

Chapter 5.

An Analysis of *Traum-Formel*

Traum-Formel is constructed from six super-imposed melodic strands. They are:

1. The complete Michael's Formula (MF);
2. The complete Lucifer's Formula (LF);
3. The *Luzifers Traum* portion of Michael's Formula (LFLT);
4. The *Luzifers Traum* portion of Eve's Formula (EFLt);
5. The *Lucifer's Traum* portion of Lucifer's Formula (LFLT);
6. The head motif of the Lucifer Formula (LHM).

In *Traum-Formel* the complete Michael and Lucifer Formulas in their Super-Formula versions, comprise the 'foreground' material. The Eve *Luzifers Traum* portion is used as material for one of the *Traum-Formel* inserts as will be seen. The Michael and *Luzifers Traum* portions and the Lucifer's Head Motive, that form the background layers are as follows:

Example 14. Michael, Eve and Lucifer *Luzifers Traum* portions and Lucifers Head Motive

The image shows a musical score for four staves, labeled MFLT, EFLT, LFLT, and LHM. The MFLT staff has a 'wind' marking above the first measure and a 'dep' marking below the first measure. The EFLT staff has a 'p' marking below the first measure and a 'ppp' marking below the last measure, which is circled with an 'x'. The LFLT staff has a bracketed section with notes 1, 2, 3, 4, 5. The LHM staff has a bracketed section with notes 1, 2, 3, 4.

The three portions from *Luzifers Traum* and the head motif of the Lucifer Formula all retain their original pitch from the Super-Formula, albeit transposed up a perfect fifth in the score for the basset-horn. The complete Michael and Lucifer Formulas are transposed: Michael's Formula so that it starts on F, the first note of its *Luzifers Traum* Portion; and Lucifer's Formula so that it starts on Db, the last note of its *Luzifers Traum* Portion. Because the basset-horn is in F, all of the parts appear transposed up a fifth in the score.

Table 12. Transpositions to Traum-formel (TF) strand pitches from the Super-formula strand pitches (SF) based on their first note (and last note in the case of Lucifer Formula)

† last note

Example 15. Transposed Michael, Eve and Lucifer *Luzifers Traum* portions and Lucifer's Head Motive

Traum-Formel adheres closely in its central section (from number 3 to the double bar after 21) to the tempo structure of the Super-Formula. However the tempi have been transposed so that the M.M. 60 first marking of the Super-Formula becomes M.M. 71. This creates a tempo octave of M.M. 53.5 - 101. Therefore each of the *Traum-Formel* Tempi is approximately 71/60th faster.

Table 13. Tempo equivalence between Super-Formula and *Traum-Formel* tempi

	1	2	3	4	5	6	7	8	9	10	11	12
SF	45	47.5	50.5	53.5	56.5	60	63.5	67	71	75.5	80	85
TF	53.5	56.5	60	63.5	67	71	75.5	80	85	90	95	101

Within the central section of *Traum-Formel* the *Licht* tempo structure and the 18 'Limbs' have been retained. Stockhausen commonly marks the ending of each limb in *Traum-Formel* with some form of termination: usually a apostrophe, fermata or ritenuto.

Table 14. Tempo structure equivalence between Super-Formula and Traum-Formel

Day	Mo	Di	Mi	Do	Fr	Sa	So
SF	60 63.5 53.5 63.5 50.5 47.5 60 85 60 45 60 56.5 71 75.5 80 63.5 67 60						
TF	71 75.5 63.5 75.5 60 56.5 71 101 71 53.5 71 67 85 90 95 75.5 80 71						

The expansion of note durations is treated independently of tempo transpositions. This fact complicates discussion in the sense that a note's absolute length is dependent both on transpositions of both its duration and tempo. In the Super-Formula the *LuzifersTraum* section is a little under 1.7 seconds in duration. Stockhausen's sketches for *Luzifers Traum*¹ give a duration of 1622.4 seconds or 27 minutes and 03 seconds, around 954 times longer than the equivalent Super-Formula section. As the section is also faster the absolute duration of each note of the Super-Formula must be expanded by $954 \times 71/60 = 1128.9$ times.

In *Traum-Formel* the situation is simpler, the formula takes around 102.4 seconds to play. This is because in *Traum-Formel* the duration of Super-Formula notes are doubled (giving 120 beats) and there are four extra beats giving a total of 124 beats as opposed to 60 in the Super-Formula, and they are played 60/71ths faster. The duration expansions create an active foreground layer and slowly moving background framework that is contrapuntal and 'harmonic' in implication.

The Formula strands are expanded in value as follows:

1. Michael's Formula note values are doubled;
2. Lucifer's Formula note values are doubled;

3. The *Luzifers Traum* portion of the Michael, Eve and Lucifer Formulae and the Lucifer Head Motive are expanded to 51 times their original length;

The 'foreground' tempo transposition in *Traum-Formel* is half speed: that is the note values of the melodies are doubled. The reason for the expansions in time of the formulae may be pragmatic. Stockhausen may have chosen an expansion that would yield a suitable duration for the work that was technically possible to play and comprehend aurally. It would have been necessary to achieve the best compromise between durational expansion and tempo series transposition. The work has a total duration of nearly eight minutes was obviously deemed an appropriate length for the purposes of this particular work.

A work for a single monodic instrument that attempts to simultaneously render six melodic lines poses a number of problems to the composer, some of which can only be solved by compromise. The distinction of individual strands is achieved to varying degrees through their characteristic differences: registral separation; melodic characteristics; dynamic variation; and to a certain extent timbral variation (on a single instrument this is partially a by-product of register and dynamic.)

Another important compositional problem is that of simultaneously sounding events. In general Stockhausen solves this by displacing or omitting details

of the strands to varying degrees. He also chooses to slightly displace whole phrases when they contain material that assists in establishing the identity of individual strands.

Traum-Formel is typical of Stockhausen in the sense that it is a mediation between the melodic/horizontal and the harmonic/vertical aspects of the Super-Formula (in this case cross-sectional might be a better term than harmonic as there can be no simultaneous notes).

There is, of necessity, a hierarchy of parameters in operation in *Traum-Formel*. Registral placement is adhered to most strongly in this work. The registral disposition of the material retains the high to low Super-Formula ordering of Michael, then Eve, then Lucifer. Only in the Coda section, presumably for dramatic reasons, do the strands deviate from their designated registers. Pitch is the second most important parameter and then rhythm, dynamics and timbral modification.

Formally *Traum-Formel* consists of the following clearly defined units:

1. an opening section (sections 1 and 2);
2. a central section consisting of two statements of the combined six layer formula incorporating 3 'inserts' (sections 3 through 20);
3. a coda section based on fragments of the Super-Formula (from 21

to 24); and

4. a closing section from 24 onwards.

The opening and closing sections will be considered together, as their function and musical material are related to each other. The central section will be analysed second, followed by the coda (its material is related to that of the central section) and finally the inserts.

The Opening and Closing Sections

The introduction contains simple materials: a high D (sounding 'G') is played '*p* crescendo *ff* decrescendo' with a matching increase and decrease in vibrato is executed by the, whilst 'slowly emerg[ing] from the right background of the stage [and] repeat[ing] until arriving at the right hand front edge of the stage (as seen from the public.)' Upon arriving at the right hand front edge of the stage the performer plays a final crescendo of dynamic and vibrato, culminating in a full semitone trill. The pitches of the trill D and Eb derive from the the opening notes of the LHM and LFLT respectively. There is then a three-beat rest signifying the end of the 'greeting'. The vibrato - trill - tremolo continuum is an important feature of this piece.

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non vibrato

molto vibrato

non vibrato

molto vibrato

vibrato accel.

TF

p *ff* *p* *ff* *pp* *ff*

Repeat until arriving at the right hand front edge of the stage (as seen from the public)

Example 17. *Traum-Formel* 'Closing' Section showing the statement of *Luzifers Traum* portion in inversion.

[illegible]

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Significantly the principal note of the Closing Section is Eb: the upper note of the opening Section's D trill. This completes a transition from the first note D of the LHM, to the first note Eb of the LFLT: the two most 'background' Lucifer melodies.

The Central Section

The analysis of the central section shows the written music for *Traum-Formel* (TF) broken into its 18 constituent Super-Formula limbs, with the corresponding sections of the 6 Super-Formula strands all in their *Traum-Formel* pitch and tempo transpositions, presented on five staves:

1. *Traum-Formel* (TF)
2. Michael's Formula (MF)
3. Lucifer's Formula (LF)
4. Michael Formula *Luzifers Traum* portion (MFLT) and Eve Formula *Luzifers Traum* portion (EFLT)
5. Lucifers Formula *Luzifers Traum* portion (LFLT) and Lucifer's Head Motive (LHM)

An analysis of each section will show the composer's adherence to and deviation from the abstract formula template in creating the work. Detailed comments will be made comparing the Super-Formula template with its realization in *Traum-Formel* in the following parameters:

1. The Super-Formula Section
2. The Section's *Licht* designation;
3. The tempo of the Super-Formula Section;
4. The length in crotchet beats of the Super-Formula Section;
5. The location of the section in the *Traum-Formel* score;
6. The tempo of the *Traum-Formel* section;
7. The length in crotchet beats of the *Traum-Formel* section (normally twice the length of the Super-Formula section);
8. The type of termination to the section employed;
9. Michael's Formula comments, including the type of material (accessory , scale, coloured silence, notes) and the accessory and coloured silence type;
10. Lucifer's Formula comments, including the type of material (accessory , scale, coloured silence, notes) and the accessory and coloured silence type;
11. General comments including 'programmatic' considerations.

Example 18. *Traum-Formel* 'Section 1'

The image displays a musical score for 'Section 1' of *Traum-Formel*. The score is written for four staves: TF (Top Four), UF (Upper Four), LF (Lower Four), and LFLTY/LHUM (Lower Four/Lowest High). The TF staff is marked with a box containing the number 11. The UF staff is marked with a box containing the number 22. The LF staff is marked with a box containing the number 11. The LFLTY/LHUM staff is marked with a box containing the number 11. The score includes various musical notations such as notes, rests, and dynamic markings (p, f, pp, ff). The tempo is indicated as 'Allegretto con moto'.

Super-Formula Section : 1

Licht designation: *Montag* Act I 'Eve's First Birth-Giving' (1984). Consisting of six scenes: Expecting; Heinzelmännchen; Birth Arias; Boy's Hullabaloo; Lucifer's Fury; The Great Weeping.

Super-Formula Tempo: 60

Super-Formula Length: 4 beats

Traum-Formel Location: 3

Traum-Formel Tempo(s): 71

Traum-Formel Length: 8 beats

Termination: Apostrophe

MF Material: Notes

Michael's Formula's entry (as the grace note to the third semiquaver) is delayed to allow for a cross-sectional exposition of all 5 formula pitches (the MF and MFLT notes are the same at this point). A second grace note marks the end point of the MF first note. The second and third notes in this section replace 'Abs' from the LF. The rhythm of the vibrato is even articulated by the grace notes to the LF's Abs in the first half of the second undecuplet. The MF is separated from the other strands by a consistent *mp* dynamic.

LF Material: Notes

The rhythm of the Lucifer Formula (LF), the most complex of the six dominates this section. It is natural that the strands must be expressed in terms of the smallest rhythmic value. Because its rhythmic identity is so

clear some of its notes can be omitted in some cases in favour of notes from other formulas. The LF is separated by the staccato articulation and a consistent *ff* dynamic.

General comments

The three strands from the *Samstag* portion of the Super-Formula and the Lucifer Head Motive (LHM) create a frame around the more active (faster moving) complete Michael (MF) and Lucifer Formulas (LF). At the highest register the Michael's Formula portion from *Luzifers Traum* (MFLT) appears as the repeated high C and is actually referred to throughout the entire work. The Eve Formula portion from *Luzifers Traum* (EFLT) is registrally between the MF and LF as it is in the Super-Formula. The Lucifer's Formula from *Luzifers Traum* (LFLT) and the LHM are presented together at the beginning of each undecuplet and the LFLT Eb is played again in the second group, perhaps to create a climax through increased activity towards the end of the undecuplet. These two Lucifer Formulas generally appear together.

Example 19. *Traum-Formel* 'Section 2'

Super-Formula Section : 2

Licht designation: *Montag* Act II 'Eve's second birth-giving' (1984-7).

Consisting of 4 scenes: Girl's procession; conception with Piano Piece; Re-birth; and Eve's Song.

Super-Formula Tempo: 60 - 63.5

Super-Formula Length: 3 beats

Super-Formula Length: 4 beats

Traum-Formel Location: 4 beats before 4

Traum-Formel Tempo(s): 71 - 75.5

Traum-Formel Length: 6 beats

Termination: Apostrophe

MF Material: Accessory (Variation)

The variation material is presented in its entirety preserving its distinctive musical identity. The MF dynamic 'pp' dominates this section. The gliss between A-Bb at the end of this section in the Super-Formula is not transferred to *Traum-Formel*.

LF Material: Notes - Accessory (Modulation)

The first Ab appears as a grace note to the MF. The repeated Gs are displaced a semiquaver to appear at the new tempo marking. The G occurs in every silence in the MF the first time with the flutter tongue. The *ppp* to *ff* crescendo is transferred to the dotted semi-quaver Ab before the tempo change.

General Comments

The LFTF and LHM notes are stated in the middle of this section: at the tempo change. The EFLT note appears as grace notes mostly between transitions from the MF to the LF.

Example 20. *Traum-Formel* 'Section 3'

Super-Formula Section : 3

Licht designation: *Montag* Act III 'Eve's Magic' (1984-6). Consisting of three scenes: Message; The Pied Piper; and Abduction.

Super-Formula Tempo(s): 53.5

Super-Formula Length: 3 beats

Traum-Formel Location: 4

Traum-Formel Tempo(s): 63.5

Traum-Formel Length: 6 beats

Termination: rit. and line

MF Material: Silence - Coloured Silence (Tongue Click)

The MF tongue click is transcribed as tongue clicks between the LF notes.

The tongue clicks accelerate toward the sixth crotchet, creating a climax that matches that of the ascending LF scale.

LF Material: Accessory (Scale)

The LF's ascending line is interleaved with MF clicks and EFLT notes. The scale itself includes all 12 interval classes, beginning with the first LF notes: G and the second F#. The grace notes in the scale occur after 1 note, 2 notes and 3 notes: the reverse series of the MF tongue clicks. The scale, minus the grace notes, also contains a number of the statements of the 014/034 trichord.

Table 15. Pitch Structure of the Lucifer Formula Scale.

	<u>0 3</u> ⁴		<u>0 1 4</u>	
0 ²	1 4 ⁵	3 6 7 ⁹	8 11 10	
<u>0</u>	<u>1 4</u>	<u>0 3 4</u>		

G = 0 Grace notes are presented in super-script

General Comments

The EFLT has its second note in this section. Stockhausen presents it as a full-value note, not a grace note: a practice that is generally continued throughout the rest of the work (there are three recurrences as grace notes).

The dynamics in this section are amplified: LF is *f* not *p*, EFLT is *mp* not *p*.

The LFLT + LHM are stated at the end of this section at the completion of the LF phrase in reverse order marking the end of the *Montag* limbs. The

end of *Montag* is also marked by a ritenuto marking and a slash as a termination. In the *Montag* limbs the most prominent occurrences of the LFLT and the LHM are presented symmetrically: at the beginning of the first limb, the middle of the second limb and the end of the third limb.

Example 21. *Traum-Formel* 'Section 4'

The image shows a musical score for 'Section 4' of *Traum-Formel*. It consists of several staves. The top staff is marked '75.5' and 'molto rit.'. Below it are staves for 'MF', 'LF', and 'LFL TI'. The 'LFL TI' staff has a '63.5' marking. The bottom staff is marked 'LFL TI' and 'LH-H'. The score includes various musical notations such as notes, rests, and dynamic markings like 'ff' and 'p'.

Super-Formula Section : 4

Licht designation: *Dienstag* Act I 'The Course of the Years' (1977-91)

Super-Formula Tempo(s): 63.5

Super-Formula Length: 2 beats

Traum-Formel Location: 5

Traum-Formel Tempo(s): 75.5

Traum-Formel Length: 4 beats

Termination: molto rit, slash, dynamic drop and crescendo

MF Material: Notes

The statement of the distinctive MF dotted ascending perfect fourth is given at the original dynamic of *ff*. Its first note is displaced by a semi-quaver.

LF Material: Notes

The LF notes are stated at their original dynamic (*ff*) and rhythm.

General Comments

Both the LF and MF are at the same dynamic level. The LHM appears separate from LFLT for the first time: a single statement precedes the statement of the LHM's second note in the next section. In this act, a version of which was complete at the time TF was written, Lucifer battles with Michael by trying to stop time: this is mirrored in the intertwined melodies of *Traum-Formel* and the *molto ritenuto* that end this section.

Example 22. *Traum-Formel* 'Section 5'

Super-Formula Section : 5

Licht designation: *Dienstag* Act II 'Invasion - Explosion with Farewell' (1990-91)

Super-Formula Tempo(s): 60

Super-Formula Length: 5 beats

Traum-Formel Location: 5

Traum-Formel Tempo(s): 75.5

Traum-Formel Length: 10 beats

Termination: molto rit. accel. line

MF Material: Accessory (Echo)

The statements of MF material retains its echoic nature: *f - mf - pp*

LF Material: Accessory (Variation)

The rhythms from LF are retained. The LF notes are displaced by notes from the MF and EFLT. The LF is interleaved with other formula notes, its decrescendo is written out: *ff-f-mf-mp-p*

General comments

This is one of the most dynamically complex sections in the work. The MF 'echoes' and LF decrescendo are both precisely transcribed. The complexity also is reflected in the tempo markings, molto ritenuto followed by an accelerando during the last undecuplet.

The LFLT states its first new note at the beginning of this section. The EFLT states its third (a grace note) and fourth notes. The dynamic levels of the EFLT are not differentiated from the other formulas until the new notes (where they are also marked 'play out'), after which the EFLT is consistently marked pp.

Example 23. *Traum-Formel* 'Section 6'

Super-Formula Section : 6

Licht designation: *Mittwoch* Scene I and II 'The Day of Reconciliation' 2.

'World Parliament and Orchestra Finalists'

Super-Formula Tempo(s): 50.5

Super-Formula Length: 2 beats

Traum-Formel Location: 6 crotchet beats before 6

Traum-Formel Tempo(s): 60

Traum-Formel Length: 7 beats (should be 4)

Termination: Breath mark and statement of LHM and LFTF

MF Material: Silence

LF Material: Silence

General Comments

In this section the LF and MF are both silent. The principle note derives from the EFLT. The three extra beats in this section are the result of a repetition of this dotted minim. The vibrato modulation of this note recalls the opening section and also prefigures the third insert. The *ppp* dynamic on the second note and non-vibrato marking give this section a restful stillness after the complex previous section. The section terminates with a statement of the LHM and LFTF.

Example 24. *Traum-Formel* 'Section 7'

TF

MF

LF

MFLT/
EFLT

LFLT/
LHM

into the instrument
'coloured noise'

coll number comes vocally into the instrument

Super-Formula Section : 7

Licht designation: *Mittwoch* Scene II 'Helicopter String Quartet and Michaelion'

Super-Formula Tempo(s): 50.5 - 47.5

Super-Formula Length: 3 beats

Traum-Formel Location: 6 crotchet beats before 6

Traum-Formel Tempo(s): 60 - 56.5

Traum-Formel Length: 7 beats (should be 6)

Termination: extra beat

MF Material: Coloured Noise (sound 's' into the instrument)

LF Material: Coloured Silence (call numbers soundlessly into the instrument)

The first two notes of the ascending chromatic septuplet are displaced by B/C trills. The LF notes are modulated by flutter tongue.

General Comments

The MF and LF coloured silence is interpreted as a modulation of the other notes: the MFLT (a high C) is played as a C/B trill and the LF notes are performed flutter tongue. The final note is not modulated and is extended by a beat linking it to the two dotted minims of the EFLT in the previous section.

Example 25. *Traum-Formel* 'Section 8'

Super-Formula Section : 8

Licht designation: *Donnerstag* Act I 'Michael's Youth' Consisting of three scenes: Childhood (1979); Moon-Eve (1978/9); and Examination (1979).

Super-Formula Tempo(s): 60

Super-Formula Length: 2 1/2 beats

Traum-Formel Location: 7

Traum-Formel Tempo(s): 71

Traum-Formel Length: 5 beats

Termination: None

MF Material: Notes

Appropriately the beginning of the *Donnerstag* section sees the MF notes dominating the rhythmic material. The MF dynamic *mf* is adopted for the whole section.

LF Material: Notes

The first of the two notes of the LF is differentiated by fast vibrato with an extended decrescendo.

General Comments

The beginning of a new 'opera' section is marked by a cross-sectional statement of all formula notes except the LHM low D. The new note of the LFLT is stated as the final beat of the section.

Example 26. *Traum-Formel* 'Section 9'

Super-Formula Section : 9

Licht designation: *Donnerstag* Act II 'Michael's Journey around the Earth'
(1978)

Super-Formula Tempo(s): 85

Super-Formula Length: 2 1/2 beats

Traum-Formel Location:

Traum-Formel Tempo(s): 101

Traum-Formel Length: 5

Termination: rit. line

MF Material: Accessory (Scale)

Michael's scale is two four note chromatic scales separated by a tone. The first four levels of its complex dynamic structure are reflected in *Traum-Formel*. The pitch class of the last note coincides with the new LF note and becomes a grace note to it. The natural deceleration of the phrase is accentuated by an actual ritenuto.

LF Material: Notes - Accessory (Echo)

The continuing Bb from the last section is given as a grace note to the MF notes. The first 'echo' is actually not quieter, the dynamic remains *f*, however the passage is marked 'broaden'.

The MF dominates the rhythmic material. The EFLT notes are interleaved with LF notes as grace notes to the MF. The section ends with a cross-sectional statement of all formulas except the MFLT note which was stated at the beginning of the section.

Consisting of two scenes: Festival; and Vision. (This is one of the instance of Limbs not exactly matching the expanded opera divisions. The first semi-quaver (quaver in the *Traum-Formel* expansion) of this section is still 'Michael's Journey around the Earth'. ^{3.})

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Super-Formula Length: 2 1/2 beats

Traum-Formel Location: 9

Traum-Formel Tempo(s): 71 - 53.5

Traum-Formel Length: 5 beats

Termination: Apostrophe and fermata

MF Material: Notes

The MF continues to define the rhythm of the section and the musical material retains the MF *f* marking throughout. The vibrato rhythm is articulated over the last four beats by playing notes of the cross section.

LF Material: Accessory (Echo)

The completion of the second echo is played at a *p* dynamic, differentiating it from the MF. The first note is displaced by the MF.

General Comments

The terminating fermata and apostrophe mark fall between the last two notes. This allows the final sextuplet to become an anacrusis to the next section.

Example 28. *Traum-Formel* 'Section 11'

Super-Formula Section : 11

Licht designation: *Donnerstag* Acts IV 'Thursday's Farewell' (1980)

Super-Formula Tempo(s): 60

Super-Formula Length: 1 1/2 beats

Traum-Formel Location: 9

Traum-Formel Tempo(s): 71

Traum-Formel Length: 3 beats

Termination: none

MF Material: Accessory (Modulation)

The MF Db leads the phrase and is still marked *f* despite a *p* marking in the Super-Formula. The flutter tongue modulation is transferred to the LF note.

LF Material: Accessory (Echo)

The final echo is marked pp. The final note has the same pitch-class as the EFLT's Bb which acts as a grace note.

General Comments

Unusually there is no termination marking the end of the *Donnerstag* Section of the Super-Formula. The new EFLT note Bb is presented first as a full length note in accordance with practice so far.

Example 29. *Traum-Formel* 'Section 12'

Super-Formula Section : 12

Licht designation: The first four beats (eight beats in *Traum-Formel*) are

Freitag Act I (1991-4) 'Friday's Temptation'. Consisting of ten scenes:

Proposal; Children's Orchestra; Children's Choir; Children's Tutti; Consent;

Fall; Children's War; Repentance; ELUFA (1991); and Choir Spiral and

twelve shorter sound scenes. *Freitag* Act II begins on the final beat (two beats in *Traum-Formel*) of this Limb.

Super-Formula Tempo(s): 60

Super-Formula Length: 5 beats

Traum-Formel Location: 5 crotchet beats after 10

Traum-Formel Tempo(s): 71

Traum-Formel Length: 10 beats

Termination: Apostrophe

MF Material: Coloured Silence ('ta' sound played into the instrument 'scarcely any pitch')

Placement of the MF notes in this section is treated comparatively freely, presumably because, like the tongue clicks in section 3, it is a coloured silence section. Staccato markings differentiate the MF notes. Dynamics are derived from the LF.

LF Material: Accessory (Wind - pitchless) - Coloured Silence(Call voicelessly into the instrument) - (Wind - pitchless)

The LF dynamic markings *pp* for the 'wind' material, and *mp* for the coloured silence material, dominate the section. The tremolos in LF introduced in this section become a characteristic feature of the rest of the piece. The tremolos at the *mp* marking begin to occur between pitches of the LF and goal tone of the LF glissandi.

General Comments

LF coloured silence occurs between two 'Wind' sections. From the *mp* marking the LF and EFLT become intertwined mirroring the plot development: Eve's temptation.

Example 30. *Traum-Formel* 'Section 13'

The musical score for 'Section 13' of *Traum-Formel* consists of five staves. The top staff is labeled 'TF' and contains a melodic line with various dynamics including *pp*, *p*, *f*, and *pp*. A box labeled '5r' is placed above the first measure. The second staff is labeled 'LF' and features a series of tremolos, with a box labeled '56.5' above the first measure. The third staff is labeled 'LF' and contains a melodic line with dynamics *pp* and *p*. The fourth and fifth staves are grouped together and labeled 'EFLT/LFLT' and 'LFLT/LHM' respectively. They contain a series of notes with dynamics *pp* and *p*. A box labeled '7.1' is placed above the first measure of the fourth staff. A box labeled 'whispered counting 1-4' is placed below the fifth staff. The score is written in a single system with a common time signature.

Super-Formula Section : 13

Licht designation: *Freitag* Act II (1991-4)

Super-Formula Tempo(s): 56.5

Super-Formula Length: 3 beats

Traum-Formel Location: 11

Traum-Formel Tempo(s): 67

Traum-Formel Length: 6 beats

Termination: None

MF Material: Silence

LF Material: Notes

The first note is omitted, but then the rhythm is retained quite closely, including the rhythm of the vibrato marking. In the first three beats dynamics are all one gradation higher than they are in the Super-Formula and the crescendo is retained.

General Comments

The beginning and end of the section contain cross-sectional statements. It is an unusually active section for the slow moving formulas: the EFLT, LFLT and LHM all have new notes. The LHM leaps up a tritone at this point the new note F# is marked *ff* in the Super-Formula and *f* in *Traum-Formel*.

Example 31. Traum-Formel 'Section 14'

Super-Formula Section : 14

Licht designation: *Samstag* Scene I *Luzifers Traum* (1981)

Super-Formula Tempo(s): 71

Super-Formula Length: 2 beats

Traum-Formel Location: 5 crotchet beats before 12

Traum-Formel Tempo(s): 85

Traum-Formel Length: 4 beats

Termination: Apostrophe

MF Material: Accessory (Wind)

MF note in this section is the initial grace note . The *ppp* marking is adopted for the LF and EFLT material.

LF Material: Coloured Silence (Call numbers voicelessly into the instrument)

The LF's quintuplet rhythm in the ascending line (four chromatic notes then a tone) dominates the section. The tremolo style intertwining of the EFLT and LF continues.

General Comments

This section is the point at which the piece crosses over the part of the Super-Formula from which the background layers are derived. The LHM note retains its *ff* marking.

Example 32. *Traum-Formel* 'Section 15'

The musical score for Example 32, 'Traum-Formel' 'Section 15', consists of five staves. The top staff (TF) is for the Top Flute and contains a complex melodic line with many slurs and accents, including a 'poco dr.' (poco ritardando) section. The second staff (MF) is for the Middle Flute and features a steady eighth-note pattern. The third staff (LF) is for the Lower Flute and has a quintuplet rhythm. The fourth staff (EFLT) is for the Extended Flute and has tremolo markings. The fifth staff (LHM) is for the Lower Horn/Mouthpiece and has a 'ff' (fortissimo) marking. The score is in 4/4 time and includes various musical notations such as slurs, accents, and dynamic markings.

Super-Formula Section : 15

Licht designation: *Samstag* First four beats: Scene II 'Kathinka's Chant as Lucifer's Requiem/ (1982). Last four beats 'Lucifer's Dance.'

Super-Formula Tempo(s): 75.5

Super-Formula Length: 4 beats

Traum-Formel Location: 12

Traum-Formel Tempo(s): 90

Traum-Formel Length: 8 beats

Termination: molto rit. line a tempo apostrophe

MF Material: Notes - Silence

The MF rhythm, with the smallest subdivisions, dominates the section. The grace note (D3) to the third beat repeats the last two notes of 'Insert 1'.

LF Material: Notes

The LF pitches are followed exactly.

General Comments

The cross-section of the MF, EFLT and LF is the dominant feature of this section. The dynamics of each layer are retained by writing a decrescendo between Lucifer's *f* marking and Michael's *p* marking. The statement of LFTF and LHM immediately precedes the first 'insert'. The Lucifer/Eve tremolos then continue.

Example 33. *Traum-Formel* 'Section 16'

Super-Formula Section : 16

Licht designation: *Samstag* Scene III 'Lucifer's Farewell' (1983)

Super-Formula Tempo(s): 80

Super-Formula Length: 3 beats

Traum-Formel Location: 15

Traum-Formel Tempo(s): 95

Traum-Formel Length: 6 beats

Termination: Apostrophe

MF Material: Silence

LF Material: Notes

The LF notes appear in this section principally as the 'grace notes' of tremolos. The LF dynamic 'f' predominates.

General Comments

There is no rhythmic material to draw upon for this section. It appears the triplet and quintuplet subdivisions are derived from the previous section as a continuation of the rhythmic density.

Example 34. *Traum-Formel* 'Section 17'

The musical score for 'Section 17' of *Traum-Formel* is presented on six staves. The top three staves are for vocal parts: TF (Tenor), MF (Mezzo Soprano), and LF (Lied). The bottom three staves are for piano accompaniment: MFLTY (Mezzo Flute), EFLTY (English Flute), and LFLTY (Lied Flute). The LHM (Lied Horn) part is also indicated. The score includes tempo markings of 75.5, 63.5, and 71. Dynamic markings include *f*, *ppp*, and *f*. The score is marked with various rhythmic notations, including triplet and quintuplet subdivisions.

Super-Formula Section :17

Licht designation: *Sonntag* 'The mystical union of Eve and Michael'

('Stockhausen has spoken of his desire to realise a solar system within the opera building and his desire to make the characters completely from light.'

3.

Super-Formula Tempo(s): 63.5

Super-Formula Length: 6 beats

Traum-Formel Location: 16

Traum-Formel Tempo(s): 75.5

Traum-Formel Length: 12 beats

Termination: None (Apostrophe and fermata in centre)

MF Material: Notes

The MF notes are displaced and in the case of the grace notes to the high D# even omitted. The high D# is however clearly differentiated by its dynamic levels.

LF Material: Notes

The LF rhythms dominate this section. The crescendo and decrescendo and dynamics are preserved.

General Comments

The high 'C' grace note of the MFLT preceding the third beat is its first appearance since section 12. There is a cross-sectional statement of all but the MFLT played at the MF dynamic of *mf*, at the height of the crescendo.

The new LFTF and LHM notes (the final for each) are stated as part of the cross-section. The LHM note is transposed up the octave as it goes out of range for the basset-horn.

Example 35. *Traum-Formel* 'Section 18'

Super-Formula Section : 18

Licht designation: *Sonntag* Act II (See *Sonntag* Act I)

Super-Formula Tempo(s): 67 -60

Super-Formula Length: 2 + 4 6 beats

Traum-Formel Location: two crotchet beats before 18

Traum-Formel Tempo(s): 80 -71

Traum-Formel Length: 4 + 8 12 beats

Termination: sustained B rest and fermata

MF Material: Notes

The MF is not played exactly rhythmically in time

LF Material: Notes - Coloured Silence (Call numbers voicelessly into the instrument)

The LF is dynamically linked to the EFLT (pp) and separated from the MF (f-ff). The pitches of the LF are displaced by a crotchet triplet from the sixth beat until the last third of beat ten. transposed a semi-tone too high from the third beat after the 71 marking and then a semi-tone too high from the last quaver triplet of the third last group.

General Comments

The final section is one of the most complex. The strict adherence to the rhythms and the fact that both the MF and LF are complex in themselves at this point creates a climactic end to the statement of the formula.

Dynamic material is adhered to very closely. The displacement of the rhythmic material of the LF is a typical strategy allowing the greatest possible relative consistency within each strand .

EFLT terminates in a glissando to the next section. It appears that notes of this glissando, written out as chromatic notes F#, F and E all occur in this final section. This process is also the subject of the second 'insert' that begins three beats after the M.M. 71 tempo marking is the second 'insert'. There is no LHM note in this section as there is a rest in its formula.

The Coda Section

During this final section the performer is instructed to 'walk towards the left exit (as seen from the public) and eventually 'disappear' through the door.

It begins with a restatement of the 'first time bar' without the silent fermata.

The Coda section is constructed from the fragmentation of sections from the main body of the work. The fragmenting section consists of the first two groups of 11 from number 3 in the score and section 1 of the Super-Formula. The statement is collapsing registrally as well as temporally: the two highest layers have fallen two octaves; the Lucifer layer has fallen one octave.

Example 36. *Traum-Formel* 'Coda' Section 1

The musical score for Example 36, 'Coda' Section 1, consists of two staves. The top staff is labeled 'Coda' and the bottom staff is labeled 'General Section'. The 'Coda' staff begins with a box containing the number '71'. The 'General Section' staff begins with a box containing the number '72'. The 'Coda' staff contains a series of notes, some of which are marked with 'f' (forte) and 'ff' (fortissimo). The 'General Section' staff contains a series of notes, some of which are marked with 'f' and 'ff'. There are also some notes in the 'General Section' staff that are marked with 'f' and 'ff' and have a '72' above them. The two staves are connected by lines, indicating a relationship between the two sections.

The next fragment at number 23 is drawn from the first four beats of number 8: the fastest tempo section of the Super-Formula.

Example 37. *Traum-Formel* 'Coda' Section 2

One crotchet after the MM. 71 tempo marking the material is drawn from the third beat of number 20 to number 21. Now the Eve Formula material has fallen below the Lucifer Formula material. .

Example 38. *Traum-Formel* 'Coda' Section 3

The Inserts

The 'inserted' musical material in *Traum-Formel* for the most part is presented inside boxes with instructions for it to be played either the first or second time through the central section. The inserts add character to the repeats of the central section. Specifically they allow a magnification of

Lucifer's formula and statement of the EFLT portion at a temporally audible speed. (Eve's is the only formula not represented at a temporally audible speed.)

The first insert occurs at number 13 in the *Traum-Formel* score. It occurs at a point corresponding to the beginning of the third beat of Lucifer's Requiem in the Super-Formula. The very large breath marks here are annotated 'breathe unnoticeably' it is possible to interpret this then as a signification of Lucifer's final breath. Again the pitches are a cross-sectional statement notes from the LHM, LFLT and LF with an additional D5 possibly a reference to the initial pitch of the LHM. Rhythmically the insert contains two repetitions of the preceding two notes from the formula, followed by a augmented version: essentially a gradually slowing of the material.

Example 39. *Traum-Formel* 'Insert' 1

The second insert occurs at number 19 in the *Traum-Formel* score. It occurs at three quaver beats after the final tempo change in the Super-Formula.

The programmatic content of the Super-Formula at this point is not yet

known, however it is shortly after the final statement of the last Kernel-Formula note (the D₃ stated by Michael and not Lucifer) and marks the point at which Lucifer begins his final descent.

The musical material is a tremolo between 'C#', the current note of the Lucifer Formula and changing notes which are a full statement of the Eve Formula *Luzifers Traum* portion at the *Licht* transposition played four times more slowly than in the Super-Formula instead of 62 more slowly as they normally appear in the rest of *Traum-Formel*. In effect it is a magnification of the Eve material illustrating the written out glissando.

The gliss from the Super-Formula between Eve's last note of the *Luzifers Traum* Section 'G', and the first note of the *Lucifer's Requiem* Section 'E' is written out. Perhaps not coincidentally the last three notes 'F - E - C#' are also the three pitches of the Lucifer's Formula *Lucifer's Requiem* portion at their *Traum-Formel* transposition. The insert terminates as it began, with a tremolo between the Eve and Lucifer's Formula notes.

Example 40. *Traum-Formel* 'Insert' 2

The final insert occurs at the conclusion of the central section and is followed by a repeat mark, so it essentially functions as a 'first time' bar. It is a fermata on the final note of the LF to be played as a subsiding and then swelling dynamic curve between *ff* and *pp*. Therefore it is the dynamic inversion of the opening and closing sections.

It is also stated at the conclusion of the central section before the coda begins. Here there is an inversion of the opening's modulation in the marking 'molto vibrato to non-vibrato, as well as a dynamic inversion from the first time version.

Example 41. Traum-Formel 'Insert' 3



Footnotes: Chapter 5

1. Karlheinz Stockhausen, *Texte zur Musik 1977-84*, 5 : p. 506
2. The completed opera *Mittwoch* consists of four scenes, all of which have been performed separately : World Parliament (1995); Orchestra Finalists (1995-6); Helicopter String Quartet (1993); and Michaelion (1997). At the time of writing, the opera had yet to be performed as a whole and it is not documented whether the two acts have two scenes each, although that would seem to be the most likely arrangement.
3. Karlheinz Stockhausen, *Texte zur Musik 1977-84*, 5 : p. 178
4. Bernard Pulham, *Sonntag from LIGHT: The Seven Days Of The Week* at <http://www.geocities.com/Vienna/2047/Sonntag.html>
It is not known at the time of writing how many Acts or Scenes Sonntag will have)

Conclusion

In an assessment of the successes of *Traum-Formel* it is difficult to separate it from the *Licht* project in general. The aims of *Licht* are extraordinarily ambitious and many of them differ greatly from those of a short stand-alone solo instrumental work. On some levels, however, some of these aims clearly transfer from the large scale structure back into the smaller work.

As has been shown in chapter 4, the Super-Formula is a highly balanced and differentiated structure and its structure is expressed in a wide variety of parameters. Although in its development there was little dialogue between the dramatic and the musical structure there appears to be a high degree of unity between them. It should logically follow that some of these qualities will be transferred to music created from these materials.

Traum-Formel exemplifies, to a degree, what Coenen identifies as Stockhausen's paradigm and the world view that flows from it. The comprehensibility of the work is dependent on melodies that move at different tempi retaining their individual character: vibration retaining its identity regardless of the time frame in which it is perceived. It cannot really be thought of as an example of galaxy-form in itself, in the sense that there is only one temporal layer at which a complete statement of the Super-

Formula is made. It is unlikely that any of the slow moving layers is recognizable as a slowed down statement of material from section 14, although all of the background material is heard at the foreground tempo: most obviously the Michael and Lucifer Portions as part of the foreground material; the Eve portion in the second insert; and the Lucifer Head Motive (in retrograde-inversion at least) as part of the 'Closing' section.

There are also numerous examples of Stockhausen's tendency to mediate between polar opposites. Mediation between the horizontal and vertical aspects, by presenting contrapuntal material on a monodic instrument, is perhaps the most central goal of *Traum-Formel*. This tendency is also evident in the continuum from a single note via vibrato to tremolo between two notes, which is such a feature of Stockhausen's writing for basset-horn in this work.

Although the horizontal structure of the Super-Formula is implicit in *Traum-Formel*, for the most part the vertical structure is not. This is most notable in the vertical alignment of the limbs as 3 sets of 12 tones. In *Traum-Formel* the complete EF is absent and the MF and LF are both transposed to different degrees. The most important ramification of this is that the final note of the MF is not the missing 12th note from the LF, an important structural feature of the Super-Formula.

The variety of tempi and fluctuations in tempo are a feature of Stockhausen's music. *Traum-Formel* adheres in the central section strictly to the order and very closely to the length of the tempo sections. The 18 limbs of the Super-Formula are generally marked in *Traum-Formel* by different kinds of terminations. These function like phrase marks, creating a speech-like ebb and flow in the presentation of musical ideas.

At a more literal technical level Stockhausen has achieved in *Traum-Formel* a very high level of adherence to the details of the Super-Formula. This is due in part to the properties of the pre-compositional structure itself, which has very clearly defined materials and a dramatic structure both underlying and reinforcing it.

As mentioned previously, in the central section the register of the formula strands is maintained almost entirely. The only departure is made for linking the notes of the Michael, Eve and Lucifer Formulas into a single 'tremolo' arpeggio. Likewise the pitch template is only deviated from at one point, in the final notes of the Lucifer formula.

Cross-rhythms are ingeniously represented using grace notes and subdivisions of the beat. Shorter rhythmic sub-divisions tend to displace

longer ones. For example domination of the rhythmic parameter by Michael's Formula in the *Donnerstag* section. 'Dramatic' considerations such as this seem to determine Stockhausen's treatment of lower-order parameters. Dynamics for example are used to differentiate strands where possible, but are also used to reinforce 'dramatic' considerations. For example the LF dynamics dominate throughout the *Samstag* limbs. The result of the ingenious differentiation of the formula strands shown in the previous chapters, is that for the most part they are discernible by the listener. At the very least, the contrasts between them coupled with the structure of the pre-compositional materials invigorates the score.

Part of the drama of the performance is undoubtedly its virtuoso dimension. *Traum-Formel's* compositional goals are fused with the very features that make it a virtuoso work: uses the entire range of the instrument and it requires the performer to leap with enormous agility between the registers. Surprisingly there are very few compromises for the sake of simplifying the performance.

It is remarkable how conveniently the transpositions of the formulas lie across the instrument's four octaves. Stockhausen would clearly have had the opportunity to develop material in collaboration with the performer. On the other hand, rather being a remarkable adaption for the instrument, the

idea of presenting the Super-Formula melodies simultaneously may have arisen simply because it was possible to realise on the basset-horn.

Traum-Formel is undoubtedly a highly structured work displaying extreme ingenuity on the part of the composer. In performance the drama, balance and diversity of the Super-Formula pre-compositional material does seem to be translated to *Traum-Formel*. In this regard part of the *Licht* macrocosm does appear to be contained within the microcosm of *Traum-Formel*.

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8 [101] rit.----- ausspielen rit. [71] 53.s

10 [71] ($J = 14.2$) Flzg. f pp

11 [67] mp pp mf

12 [90] $f > p$ $f > p$ ff p

13 nur beim 1. Mal lang unbemerkt atmen vibr. f p ff p ff pp ff

14 molto rit.----- a tempo 15 [95] f p $f > p$ $f > p$ f p f wie Schreie

16 [75.s] non staccato 5 Flzg. (f) f pp f mp

Die Türe
Op. 11, No. 1
G major, 3/4 time

Section 1: Measures 1-18
 - Measure 17: *breit*
 - Measure 18: *mp*, *f*, *pp*, *mp*, *mf*, *pp*, *mp*, *ff*, *pp*

Section 2: Measures 19-21
 - Measure 19: *f*, *pp*, *f*, *pp*
 - Measure 20: *rit.*, *a tempo*
 - Measure 21: *lang*, *breit*
 - Boxed instruction: *nur beim 1. Mal*

Section 3: Measures 22-24
 - Measure 22: *molto vibr.*, *non vibr.*, *zum Ausgang - links vom Publikum - gehen*
 - Measure 23: *J = 101*, *rit.*, *vibrato*, *J = 71*
 - Measure 24: *breit*, *molto vibr.*, *J = 56.5*, *langsames Vibrato (ad lib.)*

Section 4: Measures 25-31
 - Measure 25: *vibr.*, *an der Tür*
 - Measure 26: *vibr.*, *die Tür öffnet sich*
 - Measure 27: *vibr. rit. mit vielen starken Obertönen*
 - Measure 28: *in der Tür verschwinden*