VOX 1

for 4 amplified voices (using extended vocal techniques) with spatial projection, & 4-channel tape.

commissioned by "Electric Phoenix" with funds made available by the Arts Council of Great Britain.

with computer-controlled
spatial diffusion

using specially-built digital hardware
and composer-designed software.

GRAPHIC & NON-PHONETIC NOTATION

- normal sung notes (wamp)
- lots of breath-sound in singing voice – but still clearly singing. (½-wamp) [where nec. breath also notated separately]
- Even more breath-sound. Sung tone dominated by breath content, clear pitch not clearly discernible (¼-wamp). Wamp broken up by any multiplex [see above]
- Various kinds of noise-bands (s, ∫, h, x etc). No particular type of cross-hatching is associated exclusively with any specific noise-type (e.g. "X") (specific noise-type given in phonetic notation associated with it) but notation is locally consistent (i.e. within any one voice on one page or section of a page, a repeated noise-type will use the same cross-hatching pattern; NB especially, where the noise-type changes in a transformation, cross-hatching will change). etc.
- Various kinds of sound-complex (X+ types, & types etc). Locally consistent only (see above). etc.
- R types
- rolled-r̃
- Flabberlips
- Lipfarts

Joan la Barbara ululation. A very high pitched multiphonic ululation of the female voice (as on "Voice is the Original Instr")

The above bands will be positioned high or low, or slope up or down accordingly as sounds are pitched high or low, or gliss up or down respectively.

PITCH NOTATIONS

The lines represent the highest & lowest limits of the ranges (of the particular sound-types). Range may be qualified e.g. "non-falsetto range" for voiced sounds. (where no range indicated use "normal" pitch for sound). Changes in pitch of noise-band is through filtering (as with water-grit). All other sounds have a fundamental pitch & a formant-emphasized (filter) pitch. Where the linear graphic moves higher & lower on the page (e.g.) it is the fundamental pitch which is changing. Where both fundamental & filter pitch are controlled independently a separate formant notation is used (see opposite) & filter motion indicated independent of motion of the fundamental pitch.

G♯ Specific pitches are indicated thus.

OTHER SOUND-TYPES

- Constipation multiphonic (58)
- Inhaled sound-complex or multiphonic
- Inhaled ½-wamp (gasp)
- ¼-wamp
- Inhaled sung tone
- Normal sung tone
- Very breathy wamp, but still pitched (⅓-wamp!)
- Sound made through water in a mug or glass.

SHORT SOUNDS (attacks or staccato events)

- Unvoiced
- Voiced
- ½-voiced, or mixed unvoiced & voiced

IN THE SPEECH SECTION (pp 18-19) the following signs are also used. 1) Indicates a staccato sound with an unvoiced onset & voiced continuation e.g. sye. 2) Indicates an event which is both voiced & unvoiced i.e. g̃, which combines a click (unvoiced) with g (voiced).

PHONETIC NOTATION (Numbers in brackets refer to the 'Book of Lost Voices')

- a — "a" as in "hat" (English)
- e — "e" as in "get" (English)
- i — "ee" as in "feet", but very high formant area
- o — "o" as in "hot" (English)
- u — "u" as in "shoe", "crude" but very low (darker) formant area
- ɐ — "ai" as in "straight" in North of England pronunciation (no dipthong)
- ə — "ə" as in "butter", "away"; neutral vowel (English)
- y — as in "über" (German)
- ŋ — "ng" as in "sing" (English)

- s — as in "hiss" (English), but stronger (tighter airflow)
- ∫ — "sh" as in "shoe" (English)
- f — "f" as in "fish" (English)
- h — "h" as in "hat" (English), or just breath sound
- x — "ch" as in scottish "loch", (but NO water-grit)
- θ — "th" as in "path" (English)
- ɬ — as in welsh ll, with NO water-grit
- inhaled tonguesuck (like inhaled ɬ)
- X+ — as in scottish "loch" with water-grit in sound (39)
- "rocket-roar", as X+ but with low-frequency water-grit (40)
- {X+} i.e. pseudo-unlunged X+ (37)
- {X+} crack (plain pseudo-unlunged X+) (38)

- t! — plosive t
- d! — as plosive t, but retroflex tongue (will make a plosive "pop" even without subsequent air).
- {k}! {k!} — plosive unlunged k (no air released after it).
- high frequency noise (s) content plosive "t".

- r̃ — rolled r (27)
- fricative r is in "red" (English)
- R — uvular R (as in french "rue")

- lipflabber (16-20) unless specified otherwise e.g. "CHEEK" implies cheek-flabber (22)
- lip-fart (16-21)
- ‖:tktk:‖ rapidly repeated string of "t" & "k", as in brass etc. double-tonguing. As fast as possible
- ‖:dgdg:‖ Similar, with d & g (voiced)
- Etc.
- ‖:nŋnŋ:‖ similar, with n & ŋ (voiced)

Sustained consonants may be tied to attack consonants as shown (as with pitch-ties in conventional notation).

MULTIPLEX NOTATION

- rapid random movement from one of the listed sounds to another. (multiplex).
- seamless movement (sustained & without discontinuity) amongst the listed elements.
- Frequency of occurence of elements indicated by boldness of boxes in which they occur. e.g. dotted box, less common elements than those in normal box, latter less common than heavy-lined box.

ARTICULATIONS, BREATHS ETC.

- Take a (silent) breath
- Inhaled sound
- Normal (exhaled) sound
- Trill (wamp) between pitches indicated
- uuuuuuu Ululation
- eeeeeee Vibrato (NO VIBRATO WHERE NOT INDICATED).
- tongueflip — Tongue flips random rapidly in & out of, & around mouth, modifying any sounds being produced.
- ½-tongueflip — As tongueflip – tongue reaches as far as lips but doesn't flip right out of mouth (modifies other sounds).
- tonguartic. — Rapid random tongue motion inside mouth (modifies other sounds)
- WW — Across wamp, rolled r̃ or etc. indicates intermodulation of the 2 sounds involved. NB MOST OF THE ¼-WAMP IN FIRST HALF OF PIECE IS INTERMODULATED OR ARTICULATED BY MULTIPLEXES. This notation has largely been ommitted for the sake of visual clarity. Similarly wamp is intermodulated by rolled r̃ in all voiced r̃ sounds, so the WW notation is ommitted.

- Cupped-hands filter. One hand forms a small "trumpet". Palm of other hand swirls on one front edge of trumpet providing a variable filter.
- Similar filter. Hands in prayer formation, thumb-edge of 2-hands pressed on cheeks either side of mouth, other edge of hands open & close (filter).
- Random filter changes.
- Filter slowly opened — filter slowly closed
- Rapid open-close filter-vibrato (often specific rhythm given). Always start open. 1 motion consists of "close-open" cycle. NEVER FULLY CLOSE-OFF FILTER except where used to produce a wisnte (>o).
- May be produced by removing hand-"trumpet" from mouth, but making appropriate filter-vibrato movement with other hand, and then lowering "tpt" onto mouth.
- TTTTTTTT — Hand-"trumpet" as before, but 2nd hand moves rapidly vigorously away from & towards tpt, coming very close to it, but not quite touching it ("phasing"-type effect).

(SEE NEXT PAGE)

SPECIAL CONVENTIONS IN PHONETICS

- (d)(g)(v) — suppressed consonants. i.e. not interrupting the airflow between the vowels they separate. (see also STOPS)
- x (see below) with an upward-filter-gliss ə⇨i, with simultaneous voiced vowel constituent.
- ʀ — uvular "r" (R), with definite pitch (fundamental-pitch).
- ɭ — sustained (as a "vowel"), retroflex-tongue "l"
- z — Often notated as a voiced "s" in phonetics texts, but somewhat softer than "s" used in VOX-I (less pressure of tongue on palate; sound as in "buzz"). Normal "s" in VOX-I is strong.
- ∅ — Nothing i.e. NO consonant
- [g] — Consonant position used as a stop – consonant not sounded. Tongue moves to position where is stops airflow, & does not release air.
- h — Strong "h" sound created through turbulence rather than excessive air force. Air passed through narrowed passageway between tongue & roof of mouth.
- dg — Consonants without vowels. Assume "ə" (neutral) vowel
- i ɪ — i (normally used), as high as possible formant range. ɪ = "i" as in "hit"
- ʒ — "zh" as in french "jamais", always voiced.
- t∫ — as in "church" but more plosive
- ɦ — voiced overblown "h" (throatroar) (45)

SPEECH NOTATION

Towards the end of VOX-I, the voice-materials converge towards a kind of heightened speech articulation. The usual speed of speech is such that the detailed notational conventions used prior to this in the piece become rather cumbersome. The notation for "speech" is thus modified in various ways

(1) (See note between "Tape" & "Voice-1" systems on page 15.) Occasionally the noise-band component of a two-constituent sound is not notated in the graphics. The information is retained however in the accompanying phonetic notation.

(2) (See note between "Tape" & "Voice-1" systems on page 15.) On p.15 the noise-band constituents of the graphics have been reduced in size to make the reading of the relative pitches of the pitched constituents easier.

(3) On the final 2 pages (18-19) the phonetic notation occurs immediately below the rhythm notation, (rather than at the bottom of the part as previously).

(4) On pps. 18-19 Phonetics are notated on 3-levels thus: 1 2 3 — t̄ˢ ∫ˣ₍ᵤ₎ dʒu

The central level (2) is reserved for attack sounds and staccato groupings. The lower level (3) carries sustained voiced sounds, & the upper level (1) sustained unvoiced sounds.

Where both voiced & unvoiced constituents occur together in the same sound the notation is not always consistent (!) but should be clear in each individual case (e.g. a voiced vowel sounded with a "X" noiseband may be e.g. ˣe or ˣê).

- h — The constituent "h" is faded (from nothing) into the overall sound.
- i — The constituent (voiced) "i" is faded out of the overall sound.
- ∫e — The attack "∫" followed by sustained vowel "e"
- ∫ or ∫ with e (e) — The noise-band "∫" with formant-colour "e"
- y — The rapid formant-gliss i⇨ə (i is always exaggeratedly high "ee" as in "beef" sound) as in English "York", but more emphatic & wider-range gliss. (cf y)
- ∫y, fy, sy, hy, tsy — The same rapid formant-gliss over the noise-bands indicated. (NB formant gliss produced by rapid sliding of tongue backwards across palate & release from palate + accomp mouth-filter change)
- dy — d immediately followed by same formant gliss (voiced).
- ∫w, fw, sw, hw — As above, but upward gliss u⇨ə (exaggerated)
- g! — Like {k}! (plosive unlunged k) but further back in mouth
- g̃! — Simultaneous g & click produced by releasing tongue simultaneously from 2 positions, plosively. As in some southern Zimbabwe languages.
- θ — Flip tongue in & out of mouth rapidly, catching loose top-tip, producing water-like resonance "plops" in mouth cavity. (Mouth-shape relaxed). (unvoiced sound, unless voicing added to it).

MISCELLANEOUS

yoyoyoyo articulation of a semi h-whistle by tongue-motion (as used in the phonetic articulation "yoʃi").

[ ] "something like this". Applied normally to rapidly pitch-moving sounds (indicated by "wriggling" bands in the graphics), where the general range is specified, but the details of the actual pitch-motion are not specified.

The same sound as previously. The same sound of this particular type as previously.

The same sound as at α.

tktktktk etc. equivalent to ||:tktk:|| in phonetic notation.

Rest of unspecified duration (usually long).

Rest or note of unspecified length. The actual note or rest may be longer OR SHORTER than the indicated time-value. The actual duration is determined by the occurrence of a tape-cue, and these unspecified durations are used to facilitate resynchronisation between the group (-conductor) & the tape.

4-finger lip-strumming. Using the forefingers & middle fingers of both hands to strum the lips (||: left middle, left fore, right middle, right fore :||), rapidly.

DYNAMICS

The normal dynamic of the sounds in this piece is *mf* where this should be regarded as a strong presentation of the sound, without excessive force. However, as unvoiced sounds must match in level all voiced sounds, the former need to be delivered with much energy (they should feel *f* or even *ff*). Where dynamics are not indicated assume *mf* BUT ALSO READ CAREFULLY THE NOTES ON THE PERFORMANCE OF EACH SECTION for more detailed discussion of interpretation.

A crescendo of the sound as a whole.

A crescendo of one constituent of a sound e.g. the breath constituent in breath+wamp sound.

Fade in from absolutely nothing (may involve turn into mike)

Fade away to absolutely nothing (may involve turn away from mike).

ADDITIONAL EQUIPMENT

Singers 2 & 4 should have a glass or 1-pint mug of water available (see pages 11 & 12).

Each performer will need (at least) one tuning-fork tuned to A.

CONDUCTOR

The piece requires a conductor, chiefly to ensure close synchronisation with the 4-channel tape.

The conductor will require (at least) 2 stopclocks to ensure that his/her tempo does not vary appreciably from ♩=60, and to permit resynchronisation at crucial cue-points in the tape. The conductor must familiarise him/herself thoroughly with the tape & will probably want to use a (single) earphone during the performance to monitor the tape-cues. Knowledge of the vocoded drone material which concludes the piece is crucial to a correctly synced performance.

In cases of apparent or real discrepancies between the occurence of cues on tape & their timings as indicated in the score, follow the tape-cues rather than the clock.

More detailed notes can be found in the section dealing with interpretation.

The conductor\singers may wish to "re-bar" some sections of the score for ease of performance (i.e. to alter the placement of bar-lines ... NOT of musical events themselves!).

SPATIAL PROJECTION

Spatial projection of the sounds is intrinsic to the form of the music of VOX-I. The spatial-notation indicates where the sounds should be &/or how they should be moving, at any particular moment.

The spatial motion may be realised by any currently available technology. This piece was originally planned for spatial projection using a fully digital spatial diffusion unit capable of accepting any 4 sound inputs from a mixing desk & projecting them, independently of one another, in the space between 4 loudspeakers. Spatial projection in this system is controlled from a floppy disk written to by a microprocessor using a specially-developed spatial-diffusion program. Manual override, to control the initial time of a spatial-motion 'event', or its gross rate, is also provided, to permit close syncing in the live performance situation.

The hardware & software for this system should be available in 1984. More recently developed, technically superior systems may also be used, provided they can reproduce spatially & temporally the spatial motions indicated in the score.

NOTATION

The square is oriented with audience facing the top of the square, audience left to the left of the square, loudspeakers (if a 4 speaker system is used... must BE AT LEAST 4) are in the corners of the square.

1) indicates sound of Singer-1 at front-left, Singer-2 at front right, Singer-3 at rear-right, Singer-4 at rear-left.

2) indicates all 4 singers mixed to a mono signal, located at front centre.

3) indicates singers 1 & 4 mixed to a mono signal passing through the left-centre position in the course of an anticlockwise rotation.

4) indicates singers 2 & 4 mixed to mono passing through centre rear in course of anticlockwise rotation AND singers 1 & 3 mixed to a 2nd mono signal leaving front centre to begin an anticlockwise rotation.

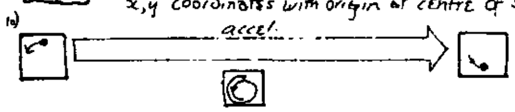
5) indicates a "frame rotation". Singers located at the 4 corners of square, the entire square rotating anticlockwise.

6) indicates a signal (here a mono-mix of singers 2 & 3) spiralling towards the centre of the auditorium.

7) indicates a "frame rotation" (see 5)) in which the 4 voices are also moving towards the centre of the square (in effect 4 clockwise spirals-to-centre).

8) indicates a more complex path.

9) indicates a position more specifically, relative to "x,y" coordinates with origin at centre of square.



10) indicates the way in which spatial motions are notated. The square to the left indicates initial position & direction of motion; the square to the right indicates final position & approach to it. The square beneath the arrow indicates the total motion (NB HERE 1½ cycles, not just ½ cycle). The "accel" above the arrow indicates the "temporal contour" of the motion.

11) indicates a rotation.

12) indicates 2 contrary rotations

13) indicates some kind of straight + diagonal complex path (see full-notation for more details. 14) indicates 2 such paths in contrary motion (more details elsewhere in notation).

15) indicates a "frame rotation".

16) 3 c.ps. indicates a speed of rotation of 3 cycles per second. A cycle is a complete rotation around the square bringing one back to ones initial position (or initial angle in polar coordinates for spiralling motions).

INTERPRETATION...

This music is difficult to perform. There are no superfluous details & each person's part matters equally in the performance.

GENERAL REMARKS

The entire piece is to be projected with an ecstatic intensity. Apart from the relaxation in section-4 ("The Sea") the music should strive forwards towards the emergence of the final "magical" text—a sense of straining towards this goal with transnormal intensity. The vocalists should sound as if "possessed" so that they speak, sing, vocalise in a mode of "spontaneous" ecstatic intensity which is more intense (faster, denser, more continuous (lacking in breathing spaces), more clearly & sharply enunciated & differentiated in coloration etc. etc.) than any kind of normal controlled vocal production. This ecstatic intensity must carry throughout the piece; (the audience should be left breathless, apart from any other reaction they might have!).

The music needs an awful lot of breath—most non-laryngeal oscillations & non-pitched sounds must be delivered with strength to match in level & import the wamp sounds. Breath control is especially important in Section-1 (where vocalisation tends to continue through inhales) & Section-2 (where vocalised inhales & exhales follow each other, without pause, in specific rhythms).

The accompanying sounds on tape were suggested by the sounds mentioned in many creation myths. They are however, not organised anecdotally, but in terms of a specific scheme of development & of gestural counterpoint. The balance between tape & voices should be such that the voices appear to be now & then engulfed by "elemental forces" in this tape-environment. Vocal detail must not be continually swamped by tape-sounds, but the tape must be relatively strong. Ideally, someone who knows the piece well should control (& appropriately change) overall tape levels through the performance.

SECTION-1. (pp 1-3) EMERGENCE & DIFFERENTIATION

At the outset both tape-sounds & voices are on the front pair of lspkrs only. The 4 voices enter (mixed to a mono stream®, front centre) IMPERCEPTIBLY, & MUST BE INDISTINGUISHABLE in sound from the tape-sounds. The vocal sound must evolve SEAMLESSLY becoming a dense multiplex different from the tape sound, & separate SEAMLESSLY into two threads (high etc. female, low etc. male). Simultaneously this sound is spatially gradually separated from the tape sound by moving to the rear loudspeakers.

At c. 28 secs a tape-gesture rushes to the rear lspkrs (the tape continuing now in 4 channels) "causing" the vocal stream to split into 2 (female stream to left front; male stream to right front). In the ensuing music the 2 streams are articulated by various short sustained elements (& are chased around various lspkr pairs by tape-gestures), & converge to a mono stream at tape cue (44 secs).

The sounds at 44 secs must evolve SEAMLESSLY out of the multiplex, progress seamlessly & evolve seamlessly on into the ensuing multiplex (aided by cupped-hand filter articulation) at c. 52-54 secs.

From 56 secs the mono stream divides to reveal the 4 distinct voices (the whole spatial frame, however, rotates) articulating independent rising gestures, and each voice transforms SEAMLESSLY onto a sustained multiphonic (without multiplexing) between 1·05 & 1·09 (all merging to a mono stream).

® "Stream"; refers to signals output from the mixer. 2 voices may be mixed & then routed to the same lspkr, forming 1 "stream".

SECTION-2. 4 CHARACTER VOICES (pp. 3-6)

On the tape gesture at 1·10 secs, the mono stream divides into 4 revealing the 4 separate vocalists located (& not moving) on the 4 different loudspeakers. Here 4 distinct "characters" must be apparent (4 "spirit voices" as "revealed" in the utterances of the possessed in certain ecstatic religions), each declaiming in a transfigured voice. If either singer 2 or singer 4 can produce, sustain & articulate as demanded strong, non-euphoni exhaled multiphonics, then these be substituted for the "constipation-multiphonics" written. (At the mixing desk, the 4 resulting streams must be of approximately equal average loudness). Each voice is articulated by sustains (rhythmically cpd between the 4 voices).

From c. 1·20 – 1·22 the voices evolve towards a synced erotic episode. This must be an EVOLUTION, not a sudden switch of material, mood (this is difficult) attaining, for the first time clear stable pitches at 1·30-31. The pitches here & on page 6 are strained towards & (at 1·38) relaxed upon.

From the tape-gesture at 1·39 there is a VERY GRADUAL transition towards the scolding, plosive articulations.

SECTION-3. EMERGENCE & DISSOLUTION of SOLI (pp 6-8)

First (tape) thunderclap cue causes the tension to dissolve in a very rapid transformation to unvoiced multiplexing (which begins to rotate around the auditorium in a mono stream). Solos in voice-3 & (from c. 9 secs) voice-1 must emerge seamlessly out of the rotating unvoiced material (they also cease to rotate along with the unvoiced material). Some gestures in the unvoiced texture (at 7¾ secs & 14 secs) are triggered by events in the solo(s).

Around c. 16 secs soli give way (seamlessly) to F-type material & the rotating voices are differentiated in material (& spatially) & transform to F-type material.

The final seconds of independent F-material in all 4 voices has each voice moving rapidly & independently around the space.

SECTION-4. RELAXATION, CONTINUATION. (pp 8-10)

At the thunderclap (tape) cue, the sound-world modulates to F. The transformation in voices 3 & 4 MUST BE SEAMLESS.

The 2 events between 8 secs & 28 secs are dissolving the music's forward dynamic (the tension built up to date has suddenly ebbed away). (Tape-sound, The Sea, on front 1 spkrs only; voices also located (mono) on front 1 spkrs ..... think of the more relaxed of the whole sounds ... but this is not meant as an 'animal-imitation'!).

From 53 secs. the multiplex material heard earlier in the piece begins to evolve SEAMLESSLY out of the F, accompanied by creakage sounds on the rear loudspeakers & from c. 54 secs is articulated by sustains (differently in each voice).

SECTION-5. EMERGENCE, COUNTERPOINT (pp. 10-14)

The 4 voices remain distinct for most of this section, & the following developments take place:-

EMERGENCE OF SYLLABLES & DRONE PITCH

(i) The syllabic material of the final text is being generated from the preceding multiplex material, through processes of transformation. Sounds thus generated in one voice may be passed to another for further transformation. Observe carefully the seamlessness of all transformations, & the accurate rendition of all details. As the section progresses, speech-like groupings emerge.

(ii) The pitches G & A (& F & C#) & the interval of a 9th between them emerge at first tentatively, becoming more confident.

COUNTERPOINT OF GESTURES

(iii) The 4 voices are set in a detailed gestural counterpoint. Rhythms must therefore be carefully observed. Note in particular where voices move in parallel (gestures, not materials), in not-quite-parallel gesture (e.g. at 57¾-58), or where events in different voices coincide (especially the end of one gesture triggering the start of, or change in, another).

(iv) The vocal gestures interact with the principal gestures on the tape (a sound event is initiated or gesturally altered midstream by the occurence of a tape gesture).[@]

COALESCING

(v) Occasionally material in different voices coincides briefly or occurs in imitation (voices 1 & 2, 24-26 secs; voices 3 & 4, 55¾-58 secs). This is the beginning of the process of coalescing occuring in the next section.

[@] Often a sense of extended anacrusial tension & sudden release found in the tape events "creakage → crack" "creakage → tear".

SECTION-6. EMERGENCE, COALESCING (pp 14-17)

This section continues the processes of Section-5, (see notes above), especially of emergence of text-like strings of syllables, & the pitches G & A & the intervening interval of a 9th, & of gestural counterpoint between voices, & between voices & tape gestures.

There should be a steady sense that this interaction & this gradual & difficult emergence is taking place.

In addition the voices are beginning to coalesce into a unison rendition of text on A. The points of synchronisation, not-quite-synchronisation & dissolving synchronisation must therefore be most carefully observed. The voices are striving towards unison with difficulty. Unison is achieved at 48 secs.

TRANSITION

Between 50 & 59 secs there is a transitory, relaxed-tension, vulnerable digression into ornamentation in 4 separate voices before re-coalescing to the strength of the final tutti.

SECTION-7. UNIFICATION, "MAGIC" TEXT (pp 17 to END)

(i) Absolutely rhythmically synchronous — as one voice.

(ii) Dynamics ... a sense of 'pushing forward'; sustained sounds should thus tend to crescendo. All attack sounds & staccato sounds should be forcefully accented (everything larger than life). The ">" stress marks beneath various syllables in this section are to indicate a sense of the speech-like stressing of syllables within the imaginary "words", and syllables thus marked should be only marginally more stressed than other attacks & staccato events.

(iii) Heightened ecstatic, or 'magical', speech. The text must never lapse into vernacular consonants, vowels or singing style. The same pitch of intensity must be maintained through to the end of the piece.

The text, although imaginary, is meant to appear:-

(a) to have a definite meaning (& significant meaning), although spoken in a language which the audience does not know (but the singers do!). Note that the repetitions of the text (following each tape 'swish') converge towards a definite set of syllables, a 'definitive text'.

(b) to transcend everyday rendition.

(iv) The tape thunderclap & 'glistening' sound resolve' onto a drone on a low B & a very high F#. As the drone proceeds it is gradually more & more clearly vocoded.
The tape-sound should appear to be drawn into the unison rendition of the singers AND NOT VICE VERSA. The 'environment' itself conforms to the revealed text with which the piece ends.
For this reason the vocalists must NOT lag behind the tape vocoding but, if anything, slightly anticipate it. (This is a subtle & difficult (but essential) point to achieve, as the group must of course take it's timing from the tape. The conductor must therefore know this material intimately & "be ahead" of it).

(v) The sung C#, being a 9th (+n octave) above the tape's B drone is meant to be held in a state of tension, with a feeling that a resolution could be achieved upwards to D#, but that there is not going to be a resolution.

FINAL REMARKS

The only way to be able to perform this piece at the required speed is to learn at a slow speed the detailed structure of your sound-events, internalise them (rehearsing them until they become "natural" gestures to make with the voice) & only then begin to rehearse the music in strict tempo. Even then, a learning of the rhythms (especially in the contrapuntal sections 5 & 6) at a slowed tempo is recommended, before performing at full speed.

SOUND-PROJECTION

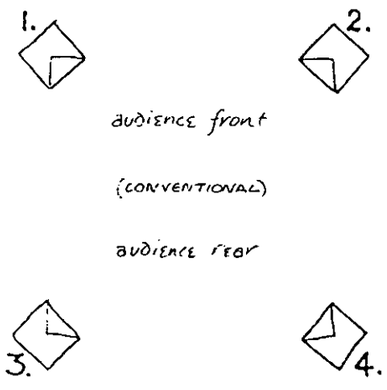
The 4 voices are to be miked & the sounds routed through a mixing deck to a 4 loudspeaker system. The mixer-operator should ensure that the average loudness of each voice, as heard on the loudspeakers, is the same. Mikes should be sufficiently separated to pick up only 1 voice each. Mikes must not pick-up sounds from the 4-channel tape.

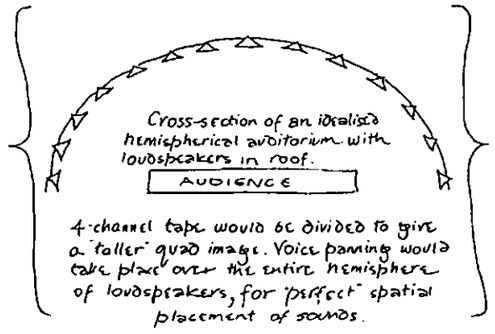
Sounds from the mixer are routed through a spatial diffusion system (see section on Spatial Projection) which distributes the voices amongst the loudspeakers in accordance with the "Panning" stave of the score.

The 4-channel tape is to be played back with the loudspeaker orientation as shown in the diagram. The level of the tape should be such as to occasionally engulf the voices. The voices should appear to "struggle" through the environmental sounds on tape, but vocal details must not be badly obscured by the tape. Overall dynamic should be quite loud; loud enough to firmly establish the "alternative environment" of tape & voices, & blot out extraneous (e.g. audience) noise in the performing space.

Depending on hall acoustics, a little reverb may need to be added to the voice signals - but never so much as to obscure vocal details. In reverberant auditoria, extra reverb should be avoided. Loudspeakers should be placed to maximise the effectiveness of the spatial movement of sounds as perceived by most of the audience.

LOUDSPEAKER PLACEMENT:-





VOX 1

TUTTI

Time in seconds (not exact): 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

hf shimmer — FRONT — water sounds continue throughout — 1st thunder — STEREO — 2nd thunder — rising pitch, crescendo — Pans to REAR — acoustic watery

♩ = 60

BEGIN ADDING AIR ETC. — BEGIN ADDING ¼-WAMP — BEGIN TIMBRE — BEGIN PITCH

Voice 1 — last place to inhale before 27s

Voice 2 — last place to inhale before 28s

TAPE CUE

ABSOLUTELY SEAMLESS DEVELOPMENT THROUGH PAGE →

very gradual crescendo through introduction of new sound constituents ..... mf (i.e. a comfortable production level)

from absolutely inaudible *

Vocal sounds must match the on-tape water-sounds, in timbral quality, pitch, pitch-contour etc. INDISTINGUISHABLE!!

becoming quite distinct from tape water-sounds

In addition Female Voices 1,2

tonguesflip grad replaced by mouth\lip motion

X+(R) types gradually change into X types

DIVERGE

S, X maxvary — rapid — smallish range — MOUTH\LIP-SHAPE — rapid — as a result VOWELSHAPE is rapid maxvary

Voice 1 — inhale gasp BUT KEEP ON PRODUCING MULTIPLEX — 3

Voice 2 — inhale gasp BUT KEEP ON PRODUCING MULTIPLEX

Female voices gradually rising into normal speech register

Female — normal register

Male — low normal register

(i) rapid tongue motion ⇄ ; tongue catching top-lip as it moves, making 'plopping' sound
(ii) vary between unvoiced & throat-open BUT NO air sound
(iii) initially in short gruppetti, with brief pauses ... soon becomes continuous

(i) imperceptibly adding air-content (inhale or exhale, but the 2 should sound identical)
(ii) simultaneously, imperceptibly gradual addition of coloration; tonguesuck on inhale, X+ & S on exhale
(iii) rapid tongue-motion very gradually becoming a more random tongueflip artic.

smallish range

Male voices gradually falling to normal speech register (low)

rapid {} ⇄ [] etc. — becoming dense — NO RESTS — adding air; & X+, S (no more inhales) — h s X+ tongueflip — adding ¼-wamp, rapid random wander around middle C

vowel artic. — rapid maxrange vowels artic — expand range — rapid full-range vowels artic

Voice 3 — last place to inhale before 27s

Voice 4 — last place to inhale before 28s

In addition Male Voices 3,4

phase-out S; phase in R & [ ], & becoming prominent

tongueflip gradually confined to inside mouth

R, X+, [ ] maxvary — rapid — smallish range — TONGUE ARTIC — rapid — rapid maxvary VOWELSHAPE

Voice 3 — inhale gasp BUT CONTINUE TO PRODUCE MULTIPLEX — 3

Voice 4 — inhale gasp BUT CONTINUE TO PRODUCE MULTIPLEX

1,2,3,4 — 13½ secs — 1,2,3,4 — VOICES VERY SLOWLY DIVERGE from TAPE SOUND (which is front centre) — 24 secs — 1,2,3,4 — 28 secs — Male/Fem's Diverge

Tape cue: tape-sound pans to rear centre

BRITISH MUSIC INFORMATION CENTRE
10 STRATFORD PLACE,
LONDON, W1N 9AE

TAPE

29 secs | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43

Tape Sound on all 4 chs. (principal gestures only, indicated)

Channel 1 | Channel 2 | Channel 3 | Channel 4

rarely fully close-off *the handcup filter

1.

gradually introduce (OPEN) Closed

("normal" range, small)

expand | range of "wamp" to | maximum | (¼ wamp max range)

"wamb" range narrows into highest register & fades out
reduce vowel range
gradual change from s,x multiplex to s,f multiplex

s,f rapid vowel sounds over small register

2.

gradually introduce (OPEN) seamless

("normal" range, small)

expand | range of | "wamb" to maximum | (¼ wamb max range)

"wamb" range narrows into lowest register & it fades away
reduce vowel articulation to zero
gradually phase out all F & R elements

phase out f | filter out vowels to (i)

3.

gradually introduce (OPEN) seamless

(low "normal" range, small)

expand | range of | "wamb" to maximum | (¼ wamb max range)

"wamb" range narrows into lowest register & it fades away
reduce vowel articulation to zero
gradually phase out all F & R elements

4.

gradually introduce (OPEN)

(low "normal" range, small)

expand range of | "wamb" | to maximum | (¼ wamb max range)

"wamb" range narrows into lowest register & it fades away
reduce vowel articulation to zero
gradually phase out all F & R elements

PAZZ-G

31 secs

Tape Cue (35) | Tape Cue (38) | Tape Cue (40) | Tape Cue (41)

Tape Cue →

TAPE

44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59

Channel 1+4

Channel 4 Channel 1 Channel 2 Channel 1 Channel 4

1.

dovetail into voice-2

dovetail into voice-2

hands approach mouth

hands move away from mouth

seamless

small gest.

with voice-3

(as at 43secs)

articulate

s,f rapid vary vowel-shape small-range

add ½ wamp → ½ wamp

f changes to h & X+

increase vowel range to max

tongueflip added

h,s,X+ tongueflip maxvary mouth/lip shape ½-wamp shape

(similar to multiplex at 19secs)

2.

hands withdrawn slowly from mouth

dovetail into voice-1

hands approach mouth

SILENT INHALE if nec.

hands move away from mouth

seamless

with voice 4

(marginal)

articulate

s,X rapid vary vowel-shape small-range

add in ¼-wamp → ½ wamp

X changes to X+ & h

increase vowel range to max

tongueflip added

h,s,X+ tongueflip maxvary mouth/lip shape ½-wamp shape

(similar to multiplex at 19 secs)

3.

hands withdrawn slowly from mouth

dovetail into voice-4

(fundamental rises as well as vowel-formant)

hands approach mouth

hands withdrawn from mouth

seamless

with voice-1

vowels rapid vary small range

add ¼ wamp → ½ wamp

add in h,s,q X+ variants

increase vowel range to max

tongueflip added

h,s,X+ tongueflip maxvary mouth/lip shape ½ wamp shape

(similar to multiplex at 19 secs)

4.

dovetail into voice-3

(fundamental rises as well as vowel-formant)

hands approach mouth

hands withdrawn from mouth

dovetail into voice-3

with voice-2

(max gust)

vowels rapid vary small range

add ¼-wamp → ½-wamp

add in h,s,X+ variants

increase vowel range to max

tongueflip added

h,s,X+ tongueflip maxvary mouth/lip shape ½-wamp shape

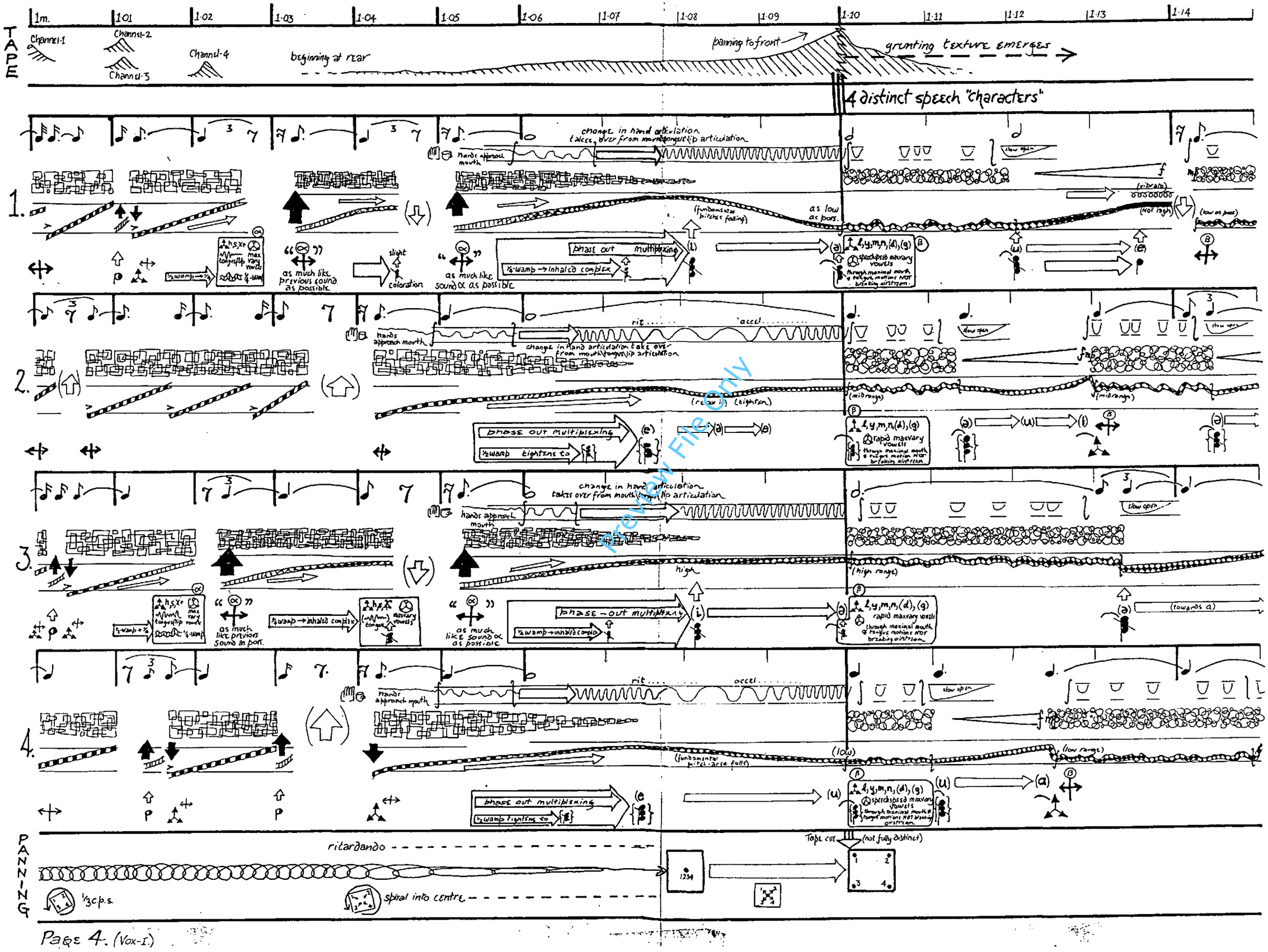
(similar to multiplex at 19 secs)

PANNING

(44) Tape cue 46 49 54 (56) Tape cue 58½

12 34 1234 1234 1234 1234 12 34 1 2 3 4

accel. into rotate ⅓ c.p.s.



TAPE

1·15 1·16 1·17 1·18 1·19 1·20 1·21 1·22 1·23 1·24 1·25 1·26 1·27 1·28 1·29 1·30 1·31

rear front more

START OF NEXT BAR CUED BY TAPE →

tape cue

1.

approx. timing only: await cue

cue

slow open

(low or pure range) low range

RISING IN PITCH

the exhales lengthen, the inhales shorten till they equalize; then accel.

never fully close

random rapid fluttering of breath (diaphragm & throat)

multiphonix gradually phased into fluttering

EROTIC

pitchwander on exhales (small range)

N.B. Not necessarily this number of inhale\exhales

(with voice-2

gasps (true inhales) & sighs (true exhales)

(The exhales are constipation multiphonics & take almost NO breath)

2.

approx. timing only: await cues

cue cue

slow open close

mid range midrange

random rapid fluttering of breath (diaphragm & throat)

multiphonix gradually phased into fluttering

EROTIC

pitchwander on exhales (small range)

(with voice-1

EMPTY LUNGS!

sighs (true exhales) & gasps (true inhales)

(The inhales are multiphonic & take almost NO breath)

but

etc.

3.

(with voice-4

slow open

never fully close

high range

tighten relax (etc.)

SUDDEN (empty lungs)

but patchy

becoming shallow

EROTIC

etc. becoming true breathy ex & inhales

gasps & sighs

On inhales: takes in air (breath) first, tightening to multiphonic: On exhale, tightens first (multiphonic) & gradually relax — sigh

decorate with tightenings

4.

(with voice-3

slow open

never fully close

relax

tighten relax (etc.)

SUDDEN gasp SUDDEN empty lungs

shallow, slow → bubbling

becoming shallow

EROTIC

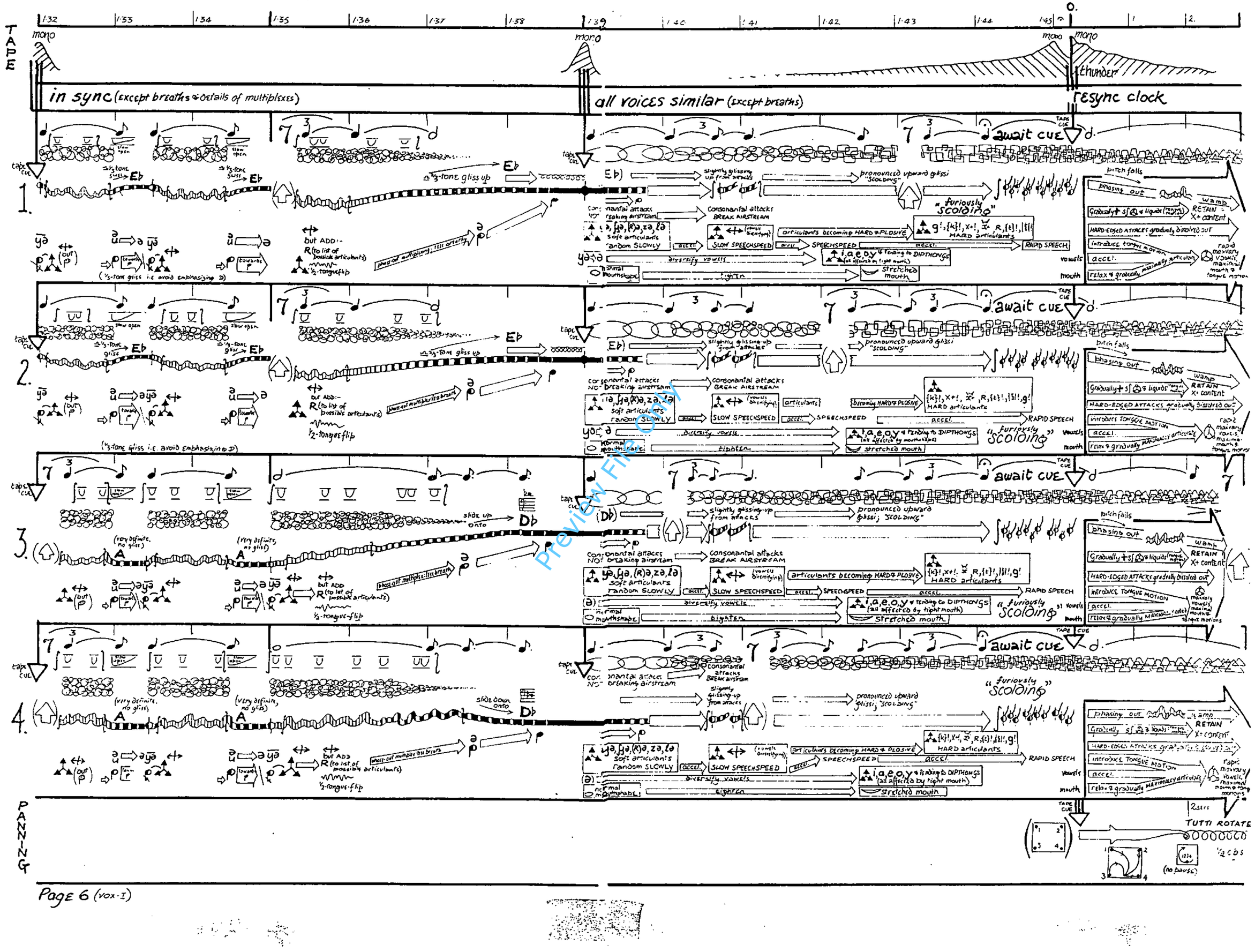
etc. becoming true breathy ex & inhales

gasps & sighs

Exhales: tight first (multiphonic) relax to sigh: Inhales: take air (breath) 1st, tighten to multiphonic

decorate with tightenings

PANNING



TAPE

swirling WINDS

(with voices 2 & 4)

1.

sync

emerging as solo

(overlap into voices 2+4)

(lt Barbara flutter)

(solo ending)

phase out R & X+ types (water control)

phase out L etc. by restricting (gradually) tongue-motion, see below

gradually restrict tongue motion to those required for h,s,ʃ transitions

rapid maxvary vowelshape

MAXIMAL MOTION mouth, lips & tongue

gradually introduce

towards

(with voices 1 & 4)

(with voice-4)

(diverge)

2.

sync

(unlunged)

phase out

R&X+ types (water control)

L etc. by gradually restricting tongue-motions; below

grad. only

restrict tongue motions to those required for h,s,ʃ transitions

to multiple

mid-range vowels

ll:tktktk:ll

mid prism

max-range vowels

t,k,s

smooth

TONGUEFLIP

phase out

phase-out liquids

restrict vowel motion

R&X+ types convert to F

restrict tongue motion

(f)

emerging as solo

approximate closely to timings shown, but nature flow; these

NOTES MUST BE ACCURATELY PLACED

(solo ending)

never fully close!

very F pitch

Slight wander (around F)

Smooth transit to falsetto

(BIG BREATH)

3.

The womb in this section is always (at least) slightly breathy (straining); except where stated.

this 'L-womb' is as strongly breathy as possible without losing pitch.

intense & pushing forward all the time

release to PURE WOMB

sprechstimme

wrap only

(a very tight F with a perfectly relaxing)

(with voices 1 & 2)

(with voice-2)

4.

sync

(unlunged)

(diverge)

phase out R & X+ types (water control)

phase out L etc. by gradually restricting tongue-motions (see below)

gradually restrict tongue motions to those required for h,s,ʃ transitions

rapid maxvary vowelshape

MAXIMAL MOTION mouth, lips & tongue

to multiple

mid-range vowels

ll:tktktk:ll

limit vowel range

soften

as low as possible

imperceptibly introduce v. low womb

phase out

R,X+ types convert to F

phase out LIQUIDS

restrict vowel motion

restrict tongue motion

SEAMLESS transformation to falsetto

open to normal

PANNING

4 secs

voice 3 remains at front centre

voice 1 remains

Voices 2 & 4

accel.

with voice 3

spiral to centre

Voices 1 & 3

STILL

with e!

comic clockwise spiral

fast & rit. to

clockwise spiral

accel

1/3 cps.

contrary rotations

the 2 motions are synced

2/3 cps.