustic output of Latin America. The compositions presented in this thesis are submerged in this effervescent eclecticism, in these contradictions and in a nearly chaotic multiplicity of sources.

A continent where an ex-cabaret dancer can become president of one of the largest countries, a continent where people are abducted from their beds at four in the morning and shot without even a summary trial, a continent where a three thousand mile highway is built through the jungle only to discover that the jungle starts claiming it back in a matter of weeks, a continent where macumba, voodoo, Christian mass, carnival and a political rally or a business meeting are often indistinguishable from one another; this picture is also Latin America. Crossroads, chaos, magic and reality. The supernatural seen as a mere terrifying accident, or just as a giddy crack in everyday life. An explosive mixture with an equally explosive history.

1.7. The psychological context: a window of possibility

In art, as in man in general, the creative waves of change take place when it is psychologically possible, or to put it negatively, when the perception of its impossibility has ceased.

The gods were no more and Christ not yet, from Cicero to Marcus Aurelius there was a unique moment where man was alone. This unforgettable phrase by Flaubert moved Margarite Yourcenar to write her famous *Memoirs of Hadrian*. (Yourcenar, 1982) ¹

I see the Latin American composer at his particular cultural crossroads as the man alone and yet related to everything. The musical cultural god of Latin America - Europe - is *no more* and the 'would be' Latin American Great Master Composers are *not yet*.. The musical tradition of Europe is perceived as exhausted, as 'worn out', (this expression has come up a number of times talking to Latin American composers) and yet there isn't the weight of the Great Masters of the past against which everything is to be judged and compared. The Latin American composer and particularly the electroacoustic composer is for the first time alone and he therefore can and must create.

1.8. Analogies with the *Magic Realist* literary movement

This feeling of being alone comes at a time when European serious music is perceived by many Latin American composers of the younger generation as being in a 'cul de sac' analogous to the one perceived by Latin American writers in respect of European fiction back in the sixties. The case is remarkably similar to that of literature. Once again, music which has always been ten or twenty years behind the other art forms (think of Impressionism, Expressionism, Modernism, Dadaism, Orientalism, etc) finally 'catches up'.

The *Magic Realists* discovered that being a Latin American artist was unnecessary because it was simply unavoidable as much as Debussy and Ravel will remain inevitably French in spite of the Spanish melodies, harmonies and rhythms which profusely but effortlessly inhabit their music. The essence of the Latin American reality was not to be found in the superficial imitation of the long-gone traditions of the Aztecs or the Incas which are as exotic to a Latin American city dweller (High Art is not rural) as they would be to a Londoner.

Latin American composers have stopped trying to be Latin American and their music is becoming more Latin American than ever and paradoxically but predictably enough more universal than ever before in its history. As the Magic Realists, they have discovered too that being Latin American cannot be an act of will. Otherwise it would not be essential.

¹ Translated by A.V.

Magic Realism is not an intellectual or artistic movement organized as such. It is not a matter of choice either. It is what happens to writers and composers when the magic of reality or the reality of magic become an inevitable living force which compels them to write. Then language is *a way of feeling reality, not an arbitrary repertoire of symbols*.

1.9. The sound object in its double function: *the thunder and the god*

In the beginning of time, so docile to vague speculation and to indefeasible cosmogonies, there could not have been poetic or prosaic things. Everything would have been somewhat magical. Thor was not the god of thunder; he was the thunder and the god (Borges 1977, 1081). So reads Borges's poetic description of a time in Europe where magic and reality were still one, where the action and the subject which performed it were indistinguishable from each other.

The concrete sound object is both the vehicle to convey the musical syntax and structure of music and a syntax and structure in itself. This double function is quite unlike the function of an instrumental note whether in traditional or contemporary instrumental music.

When *everything was a little magical* the word and the symbol were one. Perhaps electroacoustic music being at the *beginning of time* - it is a break from tradition and therefore at the beginning of its own time - still inhabits a world where the line which separates magic from reality has not yet been clearly defined. The sound object is a tooth in the cog wheel of musical syntax without ever losing its identity as a meaningful object in itself. It is precisely this very characteristic of the sound object which European composers have often criticized as an insurmountable barrier in the construction of an unambiguous musical form.

Boulez's objection is voiced in the following paragraph from *Boulez on Music Today* (1971 : 22):

Any sound which has too evident an affinity with the noises of everyday life..... with its anecdotal connotations, becomes completely isolated from its context: it could never be integrated, since the hierarchy of composition demands material supple enough to be bent to its own ends, and neutral enough for the appearance of their characteristics to be adapted to each new function which organizes them.

Or expressed in simpler terms: How can one develop a structure with objects whose very nature refuses to be subordinated to an overall hierarchy ?

For the Latin American composer the formulation of such a question is completely foreign to him. There is no doubt a risk involved in dealing with sound objects, particularly with noise-based sound objects. The structural problem is there but it is a matter of using its hierarchical

ambiguity as an intrinsic element in composition. It is precisely in this hierarchical ambiguity that the Latin American composer feels at home. It is not that he has found an answer to the formal dilemma of the sound object versus overall form. He has never formulated the dilemma in those terms. Thor is naturally the thunder and the god, as it is often in his everyday life. He uses this ambiguity. He does not try to explain it. The world of the computer and the loudspeaker is a medium akin to his perception and *weltanschauung*.

For the Latin American composer the electroacoustic medium is *an old tradition which he has just invented*.

That is why it is irrelevant that the technology involved is of European origin and often beyond the economic means of Latin American budgets. If necessary the Latin American electroacoustic composer will travel where the technology is available. The pilgrimage makes sense to him - think of Mandolini, Alvarez, Vaggione, Lanza, Brncic, myself, etc. ¹ - because it is the manufactured tool which is of foreign origin but not the medium itself which is still in the making and the Latin American composer feels he is taking an active role in the process of defining it.

When I presented two of my computer music works recently in Buenos Aires to an audience of young people - some of them musicians - the question they asked me was not *why computer music?* - as it is often the case with European audiences - but *where can we get hold of this technology and learn how to use it to make music?*

These people were not battling with their perceptions to make sense out of an *arbitrary repertoire of symbols*. Their way of feeling reality was close enough to the sound world the music was putting forward. This sound world fits into a reality where *Thor is the God and the thunder*, where poetry and prose have yet not clearly been divided, where the horrors of a tragic socio-political history are *fantastically real*.

1.10. Fantasy and precision

In a continent where the dividing line between magic and reality has not yet been clearly drawn, people do not try to explain the magical as they do in Europe. When Magic is understood it becomes reality and the dividing line is subsequently drawn. The *striving* in Latin America is not to understand reality; the *striving* is to control it.

In *One Hundred Years of Solitude*, Marquez describes how it rains interminably over Macondo, a town in the Amazon. His extensive

¹ Mandolini has worked in Belgium, Sweden, Germany and France. Alvarez has worked in England, Sweden, Portugal and France. Brncic in Argentina, Spain and France. Vaggione in many European countries as well as in Argentina. I have worked in Britain, Sweden, France and the U.S.A.

description becomes delirious and raining an act of magic. At this point he cuts short his description and with scientific precision tells us: "*it rained for four years eleven months and two days*" (Marquez, 1978:256). Magic is here described with the precision normally reserved for the scientific facts of reality. It is the will to control the magical rather than to explain it, and the movement from magic to reality in the certainty that they are a continuum, which is apparent in Marquez's text. This difference between the Latin American and the European *weltanschauung* inevitably manifests itself in the realm of electroacoustic music. The electronic and even more so the computer studio gives the composer total operational control over an object, the sound object, which deep down remains a mystery (our knowledge of psychoacoustics is still in its infancy) and therefore magical in character. This takes place in an environment (the speaker-studio environment) which is contextually different from the sound source which originated the sound-object (hardly anything more magical than a physical phenomenon in a completely alien context) and with the undeniable reality of a composition environment which has moved from the exclusive realm of the imagination (the composers mind trying to imagine the sound of his score) to the instant feed-back available through the monitors in a studio.

The studio situation is for a Latin American composer a very familiar *way of feeling reality* and not a contrived way of arranging an *arbitrary repertoire of symbols*.

To write a poem is to essay an act of minor magic, says Borges in *Los Conjurados* (Borges, 1985 : 11). To write an electroacoustic composition is *to essay an act of minor magic* and the instrument of this magic is the electroacoustic studio.

1.11. A reaction against the tyranny of Time Durations

The emphasis in gaining control as opposed to understanding the formal complexities of the medium is coupled to an intrinsic suspicion and dislike for concepts such as Time Duration. ¹

For the Latin American electroacoustic composer increasing the precision to control sound material means a possibility to reconsider the idea of pulse and rhythm and the formal implication at the micro and macro-structural level in clear opposition to the idea of Time Duration. Computer control of the electroacoustic environment makes it possible to formulate new pulse-based lines, polyphonies and its resulting forms, reopening the chapter of pulse, rhythm and repetition which Europeans had 'declared' obsolete in the modernist 1950s. Moreover, it is not just a question of

¹ I mean Time Duration as a parameter - an already questionable concept - defined exclusively by the duration of a note, as opposed to Rhythm, a far more complex and richer phenomenon, which is defined by repetition and its inevitable consequence: the perception of a pattern.

reopening the European chapter of pulsed music since this path is possibly exhausted but experimenting with new ideas derived from a multiplicity of sources (other cultures and reformulation of Latin American rhythms) as well as those pulses and rhythms which can only be generated by computer, such as pulsed irrational patterns (see Chapter 5, *Toccata del Mago*).

1.12. A poetic glimpse at the overall process

To understand the artistic processes of Latin America is to understand the poetry, the violence and fantasy of the continent as a whole as well as the flavour and magic of the Precolombian culture which is no longer there; yet its worldview has remained an essential kernel which permeates the spirit from Mexico to Patagonia.

I will close this chapter with an old indigenous myth taken from the spellbinding *Memorias del Fuego* (1982, I : 4) by historian Eduardo Galeano from Uruguay. Galeano's book presents the history of Latin America as a strange and poetic chronology of myths, rites and magics rather than as the usual sequence of 'veritable' events with its pretence of objectivity.

The sun and the moon¹

*The first sun, the water sun, was carried away by the flood. All the world's dwellers turned into fish.
The second sun was devoured by tigers.
The third one was razed by a rain of fire, which burnt the people.
The fourth sun, the wind sun, was erased by the tempest. People turned into monkeys and spread over the hills.
Thoughtful, the gods gathered at Teotihuacan.
-Who will take care of bringing dawn?
The Lord of the Snails, famous for his strength and beauty, stepped forward..
-I shall be the sun, he said.
-Who else?
Silence.
Everyone looked at the Little Syphilitic God, the ugliest and most unfortunate of the gods, and decided:
-You.*

The Lord of the Snails and the Little Syphilitic God, withdrew to the hills which are now the pyramids of the sun and the moon. There, while fasting, they meditated.

¹ Translated by A.V. from the Spanish.

Later on the gods gathered firewood, built a bonfire and called them back.

The Little Syphilitic God took a run and thrust himself into the flames. Immediately he emerged incandescent in the sky. The Lord of the Snails looked at the bonfire frowning. He moved forward, moved back, then stopped. He turned around a couple of times. Since he could not make-up his mind, he had to be pushed in. After a long delay he rose in the sky. The Gods, furious, slapped him. They beat his face with a rabbit, over and over, until they killed his shine. Thus, the arrogant Lord of the Snails turned into a moon. The stains on the moon are the scars of this punishment.

But the gleaming sun didn't move. The sparrow-hawk of obsidian flew towards the Little Syphilitic god:

-Why aren't you Moving?

The scorned, purulent, hunchback, crippled god answered:

-Because I want the blood and the kingdom.

The fifth sun, the sun of movement, shone over the Toltecas and shines over the Aztecas. He has claws and feeds on human hearts.

CHAPTER 2

Go

Phonemes as sound objects.

*I disbelieve in aesthetics. In general they are no more than useless abstractions; they vary for each writer and even for each text and they cannot be more than stimuli or occasional instruments.*¹
(J. L. Borges, 1977 : 975)

2.1. General description and format

Go is a 4 channel quadrophonic analogue tape piece. Its duration is approximately 13 minutes. The listener is meant to be surrounded by four equidistant loudspeakers. This format is essential to the correct perception of the piece. Two different types of sounds were used: vocal and percussive.

Principal voice used as sound source: Sue Bickley (alto)

Other voices used as sound sources: Frances Lynch (soprano)
Tracey Williams (soprano)
Alan Belk (tenor)
Ian Cross (baritone)
Bruno Von Ehrenberg (bass)

Based on a text by Ian Cross.²

2.2. General criterion

In this chapter I will investigate *Go* with reference to the creative processes involved in composing the piece rather than provide an analysis of the score³ and tape on the basis of systematic enumeration of musical events

¹ Quotation translated by A.V. from the original.

² Cross (b. 1953), performer and psychomusicologist, currently a member of Faculty of Music at University of Cambridge. Cross studied at City University Music Department. His work has been published in various journals here and abroad, and in "*Musical Structure and Cognition*" (ed. Howell, Cross and West, Academic Press, 1985).

³ A substantial part of the piece was written in conventional notation before I started production in the studio (see appendix 1).

with their periodicities and irregularities. This same criterion will apply with respect to the compositions presented in subsequent chapters.

I will particularly avoid as much as possible what Boulez (1971) has called "*a form of paraphrase which consists in the graphic transcription of the notated symbols of a score..*".... which*"boils down to a summary transposition of results already established with the help of a far better system of symbols "* (the actual score). This form of debased analysis so sternly criticized by Boulez, would be particularly useless in the case of tape pieces such as *Go* and *Hendrix Haze* since the composer's work already exists in a fixed final 'version' - the tape - closer to the composer's conception than any possible system of notation. Thus, any analysis which simply paraphrases or lists the musical events cannot even be justified on grounds of providing a more accessible system of symbols to describe and understand the piece.

I wish to present and discuss the decision making processes and their logic or want of it.

I am aware that I have often taken decisions (particularly in *Go*) which seemed at the time to contradict the formal and/or syntactical logic of the piece both at a local and overall structural level. Yet, I felt the 'necessity' of doing so, even if the logic of my doing was not immediately apparent to me. Furthermore, what our perception may find perfectly coherent can often defy logical explanation. It is of course always possible to take a masterpiece and 'manufacture' some obscure causal relationship to explain what otherwise defies explanation. The implicit assumption being that there can be no accident in a masterpiece and ultimately everything can be 'explained'. We have developed the habit of treating masterworks in the same way cabalists regard the Bible. For the last thirty years or so, the same has often been demanded from any piece of music which aspires to be regarded as 'serious' and which is to be discussed in an academic context, such as this thesis. Like political futurologists we can easily explain why war broke out in some remote region of the planet and give evidence of its inevitability, this of course, provided the events have already taken place. The weakness and unreality of the explanation is camouflaged by the magnitude and reality of the event it tries to explain. I will therefore avoid establishing obscure logical relationships when clear ones cannot be found to explain those passages in my work which I perceive as effective and successful, even if in some cases this may mean they might remain 'unexplained'.

2.3. The first idea: metamorphosis as form

The starting point in this work was purely conceptual. I wanted to write a piece with a form which would include variation and development but at the same time go beyond them. The idea of metamorphosis came to my mind as I was looking at some drawings by Escher. I thought that a musical form equivalent to Escher's metamorphosis could be one that starting with a musical event with a very strong identity would gradually

lose it in time. I was also interested in the reverse: moving from an event apparently alien to the piece, back to the original identity. Each movement away and back to the original identity would be like a different variation. The process of moving in itself would be developmental differing from traditional development form in that in development form the identity of the musical subject is transformed but never lost, whereas in metamorphosis the identity transforms into a new one. It was also clear to me at this stage that as soon as each process —variation reached the point where contact with the original identity was lost (metamorphosis), the process was complete and an immediate return to the original identity was absolutely necessary. I wanted to avoid creating a pot-pourri or collage which seems inevitable when several unrelated identities are present in the same context. Although the piece went through a number of transformations as I was producing it in the studio the one concept I never abandoned was the idea of 'immediate return home' after reaching 'no-man's land'. The whole dramatic tension and feeling of 'cadence' ¹ rests on it and is firmly embedded in my sense of repetition.

The psychological effect I wanted to convey was the feeling of going, moving, being active as an action, without stating a particular direction for this action. The subject and object of the action were left for the listener to fill in or leave empty according to his mood and imagination.

I needed a simple musical scheme with a strong identity and I thought of a chorale with phonemes 'belonging' to each chord. Another reason why I chose a chorale may be related to my early training. I was taught harmony in Buenos Aires by Jacobo Ficher ² who favoured Rimsky-Korsakov's treatise on that subject. This meant in practice that I had to spend some six or seven months systematically harmonizing chorales in Bach style. One would think that after such an excess I would feel rather wary of chorales but in fact, ever since that period in my life, I have regarded chorales as a very natural and immediate musical structure.

2.4. The chorale

The chorale in *Go* consists of ten chords (see VOLUME 2, appx. 1 : 1). This was the very first actual music I wrote for the piece. I call this ten chord sequence a chorale because its four-part harmonic structure, its system of tension and relaxation and to great extent its voice leading are very close to a Baroque chorale. The *cantus firmus* in the soprano part

¹ The term 'cadence' is used throughout this thesis in its broader possible sense, meaning any musical syntactical device which brings a moment of peak tension into rest.

² Russian composer, born in Odessa in 1896. He studied music at the St. Petersburg (now Leningrad) Conservatory where he shared the composition prize with Dimitri Shostakovich, also a student at that time. Ficher immigrated to Argentina in 1924 where he taught composition to several generations of Argentine composers until his death in Buenos Aires in 1978. He first translated Rimsky-Korsakov's treatises on Harmony and Orchestration into Spanish. These were published by Ricordi Sudamericana and were standard text books in Argentina for decades.

was composed at the same time as the harmonies ¹. Although the chorale was written intuitively I applied the following rules ² which I made myself:

1. A chord may not have octaves.
2. Two consecutive chords may not have more than one note in common ³.
3. The note 'carried over' from one chord to the next must remain in the same octave unless another exceptional consideration takes priority over this rule.

To create a contour of tension I juxtaposed the orthodox voice leading from chords one to three and seven to ten, to the more drastic parallel motion between chords three and four and chords six and seven. A 'brutal' change of register between chords five and six creates a node of tension which splits the chorale in two halves. This effect is further increased by the contrasting opened and closed harmonies from chords four to five and by the cluster quality of chord five. This is a chorale of extremes and contrasts. I had in mind - already at this stage - that the chords would eventually turn into sound-objects. It was therefore necessary to plan in advance, to give the chords a sharp outline, an identity which would lend itself to this purpose. Later on, as the chorale would be varied, other forms of articulation would be brought into play to enhance the transformation of the chords into sound objects.

2.5. The *Go* phonemes

I have always found it very hard to understand a text when sung by a trained classical singer yet this has never impaired my enjoyment of the music. Although one may not understand the meaning of words, words do have a meaning as sound in themselves, that is as phonemes. I chose to use phonemes in *Go* for the following reasons:

1. A chord sung on a phoneme has a stronger identity than if sung on a simple vowel and may be more readily turned into a sound object.

¹ E flat is a passing note between the first and second chord. I built into the chorale this 'compulsory' passing note for melodic reasons.

² These rules were derived from perception (my perception) and designed to fulfil the dramatic needs of the piece. Therefore, I felt free to overrule or simply ignore them when my perception so dictated.

³ The result of rules one and two is a harmonic density which at times is nearly serial. The first three chords contain the twelve chromatic notes except A.

2. Phonemes can trigger the imagination of the listener in ways which are less determined and therefore more actively creative than ready-made words. (i.e. the listener may imagine or 'hear' different words each time he listens to the piece). This is in accordance with my intention as expressed above: *The psychological effect I wanted to convey was the feeling of going, moving, being active as an action, without stating a particular direction for this action. The subject and object of the action were left for the listener to fill in or leave empty according to his mood and imagination.*
3. Phonemes may be edited together to create different words and this combination could be part of the actual process of variation applied to the chorale. This would be more difficult with ready-made words.
4. Phonemes are not as specific to a particular language as words are. Phonemes are more universal and may be combined to create words in different languages.
5. Often phonemes can be turned into percussive sounds more easily than words.

I asked Ian Cross to find ten phonemes - one for each chord - which would contain the necessary mixture of consonants and vowels so that I could start my piece with a very broad palette of percussive and periodic sounds to choose from. I wanted dramatic differences so I asked Cross to find ten dramatic phonemes, so that they would easily be differentiated from each other and develop an identity of their own. This I thought was essential if I was going to turn my chord-phoneme relationships into sound objects.

Cross found the following ten phonemes to match the chord sequence: *go, na, ri* (rolling the 'r'), *see, kei, po, veh, loo, ta* and *mi*. I gave him a draft of the first few minutes of the piece which consisted of melismatic variations of the original chorale (see appx. 1). He created a text for the melismatic variations of the chorale, combining the ten original phonemes. This combination resulted in the occasional creation of words and even phrases: *verita me ilumina* (see appx. 1 : 7).

In the first draft of the piece the phoneme 'go' was not the most important one. In fact I had asked Cross to produce a 'democratic' sequence of phonemes where all phonemes would be equally important and would be treated in a near serial way in the sense that a phoneme would not be repeated until the other nine had been heard. Indeed the final draft of the score before commencing production still followed this original plan. As I started production of the piece in the studio I found myself more and more interested in the sound-word 'go' and gradually departed from my first draft of the score and the text, so that I could centre the composition on the action suggested by the word 'go'. This shift in focus seemed to contradict the original structural and theoretical ideas which moved me - at least at an intellectual level - to write *Go*.

2.6. A Magic Realist intrusion.

Theories don't make works of Art.
Claude Debussy

Justifiable or not, it is interesting to trace the genesis of this departure since it relates to the *Magic Realist* quality of the electroacoustic studio as discussed in the previous chapter.

When the phoneme 'go' was sung by alto singer Sue Bickley during one of the early recording sessions in the studio, it immediately stopped being - to my perception - a note-event in my score and turned into a sound-object. The reason being that I was instantly seduced by the intentionality with which Sue Bickley uttered the phoneme and the particular way she chose to stress the melismata I had written around the phoneme 'go' (see appx.1 p. 5). What interested me was that I had captured the singer's emphasis and its tantalizing effect in a sound-object and was now able to control it, 'summon it' at will. The score had to change so that I could use the dramatic power of my new sound-object at the centre of the piece. I was interested in the cumulative effect of its drama and therefore in repetition, in fact, exact repetition of an intense dramatic object in the ever varying density and polyphonic complexity of the piece. The dramatic effect of the piece, I believe, is precisely in this cumulative effect, in the build up of the phoneme-word 'go' in different, often 'impossible' (magical) contexts.

The lines of *Go*'s polyphony are an 'impossible' sequence of notes, each one recorded individually, often by a different person, in different octaves and processed with different electronic devices. The phoneme-word 'go' is constantly surrounded by this ever changing context, whether it be the extreme transposition of some carefully chosen grace note or melisma (see appx. 1 page 6, crotchet = 90) in order to give a bird-like quality to the human voice, or the extreme low register of a bass voice, simply treated to bring out certain harmonics and provide a guttural subharmonic context to the 'go' sound object (i.e.: end of the piece).

The whole piece was transformed in the studio and by the studio situation, where the symbols of the score gave way to the perfect feedback of sounds fixed forever in their final version. I could have refused the unfathomable magic of 'go' the sound object, suggested (forced upon me?) by the studio situation and Sue Bickley's delivery fixed forever into the take, and remained with 'go' the tame note-event, subordinated to the chorale structure of the piece. I chose to begin the piece following my original plan and gradually *move* towards the magic of 'go' the sound-object.

The form of *Go* is the form of this movement.

2.7. The metamorphosis of the chorale

The actual development and variation of the chorale from its original form into no-man's-land is similar to the Baroque technique which introduces passing notes and embellishments between the chords of a chorale until it turns its voices into clearly separate polyphonic lines.¹

I was influenced at the time by Buddhist chanting, Gaga-ku music, Islamic chanting, Javanese Gamelan music and by Berio's *Cries of London*. All these musics focused my attention on melisma as a means to melodic variation. I acquired - if only momentarily - the oriental feeling that music is in the melisma and not in the note around which the melisma is gravitating.

I gradually introduced in the chorale an ever increasing density of melismata until the main notes of the chords become secondary and eventually lost. In time, the interval between the melismata and the centre notes grew so large that the melismata were no longer perceived as such, but heard as separate polyphonic lines (see appx.1 : 8 to 10).

This creates the feeling or illusion that each line is splitting into several sub-lines.

In the same way that the contour of tension of the chorale is defined not only by the choice of pitches but also by the smoothness or abruptness of the voice leading, the dramatic contour of the whole piece is to a great extent defined by the changing densities (often also abrupt) of its polyphony. It moves from one or two layers (e.g: from 3' 10" to 3' 30"), to moments where the chorale has so large a number of parts that the ear stops hearing them as separate (e.g: at 12' 20").

Towards the end of the piece I combined simultaneously two discourses, each one with its own polyphonic density. Every so often the sound-object 'go' cuts through the two discourses moving across space, in circles or from back to front, appearing from the distance and swiftly moving forward with a crescendo. I wanted to create the feeling that the whole process of movement from the original identity to loss of identity was accelerating to a point where we could no longer talk of a process but rather of straight juxtaposition. This I considered the final stage of the piece.

¹ Early sketches of the Well Tempered Clavier (as may be found in the Berlin Royal Library) provide good examples of this technique. The sketch of the C sharp major Prelude - second book - consists of the 'raw' original chorale-like harmonic structure from which Bach derived the polyphonic lines of the Prelude.

2.8. The function of inversions and tessitura changes in *Go*

The harmonic functionality of the chords of the chorale cannot be considered as fixed as in classical functional harmonies, since the perception of tension and relaxation do not depend exclusively on pitch. Also, in tonal harmony voice leading has its mandatory rules -within a rather constrained number of options- derived from the pitch content of the chords. In contrast to this, I subjected some of the chorale chords to orthodox voice leading not because the functionality of the chords made it mandatory but in order to create the feeling, perhaps the illusion, of relative functionality.

In tonal functional harmony an inversion or change of tessitura does not transform the functional relationship of a chord. In the *Go* chorale it does, but not in a way which invalidates the harmonic relationships or its structure. An inversion or change of tessitura in certain type of chords - with seconds and tritones for example- changes drastically the tension conveyed by the chord, modifying or varying the musical discourse. Yet, in *Go* the discourse does not lose its harmonic coherence because pitch has remained the same and with it a particular harmonic *flavour* conveyed by the simplicity of the chorale and the constant repetition of its progression. In other words, the functionality of tonality depends on our capability to predict a progression and the tension and relaxation that goes with it. A modulation is an alteration which modifies but does not invalidate our expectation. In *Go* inversions and tessitura changes play a role similar to modulation in tonal harmony. Since the 'binding' elements in the chorale are much more 'fragile' than in functional tonal harmony, a smaller gesture (inversion or tessitura change) has the same harmonic repercussion as a drastic chromatic modulation in classical harmony.

As the piece progresses tessitura changes become increasingly important and at times even more so than vertical pitch relationship. This is particularly the case when the chorale is changed by the melismatic process into a complex polyphony. An extreme use of huge vocal leaps - up to five octaves - coupled with edited male and female voices interwoven into one line, results in a polyphonic ambiguity where notes from one melisma may be heard as forming an independent line with the notes of another melisma from a different voice (see appx.1 p. 9) It is a case of tessitura and timbre (the apoggiaturas being a different timbre than the main line itself) creating a very complex polyphony derived from fairly straightforward four part harmonies. In these instances the chords of the chorale are treated as objects and their vertical relationship as a factor in the elaboration of the polyphonic discourse.

We may say that tessitura changes in *Go* are a means to musical variation and development and play a very important role in the metamorphosis of the original identity - the chorale - and its eventual disintegration.

2.9. Position and movement of sound in space

Position and movement of sound in space are used to enhance the process of polyphonic transformation of the chorale. The notes of the chords and melismata were recorded separately, with different spatial characteristics such as reverberation and time delay ¹, and then moved in the quadrophonic space so as to gradually detach the notes of the different phrases in the process of development and disintegration of the identity of the chorale.

My original draft (see appx. 1) shows the precise scoring of reverberation and track location ² of notes, individually or in blocks. Some of the effects notated at that early stage did not work in the way I expected and others did not work at all. Those which worked differently than expected often produced a result that was as interesting and occasionally more interesting than the one I had in mind. I was prepared for this, since sound displacement is a technique which was, and still is, in its infancy. Yet, it did contribute significantly to the piece in the way already described and it becomes evident when one listens to the stereo mix ³ of *Go* that the piece is significantly impoverished when it is denied its original spatial conception.

A good example of unexpected results is at the beginning of the piece. The piece begins with the very static presentation of the chorale, each chord being heard for a few seconds. I thought of presenting the chords in the right sequence but moving towards the listener in and from different spaces so as to partially deny the chorale its sequential quality. The different notes of each chord often move in opposite directions. Sometimes all the notes of a chord move spatially in a block. When the chords come *dal niente*, from a distance and reverberated, into a dry and close-miked sound, as if moving towards the listener, I introduced a fairly extreme 'doppler shift' pitch bend. I wanted to explore 'impossible' movements, that is, movements not found in nature. I imagined the harmonies of the chorale traveling in space, each one at a different speed and creating doppler shift effects which do not behave in accordance with physical laws (i.e. a doppler shift corresponding to a different speed of sound). The result was quite different. The spatialisation of the chords does partially deny the chorale its sequential quality but the doppler shift effect is not perceived always as such, but rather as a harmonic modification (untempered or microtonal) of the harmonies which makes sense because it creates a richer harmonic field without obstructing the perception of the basic tempered harmonies.

¹ A unit which produced several effects such as phase delay, flanging and chorusing was used.

² *Go* was produced using an 8 track tape deck divided in two groups of four tracks.

³ There is a stereo version of *Go* which was realized for broadcast and later on released on disc by Fylkingen records, 1982, Sweden. It is definitely not meant to be used in concert.

Position and movement of sound in space must be understood nearly always in *Go* as a technique completely subservient to the formal process of metamorphosis. At times its function is to render more transparent the complex density of polyphony by separating its diverse lines in space. But even this is done so that the actual formal process may be followed more clearly. The division of space into two juxtaposed stereo pairs, from 5' to 5' 30", is done for the same reason and also to contribute to the particular dramatic effect at that point. The very last phrase of the piece is one of the few exceptions where movement in space is used for 'decorative' effect, in other words to enhance the suggestive and tantalizing effect to the final 'go' phrase.

2.10. Rhythmic Influences and repetition

What is the most idiosyncratic characteristic of *Go* (as well as of the other three compositions but to a lesser degree) is the sense, I would say 'feeling' for repetition. From all the decision making processes which are involved in composing music, none is so intellectually obscure and at the same time perceptually transparent to me as choosing the number of times a note or event should be repeated. Whether at the micro-level (e.g.: patterned line of a polyphony) or at the macro-structural level (where I normally tend to see things more as blocks or objects, carrying the weight of accumulated time) my choice in matters of repetition remains to me a mystery.

Yet, it is the only choice that comes to me with absolute certainty. I always 'feel with adamant and obstinate precision' my choice in matters of repetition. At times this 'certainty' is in contradiction to the intellectual criteria, ideas and concepts which supposedly give cohesion and theoretical justification to a piece.

This was actually the case with *Go*. Having written the score of the piece in both traditional musical notation and technical notation indicating all the details required for production (reverberation time for individual notes, movement of phrases in space, phase delay, etc), I then proceeded to abandon my original plan when I was two minutes into the piece. That is not to say that the second score, the one that developed in my head in the studio as I was producing the original score, bears no resemblance to the first one. In fact the actual individual melodic and rhythmic lines are by and large still the same as in the original score. But they have been rearranged in different blocks, and these blocks are combined, juxtaposed, transposed and edited into a different piece. In this way, my choice in matters of repetition has a far reaching effect since it determines not only the decisions I make at 'local' level but also the overall course of a piece.

The music in *Go* is found in or derived from the draft score (appx. 1). Whether closely following the draft score at the beginning or recombining

its phrases into new ones from the third minute of the piece onwards , there is not a single vocal gesture or sound, with the exception of percussion, that is not already contained in the original draft. In this process of recombining and electronically modifying lines - prerecorded lines - the most important musical aspect was repetition and the creation of patterns. I was particularly interested in developing what I call 'rhythms of rhythms'. That is a block, a sound object which in itself contains a rhythm, juxtaposed, repeated and edited sharply with parts of itself or another rhythmic sound object so that the rhythm of the editing and the rhythm of the sound objects may be heard at the same time, hence, 'rhythm of rhythms'. Good examples of this approach to rhythmic development in *Go* take place from 5' to 5' 20", and from 6' 40" to 7' 40" into the piece. The rhythmic blocks which form the sound objects have already been heard. They are taken from a previous development of the chorale but are now presented out of the original context and repeatedly juxtaposed so that the rhythm of the editing is as much the driving force as are the rhythms contained in the sound objects.

In matters of repetition my most significant influence has been the music of Astor Piazzola ¹. My sense of repetition, which is often obsessive, seems to have been derived - unconsciously until recently - from Piazzola who in turn was influenced by Stravinsky and his rhythms. These, Piazzola assimilated and combined with his own Tango rhythms, as well as with traditional Tango rhythms, into a very original synthesis.

There is also a fabric of complex influences, like a flow chart with arrows pointing at several musics and cultures such as African, Indonesian, Jazz and Rock, pointing back and connecting again with Latin American rhythms creating a feedback system too complex to trace.

2.11. Studio technique

From the point of view of the studio technique involved in its realization *Go* is a typical *concrète* music composition which mostly uses classical studio techniques. Though processed and transformed by electronic means, the original sounds - voice and percussion - are not electronic. Nearly every single note was recorded independently with a different reverberation, amplitude, equalization and proximity to microphone and later edited to articulate the musical phrases. I needed to record every note of the piece as 'dry' as possible so that I could control the acoustical characteristics of each note later on in the studio. We started recording

¹ Argentine Tango composer and bandoneon player. He studied composition with Nadia Boulanger and returned to Buenos Aires to revolutionize the history of Tango. Piazzola is regarded as the single-handed creator of contemporary Tango. His quintet, which he founded in the late 1950's had its first public appearance in Britain at the Almeida Theatre Festival in 1985. Recordings are available on cassette, record and compact disc, in France, Germany, Holland, Italy, Switzerland, Spain, Latin America and some specialist shops in Britain.

in an anechoic chamber at City University but this was rather cumbersome since I needed to move the equipment from the studio to the chamber every session. After a few sessions I decided I was going to build a "mini" anechoic chamber which I could keep in the studio. I built a box of about 1 x 1 x .5 meters and placed a microphone inside. The inner walls of the box were covered with non-reflective material to simulate an anechoic chamber. The box had a hole into which the singer could sing.

Go is the child of the splicing block and the razor blade. The technical means and the technology used were as simple as that. It was primarily a long editing and recording 'tour de force' which took a year to accomplish. An analogue delay line and a digital reverb were the most sophisticated pieces of equipment used in the electronic transformation of the edited musical lines. The delay line was primarily used to change the timbre of the voices using 'flanging' with often extreme amounts of feedback which changed completely the original timbre, as may be heard from 8' 40" to 12' in the piece.

The original vocal material was recorded on a Stereo Revox Tape deck using Dolby A noise reduction. The piece was 'mounted' on an eight-track machine also equipped with Dolby A. The eight-track deck was used as two separate pairs of four tracks so the piece was already quadrophonic at the pre-mix multi-track stage. I mixed down from up to five separate stereo decks - started together by a common remote control - into each of the four-track sets in the eight-track deck. I often required a crew of people to help me with the simultaneous mixing and panning of the four or five stereo decks. Two quadrophonic rotating 'pan pots' were used in conjunction with a sixteen input mixer. I was able to mix simultaneously up to four different quadrophonic trajectories of sound in space. Since I had two four-track pairs in the eight-track deck I had as a final limit eight different quadrophonic trajectories.

2.12 Fantasy and precision.

The electroacoustic studio and the precision of the razor blade made *Go's* impossible vocal lines possible. The chorale was developed into an impossible polyphony with impossible articulation, impossible timbre and impossible tessitura using the most familiar sound, the human voice. Part of the effect of tension and drama in *Go*, I believe, is a consequence of this magic. Magic which is made possible by technical precision. It is not a case of the senses being taken 'by surprise' although this may be the case on first listening. If the tension, relaxation and drama of a piece rested on the surprise effect of certain procedures it would collapse on a second listening. It would be foolish to pursue that course of action.

When a singer reaches a very high note it conveys a certain stress, a tension, a drama as a result of the listener perceiving the physical and psychological effort involved in the act of projecting the note. This interacts and modifies the musical discourse. The listener's perception of

the tension and effort does not change, even if he knows the music and is expecting the passage. The emotional effect will be the same and it is not based on surprise. I believe this is the case in *Go* . The extremely 'impossible' vocal lines convey tension and drama because the listener is hearing the most natural of all instruments and the most akin to him - the human voice - in an impossibly stressed register, rhythm and timbre.

CHAPTER 3

Hendrix Haze

Music from more than one culture

*Luckily we don't owe
ourselves to one tradition. We
can aspire to all of them.*
(J. L. Borges, 1977)

3.1. Format

Hendrix Haze is a four channel quadrophonic piece. Its duration is approximately 24 minutes. The concert lay-out is identical to that of *Go*, which is now standard for quadrophonic music. Although conceived as a multi-media work comprising music and images, *Hendrix Haze* was composed before the images were realized, and was written to work as a piece of music in its own right. It is beyond the scope of this chapter to discuss *Hendrix Haze* as a multi-media work. Visuals were created by visual artist Horacio Monteverde, and have a structural complexity which would require a chapter on its own.

I wanted to write a composition that would work both as an intrinsic part of an audio-visual piece, fully integrated into its structure, and as music, to be listened to on its own. *Hendrix Haze* is submitted here as pure music and it should be solely assessed from this point of view.

This piece was composed and produced with a *Fairlight* computer music instrument, except for most of the sounds and sound transformations in variations 3 and 5 which were composed and synthesised at E.M.S.¹ in Stockholm. At E.M.S. I used a bank of sixteen digital oscillators and twenty four analogue oscillators controlled in real time by a PDP 15 mainframe computer running a special software package called IMPAC².

3.2. Ideas: how these suggested the material.

Unlike *Go*, *Hendrix Haze* started as an interplay of cultural backgrounds and a deliberate search for music that would not exclusively belong in one tradition but rather *aspire to all of them*. Specific musical considerations

¹ E.M.S. is the national Swedish electroacoustic studio. It was the first studio to use computers in Europe and it is one of the most advanced institutions of this kind in the world.

² Interactive Music Performing and Compositional Language. Designed and programmed by Michael Hinton, 1979.

such as the formal ones which were the starting point in *Go* were only given priority when the time came to actually write the piece, and this was after I had a fairly clear idea of the *cultural crossroads* ¹ I wanted to explore and the way I would set about doing so.

Hendrix Haze is a set of variations on the opening guitar riff of *Purple Haze* ² by Jimi Hendrix. In spite of this, *Hendrix Haze* aims to be neither a homage to Jimi Hendrix nor to be about him or his music. Perhaps a good comparison would be to say that *Hendrix Haze* is related to Jimi Hendrix as *La Mer* is related to the sea. *La Mer* is not about the sea but it has in it Debussy's impression of the sea. Similarly, *Hendrix Haze* carries in it the the very deep impressions that the music of the late 1960s - in particular Jimi Hendrix's exploration of sound - left in me.

It would be relevant to point out at this stage that while I was studying harmony and counterpoint in Buenos Aires during the day I was playing with a rock band in different clubs by night ³. Every rock guitar player I knew at that time - including myself - wanted to explore the new repertoire of timbre opened up by the massive amplification of electric guitar feedback and the available transistor gadgets which were basically timbre modifiers. We were all under the spell of Hendrix's own exploration which was regarded without doubt as the father and master of this technique. We were, so to speak, under Hendrix's *haze* which was indeed *purple*, a colour which was the visual epitome of psychedelia.

3.3. The form

The overall form of the piece is close to a traditional *suite* consisting of eight different 'numbers' or movements. Each number of the *suite* is a variation of the *Purple Haze* guitar riff but there is no gap between the movements so the piece runs uninterruptedly for nearly twenty four minutes. I chose to link all eight movements into one continuum because I was interested in maintaining the flow uninterrupted as in the 1960s and early 1970s 'concept album' but more importantly so, because I wanted to compose these transitions between movements as powerful gestures. A very effective transition, even if perceived merely as a transition between different variations musically independent in their own right, can be one of the beautiful and meaningful moments in a piece. Most of the eight variations may be played on their own and would make sense as 'miniatures', only needing the original guitar riff as a reference. Yet the

¹ This is consistent with the picture of Latin American art at a *cultural crossroads* as discussed in chapter one.

² *Purple Haze* is probably the best known track by Jimi Hendrix. It is a classic and a symbol of the psychedelic late 1960s. Its sound world projected itself into the 1970s inspiring other rock forms as diverse as *Heavy Metal* and indirectly *Punk Rock*.

³ I played guitar professionally during the late 1960s and early 1970s before I gave up to dedicate myself completely to composition. During this time I played mostly with two rock bands one of which enjoyed some success for a brief time leading to a recording contract and a record release.

effect when played together is in my opinion quite enhanced, since I have carefully chosen the order in which I placed each number so as to balance the piece as a whole.

In spite of choosing a pitch cell - the guitar riff - as the basic material to be varied, not one of the eight variations is primarily involved with melodic development of the original riff. On the contrary, the notes of the riff are by and large presented in the same order as in its original form, and if this form is not always apparent, this is due to the complexities of rhythm or the degree and density to which timbre is being modified. Although the barren notes of the guitar riff seldom change, what does change is the phrasing, the sound, the pulse and rhythm, in other words, the intention conveyed by the notes rather than the notes themselves. Harmony is not a main issue in *Hendrix Haze*.

3.4. The *Purple Haze* guitar riff

I used the guitar riff as a fixed point of reference against which pulse, rhythm and timbre were 'modulated'. Its pitch and harmonic implications were not the conscious object of my attention. As I have already said, I did not intend to write melodic or harmonic variations. Yet, the melodic and harmonic originality - in rock terms - and ambivalence - in tonal music terms - of the riff did not remain unnoticed by me and deserve a few comments.

Figure 1 shows the opening guitar riff of *Purple Haze*. The song starts with the guitar playing a tritone - E B flat - with a simple rhythm followed immediately by the riff. The riff is in E minor but this is only apparent from the last three notes. The entry of the voice - the song proper - starts on an E major chord and from then onwards the song is clearly in E major except that when the next guitar break comes in, it brings back G natural. The B natural - B flat ambivalence is the strength and the character of the riff. One would naturally take B flat as a passing note leading to A if the harmonic support which precedes the riff did not 'hammer' the E-B flat tritone with characteristic incisiveness. This is so much the case that for those who are familiar with the late 1960s repertoire it is only necessary to play the opening bar with the tritone immediately to recognize the song. In other words, the song is in E major but the most characteristic and most memorable parts of it are in no clear tonality. Simpler still, from the harmonic and melodic point of view *Purple Haze* is 'about' a tritone. In a lateral way, without stressing it or making an issue out of it, *Hendrix Haze* is harmonically and melodically speaking based around this tritone and the B natural-B flat ambivalence.



Figure 1 - Guitar riff.

3.5. Composing with the Fairlight: the real-time approach to work.

Hendrix Haze was my first experience using a comprehensive real-time system. The *Fairlight I* - and the subsequent version *II* - include sophisticated additive synthesis and sampling facilities, as well as the first 'music composition language' (M.C.L.) which was much more than a glorified sequencer. The *Fairlight II* may seem now like a dying dinosaur, completely superseded and made out of date by MIDI machines, twelve and sixteen bit samplers and high powered composing languages such as *Performer*, for the *Apple Macintosh* microcomputer. Yet, it is essential that I should examine and describe the impact that this machine had on my musical thinking - as it had on most people who explored it creatively whether composing serious music, rock or film music ¹ - because it changed my understanding of fundamental musical issues such as pulse and rhythm. Furthermore, *Hendrix Haze* is intrinsically a '*Fairlight* piece', in that often the musical technique used to create certain processes is suggested and even conditioned by the design of the software and hardware of the machine. In this sense I could say that the *Fairlight* was to me both an inspiring and conditioning machine. It is also relevant to point out that there are still a few sound manipulations the *Fairlight* can accomplish, which no other machine on the market at the time of writing (1987), can do.

Had composers had, back in the 1950s, a machine that could have played with absolute precision their speculations in the pitch, time-duration and rhythmic domain, the history of the *avant-garde* might have been different. It took over a decade to realize that total serialisation was from many points of view an unsound idea, and particularly from the perceptual and psychoacoustical one. Subsequently, composers experimented with rhythmic sub-divisions so complex that the failure of the performance was nearly always ascribed to the player's lack of goodwill and/or dexterity. Practically the totality of all the rhythmic experiments of the 1960's and 1970's could be tried out by a composer in a few week's work with a *Fairlight* ².

The reader can imagine the excitement I felt when I first laid hands on a *Fairlight* at City University in 1982. It was one of the first such machines in England. To start with, as soon as I became 'fluent' using the M.C.L. editor it became unnecessary, indeed burdensome, to write *Hendrix Haze* drafts on staved paper. There was not the time. I was often getting the machine to implement and play my musical ideas faster than I could notate them. In any case, the rhythmic possibilities the *Fairlight* had opened up could not have been properly notated in conventional musical notation ³.

¹ Fellow composer Richard Attree and I have produced rock songs and more than a dozen documentaries using the *Fairlight*.

² The *Fairlight* has a time accuracy of 1 millisecond.

³ The reader may be wondering at this point why I am making such a strong case about notation when a score of a tape piece is widely regarded as unnecessary or at best as an academic exercise. The fact is that I have always needed to write scores before starting production of compositions in the studio. I have even written fairly complete scores of reggae and rock songs before commencing

Most important of all, the *Fairlight* showed to me clearly the kind of complexities which made sense perceptually. Complexity for its own sake, the stuff of which a great deal of contemporary music is made, lost its appeal. It was no longer clever to be complex since anybody working with a *Fairlight* could achieve the same results. Complexity stopped being prestigious. On the other hand, the *Fairlight* offered the possibility to explore rhythmic processes infinitely subtle which do make sense perceptually. These processes did not belong to the realm of performance. They required a precision no human being could ever achieve. These were the processes I set out to explore in *Hendrix Haze*.

3.6. Variation: European and non European modes of variation

I wanted to create music with unpredictable repetitions, with rapidly changing pulses and expectations. I wanted to experiment with pulse and timbre. All this, I thought, could be done in freedom if I kept a constant melodic cell as a point of reference. As in *Go*, I looked for a simple and clear centre of gravity so that I could explore uninhibitedly other areas knowing that the binding core of the guitar riff would keep the piece 'together'.

I structured the piece in a very classical European fashion: a set of variations. What is not always European is *what* is varied and *how* this is achieved. Two types of variation were developed:

a) pulse variations: variations 1, 2, 6 and 7.

b) timbre variations: variations 3, 4 and 5.

I talk of pulse variation as opposed to rhythmic variation because although the former obviously also involves rhythm, the result is more complex and involves the perception of changing pulses, the illusion of changing pulses, and the perception of simultaneous pulses as the main musical issue. Pulse variation has not until very recently been a major issue in European serious music, and even less so, one that could have been considered capable of sustaining the fabric of the musical discourse in large scale form.

The following is a discussion on the introduction and seven variations which comprise *Hendrix Haze*. Durations are approximate since the transitions which link the different movements do not always make clear where one variation process has ended and the next one started.

recording. The *Fairlight* did not make me abandon but change this habit. I changed from conventional notation to *Fairlight* M.C.L. notation.

Introduction: from 0' to 1' 40"

Here, the notes and rhythm of the riff are introduced in its original form but played by bell-like sounds. The bell sounds are made to behave like guitar sounds in that they 'bend' pitch in the characteristic fashion of rock guitar players. My intention was to present the riff clearly for those listeners who are not familiar with late 1960s repertoire, but in doing so, I wanted to avoid boring those who had already heard the riff hundreds of times. I chose bell-like sounds because they are some of the sounds less likely naturally to behave like guitar sounds and thus provide a 'foreign' context to a well known 'tune'. I changed the tempo of the original riff, slowing it down to a tempo appropriate for tolling bells. This 'rarefied' atmosphere, I hoped, would be in sharp contrast to the intense pace of the first variation which followed.

The bell sounds are a mixture of synthetic sounds and sampled tubular bells. The synthetic sounds were produced using the additive synthesis facility ('Page 4' of the software package) of the *Fairlight*.

Variation 1: from 1' 40" to 6' 30"

This variation is divided in two sections. The idea for this variation came to me when I started experimenting freely with a rhythmic sound object (see discussion on *rhythms of rhythms* in Chapter 2). I recorded eight violins playing different pizzicati in unison. One of the takes had the peculiarity of being so imprecise that when sampled and slowed down more than one octave, an actual rhythm could be heard. I used this rhythm to create different rhythmic patterns. As I played this sound object on different *Fairlight* keys, the pitch and the tempo of the sound object and its inner rhythm changed. At times I would only play parts of the sound object or create a new emerging pattern by repeating the first two notes of the sound object at the right speed so that a new pulse would emerge. It must also be noticed that each of the eight violins which form the sound object stressed the pizzicato note differently. As I changed keys and looped the sound object differently, the stress with which each pizzicato had been played seemed to be shifting. There is a general impression of ambiguity as all the above mentioned processes interact, creating a rather unusual rhythmic syntax. The changes in pitch created by playing the sound object on different keys of the *Fairlight* (this was done from M.C.L.) followed the notes of the riff very closely although at times the sequential order of the notes was changed for rhythmic reasons. As it is plain from this description, I used what is normally the major drawback of sampling - pitch transposition destroys the quality and identity of the sample - as the ruling principle to create a variation of pulse and rhythm.

A fragmented version of the riff is played or rather 'scattered' over the processes of pulse and rhythm transformation. These fragments of the riff are also played by a sample taken from another recording of the eight violins.

After I had finished the overall structure of this variation I proceeded to 'orchestrate' the rhythms and pulses. Using sampled percussion. I accented different notes within the sound object, sometimes to reinforce the strongest perceptible pulse, thus simplifying the perception of the overall rhythm, but occasionally to contradict it so that yet another rhythmic layer was added.

At the beginning of the second half of the variation - at 4' 20" - a new pattern created from the original sound object emerges clearly as an ostinato. From this point till the end of the variation the main role is played by the sampled percussion which concentrates on the development of rhythmic figures. A rock bass drum playing echo patterns at times reversed (echo crescendo) establishes a steady pulse with an ever shifting strong beat. This I accomplished by writing by hand every note of the echo patterns in M.C.L. as opposed to using a standard echo unit. In this way it was possible to accent any note and to make sure that every echo figure would have a different length and yet the pulse would remain the same. I was here preparing the ground for the 'Rock variation' which follows.

Variation 2: from 6' 30" to 8'

This 'Rock variation' intrudes in the piece with the immediacy of a tape splice. It is a literal quotation from the rock world, or rather, it is the rock world. Had I taken an eighteenth century approach to variation this literal imitation of *Purple Haze* should have started the piece. After all it is the very musical material which is the subject of variation. Yet, the linearity of such an approach is aesthetically alien to me, and so it is, I believe, to most twentieth century listeners. I wanted to bring into the piece the harsh sound world of the fuzz guitar and the close-miked drums but only to make it crumble, disintegrate, and then re-compose it into something new. I also thought of a 'duel' between guitars and drums, so I placed the guitars in the front stereo pair of speakers and the drums in the back stereo pair of speakers. I imagined this duel as a duel of *clichés*.

A musical *cliché* may be seen as a device, an object, which has in immediacy and in economy of means what it lacks in originality. A *cliché* is therefore a powerful 'gesture' unfortunately rendered useless by its predictability. I used several rock music *clichés* in *Hendrix Haze*, particularly in this variation and in variations 3 and 7. I wanted to present these *cliché* gestures in different contexts, and seen from different perspectives. At times I saw these *clichés* as sound objects, a sampled guitar or drum gesture which could then be manipulated according to the compositional needs of the piece. By depriving these *clichés* of their usual context and making them evolve in time - *clichés* rarely do - I sought to make them less predictable, thus removing my main objection to them.

This variation is primarily concerned with the juxtaposition, evolution and final disintegration of these familiar *cliché* gestures.

Variation 3: from 8' to 10' 40"

The idea for this variation was inspired not by *Purple Haze* but by the performance of the United States national anthem which Jimi Hendrix gave at what has now become a legendary event: the 1969 Woodstock festival ¹. Hendrix's treatment of the American anthem was, from the point of view of timbre and form, a unique event in the history of rock 'n roll. It is like a milestone, standing alone, without precedent and without anybody being interested - in the rock field - to further the exploration of these ideas. His transformation of the American anthem into two separate discourses was what attracted my attention. He wanted to depict on the one hand the pomp and pretence of the anthem, and on the other the horrors of the Viet-Nam war. He would start by playing the first few notes of the anthem and hold one of them 'frozen' into a continuum of guitar feedback. A world of timbre transformations on the very same note would unfold. The ever increasing feedback and 'fuzz' distortion created sounds not unlike the familiar FM sounds used in electroacoustic music. This world of distortion and 'explosions' - he would hit his guitar to create tremendous transient sounds - represented the world of destruction brought about by the Viet-Nam war.

I was concerned with musical syntax and not with extra-musical ideas ² but I did want to develop two separate discourses. The first one, simple and easy, conveyed by short *cliché* guitar phrases taken from the riff or literally playing it note by note. The second one, the universe of timbre transformation within a continuous sound. I took from Hendrix the idea of 'freezing' notes from a well known tune - in this case the *Purple Haze* riff - to explore the sound world inside each note. These are the sound transformations I produced at E.M.S. in Stockholm using FM and additive synthesis simultaneously. It was interesting to control digital and analogue oscillators with a computer. The somewhat erratic tuning of the analogue oscillators gave a 'natural' richness to the sound which digital oscillators could not easily have produced on their own.

Variation 4: from 10' 40" to 13' 50"

This is a quotation of the introduction but developed into a proper variation. What is varied here is not the riff, but the acoustical qualities of the sampled bell which plays the riff. The bell is sampled from a recording of a Winchester Cathedral bell which John Whiting had made for Jonathan Harvey ³. I came across some of the unused takes of this recording session and sampled one stroke of the bell. All the bell sounds in this variation are

¹ Needless to mention that a recording of the Woodstock festival may be obtained at practically any record shop throughout Britain.

² It should be said to Hendrix's credit that his performance of the anthem works as music, regardless of its political content.

³ Harvey used this material in his piece *Mortuos Plango Vivos Voco* composed at I.R.C.A.M.

taken from this single stroke. I transformed the envelope of the bell by gradually changing the attack and decay while at the same time I was modifying its timbre by playing the same sample of the bell in different Fairlight voices. Each voice had a different starting time, different minute vibrato (1 or 2 hertz) and different position in space. Yet, my aim was to create a mood and atmosphere as in the introduction, to prepare the listener for the tension of the following variations. I never expected the listener to focus on the above mentioned envelope transformations. I find them of no musical interest on their own.

Variation 5: from 13' 50" to 15' 50"

This variation is like an orchestral version of variation 3. Everything said about variation 3 applies here. If anything, this variation is closer to Hendrix's treatment of the American anthem than variation 3. It presents quite clearly the melody of the riff, but played at a slow tempo. The 'frozen' notes are never held long enough completely to lose the thread of the riff, but the timbre transformations and the occasional bursts of fast rhythmic figures bringing in the note of the riff which follows, make it difficult to perceive its melodic contour, unless you are already very familiar with it. This is why this variation must take place at this point in the piece, where the listener would feel any literal repetition of the riff as redundant.

Appendix 2 shows the preliminary sketch for variation 5 which I wrote in Stockholm while working at E.M.S.. Since the IMPAC software I was using was not score oriented but rather more suited to control events globally, I went back to my habit of documenting my preliminary ideas before commencing production in the studio. In this variation, FM was the main technique used to manipulate timbre. It must be taken into account that the notes in the sketch are only briefly heard as 'pure' notes in the actual piece. They are mostly heard as textures of different densities varying according to the number of 'side bands' generated by the constantly changing modulation indexes.

Variation 6: from 15' 50" to 19' 40"

Practically the entire variation is made of one sound: a sample of a slapped pizzicato played by a single violin. The sound is not subjected to any treatment in the computer except for the inevitable change in the relative amplitude of the harmonics when a sampled sound is played in different octaves.

Echo transformations, phase shift, pulse and tempo changes, are the processes which articulate the syntax of this variation. Most of the rhythms perceived are not played by a single line of music but are the resulting rhythms created by the interaction of different patterns. Each of these patterns is in itself rather simple. The complexity rests on the very subtle relationship between the lines. I presented the riff in a 'bouncy' echo-like fashion in a simple 3/4 metre. The echo is the resulting combination of two voice or Fairlight files. I gradually come out of the simple 3/4 in one voice

while retaining the echo pulse on the other. This created in turn a new resulting pattern played by no line on its own. I continued experimenting along these lines following my imagination. In time I introduced other lines played from different files which further increased the complexity of the rhythmic interaction. I used phase difference between similar lines, gradually changing the tempo of one while the rest remained the same. I change the accents of the echo patterns so as to make the perception of meter ambiguous. I took vertical 'cross-cuts' of all the files and treated these as a sound objects. These sound objects, often lasting one or two seconds, would be brought in, edited as it were, at any given moment, drastically altering the perception of pulse. In other words, I cut out rhythmic blocks from the music so far composed and proceeded to combine these blocks to develop a sort of syntax of syntaxes.

Variation 7: from 19' 40" to 23' 10"

In this final variation I wanted to bring into play elements from all the other variations. The back-bone of the variation is a simple snare drum pattern which I sampled from a 'take' recorded a few months earlier when I was producing a collection of rock tracks. I took the snare sound object and developed it in a similar way as I had done with the violin pizzicati sound object in Variation 1. Everything said there about pulse, rhythm and tempo applies here in the same way. The pulse and rhythmic shifts brought about by the articulation of the snare drum sound object are here reinforced with accents from a bass drum, as is the case in variation 1.

The guitar riff itself is varied as if it were a sound object. It is played at contrasting different tempi, often giving the impression that one is hearing a recording played at different speeds. One of the characteristic sounds which plays the riff in this fashion was created by composer Barry Anderson at IRCAM. He digitised a chord from a harp and turned it into a very harsh metallic sound using a sophisticated filtering program. The sound has a 'heavy metal' quality which I felt was appropriate for my piece. Anderson was looking for a different sound and was going to subject the 'heavy metal' one to further processing. He generously allowed me to record it and use it in my piece.

The idea of a musical *cliché* played out of context as in Variation 2 recurs here. I played a *cliché* 'fuzz' guitar gesture, sampled it and used it as a sound object. Towards the end of the variation this guitar sound object moves in space around and across the listener, the displacements in space following the rhythmic gestures.

Finally, we also have present here those vertical cross-cuts of rhythms, as in the previous variation or as in *Go*, turned into rhythmic blocks and sound objects and articulated into a rhythm of rhythms. And this, I find, in a more consistent and successful way than anywhere else in the piece.

The stereo version of *Hendrix Haze* which was released on cassette ¹ is some three seconds shorter than the concert version. The missing three seconds consist of a guitar chord on the down beat followed by the voice of Jimi Hendrix saying "*excuse me ...while*". These words were taken from the original 1960s record of *Purple Haze*. I deliberately chose an old record in very poor shape so that the 'lo-fi' quality of the recording would be immediately apparent to the listener even if heard only for three seconds. I copied the three seconds on to tape and as I was 'bouncing' this material to the eight track master tape I stopped the stereo tape deck on the word '*while*' keeping the tape on the playback head in order to get the feeling of a drastic interruption. These three seconds are in no way part of the musical structure of the piece. They were meant as an ironic comment and had to be removed from the released version for copyright reasons.

3.7. Conclusion

Hendrix Haze does not belong in all traditions. No piece of music ever will. It *aspires* to belong in all of them but the expression *all traditions* implies a universe that cannot be contained in twenty five minutes of music, regardless of their content and quality. Nevertheless, I do believe that the piece belongs in (not to) more than one tradition if only because it does not fit comfortably in any single one of them. Its sound world is derived from that of the late 1960s. Its overall form is clearly taken from traditional European serious music. Its 'modus operandi' cannot so clearly be fitted into a single 'box' but draws from different sources as varied as Brazilian *Batucada*, African drumming (this is a very broad concept), Balinese *Gamelan* music, Latin American rhythms in general, rhythmic processes intrinsically computer-like, and last but not least the 'classic' European electroacoustic tradition.

It was not my aim to bridge 'systematically' the gap between these traditions. 'Militant' flexibility is as dogmatic and lifeless as rigid *avant-gardism*. It was my feeling and desire - more than my aim - to compose from those traditions, because some of them were already part of my background and others - as a citizen of the *global village* ² - have in time come to be felt as my own.

¹ Released by Crew Studio Ltd. London.

² Term coined by Marshal McLuhan. See chapter one.

CHAPTER 4

Triple Concerto

Playing easy and listening hard

The already excessive title of these pages proclaims its baroque nature. To bedim them would have been equivalent to destroying them.

(J.L. Borges, 1977 : 291)

4.1. Format and performance characteristics

Triple Concerto for flute, cello, piano and computer is a piece for four players. Three soloists play the acoustical instruments and a fourth player plays the mixer. The acoustical instruments are amplified to match the sound of the computer. The player at the mixer is a kind of conductor since he is responsible for maintaining the relative balance between the amplified acoustical instruments as notated in the score and for the overall balance between the instruments and the computer. Thus, he has to follow strictly the score at all times, making level adjustments according to the particular response of the microphones to the different instrumental tessituras and effects (e.g. alto flute changing to piccolo, cello playing *col legno*, etc.) and the players' movements towards or away from the microphones. Since he is the only player who can properly hear what is coming from the speakers in the auditorium, the success of a performance depends to a very great extent on his good judgement. The concert lay-out and technical characteristics are clearly indicated in the score (see VOLUME 2).

The computer part was entirely produced at City University using the *Fairlight II*, already discussed in the previous chapter. The duration of the piece is approximately 27 minutes.

4.2. The role of the computer

The computer part in the *Triple Concerto* consists entirely of sounds taken from the piano, flute, and cello. These sounds were fed into the memory of a *Fairlight* computer and modified by precise digital editing or simply by changing their envelope, vibrato, register and general articulation.

One of the ideas in the *Triple Concerto* is to explore the relationship between the conventional or more natural sounds of the piano, cello and flute and the sounds these instruments can produce but which cannot be played or articulated with any degree of dexterity by a human performer, such as flute multiphonics, scraped sounds inside the piano, cello harmonics, etc. Hence, I sampled into the *Fairlight* a variety of

"impossible" piano, cello and flute sounds. With the aid of the *Fairlight* I was then able to articulate these sounds as if they were played by a performer.

The computer part is, at times, conceived as an extension of the instrumental parts, moving in rhythmic unison with the instruments. In these sections the computer behaves as a 'mirror' or 'after image' to the instruments, as for example, in the Piano Cadenza. However, the computer clearly develops an identity of its own during the computer solos.

The computer part is recorded on tape for performance of the piece.

4.3. A personal view on the *Concerto* form

A *Concerto* is supposed to be a virtuoso piece. Virtuosity has often been understood - particularly in the nineteenth century - as the mastering of the physical technique required to control dexterously an instrument. Instrumental gymnastics have never appealed to me, so I decided before I had written a single note that I would avoid it as much as possible.

I was interested in a different kind of virtuosity. A virtuosity which consisted in being able to listen to a whole piece of music all the time. A sort of virtuosity of the ear and the brain, not of the mechanicity of muscles. As I put it in a programme note: *I want the players to listen hard and play easy*. The greatest difficulty in this concerto is not in the playing of the instrumental parts themselves, but in conveying a structure which relies on the exact rhythmic synchronicity between players and computer. This is indeed extremely difficult, to the point where after the first two rehearsals for the première of the piece, it became apparent that it was indeed extraordinarily difficult, if not impossible, for the players to remain 'in sync' in the two tutti sections without the aid of a click track. Ever since the première, a click track fed to the players via headphones has become a standard feature.

I must also admit that the individual instrumental parts turned out to be occasionally virtuosic in the old-fashioned sense. This I could not change without compromising the integrity of the music and I have accepted it as a lesser evil.

Another decision I took at a very early stage was to keep the traditional role of the soloist the same. Each instrument has a cadenza of its own. The cadenzas are fully written out. There is a tutti section fairly early in the piece, and the last section is a tutti practically throughout. The computer occasionally even plays the role of the orchestra in a romantic concerto. Nevertheless, there are three ways in which the roles of the instruments and the computer differ from traditional roles.

Firstly, I decided while I was composing the piece that the musical material required a treatment such that for long stretches of time the soloists would not play a single note. If it meant that the computer part was going to play alone for longer periods of time than the soloists would, thus becoming more prominent than the players on stage, I was prepared to accept that.

Secondly, when an instrumentalist does play, he does not necessarily play a part coherent in itself, but often one that only makes sense when played together with all the other parts. I often constructed the musical discourse as if it were a jigsaw puzzle. When played properly, the listener is not always aware of who is playing what, but of the overall result. This I feel is consistent with my view of virtuosity and is its perfect consequence at the level of instrumental role: a concerto which is not based on the virtuosity of gymnastics does not need the role of the virtuoso in the forefront. In other words, it does not matter if the audience is aware or not of how difficult it is to play this piece in rhythmic synchronicity.

Thirdly, the 'orchestra' in the *Triple Concerto* is completely taken from samples of the three acoustical instruments. Its role is to create flute-like, cello-like and piano-like sound-worlds beyond that of the flute, cello and piano, and yet staying with the flavour, one may say, within the essence, of the three instruments. In technical terms this means to extend the acoustic properties and the possibilities of articulation of that which we perceive as the flute, cello and piano timbres.

4.4. Two harmonic fields and a melodic cell

There are two harmonic fields and a pivot note which contain the twelve notes of the chromatic scale:

A) C - F - F sharp - G sharp - A

E flat (pivot note)

B) C sharp - D - E - G - B flat - B ¹

¹ I am avoiding stave notation, so as not to fix the pitches of the fields to a specific tessitura.

The piece gravitates between these two harmonic fields as if they were modalities. The pivot note belongs in both fields and acts as a link or point of contact. A system of relaxation and tension is derived from the different vertical relationships established within each field as well as from the movement from one field to the other. In moving from one field to the other often a peculiar type of modulation results. At other times the two fields succeed each other in a contrasting fashion as in tonality for example, one might go swiftly from C major to C minor without modulating. In this harmonic framework dissonance may be defined as the intrusion of notes from one field when the other is predominant. I used this criterion to create moments of greater tension and, at times, the ambivalence is such that it is no longer possible to hear which field is predominant. This extreme case I used with great care as it is obvious that it can easily destroy the already fragile harmonic structure of the piece before it has been properly established. As in *Go* I wanted to have the possibility of creating and destroying several times within a piece the order which rules and makes possible the very existence of the piece, but always keeping in mind that one can only disintegrate or destroy that which has previously been perceived as clearly established, as having some sort of an identity.

Also, as in *Go*, tessitura plays a fundamental role in the articulation of tension and relaxation. Everything said in chapter two about tessitura applies to *Triple Concerto* but perhaps more noticeably so, since the two harmonic fields can produce cluster-like chords (e.g. F- F sharp- G sharp - A) of great tension if played in the same octave, while, if the same notes are spread over five or six octaves, their harmonic density would be perceived as completely different. The harmonic approach is similar to that in *Go* except that here there is greater mobility, in principle, since there is not a fixed sequence of chords - the chorale - but rather a more open-ended harmonic field.

In spite of all said about harmony and melody, the basic melodic and harmonic material of the piece is rather simple. I was interested in the relationship between phrasing and timbre, and to a lesser degree in the syntactical development of pitch, so I chose to keep melody and harmony repetitive and at times predictable so as to focus on other types of changes. In the Piano Cadenza for example, the overall perceived timbre changes gradually as the harmonics of the notes played by the piano are microtonally shifted and left in suspension for a considerable length of time, moving the original simple harmonies into an untempered field.

The main pitch cell of the piece is derived from harmonic field 'A' and it is illustrated in Figure 4.1.

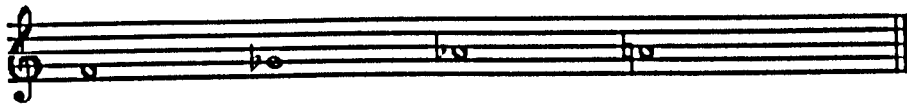


Fig. 4.1 - Main pitch cell of *Triple Concerto*.

Figures 4.2 shows the simple outline of the main melodic pattern created from the main pitch cell (I am not the first composer to use this motif). Although it is often played at very slow or very fast tempi (beginning of piece: computer solo), with a very complex timbre and often buried under a cloud of complex rational and irrational rhythms (computer sections from score p. 2 to p. 15) the core of the melodic pattern remains the same.



Fig. 4.2 - Main melodic pattern of *Triple Concerto*.

This simple outline of a melody was mostly articulated into a more elaborate rhythmic motif. Figure 4.3 shows one of the early sketches where the simple pattern has undergone some rhythmic articulation.



Fig. 4.3 - Early sketch of articulation of the melodic pattern.

There is a secondary melodic motif in the piece, which is based on harmonic field 'B', and is shown in figure 4.4.

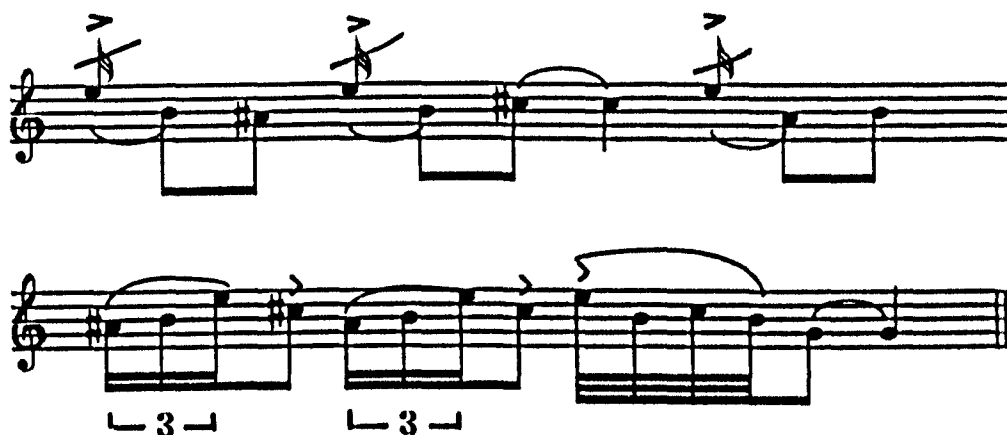


Fig. 4.4- Secondary melodic pattern based on harmonic field 'B'.

Melodic cells or motivic fragments are heard throughout the piece, which are based on this secondary pattern, as in the Piano Cadenza and the computer solo after the Flute Cadenza. The secondary melodic pattern was developed as a counterpoint to the true fundamental motif of the piece, as shown in Fig. 4.2, which is the very heart of *Triple Concerto*.

4.5. The form and its different sections ¹

Introduction: computer solo (page 1).

The piece starts with the computer introducing the main melodic cell and the harmonic field created by it, as well as most of the timbres that will be heard throughout the composition. I wanted the computer to convey the sound world of the three acoustical instruments without the piano, flute and cello ever being heard.

The piano is the first acoustical instrument to be heard (p. 1) starting a new section that develops two different musical discourses.

Development of two discourses: instruments versus computer.

The first one, of mechanical rhythms, is played by the acoustic instruments and is at times interrupted by the flexible and complex although repetitive patterns of the second one, played by the computer ².

The instrumental discourse was composed as a continuous section, consisting of short rhythmic patterns developed by each instrument. These patterns are repeated systematically to create a feeling of mechanicity but in each repetition a change is introduced increasing the level of rhythmic and pitch complexity, so that the 'cog wheel' structure is set in forward motion. The pitch content of the short rhythmic patterns is derived from the harmonic fields, but stressing primarily the pitches of the main melody. This syntax is not unlike that of systems-music. Examples of it may be found in any of the instrumental parts from page 1 to page 15.

As I was interested in the opposition of the mechanical to the flexible, and wanted to create the paradox of the computer being the flexible party, I gave the computer part a mixture of rational and irrational rhythms, with flexible changing tempi, glissandi, and patterns as repetitive as those in the instrumental parts but much more dramatic in their development. The computer part was also composed as a continuum.

Finally I edited the two discourses together as a dialogue between essentially different natures. The computer often seems to 'interrupt' the instruments and at the same time it is the computer's discourse which launches the instrumental statements which follow each interruption. The

¹ Score - see appendix 2 - and tape are required to follow the discussion on form and its sections, since the computer part is not fully notated in the score. Page numbers anywhere in this chapter refer to the score.

² Please note that only a rudimentary outline of the computer part has been notated in the score, and this is intended as a reference for the performer and not to be used for analysis.

interlocking of two discourses composed separately could never be straightforward. I had to adjust the 'edit' points, often re-write several bars, so that the whole dialectical process of the section maintains its momentum.

Gradually, the interruptions become closer in time until the two opposite discourses come together towards the end of the section (p. 11, bottom system). From here onwards we begin to hear the main pitch cell not only as an evolving pitch construct but as the main melody of the piece (p.14, top system, first bar, piano; p.15, bottom system, second bar, piano). The two discourses and their process of coming together were composed simultaneously, in other words, as a single compositional process.

The central section of the piece consists of three instrumental and computer cadenzas alternating with computer solos.

Piano Cadenza: the computer as a shadow.

The piano develops the melody it introduced on pages 14 and 15. It varies rhythmically and melismatically the main melody, and at times creates new melodic phrases derived from harmonic field 'B' (p.17, bottom system; p.18, third system, tenth bar). The most relevant musical aspect of this cadenza is the relationship between the piano and the computer. The computer behaves like an extended piano soundboard, making the actual piano resonate in 'impossible' ways. For this reason the computer part has practically no articulation, its notes having a slow-rising envelope, and its rhythm and pitch being in unison with the piano. This makes the performance of the cadenza a virtuosic undertaking. The pianist has to play melismatic musical phrases which are composed to sound very flexible, as if the performer were freely changing tempi in a nearly improvised fashion, but in fact these melismatic phrases are notated as precise rhythms (e.g: p.18, bottom system). The player has to follow the score strictly in order to remain in rhythmic unison with the computer.

The character of the melodic development, its melismatic 'style' and fast repetitive rhythmic patterns, was chosen so that the timbral exploration could move in the direction I wanted . I needed the piano to play phrases that would seem written for, or copied from, a shepherd's flute, with maximum articulation, so that the computer 'soundboard' could grow out of the piano and sustain all the fast notes of the melismata, apoggiaturas, accents and repeated rhythms. This creates a harmonic environment which is derived from the harmonic fields as well as from the different overtones of the piano, which the piano samples manipulated by the computer bring out. The piano samples were looped in different ways, using different portions of the sound, taking advantage of the quick way in which the relative amplitude of the harmonics of a piano change during the evolution of a note. I could, in this way, sustain as a continuum a portion of the piano spectrum that we never hear very much, because it decays too fast. I often changed the pitch of the computer piano sounds that were sustained, gradually sliding them up or down a microtonal interval, making them clash against the actual piano notes which are in unison, or creating a

microtonal 'environment' around the different piano melismata, the rhythmic repetitions, and the main melody itself.

The computer 'shadows' the actual piano never developing an identity of its own, and even in the instances where it overpowers the live players, it does so from 'within', never bringing to the cadenza a foreign sound world.

Flute Cadenza: the computer develops timbre and articulation.

The flute Cadenza is an exploration of the sound world of flute multiphonics and flute-like articulations. The actual flute plays no multiphonics whatsoever and as everywhere else in the piece, the players are never asked to produce non-standard sounds with their instruments.

Since harmonic field 'B' contains an implicit 'transposition' of the melody derived from field 'A', I decided to start the Flute Cadenza with the 'tune' played in field 'B'. The second field is throughout more prominent than the first one, reversing the case of the Piano Cadenza. The Flute Cadenza could be considered as two halves.

In the first half (from p.24 to p.25, second system, fifth bar) the player appears to initiate the world of flute multiphonics. The computer 'tracks' the gestures and the phrasing of the flute, playing 'in sync' inharmonic chords with a slow-rising and slow decaying envelope. As the flute plays, it seems to be leaving behind a 'trail' of inharmonic flute sounds, as if it were an act of *magic* in the world of *reality*. This is the perceived effect, but in performing terms, it is the flute player who has to remain in perfect 'sync' with the computer, and this is indeed a virtuosic accomplishment.

In the second half, the computer 'multiplies' the attacks of the flute creating the impression of multiple players, or of an ensemble of flutes which is afterwards developed further in the computer solo that follows. The computer part also brings in an irrational pulsed pattern (p.25, second system, last bar) which combined with the very rational jazzy pulse of the flute part conveys the impression of a polyphony of pulses which I was later to explore further both in the computer solo that follows and in *Toccata del Mago* (see chapter 5). The idea of variation of pulses is already present in *Hendrix Haze* as has been discussed in chapter 3.

Cello Cadenza: development of a 'cello sound-object'.

Harmonically and melodically this cadenza is perfectly clear and in the context of what has already been said it requires no further elucidation. The score speaks for itself and it does so *with the help of a far better system of symbols* (chapter 2) which common language could never equal.

The real interest in this cadenza lies in the rhythmic development of a cello sound-object and its interaction with the rather orthodox cello part. I sampled a rhythmic pattern played by cellist Rohan De Saram and based the entire cadenza on the development and articulation of this sound-object.

The cello carries the main tune, playing it with the same quality of sound - *sul ponticello* and *tremolo* - as in the sampled sound-object. I wanted to create textures and melodic contours where the cello and the computer could not be differentiated. It has often been the case in concert, that when the cello is close miked it has an even more 'electronic' sound than the actual computer, blending perfectly with the sampled sounds. This makes it even more difficult to differentiate between the cello and the computer part creating from the point of view of timbre, a consistent texture.

The treatment of the sound-object to create *rhythms of rhythms* (see chapter 2) is no different than elsewhere in my work except that here two extreme cases are present. When a rhythmic sound-object is articulated in a pulsed context, it nearly always introduces irrational patterns since any pitch transposition would change its internal rhythm into an irrational subdivision. I purposely tried to conceal this, either by introducing *rallentandi* or *accelerandi* in the cello part, or simply by editing the cello sound-object to make it fit into a more rational subdivision. Gradually, this 'squareness' of the rhythm begins to disintegrate¹, exposing the irrational patterns embedded in the sound-object until the whole cadenza turns into a texture in which the computer sound-object and the cello part become one.

The computer solo which follows develops this texture, introducing a cello harmonic sound-object sampled into the *Fairlight*.

The Finale: a tutti.

In the Finale all instruments and the computer play together. At its beginning, the Finale alternates between the two harmonic fields in clearly defined blocks (e.g: field "A" p. 33; field 'B' from p. 34 to p. 35, second system; field 'A' from p. 35, second system to p. 37), each block being several bars long. Towards the end, changes between harmonic fields become brisker and more dramatic and for the last few bars it is as if the two fields were merging into one. The piece finishes when field 'A', which has turned into a texture, suddenly stops.

The Finale integrates different aspects of the piece:

- 1_ The sound world at the beginning of the piece (computer solo), re-appears at the beginning of the Finale. It is very noticeable in places (e.g. p. 36).
- 2_ The melismatic phrasing and variation of the tune (e.g: cello p. 37).

¹ I have now noticed how often this word has come up in this writing. It would seem to indicate a consistent tendency in my composition towards structural and formal models based on a destruction and re-birth cycle.

- 3_ The computer as a mirror image, as a shadow of the piano, and as a melodic fabric deeply interwoven with it (e.g: from p. 42, second system, second bar to p. 43, top system; p. 45 and p. 46).
- 4_ The cello sound-object of the Cello Cadenza re-appears in the very last bars of the piece played by the computer (follow with tape p. 49).

The section could be said to be written in characteristic 'contemporary' or 'avant-garde' polyphonic style or rather technique ¹, if the relationship between the different lines or parts of the score is what we are focusing on. The instruments 'ride', as it were, on the computer, surfacing and submerging themselves in it, and at times being completely overpowered by its sound.

4.6. Conclusion

I would say that baroque is that style which deliberately exhausts (or wants to exhaust) its possibilities

(J.L. Borges, 1977 : 291)

The *Triple Concerto* was my first experience writing for live instruments and computer together. It triggered my imagination in so many different directions that at times, I found it difficult to reconcile them all in the context of a single piece. This may account for the length of the piece and for the somewhat inconsistent mixture of procedures or even styles. From the 'timbre-texture' exploration of the opening computer solo, to the more 'classical avant-garde' idiom of the Finale, going through the 'systems-music' procedures of the first instrumental section, the 'oriental-ethnic' melismata of the Piano Cadenza, the 'jazz-like' rhythms of the Flute Cadenza and the 'sound-object' oriented Cello Cadenza, the piece explores and incorporates every idea concerning computer and instruments that I found of musical interest at that time. The paradox is that the multi-style or multi-procedure aspect of the piece is, as I see it, both its weakness and its strength. Or rather, I would not know how to make *Triple Concerto* stylistically consistent without rendering it as contrived as an academic exercise. The computer solo, for example, between the Piano Cadenza and the Flute Cadenza is structurally weak and yet I do feel it is an effective and necessary transition between the two disparate worlds of the two cadenzas.

¹ From Webern onwards it has become increasingly difficult to talk of style. The avant-garde has a technique but does it have such a thing as style?

Perhaps the problem lies in that a diversity of 'styles' or procedures requires an equal number of transitions to interpolate between them, and too many transitions inevitably weaken the overall structure of a piece because they add very little to the development of the central compositional idea. Ultimately, a transition can only aspire to be elegant or perhaps beautiful ¹, at the expense of introducing unnecessary rhetoric. Yet, I can see in my discourse the modernist assumption that beauty in art is not enough, and that rhetoric is by definition unnecessary. This can hardly be a *Magic Realist* view of the world, and as I finish writing this chapter the strong feeling grows in me that in the long run, the *Triple Concerto* will survive the passing of time only if those inconsistent rhetorical moments are perceived as beautiful enough to justify their existence.

¹ In *Hendrix Haze* the transitions between different variations were a matter of choice. Each variation could have been a different movement, so transitions do not seek to conceal the fact that the piece is a set of variations. They are there for aesthetic reasons. Moreover, the piece is fairly consistent in its overall sound world so transitions do not have to bridge enormous gaps.

CHAPTER 5

Toccata del Mago The vertigo of unidentified pulse

5.1. Format

Toccata del Mago is a piece for 8 string players - 4 violins, 2 violas, cello and doublebass - and computer. A conductor and a player at the mixer are required. Throughout the entire piece the conductor receives a click track via headphones, as do the players in *Triple Concerto*, which is his point of reference to synchronize the players and the computer. The string instruments are amplified and mixed with the computer which is recorded on tape. The mix is diffused in stereo and the computer part must always be integrated spatially with the strings so that it becomes another instrument - albeit a multitimbral one - of the chamber ensemble.

It would be possible to play the computer part straight from the computer although a very large amount of hardware would be needed (see section 5.7). In this case, another player would be required to control the tempo of the computer part in order to follow the conductor. The click track would then become unnecessary and the players would enjoy greater freedom. At present such a set-up is not available and the version presented here is the one which uses a click track. It is hoped that in the future, the second option would become standard.

5.2. Breaking habits: aesthetic speculation before a piece

After *Triple Concerto* I was determined to write a piece that would have a strict form, the minimum number of notes required to convey the essential musical ideas, and which would not have at its core an obvious central identity, such as the 'go' phoneme, the guitar riff in *Hendrix Haze* or the main melodic pattern in *Triple Concerto*. I also wanted to mitigate a tendency in my music, often obsessive, towards repetition. I wanted to contradict my habits, the habits of my *metier*, and see what would come out of a conscious effort in this direction. I wanted to write an ascetic piece, using primarily one timbre (strings), one type of process ruling the forward motion of the music, and a restrained computer part, as opposed to the extrovert one in *Triple Concerto*.

This speculation was not a reaction to the previous music I had written. It was rather the curiosity to know what kind of music would come out of me, if I refused to follow my usual patterns. If I had not speculated in this way before, it was only because my habits were not apparent to me. As a result of this, and for the first time ever, I was primarily influenced by my own previous music and habits, both in a negative and positive way. I wanted to extend and further explore the harmonic and rhythmic ideas and

techniques I had used in my previous pieces, giving the acoustical instruments a more preponderant role than in *Triple Concerto* - positive -, and avoiding at the same time the habits of my *metier* - negative.¹

5.3. Ideas towards a structure: the vertigo of unidentified pulse

Toccata del Mago is primarily a piece about rhythm. In this respect I was concerned with the exploration of areas of *perceptible* and *non-perceptible pulse*² and the movement from one to the other. There is an area of ambiguity between pulse and no pulse, a sort of no-mans-land which has always attracted me. I wanted to capture in the piece the kind of *vertigo* that one experiences when pulse is perceived as being present but one cannot pin down the rhythm and the beat to a clear pattern or point of reference.

I used regular and irregular, symmetrical and asymmetrical rhythms to create pulse or pulseless lines of music. At times I juxtaposed them to form a complex polyphonic structure or made each of these lines gradually transform into its opposite. At other times I repeated - perhaps obsessively³ - a short fragment of a chaotic rhythm so that from this repetition a sense of pulse was grown and yet, that which was repeated retained its original chaotic, asymmetrical pulseless quality. This, at times, created the ambiguous perception of a rhythmic object with and without pulse. This ambiguity is often used as a transition between moments of pulse and moments of no pulse, but also as the fundamental content of a section. The pulsation of a fragment of music or sound-object which itself has no pulse (or a different pulse to the one being imposed) is characteristic of the pieces that have been discussed in previous chapters. The novelty here is that in *Toccata del Mago* it is the first time I have consciously and systematically applied this idea, not only to the computer part but also and possibly primarily to the instrumental parts.

I also explored the often paradoxical relationship between rational and irrational rhythms. The latter ones are often perceived as having a very simple pulse until they are played against a grid of rhythms of the former kind. The computer and the strings in *Toccata del Mago* function, at times, as points of reference to each other. The nature of the rhythm played by one of them can only be perceived and *felt* in relationship to the rhythm played by the other.

¹ Note that the terms 'positive' and 'negative' are not used as value judgments.

² Pulse is meant here as that which is perceived as having pulse regardless of its nature and its originating source. Those rhythmic constructs which are built from pulsed phrases but are not perceived as having pulse due to the context in which they are presented, are here regarded as not having pulse.

³ It is difficult for me to assess if I have found a point of balance in this respect.

Once I had defined the types of rhythmic processes I wanted to work with, I formulated a possible structure which would explore step by step, and in an orderly and rational way, the possible combinations:

- 1_ **Introduction:** presentation of regular and irregular rhythmic patterns.
- 2_ **Juxtaposition:** polyphony created from the juxtaposition of the two types of patterns.
- 3_ **Transition:** each line of the polyphony moves from regular to irregular rhythmic patterns.
- 4_ **Transition and Juxtaposition:** simultaneous polyphonic combination of 2 and 3.

As it turned out, the *a priori* structure I had conceived became too rigid a prescription to be followed to the letter. It allowed no space for fantasy and imagination, since once you were in one of its 'modes', say, Transition Mode - step 3 - you were not allowed to introduce elements of Juxtaposition Mode, and were supposed to wait till the last section to mix together Transition and Juxtaposition. This seemed to me like some of those inflexible structures composers worked with in the 1950s and 1960s, which, although presented as liberating (e.g. *Moment Form*), ended caging the mind and the imagination into even more enclosed forms than the ones it wanted to free it from.

I decided that I was going to define the types of rhythmic interactions and the kind of polyphony I wanted to have in the piece, but was freely going to use any of these types of processes whenever my imagination dictated. The overall form was going to be found in the making of the piece and not in an *a priori* speculation. If afterwards, entire sections of music were felt redundant or merely rhetorical, they could be changed or removed at that time. I re-defined the types of interactions without any sequential order: pulsed and not pulsed rhythmic polyphony, as well as juxtaposition and transformation of pulsed and pulseless lines within a rhythmic polyphony. I also wanted to combine pulsed lines derived from different rhythmic units and to pulsate sound-objects which might or might not contain a pulsed rhythm in themselves. All these types of interactions would be presented in constantly varying levels of densities (number of parts and *thickness* of timbre). Juxtaposition of levels of density is used quite often as if one were *splicing* concrete sound objects (e.g. sudden *razor sharp* changes from one or two parts to several parts and vice-versa).

Many of the regular and irregular phrases were generated by multiplying the different rhythmic units of each polyphonic line by the same or different series of numbers or by recurrently adding to them a fixed duration. These phrases were later combined to create the different types of polyphony. Figure 5.1 shows an early 'prototype' rhythmic line generated

by multiplying a demi-semi-quaver unit by a series of numbers. The series 6, 3, 7, 4, 5, 9, 2, 13, generates each group of demi-semi-quavers. The groups are separated by rests of different lengths. The length of each rest is also generated by multiplying a demi-semi-quaver rest by a series of numbers. The series used here was 8, 13, 2, 9, 5, 12, 7, 15, 6. The series in this case were chosen so that the note groups and the rests interlocked between them would be always irregular.

This procedure was implemented in the piece undogmatically, taking it as a very primitive but useful tool which could be contradicted at any time. The polyphony derived from it is mostly rigid and lifeless, it has a 'wooden' quality which is characteristic of poor 'mechanic' polyphonic writing. It was used as a mere point of departure to obtain basic qualities: regularity, irregularity, symmetry, asymmetry, pulse, no pulse. The lines were later modified or adjusted intuitively so that they made sense in the melodic and harmonic context in which they evolved, and in the overall structural development. There is not a single line in *Toccata del Mago* produced with this technique which has not been changed - often drastically - before reaching the final score.



Figure 5.1- Early 'prototype' rhythmic line for *Toccata del Mago*

5.4. Harmonic structure

Harmonically, the piece is relatively simple, consisting basically of two main chords or *harmonic fields*. A chorale-like sequence is derived from these two harmonic fields as well as two basic melodic cells. It is a combination of the harmonic field idea of the *Triple Concerto* with the chorale idea of *Go*.

There are two main harmonic fields very similar in structure to the ones in *Triple Concerto*.

- 1) D sharp - E - G - A flat - B flat - B
- 2) D - F - F sharp - A - C - C sharp (A flat)

The pitch 'A flat' is only a secondary note in the second field. It is often used in chord formations which are clearly 'on' the second field and I therefore feel the need to consider it as a note belonging in the second field, albeit of secondary importance.

A chorale-like sequence of chords was constructed from these harmonic fields (Figure 5.2). Some chords are 'pure', consisting only of notes from one of the two fields. Others are constructed from a mix of the two fields. The chorale is not used exclusively at the centre of the piece as in *Go*, but rather as an instance of the possible harmonic combinations of the two fields. When it is used, though, it is treated in the same way as the one in *Go*, and everything said in Chapter Two about tessitura changes, closed and open harmonies, voice leading and melismatic transformation applies here in the same way, so there is no need for further elucidation.



Fig. 5.2 - Chorale-like sequence of chords from *Toccata del Mago*

Harmonic examples ¹

ex.1 The different crescendi and 'cross fades' played by the strings in the section of the first movement starting at crotchet = 96, are used to introduce the harmonic fields and the chords of the chorale. I wanted in this introduction to present the different 'flavours' of the harmonies, which would be used later on in a more complex way. The A flat - G interval from the first field, which is later on to feature so strongly in different places (e.g. second mov. viola parts starting at bar 33), is introduced in the crescendo in bar 19.

The crescendo in bar 30 (violin 1, violin 2, violin 3, viola 1 and doublebass) bring out chord 1 of the chorale. Although the added A in viola 1 is not strictly speaking part of the chord, the chord itself is derived from the first melodic cell and its ornaments and apoggiaturas (e.g. violins and violas bar 3; violin 2 bar 28) which do contain the A as passing or arpeggiato note.

The crescendi in bars 38 to 40 and in bars 67 to 69 bring out the first harmonic field.

ex.2 The chorale is used to structure the harmonies in the second half of the first movement (crotchet = 80, bar 84). I thought of this section of the first movement as of a waltz-like dance. As I developed the rhythmic and harmonic ideas not much was left that resembled a waltz, but the repetitive rhythmic patterns and their respective variations (e.g. cello bars 85, 86, 87, 88, etc.) still convey the overall feeling of a slow dance. The chorale here is used freely, in the sense that chord 1 (bars 85 and 86) and chord 2 (bars 87 and first beat of 88) are not immediately followed by chord 3, but we go first back to chord 1 (from second beat bar 88 to first beat of bar 90) and chord 2 (second beat of bar 90 to first beat of bar 91) and only then to chord 3 (second beat bar 91 to first beat bar 92) followed by chord 4 (second beat bar 92 to first beat bar 94) and then chord 5 (second beat bar 95) etc. The sequential order of the chorale is by and large respected but not in a 'serial' fashion, in the sense that one is allowed to start the whole sequence from the beginning before one has reached the end and all 9 chords have been played.

ex.3 The second harmonic field present in the last chord of the chorale 'cuts' into the flow of the piece at several points in both movements (first movement triplets creating an 'echo effect' bar 98 and bar 103; third beat bar 105; quavers creating an echo pattern on bar 106; second and fourth beat bar 147; second movement bars 153, 154 and 155). It is often used as a nearly colotomic device in the sense that it 'closes' or indicates the end of a phrase, sequence, or rhythmic process (as in bar 106 where the dance-like process which started in bar 84 is closed and a recapitulation follows in bar 107) or indeed a whole movement. It can at times itself cause the 'unnatural' ending of a process. In this case its use is not colotomic but

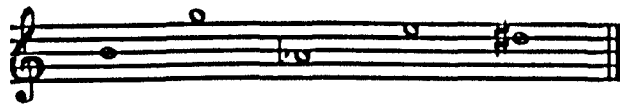
¹ See score in VOLUME 2 for all the examples presented in this chapter.

purely dramatic. Yet, both uses are also superimposed and it is not really relevant to establish which case is exactly which. Suffice it to know that I had both ideas in mind at the time of composition.

5.5. Melodic element

There are no melodies as such although the two melodic cells feature extensively in the piece and are often developed in a melismatic fashion similar to that of some eastern ethnic musics. There are two melodic cells which feature extensively in the piece (Figure 5.3).

Melodic cell from field 'A'



Melodic cell from field 'B'



Fig. 5.3 - Melodic cells from the two harmonic fields

Both melodic cells are often developed in a melismatic fashion where some of the notes of the field only feature as melisma or apoggiaturas of other notes of the field which at a particular moment become the centre of gravity of a section or passage of the piece. Although the melodic centre of gravity at any given point in the piece may only contain notes from one field, the apoggiaturas, arpeggiatos and melismata may at times be taken from the other (e.g. first movement, bars 3 and 4). These procedures never account for *melodic development* in the traditional sense of the term - sonata form, variation, etc. - and yet the unfolding of these melodic cells contribute to and condition the pace and form of the micro-structure and indirectly also the overall structure of the composition. Motivic development should be here understood in an Oriental sense, as, for example, in Indian music, Islamic chanting, or the hichiriki melismatic phrasing in Japanese Gaga-ku music. This non-western approach to melodic development in *Toccata del Mago* is in principle the same as in *Go*, and parts of *Triple Concerto*, as discussed in the corresponding chapters. The differences are in the particularities of the realizations - different instruments, different polyphonic densities, etc. - and are not conceptual.

Melismatic treatment of the melodic cells from the harmonic fields can be found in the first half of the first movement and most of the second movement. The following examples illustrate the point:

First movement:

Motifs from both melodic cells are presented by each string instrument in turn.

ex.1 Derived from the first cell are the motives played by viola 2 (bars 25 to 31), violin 2 (bars 28 to 31), violin 1 (bars 33 to 35 and bars 36 and 37), viola 1 (bars 36 to 38), etc.

ex.2 Derived from the second cell are the motives played by violin 2 (bars 35 and 36), viola 2 (bars 36 to 38), and the *secco* phrase on violin 2 and viola 2 (bar 32).

Second movement:

ex.3 The melodic cells are transformed from rhythmic patterns into very melismatic motivic phrases. This process starts in the cello solos playing the first melodic cell (bars 21 to 24 and bars 26 to 30). Melismatic transformation begins in bar 39.

ex.4 A new 'fiddle' motive is introduced by violin 1 (bars 36 to 44), with a gypsy-like flavour.

ex.5 Violin 3 takes part in the melismatic development (bars 41 to 44).

ex 6 Melismatic development continues in the cello (bars 46 to 54 and bars 61 to 65), in violin 3 (bars 74 to 78 and 82 to 84) and in the cello and doublebass (bars 111 to 115).

At this point it would be advisable to listen to the recording of the piece from bars 21 to 115, so that the combination effect of the phrases so far illustrated, together with the other instruments and the computer part, may be appreciated from the melodic perspective being discussed.

5.6. The rhythmic development seen from examples:

The following examples from the score consist of lines created by multiplying a single constant rhythmic unit by a series of numbers. In the original 'prototype' lines every group of notes and every rest had a different length since the series had no repeated numbers. The lines from the score shown in the examples have been modified to suit the piece, as already explained, and do have repetitions. In this sense they are no longer serial but rather serial-derived. The result is lines with a very clear pulse derived from a consistent regular rhythmic unit but organized in irregular asymmetrical groups of notes and rests.

First movement:

ex.1 Rhythmic phrase using a demi-semi-quaver unit, played by violin 3 (bars 95 to 97) and continued by viola 1 (bar 97 to 99).

ex. 2 Rhythmic phrase with a quintuplet semiquaver unit, played by violin 3 (bars 115 to 127).

ex. 3 Rhythmic phrase with a triplet quaver unit, played by violin 1 (bars 121 to 127).

Different degrees of repetitions may be found in the three examples. Ex. 3 was modified so drastically that it hardly exhibits a trace of the serial multiplication of the triplet quaver unit. Yet, I am illustrating my working procedures and not justifying their results. I must therefore also show those results which only vaguely relate to the procedure itself.

Second movement:

ex.4 The second movement develops a polyphony in which each line has a different rhythmic unit. Violins 3 and 4 have a semiquaver unit (bars 1 to 7), violin 2 has a triplet or sextuplet semiquaver unit (bars 1 to 8), violas 1 and 2 a demi-semi-quaver unit (viola 1, bars 4 to 8; viola 2, bars 6 to 11), and cello and double bass a triple quaver unit (bars 7 and 8). The different instruments exchange the already established rhythmic units developing this procedure until bar 87.

In spite of the modifications, the lines played by the two violas (e.g. bars 4 to 11; bars 69 to 74; bars 83 to 85) exhibit, perhaps more apparently than elsewhere in the piece, the serial multiplication of their rhythmic unit.

ex.5 A perfectly pulsed rational rhythm (crotchets on each beat) is played by the computer against a grid of very square rational rhythms played by the strings. The computer gradually slows down its tempo, so that although the rhythm remains the same, it becomes irrational with respect to the unchanged tempo in the strings (bars 97 to 100, which must be listened to, as the computer part is not notated in the score). I 'shrank' the rhythm in the computer part using a command in the *Performer* software, which allows one to change durations globally specifying a percentage, so that the

duration of a section may be shortened or lengthened without changing the rhythms within the section. This is equivalent to a tempo change. The rhythms in the computer become rational again in bar 101.

Discussion and examples of instrumental sound-objects

ex.6_ There are three main instrumental sound-objects in *Toccata del Mago*. All three imitate the dynamic curve of an electronically produced echo, although, unlike an echo, pitch at times changes with each repeat (e.g: first movement: triplets on bar 98, 103, 108, 109, 114, 117, 122, 124, etc; sextuplets on bars 100, 102, 104, 126, 139, 141, etc.; second movement: quintuplets on bars 4, 11, 12, 13, 29, 30, 50, etc.).

I am stretching the meaning of 'sound-object' here, applying it to these rhythmic patterns because they interact with the polyphonic discourse in a similar, sometimes nearly identical, way to classical *music concrète* sound-objects in an electroacoustic piece. It is the interaction, the syntax, that makes them sound-object-like. I have developed a sound-object-oriented syntax using rhythmic patterns which, if found in a different context, would not be taken as sound-objects. Let us take one of them, say the triplet sound-object in the first movement, to illustrate the point.

It first appears in bar 98, and at this point it comes in merely as an accent, already echo-like and mechanical but not yet as a sound-object. At this point it is just an articulation of the overall syntax - the ear may vaguely relate it to the triplet figure the cello and the doublebass have been playing since bar 85 - but it has not developed an identity of its own.

When it comes in again in bars 103 and 104, it does so, playing the same chord (harmonic field 2), same dynamic envelop, same mode of attack, thus beginning to establish its own identity, beyond a functional or structural relationship to the rest of the musical material. In other words, it is beginning to fulfil the most essential characteristic of a sound-object. It does not need the piece to exist. Yet, it does modify the musical discourse, and it is this double quality that makes it interesting.

Its next appearance is in bar 105. Here, the decay of the echo pattern has been 'spliced out', and shifted to bar 106, where it is heard as quavers, that is, slowed down triplets, or one might say, a slower echo rate. Note that the C sharp (violin 2 bar 105) has already 'faded out' in bar 106, as if 'decaying faster' than the other notes of the chord (higher frequencies decay faster in an electronic echo device). This apparently insignificant detail is of paramount importance in the instrumental simulation of an electronic echo pattern.

The following appearance in bar 108 and 109 is a further development of the same idea: the accent of the echo and the echo itself have been severed and articulated separately. If there were any doubts, this new repetition of the procedure firmly establishes the triplet's pattern as a separate identity, that is, as an instrumental sound-object.

In bars 121 and 124 the echo pattern appears with a 'reversed envelope' and on a different chord (harmonic field 1). Reversing an envelope is a characteristic transformation of an electroacoustic sound-object but harmonic transformation is not.

Further development of the triplet sound-object continues until the end of the movement. The other instrumental sound-objects follow a similar genesis and evolution.

5.7. Sound design, studio technique and realization

The computer part was generated by two *Yamaha TX816* FM synthesisers and an *Akai S900* sampler played by a *Macintosh Plus* computer using *Performer* as the sequencer software. This was mixed onto 2 *Sony 3202 Dash* (Digital Audio Stationary Head) digital tape recorders and then re-mixed onto a master tape -also *Sony Dash* - which is used in concert to play the computer part.

There is one FM sound in the piece which features preponderantly in the computer part. I did not design this sound from scratch. I found it on a disc containing hundreds of other FM sounds. The sound was labelled as *electric violin* and since I was looking for string-like sounds I decided to try it. I found the sound perfectly lifeless and totally lacking in musical interest, except for the attack which I discovered could be made to behave in different interesting ways. I produced different 'versions' of this sound, which I could instantly recall from *Performer* to use individually, or simultaneously, and occasionally to create transitions from one version to another. The first 'thin' version of the sound appears at the beginning of the piece and also at the very end and it was used to create irrational patterns which are often perceived as pulsed rational ones when they are not played against a grid or point of reference.

ex.1 First movement. 'Thin' version of FM sound plays irrational patterns. This must be listened to, since notation of such patterns can only be an approximation or a guide. Starts at crotchet = 96 (bar 7) and features extensively until crotchet = 80 (bar 84), surfacing in a variety of contexts. When heard in the context of very simple rational rhythms played by the strings, the combination of rational and irrational rhythms becomes apparent.

The timbre of the sound and its spatialization are both the product of the same treatments: time delay, changing for every note and ranging from 'flanging' effects to echo and even rhythms, double tracking and panning.

ex.2 'Fat' version of the sound. The opposite extreme of 'thin' version. Produced by piling up several notes of the 'thin' sound, a sort of fast arpeggiato of several 'thin' sounds in different registers, and changing the amplitude envelope of one of the oscillators which form the particular FM

patch of this sound, as the arpeggio is being played. This is done using a MIDI control from *Performer*. The 'fat' version is often used to 'double' big chords on harmonic field one, played by the strings. This orchestration becomes, throughout the piece, a landmark, a point of reference both harmonically and with respect to timbre (first movement: second and third beat of bar 145, bars 180 and 182. Second movement: bars 153 and 154).

ex. 3 Transformation of the sound from 'thin' to 'fat' and vice-versa, in its different gradings, are heard throughout the piece and in particular in the computer solo in the first movement (bars 41 to 63) and in the second movement (bars 86 to 128).

A 'demo' of the string parts was realized using the TX816 string sound. The conductor and each string player received a cassette containing this realization together with the score, so that they could study the piece before rehearsal. This was intended primarily as a rhythmic point of reference for the players, since the computer realization of the string parts is in this respect 100 % accurate.

5.8. Conclusion

...I have verified many times that purposes and literary theories are no more than stimuli which the final work often ignores and even contradicts.

(J.L. Borges, 1972: 681)

As Borges, I am able to verify that my initial purpose, to write a piece that goes beyond the habits of my '*metier*', is *ignored* and occasionally *contradicted* by my final work. I am resigned to being Viñao¹. Yet, in spite of my habits - particularly in the rhythmic domain - still in force in this piece, I believe *Toccata del Mago* does achieve a formal unity greater than the other pieces presented here, perhaps with the exception of *Go*. And this it does with an economy of means (perhaps ascetism) I have not been able to find in the past anywhere else in my writing. Nevertheless, at times, I feel the piece is psychologically speaking and as a whole, unbalanced. The two movements have a relentless drive, a forward pace which is almost exhausting. The two movements are equally tense and dramatic and they use the same string modes of attack (ricochet, staccato, spiccato, etc.). Sustained sounds are rarely heard in either movement. The overall balance of the piece could benefit from a middle movement with

¹ I am paraphrasing one of Borges favourite epigrams.

fully bowed longer sounds and with slower tempi and pulse. It could also introduce as embryonic motives, the melodic material played by the cello in the last movement (from bar 29 onwards), so that when the cello phrases are heard, they would be perceived not only as a coherent development from the harmonic fields, as is the case now, but as a necessary development of embryonic motifs previously introduced. The new movement could be very short, perhaps three to four minutes, just enough to prepare or give 'space' for the rhythmic drive that follows.

To summarize the above said: I am perfectly satisfied with the formal unity of the movements of *Toccata del Mago* but I am in two minds about the overall psychological effect. It could well be that the inclusion of a new middle movement with the said characteristics could make the piece less powerful - with less of a *Toccata* drive to it - on first listening, but a better balanced composition as a whole.

A conclusion or epilogue to this text might seem to suggest a conclusion to the thesis. Since the subject of the thesis is the music presented and not the text, I would like to conclude this text with a prologue to the listener.

Prologue to the listener Towards new music with fervour

...like Poe, who reasoned, or pretended to reason, that the writing of a poem is an operation of the intelligence. I cannot cease to admire that the Classics professed a romantic thesis, and a romantic poet, a classical thesis.
(J.L. Borges, 1977 : 1021)

Contemporary music has been removed from audiences at large not primarily because it is too complex, or not complex enough, or because it has not had the 'official' support other musics have, but for a much more fundamental reason: it desperately lacks fervour.

It may seem surprising that many of the composers who are seeking to recover this fervour, are doing so using what would be generally regarded as a very intellectual tool: the electroacoustic studio and more recently the sound world of the computer. It is the electroacoustic medium that has enabled the *Magic Realist* composer to reevaluate rhythm beyond the modernist taboos of the avant-garde and the simplistic *cul de sac* into which the minimalists have taken it. Rhythm has been reintroduced in serious new music and this time not through the back door, that is, as a musical 'parameter' governed by the same artificially abstract law that governs other musical 'parameters' ¹, but through the front door, as the very subject of composition itself, capable of generating the binding force that keeps a piece of music together. It is this rhythmic fervour which has set the wheels of Latin American new music in motion and has poured 'fresh blood' into the European experimental stream. The *Magic Realists* do not hesitate to draw from all traditions and techniques - *we don't owe ourselves to one tradition.....* - and do not strive to be contemporary. Being contemporary is not a matter of choice. You are contemporary whether you like it or not.

¹ I continue to write 'parameters' in quotes as a way of questioning their very existence other than as mere abstractions, of little value in compositional terms.

Computer technology is producing a revolution which is not only technological but also economic. The northern hemisphere's cultural dominance may gradually disappear as the price of technology drops. Other cultures will have access to the same sophisticated technology as the richer countries do, and this will probably change very significantly our concept of High Art ¹. The world may come closer to McLuhan's idea of the *global village*, and in the *global village* it will be more difficult for one culture to prevail over all others. Musics which address what were until recently non-European musical problems will no longer be 'ethnic music'. They will simply be music.

The author hopes that whatever may be the technical achievement - in the domain of rhythm, timbre, structure, sound synthesis, etc. - of the four electroacoustic pieces which comprise this thesis, they will make a contribution towards the recovery of lost fervour in new music and towards the creation of a more fertile cross-cultural environment.

¹ This is already happening in the Rock Music world which is completely dominated by, and dependent on, high technology. Bands playing diverse popular musics from different cultures (African Pop, Reggae, Salsa, Latin-Jazz, Brazilian Rock, New York Salsa, etc.) are finding their way to the charts of the world's best sellers, previously monopolized by American and English Rock Bands. This is no doubt partly because their 'sound' is as good as anybody else's in the business, and they can now afford to experiment without a technical handicap.

Appendix 2

Hendrix Haze

Variation 5 - Sketch

Alejandro Viñao

♩ = 60 5

The musical score is written for five instruments, labeled Inst. 1 through Inst. 5. The tempo is marked as ♩ = 60. The score includes various musical notations such as dynamics (f, p, mf), articulation (accents, slurs), and phrasing (breath marks). The notation is spread across five staves, with Inst. 1 in treble clef and the others in bass clef. The score is a sketch, indicated by the title.

Inst. 1

Inst. 2

Inst. 3

Inst. 4

Inst. 5

10

ff *f* *p* *f* *p*

f *p* *f* *p*

f *p* *f* *p*

f *p* *f* *p*

p *f* *p*

A handwritten musical score for the song 'The Rose Tree'. The score is written on five staves. The first four staves are in bass clef, and the fifth staff is in treble clef. The music is in 2/4 time. The first staff begins with a treble clef, a key signature of one sharp (F#), and a 2/4 time signature. The melody is written in the first staff, with a treble clef and a key signature of one sharp. The second staff continues the melody. The third staff continues the melody. The fourth staff continues the melody. The fifth staff is in treble clef and contains a single note, likely a vocal entry. The score is written in ink on aged paper.

Handwritten musical score for system 20, measures 1-5. The system consists of five staves. The first staff is in bass clef, the second and third in treble clef, the fourth in treble clef, and the fifth in bass clef. The music features various notes, rests, and slurs. There are also some handwritten markings below the staves, including a large 'V' and some smaller symbols.

Handwritten musical score for system 25, measures 1-5. The system consists of five staves. The first staff is in bass clef, the second and third in treble clef, the fourth in treble clef, and the fifth in bass clef. The music features various notes, rests, and slurs. There are also some handwritten markings below the staves, including a large 'V' and some smaller symbols.

Handwritten musical score on five staves. The notation includes various notes, rests, and dynamic markings such as *fp* (fortissimo piano) and *f* (forte). There are also some unusual symbols like *bx* and a wavy line. The score is written in a cursive, handwritten style.

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Toccatto del Mago

Alejandro Viñao
1987

Toccata del Mago

for 8 string players and computer

Alejandro Viñao

Toccata del Mago was commissioned by the Experimental Music Studio of the Media Laboratory at the Massachusetts Institute of Technology, through a New Works grant from the Massachusetts Council on the Arts and Humanities.

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DURATION: 16 mins.

Requirements

10 performers are required:

conductor

- 4 violin players
- 2 viola players
- 1 cello player
- 1 doublebass

1 player at the mixer (must be a trained musician, E.G. a composer or conductor - necessarily someone experienced in the diffusion of electroacoustic music).

Equipment

The computer part of the *Toccata del Mago* was recorded in stereo into a digital PCM tape deck. A **click track** - which is used for synchronizing the conductor with the computer part - was recorded onto the analogue track/s of the VCR.

1 Sony PCM F1 digital tape recorder.

(most formats are available. Beta Hi-Fi is strongly recommended so that the quality of the click track recorded on the analogue track of the VCR transport is good enough and does not interfere with the performance.).

8 high quality directional microphones to amplify the strings.

1 pair of headphones for the conductor (to monitor the click-track).

1 mixer. (At least 11 input channels are required: 8 for the instruments, 2 for the tape and 1 for the click track recorded on the analogue track of the VCR. The click-track should be sent to the conductor via headphones).

Speakers and amplifiers.

It is also possible to perform the computer part straight from the computer in which case the conductor could control tempo changes and even do away altogether with the click-track. If the organizers of the concert were to pursue this very interesting option they should contact the composer for further details but it must be kept in mind that a considerable amount of **extra equipment** would be necessary, as follows:

2 Yamaha TX816 midi racks.

1 Akai S-900 sampler

1 Macintosh plus with midi interface.

The Sony PCM deck **will not be necessary** but a much larger mixer will be required instead (24 input channels).

The Performance

All the instrumental parts are equally important. All the players are treated as soloists. Numbering of parts (violin 1, 2, etc.) is strictly for convenience and does not indicate in any way a degree of difficulty, musical relevance or significance of any kind.

The conductor uses headphones throughout the entire performance to receive the click-track from the tape deck. The computer part often contains irrational rhythms which would be very difficult to notate accurately. The conductor does not follow the computer part. His point of reference is the click-track. The notation of the computer part has been simplified. The computer part has only been fully notated when it becomes a point of reference, essential for performance and/or the understanding of the piece.

Ultimately the overall balance between the string players and the computer parts rests with the performer at the mixer. There is no way in which the conductor could control it himself. The performer at the mixer may need to bring the level of one instrument up from the mixer to enhance or clarify a musical statement. It is essential that the performer at the mixer studies the score thoroughly so that he is capable of making quick musical judgements **during performance** and not simply follow settings arrived at during rehearsal. He **must be a musician and not just a recording engineer**.

Notation of the computer part

The computer part is not fully notated. Only a rudimentary outline of its complexity is given, and this written on one staff. The purpose of this is to provide the conductor with an extra point of reference. He already has the click track.

The sketchy representation of the computer part often omits entire phrase which would be too cumbersome or impossible to notate. Irrational rhythms are mostly left out or simplified. Register and pitch are only an approximation.

Yet, this sketchy representation of the music played by the computer does give the conductor very important cues: It indicates to him exactly where it is essential that the string players and the computer should be in perfect synchronicity.

The composer hopes that this information coupled to a detailed study of the score and the demonstration cassette will help the conductor to organize the rehearsal time in the most economical way. Experience shows that even outstanding players require at least 10 hours of rehearsal to give a good performance. This is due to the rhythmic complexity of the piece, which contains a large number of pairs or blocks of instruments playing difficult rhythmic unisons.

AV.

I

♩ = 50

3

Vln.1 *mf* *f* *pp mf* *f* *p* *ff*
 Vln.2 *mf* *f* *pp mf* *f* *p* *ff*
 Vln.3 *mf* *f* *pp mf* *f* *p* *ff*
 Vln.4 *mf* *f* *pp mf* *f* *p* *ff*
 Vla.1 *mf* *f* *pp mf* *f* *p* *ff* *mf* *ff*
 Vla.2 *mf* *f* *pp mf* *f* *p* *ff* *mf* *ff*
 Cello *f* *ff* *mf* *ff*
 Ch.
 CLICK TRACK
 Tape **SOLO** *f* *p* *ff*



♩ = 96

10

13

Vln.1 *ppp* *mf < f*
 Vln.2
 Vln.3
 Vln.4
 Vla.1
 Vla.2
 Cello *ff* *p* *ff* *staccato* *stz*
 Ch.
 Tape *f* *ff*
 IRRATIONAL PATTERNS

==

[illegible]

Vln.1 *pp* *< ff pp*
 Vln.2 *pp* *< ff pp* *ff sfz* *secco*
 Vln.3 *pp* *< ff pp* *pp < fff > pp*
 Vln.4 *ppp* *< ff p > pp < ff > p* *ppp*
 Vla.1 *pp* *< ff pp* *pp < fff > ppp*
 Vla.2 *ff* *p* *pp* *ff sfz* *secco*
 Cello *f* *p* *< fff* *ff* *p* *< ff* *p* *ff* *sfz*
 Cb. *pp* *< ff pp* *pp < fff > ppp* *ff*
mf

Vln.1 *ff* *p* *< ff* *p > pp*
 Vln.2 *ff* *f*
 Vln.3 *pp* *< ff*
 Vln.4 *pp* *< ff*
 Vla.1 *ff* *p* *ppp < ff* *sfz* *p*
 Vla.2 *pp* *< ff* *ff* *pp* *< pp*
 Cello
 Cb. *pp* *ff* *p* *< ff*

Score for Violins 1-4, Violas 1-2, Cello, and Double Bass. Measures 40-50. Dynamics include *p*, *ppp*, *f*, and *sf*. A **SOLO** section is marked in the Double Bass part.



Score for Violins 1-4, Violas 1-2, Cello, and Double Bass. Measures 55-65. Dynamics include *ppp* and *sfz*. The Double Bass part includes the instruction: Irrational patterns continue -- >>

70

Vln.1 *ff* *pp*

Vln.2 *ppp* *molto stac.*

Vln.3 *ppp* *molto stac.*

Vln.4 *ppp* *molto stac.*

Vla.1 *ppp* *molto stac.*

Vla.2 *ppp* *molto stac.*

Cello *molto stac.*

Cb. *molto stac.*

f

75 80

Vln.1 *molto stac.*

Vln.2 *molto stac.*

Vln.3 *molto stac.*

Vln.4 *molto stac.*

Vla.1 *molto stac.*

Vla.2 *molto stac.*

Cello *molto stac.*

Cb. *molto stac.*

IRRATIONAL PATTERNS

↓ = 80

87 88

Vln.1 *f* *sautille* *mf*

Vln.2 *Ap* *sautille*

Vln.3 *p* *f* *sautille* *STACC.*

Vln.4 *mf* *sautille*

Vla.1 *mf*

Vla.2 *SPICC.* *f* *spic.* *f*

Vlc. *mf*

Cb. *mf*

Tape *mf*

89 90

Vln.1 *mf* *SPICC.* *f* *MOLTO STAC.*

Vln.2 *f* *molto staccato* *f*

Vln.3 *f* *MOLTO STAC.*

Vln.4 *f*

Vla.1

Vla.2 *stac.* *f*

Vlc. *mf*

Cb. *mf*

Tape *mf* *PP* *f* *mf* *f*

Handwritten musical score for a string quartet and other instruments. The score is divided into two systems. The first system includes Vln. 1, Vln. 2, Vln. 3, Vln. 4, Vla. 1, Vla. 2, Vlc., and Cb. The second system includes Vln. 1, Vln. 2, Vln. 3, Vln. 4, Vla. 1, Vla. 2, Vlc., Cb., and Tape. The score features various musical notations including dynamics (ff, mf, sf), articulation (acc.), and performance instructions (ARCO, RHYTHMICALLY).

Violins 1-4, Violas 1-2, Violoncello, Contrabass, and Tape. The score is in 3/4 time and consists of two systems. The first system shows the initial entries of the instruments. The second system shows more complex rhythmic patterns and dynamics. The score includes various musical notations such as staccato, sautillés, and pizzicato.

Vln.1 *f* *mf*
 Vln.2 *f* *mf* *f* *mp* *f*
 Vln.3 *mf*
 Vln.4 *f* *mf* *f*
 Vla.1 *f* *mf*
 Vla.2 *f* *mf* *f*
 Vlc. *f* *mf* *f*
 Cb. *arco* *f* *mf*
 Tape *f* *pp*

Vln.1 *f* *spic.*
 Vln.2 *f* *mp*
 Vln.3 *mp* *f*
 Vln.4 *spic. 5* *mp*
 Vla.1 *mp* *f* *stacc.*
 Vla.2 *spic.* *f* *intense*
 Vlc. *mf* *pp*
 Cb. *Pizz.* *ARCO* *pizz.* *arco* *Pizz.* *ARCO*
 Tape *mf* *f* *mf* *f*

(poco sul pont.) eszaco

Vln.1 (con bravura) *ff* *mf*
 Vln.2 *sfz* (con bravura) *ff* *spic.* *stac.* *molto stac.*
 Vln.3 *sfz* *ff* *spic.* *mf* *molto stac.*
 Vln.4 *ff* *spic.* *molto stac.*
 Vla.1 *ff* *spic.* *mf* *molto stac.*
 Vla.2 *ff* *f* *pp* *3*
 Vlc. *f* *ff* *mf* *3*
 Cb. *f* *ff* *pizz.* *3* *ARCO*
 Tape *f* *ff* *mf* *3* *f*

Vln.1 *ff*
 Vln.2 *f* *f*
 Vln.3 *ff* *f* *mf* *mf*
 Vln.4 *ff* *f* *mf* *mf*
 Vla.1 *ff* *f* *mf* *mf*
 Vla.2 *ff* *f* *mf* *mf*
 Vlc. *ff* *f*
 Cb. *ff* *pizz.* *3* *arco*
 Tape *ff*

110 3 3 111

Vln.1 *f* *mf*

Vln.2 *stac.* 5 *f* *stac.* *mf* SPICC 5 5

Vln.3 *f* *f* *P*

Vln.4 *stac.* 5 *f* *stac.* 5

Vla.1 *f*

Vla.2 *stac.* 5 SPICC. 5 5 5 5

Vlc. *f* *mf* 3

Cb. *f* *pizz.* 3 *arco*

Tape *f* *mf*



112 113

Vln.1 6 6 6 *f* *stac.*

Vln.2 5 *espressivo* 3 *f* *spic.*

Vln.3 *f* *f* *STACC.*

Vln.4 6 6 *mf* *f* 6 6 *spic.*

Vla.1 6 6 6 *P* *f* 6 6 *P* *f*

Vla.2 6 6 *f* 6 6 *f*

Vla. 3 *f* *STAC.* *SPICC.*

Cb. *pizz.* 3 *f* *arco*

Tape

Vln.1 *spic.* *STACC.* *ff* *mp*
 Vln.2 *spic.* *f* *ff* *mp*
 Vln.3 *stac.* *f* *ff* *mf*
 Vln.4 *ff* *mf* *ff* *mp*
 Vla.1 *f* *ff*
 Vla.2 *f* *ff*
 Vlc. *ff* *ff* *mf*
 Cb. *ff* *mf*
 Tape *ff* *f* *mf*

Vln.1 *spic.* *3* *3*
 Vln.2 *spic.* *p*
 Vln.3 *5* *5* *5* *5* *mf*
 Vln.4 *spic.* *5* *5* *mp* *f*
 Vla.1 *spic.* *3* *3* *p*
 Vla.2 *spic.* *3* *3* *f* *p*
 Vlc. *3* *3* *3* *f*
 Cb. *3* *3* *3* *f*
 Tape *8va* *7.* *mf* *pp*

122 123

Vln.1 *mf*

Vln.2

Vln.3

Vln.4

Vla.1 *f*

Vla.2 *mf f*

Vlc.

Cb.

Tape *f* *mf* *mf*

124 125

Vln.1

Vln.2 *ff*

Vln.3 *mf*

Vln.4

Vla.1 *SPICC.* *ff*

Vla.2 *mp* *SPICC.* *ff*

Vlc. *SECCO* *mf* *ff*

Cb.

Tape *mf* *f*

Violin 1 (Vln.1) and Violin 2 (Vln.2) parts for measures 126 and 127. Vln.1 features triplets and sixteenth notes. Vln.2 includes dynamic markings *mf*, *f*, and *mf*. Violin 3 (Vln.3) and Violin 4 (Vln.4) parts also show triplets and sixteenth notes, with Vln.4 having dynamic markings *mf* and *f*. Viola 1 (Vla.1) and Viola 2 (Vla.2) parts are present, with Vln.1 having dynamic markings *mf* and *mp*. Violoncello (Vlc.) and Contrabasso (Cb.) parts are shown, with Vlc. having dynamic markings *ff* and *mf*. The Tape part includes a double bar line and a diagonal line.

Violin 1 (Vln.1) and Violin 2 (Vln.2) parts for measures 128 and 129. Vln.1 has a dynamic marking *ff*. Violin 3 (Vln.3) and Violin 4 (Vln.4) parts are shown, with Vln.3 having dynamic markings *f* and *ff*. Viola 1 (Vla.1) and Viola 2 (Vla.2) parts are present, with Vln.1 having dynamic markings *ff* and *ff*. Violoncello (Vlc.) and Contrabasso (Cb.) parts are shown, with Vlc. having dynamic markings *ff* and *ff*. The Tape part includes a double bar line and a diagonal line, with a dynamic marking *ff* and a glissando marking *GLISS*.

molto stac.

Score for measures 134 and 135. The score includes staves for Vln. 1, Vln. 2, Vln. 3, Vln. 4, Vla. 1, Vla. 2, Vcl., Cb., and Tape. The tempo/mood is marked *molto stac.* (molto staccato). The dynamics range from *f* (forte) to *ff* (fortissimo). The key signature is one sharp (F#).

136

137

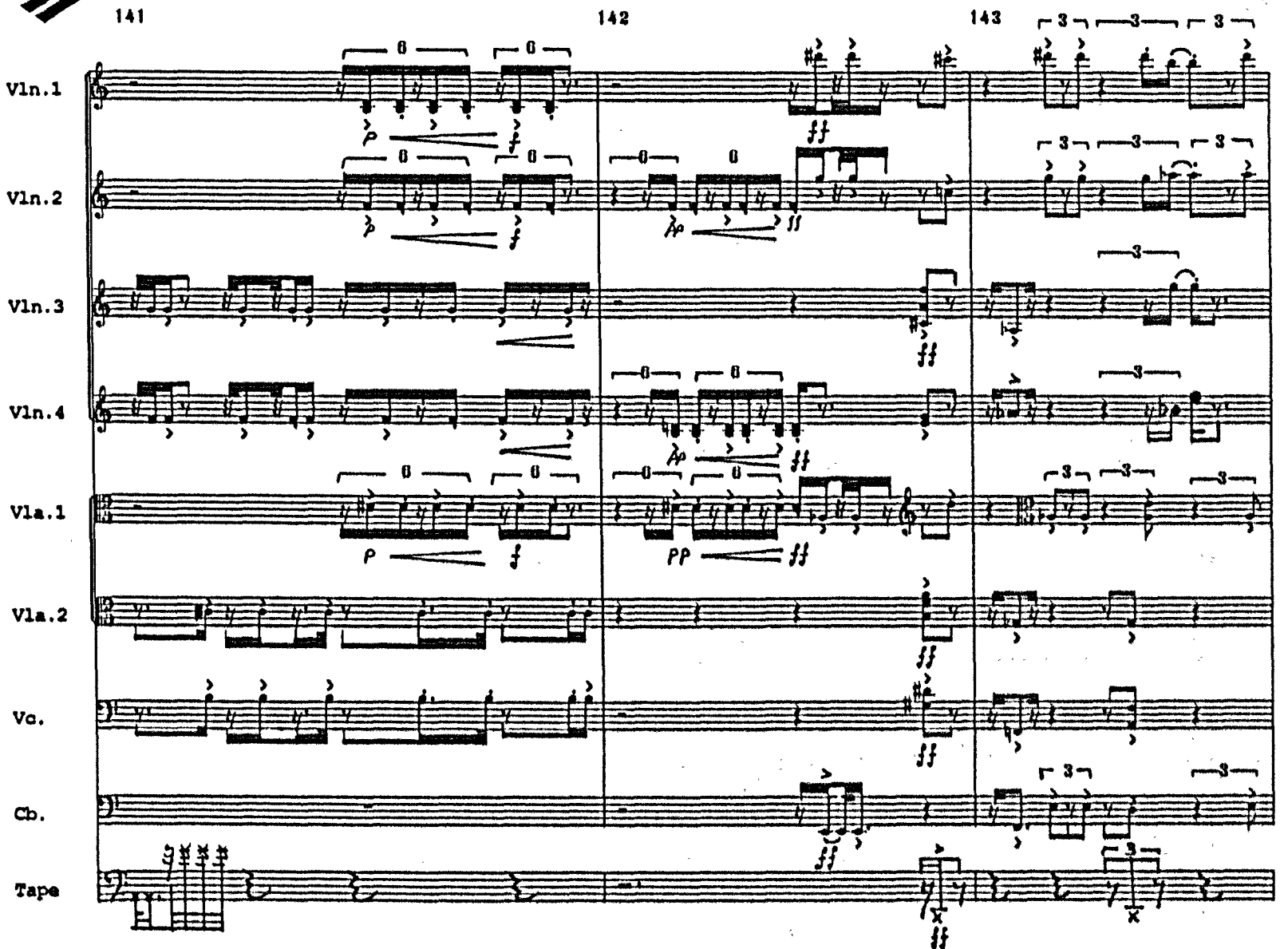
138

Score for measures 136, 137, and 138. The score includes staves for Vln. 1, Vln. 2, Vln. 3, Vln. 4, Vla. 1, Vla. 2, Vc., Cb., and Tape. The tempo/mood is marked *molto stac.* (molto staccato). The dynamics range from *f* (forte) to *ff* (fortissimo). The key signature is one sharp (F#). The score includes various musical notations such as slurs, ties, and dynamic markings.

Score for measures 139 and 140. The score includes staves for Violins 1-4, Violas 1-2, Cello, Double Bass, and Tape. Dynamics include *ff*, *p*, *f*, and *mf*. The Tape part features a complex rhythmic pattern with *f*, *mf*, and *f* dynamics.



Score for measures 141, 142, and 143. The score includes staves for Violins 1-4, Violas 1-2, Cello, Double Bass, and Tape. Dynamics include *ff*, *p*, *f*, *mf*, and *pp*. The Tape part features a complex rhythmic pattern with *f*, *mf*, and *f* dynamics.



Score for measures 144 to 147, featuring Vln. 1, Vln. 2, Vln. 3, Vln. 4, Vla. 1, Vla. 2, Vc., Cb., and Tape.

Measure 144: Vln. 1 and 2 play a rhythmic pattern with accents. Vln. 3 and 4 play a similar pattern. Vla. 1 and 2 play a melodic line. Vc. and Cb. play a bass line. Tape plays a rhythmic pattern.

Measure 145: Vln. 1 and 2 play a rhythmic pattern with accents. Vln. 3 and 4 play a similar pattern. Vla. 1 and 2 play a melodic line. Vc. and Cb. play a bass line. Tape plays a rhythmic pattern.

Measure 146: Vln. 1 and 2 play a rhythmic pattern with accents. Vln. 3 and 4 play a similar pattern. Vla. 1 and 2 play a melodic line. Vc. and Cb. play a bass line. Tape plays a rhythmic pattern.

Measure 147: Vln. 1 and 2 play a rhythmic pattern with accents. Vln. 3 and 4 play a similar pattern. Vla. 1 and 2 play a melodic line. Vc. and Cb. play a bass line. Tape plays a rhythmic pattern.

Score for measures 148 to 149, featuring Vln. 1, Vln. 2, Vln. 3, Vln. 4, Vla. 1, Vla. 2, Vc., Cb., and Tape.

Measure 148: Vln. 1 and 2 play a rhythmic pattern with accents. Vln. 3 and 4 play a similar pattern. Vla. 1 and 2 play a melodic line. Vc. and Cb. play a bass line. Tape plays a rhythmic pattern.

Measure 149: Vln. 1 and 2 play a rhythmic pattern with accents. Vln. 3 and 4 play a similar pattern. Vla. 1 and 2 play a melodic line. Vc. and Cb. play a bass line. Tape plays a rhythmic pattern.

Vln.1 *f*
 Vln.2 *f*
 Vln.3 *stac.* *mf*
 Vln.4 *f*
 Vla.1 *f* *mp*
 Vla.2 *f*
 Vc. *f* *pizz.*
 Cb. *mf*
 Tape *mp* *P* *pp* *mp*

Vln.1 *pp* *mf* *f*
 Vln.2 *espressivo* *f*
 Vln.3 *f*
 Vln.4 *mp* *pp* *mf*
 Vla.1 *mf*
 Vla.2
 Vc. *f* *pizz.*
 Cb. *f*
 Tape *P* *mf* *f* *mf*

Score for measures 134 and 135. The score includes staves for Vln.1, Vln.2, Vln.3, Vln.4, Vla.1, Vla.2, Vc., Cb., and Tape.

Measure 134 features a *splo.* (splosh) effect in the strings, marked *ff* with a triplet of eighth notes. The Tape part begins with a *P* (piano) dynamic.

Measure 135 features a *splo.* (splosh) effect in the strings, marked *ff* with a triplet of eighth notes. The Vc. part features a *mf* (mezzo-forte) dynamic, and the Tape part features a *f* (forte) dynamic.

Other markings include *espressivo* for the strings and *arco* for the Vc. part.

Score for measures 136 and 137. The score includes staves for Vln.1, Vln.2, Vln.3, Vln.4, Vla.1, Vla.2, Vc., Cb., and Tape.

Measure 136 features a *f* (forte) dynamic in the strings. The Vla.1 part features a *stac.* (staccato) marking. The Tape part features a *f* (forte) dynamic.

Measure 137 features a *f* (forte) dynamic in the strings. The Vc. part features a *f* (forte) dynamic. The Tape part features a *f* (forte) dynamic.

This musical score page contains two measures, 158 and 159. The staves are arranged vertically from top to bottom as follows:

- Vln.1**: Violin I staff.
- Vln.2**: Violin II staff.
- Vln.3**: Violin III staff.
- Vln.4**: Violin IV staff.
- Vla.1**: Viola I staff.
- Vla.2**: Viola II staff.
- Vc.**: Violoncello staff.
- Cb.**: Contrabasso staff.
- Tape**: A separate staff at the bottom, likely for electronic effects or tape manipulation.

The notation includes various musical symbols such as notes, rests, beams, slurs, and dynamic markings like *mf* (mezzo-forte) and *f* (forte). Measure 158 shows complex rhythmic patterns across several instruments, while measure 159 continues these patterns with some changes in dynamics and articulation. The 'Tape' staff has specific markings indicating where tape effects might be applied.

The musical score for "Irrational Patterns" by John Cage is presented on eight staves. The staves are labeled as follows:

- Vln. 1
- Vln. 2
- Vln. 3
- Vln. 4
- Vla. 1
- Vla. 2
- Vc.
- Cb.
- Tape

The score includes various musical notations, including notes, rests, and dynamic markings such as *f* (forte) and *mp* (mezzo-piano). The title "IRRATIONAL PATTERNS" is written in all caps at the bottom right of the page.

[illegible]

104

105

Vln.1

Vln.2

Vln.3

Vln.4

Vla.1

Vla.2

Vc.

Cb.

Tape

104

105

Vln.1

Vln.2

Vln.3

Vln.4

Vla.1

Vla.2

Vc.

Cb.

Tape

166 167

Vln.1

Vln.2

Vln.3

Vln.4

Vla.1

Vla.2

Vc.

Cb.

Tape

f *mf*

168

Vln.1

Vln.2

Vln.3

Vln.4

Vla.1

Vla.2

Vc.

Cb.

Tape

f

Score for measures 109-170. Instruments: Vln.1, Vln.2, Vln.3, Vln.4, Vla.1, Vla.2, Vc., Cb., Tape.

Measure 109: Vln.1 (mf), Vln.2 (f), Vln.3 (mf), Vln.4 (f), Vc. (3), Cb. (3), Tape (3).

Measure 170: Vln.1 (f), Vln.2 (mp), Vln.3 (mf), Vln.4 (f), Vc. (3), Cb. (3), Tape (3).

Score for measures 171-173. Instruments: Vln.1, Vln.2, Vln.3, Vln.4, Vla.1, Vla.2, Vc., Cb., Tape.

Measure 171: Vln.1 (P, f), Vln.2 (P, f), Vln.3 (f), Vln.4 (f), Vla.1 (f), Vla.2 (f), Vc. (f), Cb. (f), Tape (f).

Measure 172: Vln.1 (mf), Vln.2 (mf), Vln.3 (mf), Vln.4 (mf), Vla.1 (mf), Vla.2 (mf), Vc. (mf), Cb. (mf), Tape (mf).

Measure 173: Vln.1 (ff), Vln.2 (ff), Vln.3 (ff), Vln.4 (ff), Vla.1 (ff), Vla.2 (ff), Vc. (ff), Cb. (ff), Tape (ff).

Measure 174: Vln.1 (ff), Vln.2 (ff), Vln.3 (ff), Vln.4 (ff), Vla.1 (ff), Vla.2 (ff), Vc. (ff), Cb. (ff), Tape (ff).

II

1 $\text{♩} = 80$ 2 3

Vln. 1 *staccato* *mf* *TENSE* *SPIC.*

Vln. 2 *staccato* *mp* *mf* *SPIC.*

Vln. 3 *spiccato* *mf*

Vln. 4 *spiccato* *mf*

Vla. 1

Vla. 2 *stac.* *mf*

Vc.

--- 2 bars of **Click Track**
before the movement begins

Cb.

Tape *pp* *mf* *pp* *pp* *p*



4 5

Vln. 1

Vln. 2 *SEMPRE SPIC.*

Vln. 3

Vln. 4 *mp*

Vla. 1 *secco & Intense* *mp* *mf*

Vla. 2

Vc.

Cb.

Tape

Vln. 1
 Vln. 2
 Vln. 3
 Vln. 4
 Vla. 1
 Vla. 2
 Vc.
 Cb.
 Tape

Vln. 1
 Vln. 2
 Vln. 3
 Vln. 4
 Vla. 1
 Vla. 2
 Vc.
 Cb.
 Tape

SPIC 5 10 5 5 5 5

Vln. 1 *mf*

Vln. 2 *mf* *f* *mf* *f*

Vln. 3

Vln. 4

Vla. 1 *secco* 3 *sfz* 3 3 3 3 3 3

Vla. 2

Vc. *secco* 3 *sfz* 3 3 3 3 3 3

Cb. 3 *sfz* 3 3 3 3 3 3

Tape 3 *sfz* 3 8va 3 3 3 3

11 12 SPIC. 5 13

Vln. 1 *SPIC.* 5 *ff* *SPIC.* 5 *SPIC.* 5 5

Vln. 2 *SPIC.* 5 *ff* *SPIC.* 5 *SPIC.* 5 5

Vln. 3 5 *ff* *SPIC.* 5 5

Vln. 4 5 *ff* *SPIC.* 5 5

Vla. 1 3 3 3 3

Vla. 2

Vc. 3 3 3 *ff* *f* *ff*

Cb. 3 3 *ff* *f* *ff*

Tape *ff* *f* *ff*

14 *molto stac.* 15

Vln. 1 *molto stac.* 3 3

Vln. 2 *ff molto stac.* 3

Vln. 3 *secco* *mp*

Vln. 4 *molto staccato* *mp*

Vla. 1 *molto stac.* 3 3

Vla. 2 *ff molto stac.* 3 3

Vc. *mf* 6 3 3 3 3 3

Cb.

Tape *f* *P* *f*



16

Vln. 1

Vln. 2

Vln. 3 *mf*

Vln. 4 *mf*

Vla. 1

Vla. 2

Vc. 3 3 3

Cb.

Tape *f*

Vln. 1
 Vln. 2
 Vln. 3 STACCATO
 Vln. 4
 Vla. 1
 Vla. 2
 Vc. 3
 Cb. *mf*
 Tape *b**
f

Vln. 1
 Vln. 2
 Vln. 3 *secco* STACCATO *intense*
 Vln. 4 *intense* *f*
 Vla. 1
 Vla. 2
 Vc. 3 3 8 8
 Cb. 6
 Tape

Score for measures 19 and 20. The score includes staves for Vln. 1, Vln. 2, Vln. 3, Vln. 4, Vla. 1, Vla. 2, Vc., Cb., and Tape.

Measure 19 features dynamic markings *ff* and *f*. Measure 20 includes *f*, *pp*, and *mf*. The Cb. staff has a section labeled "[DANCE PULSE IN 5/16]". The Tape staff has a section marked *pp* and *mf*. There are also markings for *spic.* and *mf* in the Vln. 4 and Vla. 2 staves.

Score for measures 21 and 22. The score includes staves for Vln. 1, Vln. 2, Vln. 3, Vln. 4, Vla. 1, Vla. 2, Vc., Cb., and Tape.

Measure 21 features dynamic markings *mf* and *f*. Measure 22 includes *mf*, *f*, and *INTENSE*. The Vln. 4 staff has a section marked *mf*. The Vc. staff has a section marked *mf* and *f*. The Tape staff has a section marked *pp*. There are also markings for *spic.* and *mf* in the Vln. 4 and Vla. 2 staves.

Vln. 1
 Vln. 2 *mf*
 Vln. 3
 Vln. 4 *mp* *f* *mf*
 Vla. 1
 Vla. 2
 Vc.
 Cb.
 Tape

Vln. 1 *f*
 Vln. 2
 Vln. 3 *f*
 Vln. 4 *f* *sempre spic.* *mf*
 Vla. 1 *sempre spic.*
 Vla. 2 *sempre spic.*
 Vc.
 Cb.
 Tape

29 5 30 5

Vln. 1 SPIC. *f* 5

Vln. 2 SPIC. *f* 5

Vln. 3 SPIC. *f* 5

Vln. 4 3 3 intense *ff*

Vla. 1

Vla. 2

Vc. INTENSE *f* intense *ff*

Cb.

Tape



31 32 33 34

Vln. 1 *ppp* *mf* molto staccato 8

Vln. 2 *ppp* staccato *mf* 8

Vln. 3

Vln. 4

Vla. 1 *ppp* *f* SPIC. *mf* SPIC.

Vla. 2 *ppp* *f* *mf*

Vc.

Cb. *sfz*

Tape IRRATIONAL PATTERNS WITH DOWNWARDS GLISSANDI *f*

molto
secco

Vln.1 *mf* *spiccato* *intense* *mf* *spic.* *f*
 Vln.2 *mf* *spiccato* *mf* *SPIC.* *mf*
 Vln.3
 Vln.4 *f*
 Vla.1 *spic.* *spic.* *f* *mf* *SPIC.* *f* *SPIC.*
 Vla.2 *f*
 Vc. *STACC.* *mf* *f*
 Cb. *f*
 Tape *f* *f*

Vln.1 *SPIC.* *5* *f*
 Vln.2 *SPIC.* *5*
 Vln.3 *secco tense* *f*
 Vln.4 *secco tense* *f*
 Vla.1 *SPIC.* *SPIC.* *spic.* *mf* *f*
 Vla.2 *f*
 Vc. *3* *espressivo* *poco f*
 Cb. *tenuto* *f*
 Tape *f* *ff*

musical score for measures 40 and 41. The score includes staves for Vln.1, Vln.2, Vln.3, Vln.4, Vla.1, Vla.2, Vc., Cb., and Tape.

Measure 40: Vln.1 and Vln.2 have markings *molto stao*, *mf*, *STAC.*, *f*, *SPIC.*, *STAC.*, and *f*. Vln.3 and Vln.4 have *f* and *mf*. Vla.1 and Vla.2 have *mf* and *f*. Vc. has *f* and *mf*. Cb. and Tape are empty.

Measure 41: Vln.1 and Vln.2 have *spic.*. Vln.3 and Vln.4 have *intense*, *f*, *mf*, *f*, and *mf*. Vla.1 and Vla.2 have *mf* and *f*. Vc. has *f* and *mf*. Cb. and Tape are empty.

musical score for measures 42 and 43. The score includes staves for Vln.1, Vln.2, Vln.3, Vln.4, Vla.1, Vla.2, Vc., Cb., and Tape.

Measure 42: Vln.1 and Vln.2 have *SPIC.*, *mf*, *f*, and *mf*. Vln.3 and Vln.4 have *f* and *mf*. Vla.1 and Vla.2 have *f* and *mf*. Vc. has *f* and *mf*. Cb. and Tape are empty.

Measure 43: Vln.1 and Vln.2 have *spic.*, *mf*, *f*, and *mf*. Vln.3 and Vln.4 have *f* and *mf*. Vla.1 and Vla.2 have *f* and *mf*. Vc. has *f* and *mf*. Cb. and Tape are empty.

Measure 44: Vln.1 and Vln.2 have *intense secco*, *f*, and *mf*. Vln.3 and Vln.4 have *f* and *mf*. Vla.1 and Vla.2 have *f* and *mf*. Vc. has *f* and *mf*. Cb. and Tape are empty.

like a dance in 8/16

Vln.1 *f*
 Vln.2 *f*
 Vln.3
 Vln.4 *STAC.* *f*
 Vla.1 *spic.* *f*
 Vla.2 *f*
 Vc. *f*
 Cb.
 Tape *f* *mf* *f* *mf*

Vln.1 *f*
 Vln.2 *mf* *ff*
 Vln.3 *secco* *f* *mf* *ff*
 Vln.4 *secco* *f* *mf* *ff*
 Vla.1 *mf* *ff* *mf* *spic.* *P*
 Vla.2 *mf* *ff* *mf* *spic.* *P*
 Vc. *f* *mf* *intense* *f* *mf*
 Cb. *mf* *ff*
 Tape *f* *mf*

Vln.1
 Vln.2
 Vln.3
 Vln.4
 Vla.1
 Vla.2
 Vc.
 Cb.
 Tape

Musical score for measures 49 and 50. The score includes staves for Violins 1-4, Violas 1-2, Cello, and Tape. Measure 49 shows various dynamics like *ff* and *f*, and articulation like *spic.* and accents. Measure 50 continues with similar notation, including triplets and slurs. A large double slash is present at the bottom left of the page.

Vln.1
 Vln.2
 Vln.3
 Vln.4
 Vla.1
 Vla.2
 Vc.
 Cb.
 Tape

Musical score for measures 51 and 52. The score includes staves for Violins 1-4, Violas 1-2, Cello, and Tape. Measure 51 shows various dynamics like *ff* and *f*, and articulation like *spic.* and accents. Measure 52 continues with similar notation, including triplets and slurs. A large double slash is present at the bottom left of the page.

Violin 1 (Vln.1) and Violin 2 (Vln.2) staves are empty. Violin 3 (Vln.3) and Violin 4 (Vln.4) staves contain melodic lines with dynamic markings *mf* and *f*. Viola 1 (Vla.1) and Viola 2 (Vla.2) staves contain harmonic support with dynamic marking *f*. Cello (Cb.) and Double Bass (Vc.) staves contain a bass line with dynamic markings *mf* and *f*. The Tape track contains percussive elements marked with 'x' and dynamic markings *f* and *mp*.

Vln.1 *f*
 Vln.2 *f*
 Vln.3 *secco*
 Vln.4
 Vla.1 *secco*
 Vla.2
 Vc. *f*
 Cb. *f*
 Tape

Vln.1 *secco*
 Vln.2 *secco*
 Vln.3 *ff*
 Vln.4
 Vla.1 *ff*
 Vla.2 *ff*
 Vc. *ff*
 Cb.
 Tape

Vln.1 *f*
 Vln.2 *tense*
 Vln.3 *mf* *f* *tense*
 Vln.4 *f* *tense*
 Vla.1 *f*
 Vla.2 *f*
 Vc. *intense* *f*
 Cb.
 Tape

Vln.1
 Vln.2 *f*
 Vln.3
 Vln.4 *f*
 Vla.1 *ff*
 Vla.2 *ff*
 Vc. *sfz*
 Cb.
 Tape *ff*

Vln.1 *ff*
 Vln.2 *f*
 Vln.3 *f*
 Vln.4 *f*
 Vla. 1
 Vla.2 *espressivo* 5 5
 Vc. *f* 3
 Cb. *f* 3
 Tape *f*

Vln.1
 Vln.2
 Vln.3
 Vln.4 *ff*
 Vla. 1
 Vla.2 5
 Vc. 3 3 3 *ff*
 Cb. 3 3 3 *ff*
 Tape *P* *f* *mf* *f*

Musical score for "The Great Wall" by Tan Dun. The score is arranged for a string quartet (Vln. 1, Vln. 2, Vln. 3, Vln. 4), two violas (Vla. 1, Vla. 2), a cello (Cb.), and a Tape part. The music is written in 2/4 time and includes various musical notations such as staccato, stacc., STACC., ff, mp, mf, and dynamic markings. It also features triplets, slurs, and specific performance instructions like "gentle" and "tense non legato".

70 71

Vln.1

Vln.2

Vln.3

Vln.4

Vla. 1

Vla. 2

Vc.

Cb.

Tape

SPIC.

mf

mp

mf

stacc.

mf

f

stacc.

mf

f

72

Vln.1

Vln.2

Vln.3

Vln.4

Vla. 1

Vla. 2

Vc.

Cb.

Tape

SPIC. 3 3 JATE 3

mf f

mf mp

f

intense

mf f f

74

75

3 staccato 6 3 3 3

Vln.1

Vln.2

Vln.3

Vln.4

Vla. 1

Vla. 2

Vc.

Cb.

Tape

f mf f

espressivo-free

f

mf

76 77

Vln.1

Vln.2

Vln.3

Vln.4

Vla. 1

Vla.2

Vc.

Cb.

Tape

stacc.

78 79

Vln.1

Vln.2

Vln.3

Vln.4

Vla. 1

Vla.2

Vc.

Cb.

Tape

spiccato

mp

mf

spiccato

mp

mf

mp

80 81

Vln. 1

Vln. 2

Vln. 3

Vln. 4

Vla. 1

Vla. 2

Vc.

Cb.

Tape

82 83

Vln. 1

Vln. 2

Vln. 3

Vln. 4

Vla. 1

Vla. 2

Vc.

Cb.

Tape

Vln.1
 Vln.2 *mf*
 Vln.3
 Vln.4 *stacc.*
 Vla. 1 *mp*
 Vla.2 *mp*
 Vc.
 Cb.
 Tape *mf*

Vln.1 *mf*
 Vln.2
 Vln.3
 Vln.4 *mf*
 Vla. 1
 Vla.2 *mf*
 Vc.
 Cb.
 Tape

Vln.1 *mf*
 Vln.2
 Vln.3
 Vln.4 *mf*

$\text{♩} = 120$
spiccato

Vln.1 *p*
 Vln.2 *p*
 Vln.3
 Vln.4
 Vla.1 *p*
 Vla.2
 Vc.
 Cb.
 Tape *f*

The computer part doubles the strings for 4 bars with a string-like sound, gradually fading away. If the string players feel uncertain about the sudden change of tempo on bar 87, they may listen to the computer first, and 'fade in' gradually on bar 88, effectively doing a 'cross-fade' with the computer.

Vln.1 *f* *p*
 Vln.2 *f* *p*
 Vln.3
 Vln.4
 Vla.1 *mf* *p*
 Vla.2
 Va.
 Cb.
 Tape *f* *p*

93 94 95

Vln.1 Vln.2 Vln.3 Vln.4 Vla.1 Vla.2 Vc. Cb. Tape

mf *p* *pp* *spiccato* *3* *3* *mf* *p* *pp* *mf* *p*

96 97 98

Vln.1 Vln.2 Vln.3 Vln.4 Vla.1 Vla.2 Vc. Cb. Tape

mf *p* *pp* *spiccato* *3* *3* *3* *ff* *spic* *3* *3* *ff* *pp* *pp* *p* *5*

Score for measures 99 and 100. The score includes staves for Violins 1-4, Violas 1-2, Violoncello (Vc.), Contrabass (Cb.), and Tape.

Measure 99 features a complex texture with multiple staves. Violin 3 (Vln.3) has dynamic markings *mf* and *f*. Violin 4 (Vln.4) has a dynamic marking *mf*. The Tape part has a dynamic marking *mf*.

Measure 100 features a complex texture with multiple staves. Violin 3 (Vln.3) has a dynamic marking *mf*. The Tape part has a dynamic marking *mf*.

Score for measures 101 and 102. The score includes staves for Violins 1-4, Violas 1-2, Violoncello (Vc.), Contrabass (Cb.), and Tape.

Measure 101 features a complex texture with multiple staves. Violin 3 (Vln.3) has a dynamic marking *mf*. The Tape part has a dynamic marking *mf*.

Measure 102 features a complex texture with multiple staves. Violin 3 (Vln.3) has a dynamic marking *mf*. The Tape part has a dynamic marking *mf*.

103

Vln.1

Vln.2

Vln.3

Vln.4

Vla.1

Vla.2

Vc.

Cb.

Tape

f

pp

f

3

3

3

3

sf/z

p

mf

mf

ff

f

p

105

106

107

Vln.1

Vln.2

Vln.3

Vln.4

Vla.1

Vla.2

Vc.

Cb.

Tape

3

3

intense

3

3

mp

p

3

3

3

mf

f

108 109 110

Vln.1

Vln.2

Vln.3

Vln.4

Vla.1

Vla.2

Vc.

Cb.

Tape

mf *ff* *mf* *pp*

f *p*



111 112 113

Vln.1

Vln.2

Vln.3

Vln.4

Vla.1

Vla.2

Vc.

Cb.

Tape

mf *f* *mf*

f *Intense* *Intense* *f* *3* *5*

ff *5*

Vln.1 *Intense*
ff
 Vln.2
 Vln.3 *mf* *p* *f* *mf*
 Vln.4
 Vla.1 *ff*
 Vla.2 *ff*
 Vc. *ff*
 Cb. *ff*
 Tape *ff*

117

118

119

Vln.1 *spiccato*
p *mf*
 Vln.2 *SPICCATO*
p *mf*
 Vln.3
 Vln.4 *fff*
 Vla.1 *SPICCATO*
p
 Vla.2
 Vc. *TRANQUILLO*
mf
 Cb.
 Tape *fff* *mf* *mf*

120 121

Vln.1 *mf p*

Vln.2 *mf p*

Vln.3 STACC. *mf*

Vln.4 STACC. *mf*

Vla.1

Vla.2

Vc.

Cb.

Tape *mp* *f* *p* *f* *p*



122 123 124

Vln.1 *f* *p* *f* *mp*

Vln.2 *mf p* *f* *p* *f* *mp*

Vln.3 SPICC. *mp* *f* *mf* *ff*

Vln.4 SPICC. *f* *ff*

Vla.1

Vla.2

Vc. *f*

Cb.

Tape

Score for measures 125-127. Instruments: Vln. 1, Vln. 2, Vln. 3, Vln. 4, Vla. 1, Vla. 2, Vc., Cb., Tape.

Measure 125: Vln. 1 and 2 play a rhythmic pattern with dynamics *f* and *p*. Vln. 3 has a triplet of eighth notes marked *mp* and *f*. Vln. 4 is silent. Vla. 1 and 2 play a rhythmic pattern. Vc. has a long note marked *f*. Cb. is silent. Tape has a short burst marked *pp*.

Measure 126: Vln. 1 and 2 continue the pattern. Vln. 3 has a triplet of eighth notes marked *f*. Vln. 4 is silent. Vla. 1 and 2 continue the pattern. Vc. has a long note marked *f*. Cb. is silent. Tape has a short burst marked *pp*.

Measure 127: Vln. 1 and 2 continue the pattern. Vln. 3 has a triplet of eighth notes marked *f*. Vln. 4 is silent. Vla. 1 and 2 continue the pattern. Vc. has a long note marked *f*. Cb. is silent. Tape has a short burst marked *pp*.

Score for measures 128-130. Instruments: Vln. 1, Vln. 2, Vln. 3, Vln. 4, Vla. 1, Vla. 2, Vc., Cb., Tape.

Measure 128: Vln. 1 and 2 play a rhythmic pattern with dynamics *p* and *mf*. Vln. 3 is silent. Vln. 4 has a short note marked *ff*. Vla. 1 and 2 play a rhythmic pattern. Vc. has a short note marked *f*. Cb. is silent. Tape is silent.

Measure 129: Vln. 1 and 2 continue the pattern. Vln. 3 is silent. Vln. 4 has a short note marked *ff*. Vla. 1 and 2 continue the pattern. Vc. has a short note marked *f*. Cb. is silent. Tape is silent.

Measure 130: Vln. 1 and 2 continue the pattern. Vln. 3 is silent. Vln. 4 has a short note marked *ff*. Vla. 1 and 2 continue the pattern. Vc. has a short note marked *f*. Cb. is silent. Tape is silent.

131 132 133

Vln. 1 *P* *mf* *P*

Vln. 2 *P* *mf* *espressivo* *P*

Vln. 3 *f* *ff*

Vln. 4 *ff*

Vla. 1

Vla. 2 *ff*

Vc. *f*

Cb. *mf*

Tape

134 135

Vln. 1 *mf*

Vln. 2 *mf* *f*

Vln. 3 *ff*

Vln. 4 *ff*

Vla. 1

Vla. 2 *mf*

Vc. *f*

Cb.

Tape



Vln. 1
 Vln. 2
 Vln. 3
 Vln. 4
 Vla. 1
 Vla. 2
 Vc.
 Cb.
 Tape

molto stacc.

Vln. 1
 Vln. 2
 Vln. 3
 Vln. 4
 Vla. 1
 Vla. 2
 Vc.
 Cb.
 Tape

142

143

Score for measures 142 and 143. The score includes staves for Violins 1-4, Violas 1-2, Violoncello (Vc.), Contrabass (Cb.), and Tape.

Measure 142 features triplets in Violin 1 and Violin 2. Measure 143 features a triplet in Violin 1 and a 5:4 ratio in Violin 2, marked *f* and *spic.* The Viola 1 and Viola 2 parts have a *p* dynamic marking. The Violoncello and Contrabass parts are marked *p*. The Tape part is marked *p*.

144

145

Score for measures 144 and 145. The score includes staves for Violins 1-4, Violas 1-2, Violoncello (Vc.), Contrabass (Cb.), and Tape.

Measure 144 features triplets in Violin 1 and Violin 2, and 5:4 ratios in Violin 2. Measure 145 features a triplet in Violin 1 and 5:4 ratios in Violin 2. The Viola 1 and Viola 2 parts have a *ff* dynamic marking. The Violoncello and Contrabass parts have a *mf* dynamic marking. The Tape part has a *mf* dynamic marking. The Violoncello and Contrabass parts have a *pp* dynamic marking.

146

Vln. 1

Vln. 2

Vln. 3

Vln. 4

Vla. 1

Vla. 2

Vc.

Cb.

Tape

3

3:4

3:4

3:4

3:4

ff

3

3

ff

p

f

ff

5:4



Vln. 1

Vln. 2

Vln. 3

Vln. 4

Vla. 1

Vla. 2

Vc.

Cb.

Tape

3:4

3:4

3:4

3:4

stage.

3

3

6:5

ff

ff

150 marcato 151

Vln. 1 *f marc.* 3:4

Vln. 2 *f marc.* 3:4

Vln. 3 *f marc.* 3:4

Vln. 4 *f marc.* 3:4

Vla. 1 *f stacc.* 3 3 6 6 6 6 6 6

Vla. 2 *f stacc.* 3 3 6 6 6 6 6 6

Vc. *f stacc.* 3 3 6 6 6 6 6 6

Cb.

Tape *f* 5 *ff* 5 *ff* 5:4 *ff*

152 153 154 155 156 157 158 159 160 161 162

Vln. 1 *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff*

Vln. 2 *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff*

Vln. 3 *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff*

Vln. 4 *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff*

Vla. 1 *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff*

Vla. 2 *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff*

Vc. *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff*

Cb. *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff*

Tape *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff* *ff*

S O L O

Vln. 1

Vln. 2

Vln. 3

Vln. 4

Vla. 1

Vla. 2

Vc.

Cb.

Tape



Alejandro Viñao

1987

Go
Chorale

Alejandro Viñao

The musical score is written on four staves in treble clef. It consists of 10 measures. The notation includes various notes (quarter, eighth, and sixteenth notes), rests, and accidentals (sharps, flats, and naturals). The score is handwritten and appears to be a draft or a personal manuscript. The first measure starts with a treble clef and a key signature of one sharp (F#). The notation is somewhat sparse, with many notes being single notes or simple chords. The overall style is that of a personal musical sketch or a working draft.

DOPPLER SHIFT SECTION

Vocal Staves:

- Soprano (S):** Lyrics include "ma", "nn... a sec...", "paw", "eh", "loo", "ma". Dynamics: *pp*, *ff*, *mf*.
- Alto (A):** Lyrics include "nn... a sec...", "paw", "eh", "loo", "ma". Dynamics: *pp*, *ff*, *mf*.

Timpani Staves (T1, T2, T3):

- Notes are marked with asterisks (*1, *2, *3) indicating specific recording points.

STEREO

* to be recorded separately and then spliced to a PPP

Handwritten musical score for four voices (Soprano, Alto, Tenor 1, Tenor 2) and eight Tenors (T1-T8). The score is written on staves with various musical notations, including notes, rests, and dynamic markings.

Staff 1 (Soprano): Starts with a treble clef and a key signature of one flat. The melody begins with a half note G4, followed by a half note A4, and then a half note B4. The lyrics "go" are written below the first note. The staff includes various dynamic markings such as *ff*, *f*, *pp*, and *mf*. There are also handwritten notes like "see ri" and "ai ai ai".

Staff 2 (Alto): Starts with a treble clef and a key signature of one flat. The melody begins with a half note G4, followed by a half note A4, and then a half note B4. The lyrics "go" are written below the first note. The staff includes various dynamic markings such as *ff*, *f*, *pp*, and *mf*. There are also handwritten notes like "ai" and "eh v eh eh".

Staff 3 (Tenor 1): Starts with a treble clef and a key signature of one flat. The melody begins with a half note G4, followed by a half note A4, and then a half note B4. The lyrics "go" are written below the first note. The staff includes various dynamic markings such as *ff*, *f*, *pp*, and *mf*. There are also handwritten notes like "ai" and "eh v eh eh".

Staff 4 (Tenor 2): Starts with a treble clef and a key signature of one flat. The melody begins with a half note G4, followed by a half note A4, and then a half note B4. The lyrics "go" are written below the first note. The staff includes various dynamic markings such as *ff*, *f*, *pp*, and *mf*. There are also handwritten notes like "ai" and "eh v eh eh".

Staff 5 (Tenor 3): Empty staff.

Staff 6 (Tenor 4): Empty staff.

Staff 7 (Tenor 5): Empty staff.

Staff 8 (Tenor 6): Empty staff.

Staff 9 (Tenor 7): Empty staff.

Staff 10 (Tenor 8): Empty staff.

* 2 voices a $\pm$ fourth of a second out of phase the other two $\pm$ half a second out of phase

1 1/2 sec d=100 18 i.p.s. - 7

Tempo mostly steady $\pm$ d=90

d=70 i b=55

RANDOM Distribution 4
cloud $\rightarrow$ type of sound for 2 second
make look

Handwritten musical score for four vocal parts (Soprano, Alto, Tenor 1, Tenor 2) and eight tracks (T1-T8). The score includes notes, rests, and lyrics. The lyrics are: "pa a pa a", "loos loo loo", "5.2 p.s", "N.R R R R R R N R N R N R N R R", "U.L. R", "loos loo", "loos loo", "Taa a ta ta ta", "tata a ta a ta a", "a ta a".

Annotations and markings include:

- 1/2 sec d=100 18 i.p.s. - 7
- Tempo mostly steady $\pm$ d=90
- d=70 i b=55
- RANDOM Distribution 4 cloud $\rightarrow$ type of sound for 2 second make look
- random dynamics and attacks
- USE OF ECHO in other track $\pm$ 250ms delay R:9 D:3
- 5.2 p.s
- N.R R R R R R N R N R N R N R R
- U.L. R
- loos loo
- loos loo
- Taa a ta ta ta
- tata a ta a ta a
- a ta a

T1
T2
T3
T4
T5
T6
T7
T8

* large A * * * * * 8-10

Handwritten musical score for a vocal ensemble. The score is written on eight staves, labeled S (Soprano), A (Alto), T1 through T8 (Tenors). The tempo is marked "Varying Tempo approx 70". The key signature is F major. The score includes lyrics in a non-Latin script, likely Thai, and various musical notations such as notes, rests, and dynamic markings. The score is divided into two systems by a vertical line. The first system contains measures 1 through 11, and the second system contains measures 12 through 22. The lyrics are: "st go go a - go o o go ga go o go fto r sec me st kai - ri leh loo-na ta go - - sec", "ai ri leh loo-na a o sec", "ai ri leh loo-na ta see", and "kai - ri leh loo-na a go sec". The score includes various musical notations such as notes, rests, and dynamic markings. The score is divided into two systems by a vertical line. The first system contains measures 1 through 11, and the second system contains measures 12 through 22. The lyrics are: "st go go a - go o o go ga go o go fto r sec me st kai - ri leh loo-na ta go - - sec", "ai ri leh loo-na a o sec", "ai ri leh loo-na ta see", and "kai - ri leh loo-na a go sec". The score includes various musical notations such as notes, rests, and dynamic markings. The score is divided into two systems by a vertical line. The first system contains measures 1 through 11, and the second system contains measures 12 through 22. The lyrics are: "st go go a - go o o go ga go o go fto r sec me st kai - ri leh loo-na ta go - - sec", "ai ri leh loo-na a o sec", "ai ri leh loo-na ta see", and "kai - ri leh loo-na a go sec".

$\text{♩} = 90$ Tempo giusto = 12 i.p.s

~~♩ = 120~~ Tempo giusto $\text{♩} = 10$ i.p.s

S Kai me lih ri loo ta ma pa go kai beh -- ri ee ta loo me na Kai go pa
(key)

S ai me eh i loo a ma a o Kai eh ri ee ta loo e na ai o pa
word and octave higher

A ai e uh i loo a ma a go Kai eh i ee ta loo e na ai go pa

A ai me uh ri oo a a pa go ai eh ri ee ta oo e a kai o pa

$\text{♩} = 90$ is repeated the work (A) and $\text{♩} = 10$ i.p.s
both sections sang

T 1

T 2

T 3

T 4

T 5

T 6

T 7

T 8

* ornaments R.4
chords R.0

*1 the first time all the voices mix and with lots of general noise the second as it is
*2 the first time as it is the second with lots of noise and mix

Handwritten musical score for Soprano (S), Alto (A), and Tenor (T) parts. The score is written on staves with treble clefs. The tempo is marked as $\text{♩} = 10$ and $\text{♩} = 50$. The lyrics are in a non-Latin script, possibly a South Asian language, and include words like "ve-ri-ta-mi-loo", "mi-na-ee-o", "kai", "loo mee na kai", "mi", "eh-i-a-ee", "oo-ee-a-ai", "mi", "ve-ri-ta-mi-loo", "mi-na-ee-o", "kai". The score includes various musical notations such as notes, rests, and dynamic markings. The lyrics are written below the notes, and the tempo markings are at the top. The score is divided into measures by vertical bar lines. The lyrics are written in a non-Latin script, possibly a South Asian language, and include words like "ve-ri-ta-mi-loo", "mi-na-ee-o", "kai", "loo mee na kai", "mi", "eh-i-a-ee", "oo-ee-a-ai", "mi", "ve-ri-ta-mi-loo", "mi-na-ee-o", "kai". The score includes various musical notations such as notes, rests, and dynamic markings. The lyrics are written below the notes, and the tempo markings are at the top. The score is divided into measures by vertical bar lines.

Soprano (S):

$\text{♩} = 10$ $\text{♩} = 50$

ve-ri-ta-mi-loo mi-na-ee-o kai

Alto (A):

eh-i-a-ee kai

oo-ee-a-ai mi

ve-ri-ta-mi-loo mi-na-ee-o kai

Tenors (T):

T1

T2

T3

T4

T5

T6

T7

T8

♩ = 100 = 10"

Handwritten musical score for Soprano (S), Alto (A), and Tenor (T) voices. The score is written on staves with treble clefs. The lyrics are: "ri ri ri ri ri go ma el el".

The score includes various musical notations such as notes, rests, and dynamic markings. The Soprano part has a tempo marking of 100 = 10". The Alto part has a tempo marking of 100 = 10". The Tenor part has a tempo marking of 100 = 10".

Below the staves, there are eight empty staves labeled T 1 through T 8.

chords note RA for all voices
approaches RO for all voices

Handwritten musical score for four vocal parts (Soprano, Alto, Tenor 1, Tenor 2) and eight Tenors (T1-T8). The score is written on staves with treble clefs and a key signature of one flat (Bb). The lyrics are in a non-Latin script, possibly a form of Thai or Burmese, and include syllables like "Kai", "ai", "pa", "a", and "mul". The notation includes various musical symbols such as notes, rests, and dynamic markings (e.g., *f*, *p*, *mf*). The score is divided into two systems by a vertical line. The first system covers measures 1 through 4, and the second system covers measures 5 through 8. The lyrics are written below the notes, with some syllables connected by dashed lines to indicate long notes or breaths. The Tenor parts (T1-T8) are currently empty staves.

Handwritten musical score for four vocal parts (Soprano, Alto, Tenor 1, Tenor 2) and eight Tenors (T1-T8). The score is written on staves with treble clefs and includes various musical notations such as notes, rests, and dynamic markings. The lyrics are written below the staves.

Soprano (S): The first staff shows a melodic line with lyrics "see", "beh", "beh", "oo", "loo". It includes a key signature change to B-flat and various ornaments like "R" and "7".

Alto (A): The second staff continues the melody with lyrics "ee", "see", "eh", "loo", "loo", "loo". It features a key signature change to A major and includes a triplet of eighth notes.

Tenors (T1-T8): The bottom section contains eight empty staves labeled T1 through T8, intended for additional vocal parts.

E b 5

Handwritten musical score for a 10-stringed instrument (likely a Sitar or Veena) with four staves (S, S, A, A) and a table of string durations (T1-T8).

Top Staff (S): Notes are circled and labeled with fingerings and positions. Below the staff are fingerings: $R_0 1$, $2\ 4\ 6\ 8\ 10$, $R_0 2\ 4\ 6\ 8$, $R_0 5\ 10$, $R_0 3\ 6\ 10\ 6\ 3\ R_0$, and $R_0 R_6 R_6 R_{10}$.

Second Staff (S): Notes are circled and labeled with fingerings. Below the staff are fingerings: $R_0 2\ 4\ 6\ 8\ 10$, $R_0 4\ 6\ 8$, $R_5 10$, $R_0 R_{10} R_0$, and $R_8 3 R_0 R_{10}$.

Third Staff (A): Notes are circled and labeled with fingerings. Below the staff are fingerings: $R_0 R_1 R_2 R_3 R_4 R_5 R_6 R_7 R_8 R_9 R_{10}$, $R_0 R_1 2\ 3\ 4\ 5\ 6\ 8\ 10$, $R_0 2\ 3\ 4\ 6\ 8$, $R_2 3\ 6\ 10$, $R_3 6\ 10 R_0$, and $R_9 4 R_0 5\ 10$.

Fourth Staff (A): Notes are circled and labeled with fingerings. Below the staff are fingerings: $R_0 1\ 2\ 3\ 4\ 6\ 8\ 10$, $R_0 2\ 4\ 8$, $R_0 3\ 6\ 10$, $R_0 3\ 6\ 10\ 5\ R_0$, and $R_{10} 6\ 3\ R_0 3\ 6\ 10$.

Table of String Durations (T1-T8):

T1	$7\frac{1}{2}''$	$6\frac{1}{2}''$	$5\frac{1}{2}''$	$5''$	$4\frac{1}{2}''$	$4''$
T2	shorter					
T3	$4\frac{1}{2}''$	$3\frac{1}{2}''$	$3''$	$3''$	$2\frac{1}{2}''$	$2''$
T4						
T5						
T6						
T7						
T8						

() value of main chord note when the loop starts [value of chord second time] - Rev. scale from 0 to 10

PERFORMANCE SCORE

THE CITY UNIVERSITY LIBRARY
Northampton Square London EC1V 0HB

TRIPLE
CONCERTO
FOR
FLUTE · CELLO · PIANO & COMPUTER

ALEJANDRO VIÑAO

TRIPLE
CONCERTO
FOR
FLUTE · CELLO · PIANO & COMPUTER

ALEJANDRO VIÑAO
© 1984

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TRIPLE CONCERTO
REQUIREMENTS

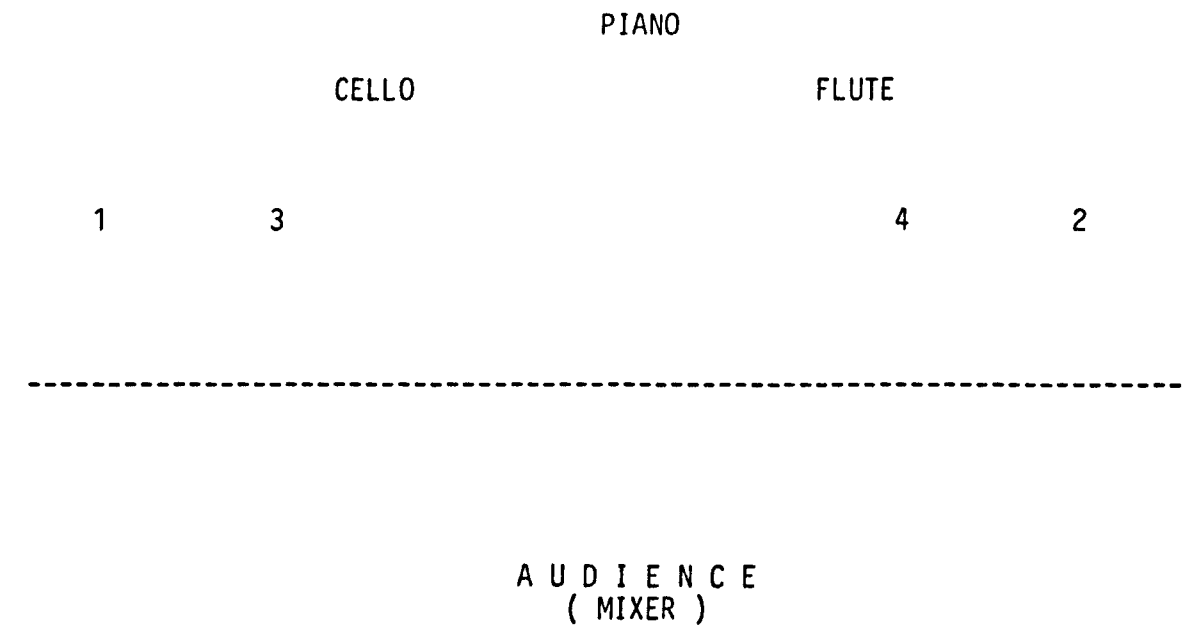
4 PERFORMERS ARE REQUIRED :

- 1) FLUTE (ALSO PICCOLO AND ALTO IN G)
- 2) CELLO
- 3) PIANO
- 4) SOUND DIFFUSION (SHOULD BE A TRAINED MUSICIAN, E.G. A COMPOSER OR CONDUCTOR - NECESSARILY SOMEONE EXPERIENCED IN THE DIFFUSION OF ELECTRO-ACOUSTIC MUSIC.)

EQUIPMENT :

- 1 SONY PCM F1 DIGITAL TAPE RECORDER.
 - 1 MIXER 8 INTO 4.
 - 1 REVERBERATION UNIT (OPTIONAL. ONLY USED IN THE FLUTE CADENZA TO MATCH THE LIVE SOUND WITH THE SOUND ON THE TAPE.)
 - 3 PAIRS OF LIGHT HEADPHONES.
 - 5 HIGH QUALITY DIRECTIONAL MICROPHONES. 3 FOR THE PIANO (AT LEAST), 1 FOR THE FLUTE AND 1 FOR THE CELLO.)
 - 4 SPEAKERS (2 STEREO PAIRS) SO THAT THE INSTRUMENTS AND TAPE MAY COME FROM DIFFERENT PAIRS. (SEE DIAGRAM).
-

DIAGRAM : SPEAKERS 1 AND 2 DIFFUSE THE INSTRUMENTS.
SPEAKERS 3 AND 4 DIFFUSE THE TAPE.



THE IDEA OF THIS SET-UP IS THAT THE TAPE SOUND AND AMPLIFIED INSTRUMENTS SHOULD COME ROUGHLY FROM THE SAME POSITION IN SPACE BUT NOT FROM THE SAME SPEAKERS.

(IN THEORY A SINGLE PAIR OF SPEAKERS COULD BE USED THROUGH WHICH TAPE AND LIVE INSTRUMENTS COULD BE DIFFUSED. IN PRACTICE THE RESULT IS USUALLY BETTER WHEN THE ABOVE SET-UP IS USED.)

IF A SET-UP WITH SEVERAL SPEAKERS POSITIONED AROUND THE CONCERT HALL WERE AVAILABLE (AS WELL AS THE DOUBLE STEREO PAIR), THEN THE PERFORMER AT THE MIXER COULD DIFFUSE THE TAPE SOLOS USING THE EXTRA SPEAKERS IN A CREATIVE WAY (MOVING THE SOUND IN SPACE), BUT TAKING CARE THAT TOWARDS THE END OF EACH TAPE SOLO THE SOUND SHOULD COME BACK TO THE FRONT SPEAKERS AS SHOWN ABOVE.

THE PERFORMER AT THE MIXER SHOULD ALSO TAKE SPECIAL CARE NOT TO MODIFY THE DYNAMIC RANGE ALREADY ON TAPE WHILE PANNING THE SOUND THROUGH THE DIFFERENT SPEAKERS ACROSS THE ROOM.

THE SCORE : CRITERION AND SYMBOLS.

THIS SCORE IS INTENDED FOR PERFORMANCE AND NOT FOR A DETAILED ANALYSIS OF THE PIECE. FOR THIS REASON THE TAPE PART ONLY CONTAINS THE MUSICAL EVENTS WHICH ARE NECESSARY TO KEEP THE PLAYERS AND TAPE TIGHTLY SYNCHRONISED AND HAS BEEN GREATLY SIMPLIFIED WITH THIS AIM IN MIND.

FURTHERMORE, A PRECISE MUSICAL NOTATION OF THE TAPE PART WOULD BE PRACTICALLY IMPOSSIBLE.

MOST OF THE LONG COMPUTER SOLOS ARE NOT NOTATED AND IF THE PERFORMER AT THE MIXER WERE TO DIFFUSE THEM CREATIVELY THROUGH A COMPLEX ARRAY OF SPEAKERS HE WOULD BE EXPECTED TO LEARN THEM BY HEART.

ACCIDENTALS HOLD FOR THE WHOLE OF EACH BAR.

↓
INDICATES AN EVENT IN THE COMPUTER PART WHICH CAN BE TAKEN AS A CUE OR POINT OF REFERENCE BY THE PLAYERS IN ORDER TO HELP THE SYNCHRONISATION BETWEEN INSTRUMENTS AND THE COMPUTER PART. THESE CUES ARE FUNDAMENTAL IF THE PERFORMERS DECIDE TO PLAY THE PIECE WITHOUT THE AID OF THE CLICK TRACK. THIS WOULD BE EXTREMELY DIFFICULT IN THE LAST SECTION (FINALE) AND SHOULD NOT BE ATTEMPTED UNLESS THE ENSEMBLE HAS AN ALMOST UNLIMITED AMOUNT OF REHEARSAL TIME AVAILABLE.



INDICATES THE COMPUTER PART ON TAPE

THE TAPE FORMAT AND CLICK TRACK:

THE COMPUTER PART IS RECORDED DIGITALLY IN STEREO (PCM F1). BETAMAX AND UMATIC FORMATS ARE AVAILABLE.

THE ANALOGUE AUDIO TRACK OF THE VIDEO CASSETTE HAS A CLICK OR "GUIDE" TRACK RECORDED ON IT, AND SHOULD BE FED TO THE PLAYERS DURING PERFORMANCE VIA HEADPHONES. THE PURPOSE OF THE CLICK TRACK IS TO KEEP THE PERFORMERS IN SYNC WITH THE COMPUTER PART; IT IS NOT MEANT TO BE HEARD BY THE AUDIENCE.

THE CLICK TRACK IS PRESENT ONLY IN THOSE SECTIONS WHERE ALL THREE INSTRUMENTS PLAY TOGETHER. EACH REAPPEARANCE OF THE CLICK TRACK IS CLEARLY MARKED IN THE SCORE.

THE PERFORMANCE.

THE MOST IMPORTANT TECHNICAL ACHIEVMENT FOR THE PERFORMERS IS TO PLAY IN SYNC WITH THE COMPUTER TAPE. A WRONG PITCH IN SYNC WITH THE TAPE AND/OR OTHER PLAYERS IS NOT AS BAD AS THE RIGHT PITCH OUT OF SYNC WITH THE TAPE AND/OR THE OTHER PLAYERS. (THERE ARE EXCEPTIONS TO THIS RULE).

ACCURATE SYNCHRONISATION BETWEEN THE COMPUTER PART ON TAPE AND THE PLAYERS IS VERY DIFFICULT BUT MUST BE ACCOMPLISHED AS PRECISELY AS POSSIBLE SINCE IT IS THE SINGLE MOST IMPORTANT REQUIREMENT FOR THE PIECE TO WORK.

WHEN A DIFFICULT SYNCHRONOUS ATTACK ON TAPE AND LIVE INSTRUMENT TAKES PLACE IT IS ALWAYS WITHOUT EXCEPTION PREFERABLE THAT THE INSTRUMENT SHOULD BE SLIGHTLY EARLY THAN LATE.

SINCE IN THESE OCCASIONS MOST OF THE TAPE ATTACKS ARE SMOOTHER THAN THE INSTRUMENTAL ATTACKS, A "MASKING" EFFECT WOULD MINIMISE THE IMPRECISION WHEN THE INSTRUMENT IS EARLY AND CONVERSELY EXPOSE IT WHEN IT IS LATE. THIS IS PARTICULARLY OBVIOUS IN THE PIANO CADENZA. STILL, "COMING IN A LITTLE EARLY" SHOULD NOT BECOME A HABIT SINCE ULTIMATELY THE CHALLENGE SHOULD REMAIN - TO PLAY IN PERFECT SYNC.

THERE ARE TWO HARMONIC FIELDS IN THIS PIECE :

- 1) Gf - F - A - Af - (PLUS C, WHICH IS LESS IMPORTANT)
Ef (PIVOT NOTE. BELONGS IN BOTH FIELDS.)
- 2) G - As - B - Cs - D - E

THE PLAYERS COULD LEARN TO "FEEL" THIS TWO HARMONIC FIELDS IN A SIMILAR WAY TO THAT IN WHICH WE FEEL THE MAJOR AND MINOR MODES OF THE TONAL SYSTEM OR AN ARCHAIC MODAL SCALE.

THE PLAYER AT THE MIXER SHOULD THINK OF HIMSELF AS A PERFORMER. INDEED, IT IS HIS RESPONSIBILITY TO CONTROL THE OVERALL BALANCE BETWEEN THE INSTRUMENTS AND THE TAPE IN THE SAME WAY AS A CONDUCTOR DOES WITH AN ORCHESTRA. THE DYNAMICS OF THE INSTRUMENTS (PARTICULARLY THE PICCOLO) CANNOT BE LEFT SOLELY TO THE FLUTE PLAYER SINCE IT WILL ALSO DEPEND ON PARAMETERS THE FLUTE PLAYER CANNOT CONTROL OR MODIFY, SUCH AS THE HALL ACOUSTICS, THE FREQUENCY RESPONSE OF THE MICROPHONE, UNWANTED FEED-BACK AND PERHAPS MORE IMPORTANT, THE DISTANCE FROM THE INSTRUMENT TO THE MICROPHONE WHICH WILL INEVITABLY CHANGE DURING PERFORMANCE.

THE PLAYER AT THE MIXER SHOULD KNOW THE PIECE AS A WHOLE EVEN BETTER THAN THE INSTRUMENTAL PLAYERS THEMSELVES, SINCE HE MUST INTERACT WITH ALL THE INSTRUMENTAL PARTS AND THE COMPUTER PART AT THE SAME TIME.

ARTIFICIAL REVERBERATION COULD BE ADDED TO THE FLUTE - WHEN AVAILABLE - DURING THE FLUTE CADENZA SO AS TO MATCH THE LIVE SOUND TO THE SOUND ON TAPE.

TRIPLE
CONCERTØ

FOR

FLUTE · CELLO · PIANO & COMPUTER

ALEJANDRO VIÑAO

© 1984

**THE PIECE STARTS WITH A
COMPUTER SOLO FOR 3' 21"
FOLLOWED BY A SILENCE.**

7/8 ♩ = 200

9/8 4/8 7/8 3/8 4/8 2/8 6/8 9/8

Pf *pp* *p*

pp *p* *mf*

4/8 7/8 6/8 2/8 4/8 7/8

Pf *mp* *mf* *mp* *mf* *f*

mp *mf* *mf* *f*

MECHANIC AND INTENTIONAL

Pf *f*

f *f* *f* *f*

Pf

4
8

5
8

2
8

3
8

1s

5s

10s

15s

20s

25s

30s

pp

f

pp

f

pp

mf

p

mf

#

35s 40s

4 $\text{♩} = 100$
4

CLICK STARTS

p *f* *sf* *f*

4 ALWAYS MECHANICAL AND STRICTLY A TEMPO
4

FI staccato

Vc détaché (*f*)

Pf

f

FI

Vc

Pf

1s

5s

10s

FI

Vc

Pf

fp

pp

mp

pp

mf

15_s20_s25_s30_s35_s

First system of musical notation. The top staff is a treble clef with a piano (p) dynamic. The bottom staff is a bass clef with a piano (p) dynamic. The score includes various musical notations such as notes, rests, and dynamic markings (p, mf, pp, f, mp). There are also some graphical elements like a large 'X' and a double bar line.

4
4 ♩ = 100

Second system of musical notation. The top staff is labeled FI (Flute I) and the bottom staff is labeled Vc (Violoncello). The FI staff includes the instruction "frullati" (trills). Both staves contain complex musical notation including triplets, slurs, and dynamic markings (f, p, ff, mp).

Third system of musical notation. The staff is labeled Pf (Piano). It contains complex musical notation including chords, slurs, and dynamic markings (f, ff).

CLICK TRACK STARTS

Fourth system of musical notation. The top staff is a treble clef and the bottom staff is a bass clef. The score includes various musical notations such as notes, rests, and dynamic markings (pp, ff). There are also some graphical elements like a large 'X' and a double bar line.

FI

Vc

Pf

f

sul pont.

FI

Vc

Pf

5
4

1_s

sul pont.

5_s 10_s 15_s 20_s

25_s 30_s 35_s 40_s 44_s

4/4 ♩ = 100

5/4

FI

Vc

Pf

CLICK STARTS

The musical score is divided into two main systems. The first system contains staves for a piano (p) and a double bass (b). The piano part features a series of notes with dynamic markings *p*, *ppp*, *mf*, and *fp*, along with glissando markings. The double bass part has a series of notes with dynamic markings *f* and *ppp*, and a glissando marking. The second system contains staves for a Flute (FI), Violoncello (Vc), and Piano (Pf). The Flute part is in 4/4 time and features a series of notes with dynamic markings *f* and *ppp*. The Violoncello part is in 5/4 time and features a series of notes with dynamic markings *f* and *ppp*. The Piano part is in 4/4 time and features a series of notes with dynamic markings *f* and *ppp*. A 'CLICK STARTS' marking is present at the beginning of the Piano part.

1s $\flat$ mp mf f $\flat$ $5s$ $\flat$ mp f $10s$

p f mp f mp f

5 4 $\bullet = 100$

CLICK STARTS

5 4

frullati

F1

f

Vc

f

sul pont.

Pf

f

ppp f

6 6 6 6 6

p

f

4_s **7_s**

mf

f

4 **4** ♩ = 100

CLICK STARTS

4 **4** ♩ = 100

f *frullati*

FI

Vc

Pf

FI

Vc

Pf

6

6

6

3

1s

pp

mf

5s

10s

13s

4 4 = 100

CLICK TRACK STARTS

mf

pp

f

ppp

f

1_s

2_s

3_s

4_s

4
4

Fl

frullati

Vc

sul pont.

Pf



mp

f

f = pp



5_s

6_s

7_s

8_s

7
16



f = pp

f

f

f

f

f

f

CLICK TRACK

etc.

8 16 7 16 6 16

Flute I (FI) and Violoncello (Vc) parts are in 8/16, 7/16, and 6/16 time signatures. The Piano (Pf) part is in 4/16 time. The Percussion (P) part is in 3/16 time.

The score consists of five systems of staves. The first system (measures 13-16) includes FI, Vc, Pf, and P. The second system (measures 17-20) includes FI, Vc, and Pf. The third system (measures 21-24) includes FI, Vc, and Pf. The fourth system (measures 25-28) includes FI, Vc, and Pf. The fifth system (measures 29-32) includes FI, Vc, and Pf.

The music is written in a key with one flat (B-flat) and a common time signature of 4/16. The tempo is marked with a double bar line and the number 4. The score includes various musical notations such as notes, rests, and accidentals.

4/4

FI *frullato*
mf *p* *f* *p* *mf* *f* *p* *f* *p*

3/4

5/8

Vc *sul pont.*
mf *p* *f*

Pf *p* *f* *p* *ff* *f*

* or as fast as possible

pp *mf* *pp* *f* *pp* *f* *pp* *f* *gliss.*

4/4

FI *harsh sound*
f

Vc *f*

Pf *ff* *mf* *f* *mf*

mf *ff*

2
4

5
16

2
8

5
16

4
4

Fl

Vc

Pf

gliss

3
8

4
4

Fl

Vc

Pf

ff

ff

ff

frullato

sul pont.

al niente

STARTS
COMPUTER
SOLO

al niente

l.v.

COMPUTER SOLO FOR 1' 15"

17 piano cadenza

$\text{♩} = 150$

THE COMPUTER PART CONTINUES IN RHYTHMIC UNISON WITH THE PIANO PART BUT WITH SMOOTH ATTACKS.
ONLY THOSE PHRASES WHICH GIVE A CUE TO THE PLAYER ARE NOTATED.

6/8 5/8 9/8 6/8 5/8 6/8 4:3 2+3/8 9/8

Pf p f mf f P < ff

6/8 7/8 6/8 4/8 6/8 9/8

Pf p f mf f P < f

6/8 5/8 9/8 6/8 4/8 6/8 5:6 5/8

Pf p f ff p f mf ff

6/8 3/8 6/8 5/8 6/8 2/8 6/8

Pf ff mf f mf ff mf f mf f

Pf

6 8 2 6 5 6 9 5

8 8 8 8 8 8 8 8

mf ff mf f mf mp mf f mf

POLO RIT. A TEMPO

Pf

4 9 6 7 12 9 6 5 2 6

8 8 8 8 8 8 8 8 8 8

mp mf mf f mf f

A TEMPO

Pf

2 6 7 6 5 6

8 8 8 8 8 8

ACCEL 8 A TEMPO

mf f mp mf f mp mf f

Pf

9 6

8 8

mp f mp f p f mp mf

19

Handwritten musical score for piano, measures 19-23. The score is written on five systems of grand staves. Measure numbers 4, 6, 8, 9, 10, 5, 6, 9, 6 are written above the staves. Dynamics include *mf*, *f*, *P*, *ff*, *mp*, and *PP*. There are various musical notations including slurs, ties, and fingerings.

6/8 12/8 8 6/8 2/8 6/8 9/8 5/8

Pf *fff* ACCEL. 6/8 A TEMPO

12/8 6/8 7/8 5/8 3/8 7/8 3/8 2/8 4/8

Pf *fff* PP *fff* PP *mf* PP *f* PP *fff* PP P *mf* *fff* P

7/8 6/8 9/8 2/8 4/8

Pf PP *f* P *mf* PP *f* PP *f* PP *fff* *f* *fff* mp *mf* *f* *fff*

6/8 15/8 7+5/8 4/8 15/8 9/8

Pf 3:2

f PP *mf* P *fff* P *f*

This musical score is for a piano piece, starting on page 21. It features a complex arrangement of staves with various time signatures and dynamic markings.

Time Signatures: The score includes a variety of time signatures: $\frac{7}{8}$, $\frac{6}{8}$, $\frac{5}{6}$, $\frac{2}{8}$, $\frac{4}{8}$, $\frac{3}{8}$, $\frac{12}{8}$, $\frac{3}{2}$, and $\frac{8}{8}$.

Dynamic Markings: The dynamics range from *pp* (pianissimo) to *fff* (fortississimo), including *Pf* (pianoforte), *f* (forte), *mf* (mezzo-forte), and *P* (piano).

Performance Instructions: The score includes several performance instructions: *Gliss* (glissando) and *tr* (trill).

Staff Details: The score is written for piano, with multiple staves. The first staff is in treble clef, and the second staff is in bass clef. The third staff is in treble clef, and the fourth staff is in bass clef. The fifth staff is in treble clef, and the sixth staff is in bass clef. The seventh staff is in treble clef, and the eighth staff is in bass clef. The ninth staff is in treble clef, and the tenth staff is in bass clef. The eleventh staff is in treble clef, and the twelfth staff is in bass clef. The thirteenth staff is in treble clef, and the fourteenth staff is in bass clef. The fifteenth staff is in treble clef, and the sixteenth staff is in bass clef. The seventeenth staff is in treble clef, and the eighteenth staff is in bass clef. The nineteenth staff is in treble clef, and the twentieth staff is in bass clef. The twenty-first staff is in treble clef, and the twenty-second staff is in bass clef. The twenty-third staff is in treble clef, and the twenty-fourth staff is in bass clef. The twenty-fifth staff is in treble clef, and the twenty-sixth staff is in bass clef. The twenty-seventh staff is in treble clef, and the twenty-eighth staff is in bass clef. The twenty-ninth staff is in treble clef, and the thirtieth staff is in bass clef. The thirty-first staff is in treble clef, and the thirty-second staff is in bass clef. The thirty-third staff is in treble clef, and the thirty-fourth staff is in bass clef. The thirty-fifth staff is in treble clef, and the thirty-sixth staff is in bass clef. The thirty-seventh staff is in treble clef, and the thirty-eighth staff is in bass clef. The thirty-ninth staff is in treble clef, and the fortieth staff is in bass clef. The forty-first staff is in treble clef, and the forty-second staff is in bass clef. The forty-third staff is in treble clef, and the forty-fourth staff is in bass clef. The forty-fifth staff is in treble clef, and the forty-sixth staff is in bass clef. The forty-seventh staff is in treble clef, and the forty-eighth staff is in bass clef. The forty-ninth staff is in treble clef, and the fiftieth staff is in bass clef. The fifty-first staff is in treble clef, and the fifty-second staff is in bass clef. The fifty-third staff is in treble clef, and the fifty-fourth staff is in bass clef. The fifty-fifth staff is in treble clef, and the fifty-sixth staff is in bass clef. The fifty-seventh staff is in treble clef, and the fifty-eighth staff is in bass clef. The fifty-ninth staff is in treble clef, and the sixtieth staff is in bass clef. The sixty-first staff is in treble clef, and the sixty-second staff is in bass clef. The sixty-third staff is in treble clef, and the sixty-fourth staff is in bass clef. The sixty-fifth staff is in treble clef, and the sixty-sixth staff is in bass clef. The sixty-seventh staff is in treble clef, and the sixty-eighth staff is in bass clef. The sixty-ninth staff is in treble clef, and the seventieth staff is in bass clef. The seventy-first staff is in treble clef, and the seventy-second staff is in bass clef. The seventy-third staff is in treble clef, and the seventy-fourth staff is in bass clef. The seventy-fifth staff is in treble clef, and the seventy-sixth staff is in bass clef. The seventy-seventh staff is in treble clef, and the seventy-eighth staff is in bass clef. The seventy-ninth staff is in treble clef, and the eightieth staff is in bass clef. The eighty-first staff is in treble clef, and the eighty-second staff is in bass clef. The eighty-third staff is in treble clef, and the eighty-fourth staff is in bass clef. The eighty-fifth staff is in treble clef, and the eighty-sixth staff is in bass clef. The eighty-seventh staff is in treble clef, and the eighty-eighth staff is in bass clef. The eighty-ninth staff is in treble clef, and the ninetieth staff is in bass clef. The ninety-first staff is in treble clef, and the ninety-second staff is in bass clef. The ninety-third staff is in treble clef, and the ninety-fourth staff is in bass clef. The ninety-fifth staff is in treble clef, and the ninety-sixth staff is in bass clef. The ninety-seventh staff is in treble clef, and the ninety-eighth staff is in bass clef. The ninety-ninth staff is in treble clef, and the hundredth staff is in bass clef.

8 $\frac{2}{8}$ $\frac{6}{8}$ $\frac{2}{8}$ $\frac{5}{8}$ $\frac{3}{8}$ $\frac{6+2}{8}$ $\frac{5}{8}$

fff pp fff pp f P ff

$\frac{9}{8}$ $\frac{4}{8}$ $\frac{6}{8}$ $\frac{7}{8}$ $\frac{4}{8}$ $\frac{6}{8}$ $\frac{5}{8}$ $\frac{2}{8}$ $\frac{5}{8}$ $\frac{2}{8}$ $\frac{6}{8}$ $\frac{7}{8}$

pp mf P f P ff poco f

$\frac{3}{8}$ $\frac{7}{8}$ $\frac{9}{8}$ $\frac{3}{8}$ $\frac{4+3}{8}$ $\frac{3}{8}$ $\frac{6}{8}$ $\frac{3}{8}$ $\frac{5}{8}$

$\frac{5}{8}$ $\frac{6}{8}$ $\frac{4}{8}$ $\frac{6}{8}$ $\frac{3}{8}$ $\frac{4}{8}$ $\frac{5}{8}$ $\frac{3}{8}$ $\frac{5}{8}$

mp f fff

$\frac{6}{8}$ $\frac{4}{8}$ $\frac{6}{8}$

fff pp fff pp ff fff

COMPUTER SOLO FOR 2' 14"

$\text{♩} = 100$ FLUTE CADENZA

$\frac{3}{4}$ BREATHY SOUND $\frac{4}{4}$ THROUGHOUT

ALTO
FLUTE

This musical score is for an Alto Flute Cadenza, featuring a single staff with a treble clef and a key signature of one flat (B-flat). The tempo is marked as quarter note = 100. The score is divided into several measures, each with a specific time signature: 3/4, 2/4, 4/4, 3/4, 4/4, 3/4, 4/4, 5/4, 5/16, and 4/4. The music includes various dynamic markings such as *mp* (mezzo-piano), *pp* (pianissimo), *mf* (mezzo-forte), and *f* (forte). It also features articulation marks like accents and breath marks, as well as fingering numbers (1-5) and slurs. The notation includes eighth, sixteenth, and thirty-second notes, as well as rests and ties. The final measure is marked 'A TEMPO'.

RALENTANDO $\frac{3}{4}$ A TEMPO $\text{♩} = 120$

$\text{♩} = 100$

$\frac{4}{4}$ $\frac{3}{4}$ $\frac{4}{4}$ $\frac{2}{4}$

$\frac{4}{4}$ $\frac{4}{4}$ $\frac{6}{4}$ $\frac{2}{4}$ $\text{♩} = 120$ $\frac{3}{4}$ $\frac{5}{4}$ $\frac{4}{4}$

CONTINUES UNTIL THE END OF THIS CADENZA.
(SEE INSTRUCTIONS PAGE)

THIS PATTERN

First system of musical notation, featuring two staves. The upper staff contains a melodic line with eighth and sixteenth notes, including triplets and slurs. The lower staff provides a harmonic accompaniment with chords and moving lines. Dynamic markings include *p*, *f*, *mp*, and *ff*. The system concludes with a key signature change to two sharps (F# and C#).

Second system of musical notation, continuing the piece. The upper staff features more complex rhythmic patterns with triplets and slurs. The lower staff continues the accompaniment. Dynamic markings include *mf*, *f*, *p*, *mp*, and *f*. The system ends with a key signature change to one sharp (F#).

Third system of musical notation. The upper staff shows a melodic line with various dynamics. The lower staff has a more active accompaniment with sixteenth notes and slurs. Dynamic markings include *mf*, *pp*, *p*, *f*, and *ff*. The system concludes with a key signature change to one flat (Bb).

Fourth system of musical notation, the final system on the page. The upper staff continues the melodic development with slurs and dynamic markings. The lower staff provides a steady accompaniment. Dynamic markings include *p*, *mf*, *f*, *ff*, and *mp*. The system ends with a key signature change to two flats (Bb and Eb).

The image displays a handwritten musical score for a computer solo, organized into three systems of staves. The notation includes various musical symbols such as notes, rests, and dynamic markings.

System 1: The first system consists of two staves. The upper staff features a series of eighth and sixteenth notes with accents, dynamic markings of *f*, *mp*, *ff*, *mf*, *ff*, *mf*, *p*, *ff*, *f*, *pp*, *ff*, *p*, *f*, *p*, *f*, *mf*, and *f*. The lower staff contains triplet markings and dynamic markings of *mf*, *ff*, *f*, and *ff*. Fingering numbers 6 and 5 are indicated above the upper staff.

System 2: The second system also consists of two staves. The upper staff includes notes with accents and dynamic markings of *ff*, *mf*, *f*, and *mf*. The lower staff features dynamic markings of *ff* and *ff*. A triplet marking is present above the upper staff.

System 3: The third system consists of two staves. The upper staff shows notes with accents and dynamic markings of *ff* and *pp*. The lower staff includes dynamic markings of *ff* and *fff*.

COMPUTER SOLO FOR 1' 45"

CELO CADENZA

PLAY SUL PONTICELLO THROUGHOUT ENTIRE CADENZA IMITATING THE SOUND ON TAPE AS CLOSE AS POSSIBLE - TREMOLORES AS FAST AS POSSIBLE - FOR LONG NOTES MAKE

Vc. $\text{♩} = 140$

THE SPEED OF TREMOLORES IRREGULAR AS IN TAPE - CELLO AND TAPE SHOULD MERGE INTO ONE.

Vc. *sf* THROUGHOUT

Vc. *mf* *mp* *ff*

Vc. *meno pont.* *ACCEL* *A TEMPO*

2/4 4/4 2/4 3/4 2/4 3/4 4/4 5/4

RAILLENTANDO A TEMPO

Handwritten musical score for Violoncello (Vc.) and Double Bass (C). The score is divided into four systems, each with a Vc. staff and a C staff. The first system is in 4/4 time, the second in 3/4, the third in 3/4 with a 3+2 measure, and the fourth in 4/4. The score includes various musical notations such as notes, rests, slurs, and dynamic markings (ff, f, mf, meno pont.).

System 1: 4/4 time. Vc. staff starts with a *ff* dynamic, followed by a *f* dynamic, then *mf*, and finally *f*. The C staff has a *ff* dynamic. The system ends with a 3/4 time signature.

System 2: 3/4 time. Vc. staff has a *f* dynamic. The C staff has a *f* dynamic. The system ends with a 2/4 time signature.

System 3: 3/4 time. Vc. staff has a *f* dynamic. The C staff has a *f* dynamic. The system ends with a 3+2 measure, followed by a 4/4 time signature.

System 4: 4/4 time. Vc. staff starts with a *ff* dynamic, followed by a *mf* dynamic, then *f*, and finally *f*. The C staff has a *f* dynamic. The system ends with a 4/4 time signature.

Handwritten musical score for Violoncello (Vc.) and Double Bass (represented by two staves with a double circle symbol).

The score is divided into four systems, each with a key signature of one flat (B-flat) and various time signatures.

System 1:

- Time signatures: $\frac{3}{4}$, $\frac{3+2}{8}$, $\frac{2}{4}$.
- First staff (Vc.): Features a melodic line with slurs and accents.
- Second staff (Double Bass): Features a bass line with slurs, accents, and dynamic markings f and ff .

System 2:

- Time signature: $\frac{4}{4}$.
- First staff (Vc.): Features a melodic line with slurs, accents, and dynamic markings f , mf , and ff . The word "marcato" is written above the staff.
- Second staff (Double Bass): Features a bass line with slurs, accents, and dynamic markings f and ff .

System 3:

- Time signatures: $\frac{2}{4}$, $\frac{4}{4}$.
- First staff (Vc.): Features a melodic line with slurs, accents, and dynamic markings f and mf .
- Second staff (Double Bass): Features a bass line with slurs, accents, and dynamic markings mf and f .

System 4:

- Time signatures: $\frac{2}{4}$, $\frac{4}{4}$.
- First staff (Vc.): Features a melodic line with slurs, accents, and dynamic markings mp and f .
- Second staff (Double Bass): Features a bass line with slurs, accents, and dynamic markings f and mp .

First system of musical notation. The upper staff is labeled **Vc.** and contains a melodic line with various ornaments and dynamics including *mp* and *p*. The lower staff contains a bass line with a triplet of eighth notes marked with a bracket and the number 3, and a group of eighth notes marked with a bracket and the number 8. The system concludes with a double bar line.

Second system of musical notation. The upper staff is labeled **Vc.** and contains a melodic line with dynamics including *pp*, *p*, *mp*, and *pp*. The lower staff contains a bass line with dynamics including *p*, *mp*, and *pp*. The system concludes with a double bar line.

Third system of musical notation. The upper staff is labeled **Vc.** and contains a melodic line with dynamics including *p*, *ppp*, and *pp*. The lower staff contains a bass line with dynamics including *pp* and *pp*. The system concludes with a double bar line.

Four empty musical staves at the bottom of the page.

COMPUTER SOLO FOR 0' 46"

FINALE

4
4

♩ = 90

3
44
43
44
45
4

Rit.

Vc

*pp**p*

Pf

*mp**p**mp**p**p*
(sost. until *)

CLICK STARTS

3

3

5

5



4
4

Vc

pp

mp

f

f

3

Pf

mf

pp

f

poco f

ppp

mf

mf

p

mf

This musical score is for the piece "The Wind" by Maurice Strakosky, arranged for Flute I, Violoncello, Piano, and Harp. The score is written in 3/4 time and consists of 54 measures, with the measure numbers 5 and 4 prominently displayed in the center. The instrumentation includes Flute I (FI), Violoncello (Vc), Piano (Pf), and Harp (Harp). The score features various musical notations, including dynamics (pp, p, mp, f, mf, pp), articulation (accents, slurs), and performance instructions (al niente, gliss). The Flute I part begins with a triplet of eighth notes, followed by a series of eighth and sixteenth notes. The Violoncello part starts with a half note, followed by a series of eighth notes. The Piano part features a complex rhythmic pattern with triplets and sixteenth notes. The Harp part includes a series of chords and a glissando. The score concludes with a final measure marked with a double bar line.

Flute I (Fl)
Measures 35-40: **3/8**, **4/4**, **3/4**. Dynamics: *p*, *pp*. Includes a **PICCOLO** part in the final measure.

Piano (Pf)
Measures 35-40: *poco f*. Includes a ***** in the final measure.

Violoncello (Vc)
Measures 35-40: **5/4**, **4/4**, **5/4**. Includes the instruction **COL LEGNO (close to microphone)**.

Piccolo (Piccolo)
Measures 35-40: **4/4**, **5/4**. Includes a downward arrow pointing to the final measure.

Other parts
Measures 35-40: **5/4**, **4/4**, **5/4**. Includes a ***** in the final measure.

4
4

rhythmic and intentional

5
4

Vc

Pf

C

Vc

Pf

C

First system: Vc (bass clef) plays a rhythmic pattern of eighth and sixteenth notes with accents. Pf (treble and bass clefs) has a single note in the treble and a whole note in the bass. C (treble and bass clefs) has a piano introduction with dynamics *p*, *ppp*, *f*, and *ppp*, including a glissando and a key signature change to two sharps.

Second system: Vc (bass clef) starts with a triplet of eighth notes marked *ff*, followed by a half note marked *mf*. Pf (treble and bass clefs) features a piano introduction with dynamics *p*, *ff*, *pp*, *mf pp*, and *mf pp*, including a 10-measure triplet. C (treble and bass clefs) has a piano introduction with dynamics *f* and *p*.

Pic

Vc

Pf

ppp — mf p

pp — mf p

p — mf

p

Pic

col legno

Vc

Pf

pp — mf

pp — mf

p — mf

p

mf

pp — mf p

pp — mf p

pp — mp

mf

mp

mp

Pic *p* *pp* *p*

Vc *arco* *f*

Pf *f* *mf* *f* *ff*

3 **2** **3** **3** **5**

Pic **3** **3** **4** *p* *ff*

Vc *sul pont.* *p* *ff*

Pf

3 **3** **4** **3** **5** **4** **3** **5**

This musical score is for a chamber ensemble consisting of Piccolo (Pic), Violoncello (Vc), Piano (Pf), and Double Bass (DB). The score is divided into two systems, each with a rehearsal mark (5 and 4).

System 1 (Rehearsal Mark 5):

- Piccolo (Pic):** Starts with a *p* dynamic, followed by a crescendo to *pp*, then a sharp increase to *f* with a glissando effect. The system ends with a *p* dynamic.
- Violoncello (Vc):** Starts with a *mf* dynamic, followed by a crescendo to *f*, then a sharp increase to *f* with a glissando effect. The system ends with a *p* dynamic.
- Piano (Pf):** Starts with a *mp* dynamic, followed by a crescendo to *f*, then a sharp increase to *ff*. The system ends with a *p* dynamic.
- Double Bass (DB):** Starts with a *pp* dynamic, followed by a crescendo to *mf*, then a sharp increase to *pp*. The system ends with a *ppp* dynamic.

System 2 (Rehearsal Mark 4):

- Piccolo (Pic):** Starts with a *f* dynamic, followed by a crescendo to *f*, then a sharp increase to *mf*, then a sharp increase to *ff*. The system ends with a *mp* dynamic.
- Violoncello (Vc):** Starts with a *ff* dynamic, followed by a crescendo to *pp*, then a sharp increase to *ff*. The system ends with a *pp* dynamic.
- Piano (Pf):** Starts with a *mf* dynamic, followed by a crescendo to *ff*, then a sharp increase to *ff*. The system ends with a *mf* dynamic.
- Double Bass (DB):** Starts with a *pp* dynamic, followed by a crescendo to *ff*, then a sharp increase to *ff*. The system ends with a *ff* dynamic.

The musical score consists of three staves. The top staff is for Piccolo (Pic), the middle for Violoncello (Vc), and the bottom for Piano (Pf). The Piccolo part features rapid sixteenth-note passages with fingerings of 5, 10, 5, and 10, and dynamic markings of *ppp*, *f*, and *pp*. The Violoncello part includes similar rapid passages with fingerings of 5, 10, 5, and 10, and dynamic markings of *pp*, *f*, and *pp*. The Piano part features a complex texture with rapid sixteenth-note passages in both hands, including a section marked "sul pont (harsh sound)" with a dynamic of *pp*. The score is written in G major and 2/4 time.

Musical score for Piccolo (Pic), Violoncello (Vc), and Piano (Pf). The score is divided into two systems. The first system is in 2/4 time, and the second system is in 4/4 time. The Piccolo part starts with a key signature of one sharp (F#) and a tempo marking of *mf*. The Violoncello part starts with a key signature of one sharp (F#) and a tempo marking of *mf*. The Piano part starts with a key signature of one sharp (F#) and a tempo marking of *mf*. The score includes various musical notations such as notes, rests, dynamics, and articulations.

RIT.

A TEMPO

A.F. **3** **4** **4** **4**

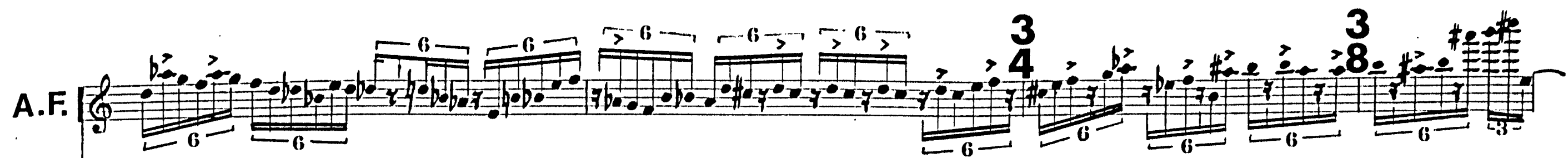
Pf **3** **6** **3** **10**

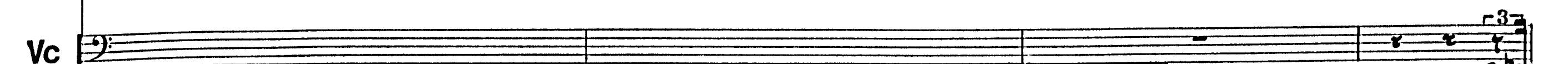
5 **8** **gliss**

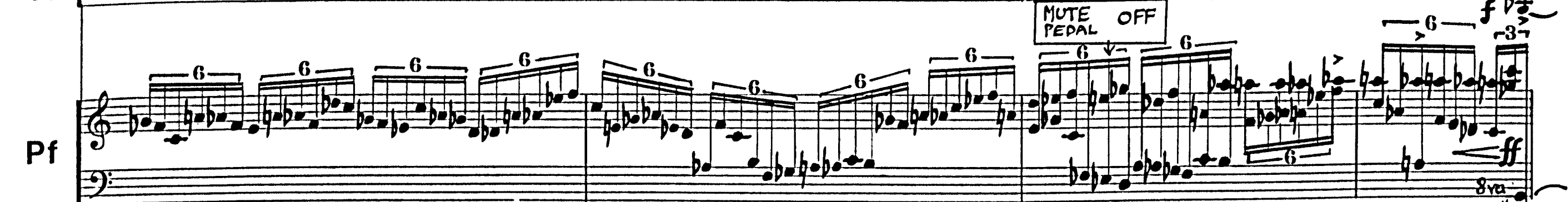
A.F. **6** **6** **6** **6** **6** **6** **6** **6** **6** **6**

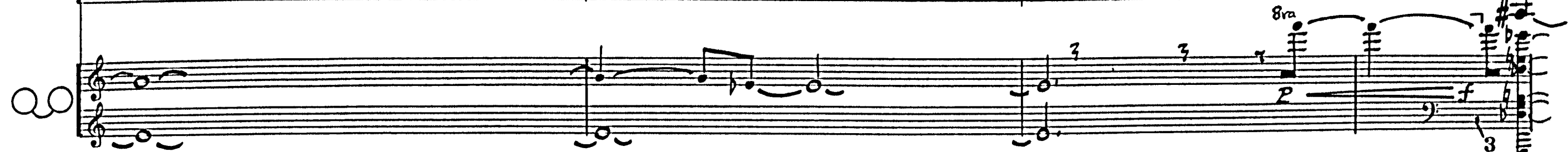
Pf **6** **6** **6** **6** **6** **6** **6** **6** **6** **6**

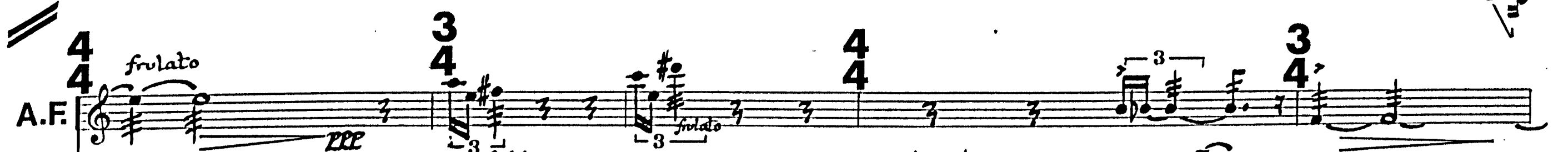
3 **8**

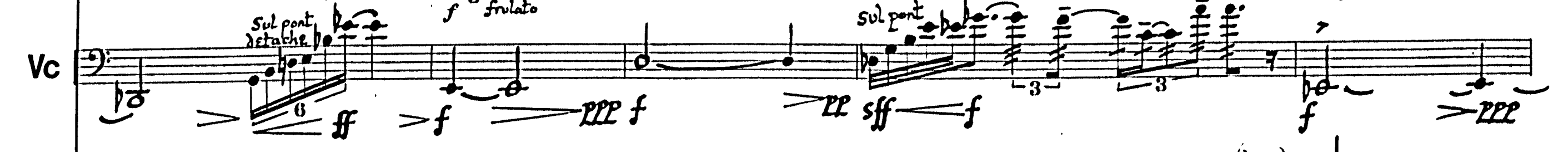
A.F. 

Vc 

Pf 



A.F. 

Vc 

Pf 

[illegible]

This musical score features three staves: Piccolo (Pic), Violoncello (Vc), and Piano (Pf). The Piccolo part includes a 'frulato' section with triplets and dynamic markings from *mf* to *ppp*. The Violoncello part has a melodic line with dynamic markings from *mf* to *pp*. The Piano part features a complex texture with triplets, quintuplets, and decuplets, with dynamic markings from *f* to *pp*. The score is written in a key with one sharp (F#) and a common time signature (C).

FI

[illegible]

3 $\text{♩} = 90$ 5 $\text{♩} = 110$ 3 $\text{♩} = 90$ 4

pic 8 8 3 4 4

Vc *f* *p* *ff* *fff*

Pf *f* *ff*

FLUTE

Pic 3 4 3 8

Vc *mf* *ff* *f* *ff*

Pf *SEMPRE ff E marcato* *8va* *gliss* *ff*

FLUTE

A musical score page featuring four staves: Flute I (FI), Violoncello (Vc), Piano (Pf), and Double Bass. The top system includes time signatures of 3/4, 3/8, and 3/4, with dynamics like ff and markings such as "frutato" and "ACCEL.". The bottom system includes time signatures of 2/4, 5/8, and 4/4, with dynamics like mf and markings like "Poco RIT", "gliss", and "ff". The score contains various musical notations including notes, rests, slurs, and articulation marks.

Handwritten musical score for four instruments: Flute (Fl), Violin (Vc), Piano (Pf), and Glass. The score is written on four staves. The Flute staff has a 2/4 time signature and a key signature of one flat. The Violin staff has a 4/4 time signature and a key signature of one flat. The Piano staff has a 5/8 time signature and a key signature of one flat. The Glass staff has a 4/4 time signature and a key signature of one flat. The score includes dynamic markings (ppp, ff) and performance instructions (FAR BACK FROM MICROPHONE, MOVING CLOSER, CLOSE). The Glass part is marked with a 'glass' label and a 'gloss' label.

Fl

2/4

4/4

5/8

ppp

[FAR BACK FROM MICROPHONE → MOVING CLOSER → CLOSE]

Vc

ppp

Pf

ppp

gloss

TRIPLE
CONCERTØ