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Paul Klee Notebooks Volume 2 The nature of nature

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J.S.

205178

The artist cannot do without his dialogue
with nature,
for he is a man, himself of nature,
a piece of nature and within the space of
nature.

Paul Klee, 1923

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Note on the arrangement of the text

Paul Klee's texts and lectures occupy the larger part of the printed page. They are set in the larger type-size. The columns set in smaller type contain quotations from Klee's writings (in quotation marks) and notes by the editor. Occasionally comments by the editor are also set in the larger type-size, for typographical convenience and where the source is obvious. Here is an example (for the corresponding illustration see p.63):

1934/u 8: *Supervegetational.*
Waxed watercolour on plaster-grounded jute.
62·5 x 80·5.

From one of Klee's notes on nature study:
'Dynamic forces are inward (esoteric), limits are outward (exoteric). Core, interior space, material rind, exterior space. Concepts: dynamic form – imitational form. Additionally, the abstract: active-linear, linear-medial.'
1934/u 8: *Supervegetational:*
Synthesis of firm and relaxed rhythms. The individual form of the core layers is firm. The structural elements are looser and more flowing than the surrounding layer.

Creative power is ineffable. It remains ultimately mysterious. And every mystery affects us deeply.
We are ourselves charged with this power, down to our subtlest parts. We may not be able to express its essence, but we can move towards its source, insofar as at all possible. In any event, it is up to us to manifest this power in its functions, just as it becomes manifest within ourselves.
In all likelihood, it is itself a form of matter, although it cannot be perceived with the same senses as the more familiar kinds of matter. Yet it is in these familiar kinds that it must reveal itself. It must function in union with matter. Permeated with matter, it must take on living, actual form. It is thence that matter derives its life, acquiring order from its minutest particles and most subordinate rhythms all the way to its higher articulations.

Dimensions of pictures

All measurements are in centimetres, height preceding width. In the reproductions of paintings, measurements indicate the outer limits of the painted surface. For watercolours, colour prints, and drawings, they indicate the size of the work, excluding the mount.

Paul Klee in 1896, aged 17, in the garden of his family home in the Obstbergweg, Berne.

The concept of the infinite as cosmic-earthly tension

The main title 'Infinite natural history' [here rendered as 'The nature of nature'] as a characterisation and *Leitmotiv* is Paul Klee's and heads the introduction to the section 'Style, Archestyle' (20/1–59).[1]

[1] First published in *50 Jahre Bauhaus*, catalogue of the exhibition, p.63, Württembergischer Kunstverein, Stuttgart, 1968.

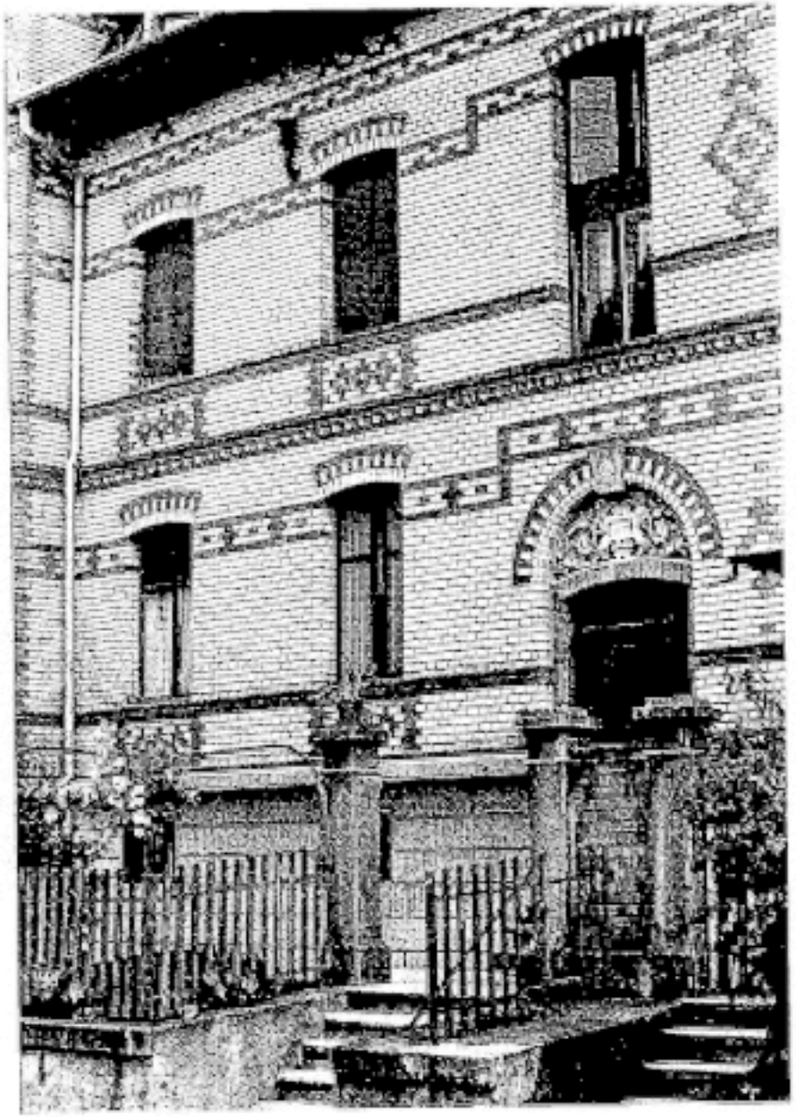
In this introduction to the subject of archestyle, the question of style is developed in terms of cosmic history or cosmogony. Klee posits an absence of gravitation as the primordial state and regards mobility as the prerequisite for change from this original state.
The concept of the infinite thus applies not merely temporally, but must be understood spatially in terms of earthly-cosmic tension.

As a premise for basic style-setting forms as for the absence or presence of gravitation this concept is so extraordinary in a theory of form that the text is here reproduced in full.

'In the beginning what was?[2] Things moved freely, so to speak, in neither curved nor straight directions.
'They must be thought of as primordially mobile, they go whither they go, in order to go, without aim, without will, obeying no law, taking their motion for granted, as a state of primordial mobility.
'Initially there is but one principle:[3] to move. No law of motion, in other words, no special will, nothing specific, nothing partaking of order.
'Chaos and anarchy, a turbid jumble. The intangible – nothing is heavy, nothing light (light-heavy); nothing is white, nothing black, nothing red, nothing yellow, nothing blue, only an approximate grey.
'Even the grey is not precise, nothing is precise, all is vague, indeterminate.
'No here, no there, only everywhere. No long-short, only everywhere. No far-near, no yesterday, today, tomorrow, only tomorrow-yesterday.
'No doing, only being.

[2] Crossed out: what 'happened'?

[3] Crossed out: 'law'.



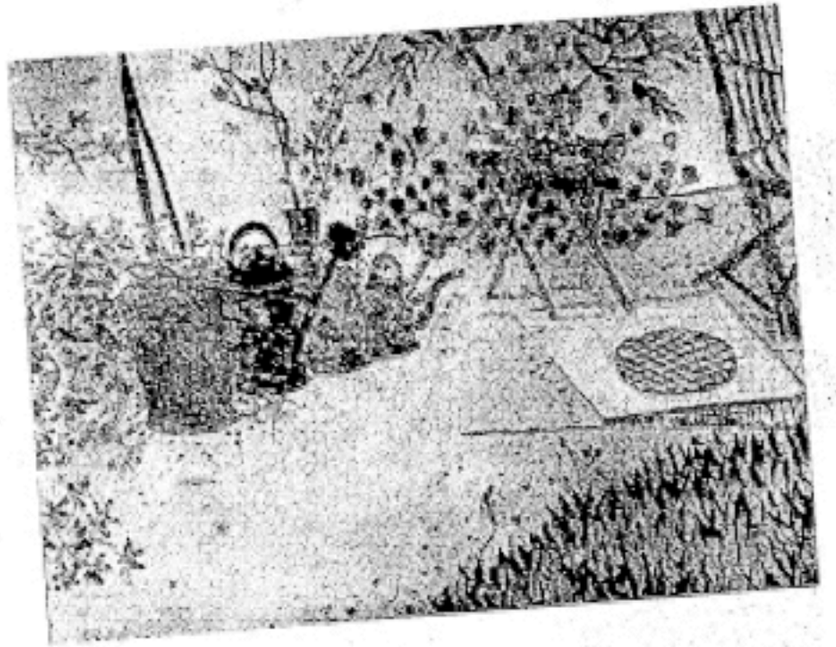
The family home in the Obstbergweg, Berne. Paul's father Hans Wilhelm Klee lived here until his death in 1940 and his sister Mathilde Klee (1867–1953) until 1953.

[a] Original version superscribed: 'only a shadowy interweaving'.

[b] Crossed out: 'is probably objectively untrue'.

'No explicit rest, no explicit motion, only
'The only something: mobility as a prerequisite for change from this primordial
'Whether it was so is not proven,' is hopefully true, is at any rate conceivable, and what is conceivable is factual and useful. It is useful as a concept opposed to what may have ensued, to change, development, seizure, specification, measurement, destiny.
'Perhaps it was at least a pause in the course of events, a caesura in the cosmic programme that knows neither beginning nor end, but is marked by breaks, halts, let-ups. It is useful, moreover, because it may be creatively exploited for purposes of contrast.

1905/24: *Garden scene, watering cans, a cat, a red chair, from nature.*
Watercolour under-glass, 14 × 18·5.
The theme for this small under-glass painting by the youthful Klee was borrowed from the garden of the family home in the Obstbergweg, Berne, shown opposite.



'Hence it is chaos, after all, not chaos inconceivable, but chaos conceivable, as logos.
'This means that chaos as a concept does not stand alone, no more than cosmos can be grasped apart from chaos. They are a mutual conceptual duality. They serve operationally, with the support of contrast, tacit or explicit.

Paul Klee with his father Hans Klee in 1935 in the garden of the family home in the Ghaetzergweg, Berne. Hans Wilhelm Klee was a music teacher at the Berne seminary of Hofwil. He died in 1940 at the age of 91, a few months before his son.

'Gravitation
'"In the beginning": what happened?
'Things, presumably gaseous condensations, thickened as accumulations and proximations of their particles. A few particles attracted one another, forming focal groups for further attraction. Once attracted, they established a dominance for themselves and other particles that came within the sphere of attraction. As the group grew, its parts fitted more and more into a hierarchy.
'Reaching out from a main nucleus (a centre), this graduated exercise of power regulated itself by attraction, the nucleus dominating the whole.
'The primordial mobility persisted. Nucleus remained primordially mobile and with it the layers, hence the layers too remained primordially mobile, but only co-mobile rather than autonomous. They did not move on their own, they rode along. They were fixed in their relation to the nucleus, but since the nucleus was mobile, they too were mobile.'

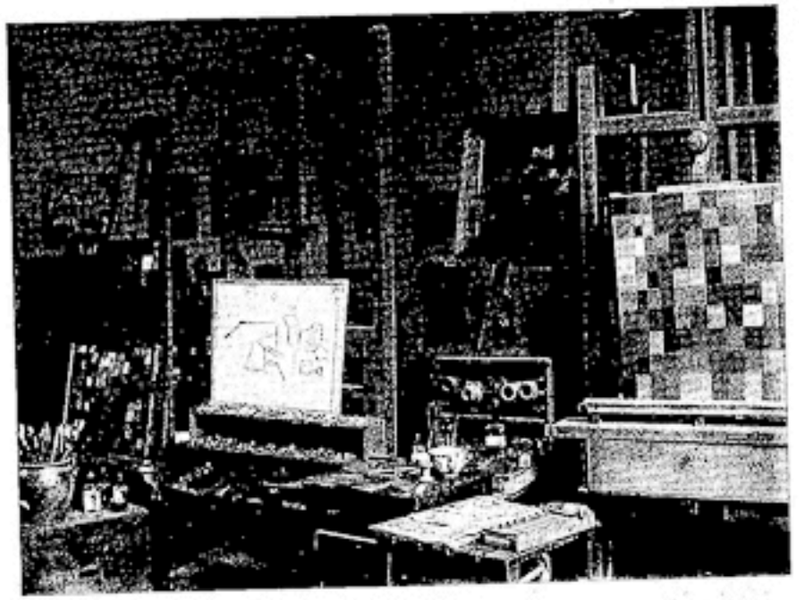
In another passage, Klee characterises the concept of the infinite in a context that is also out of the ordinary. Here too movement is the standard prerequisite, extending in time from beginning to end and leading to circulation.
'The instinctively sensed possibility of going beyond a beginning is characterised further, in the concept of the infinite, which extends from beginning to end (not related solely to the beginning), leading to cyclical motion, where movement is the norm and the question of its inception does not therefore arise.'
The finite circulatory motive in nature[1] for its part characterises paired tensions such as finite-infinite and earthly-cosmic.

[1] Water cycle, p.93.
The seasons, p.97.
Cosmic cycle, p.99.
Circulation of the blood, p.101.

Chronology of the Lectures, 1921–24.

The lectures from 'Towards a theory of form production' provide the main part of *The thinking eye* (Volume 1).
They comprise the winter semester of 1921/22 and the summer semester of 1922, with a section entitled 'Review of exercises in general'.
The winter semester of 1922/23, dealing with colour system, forms the concluding part. The dates run from 14 November to 19 December 1922.
The last lecture closes with peripheral colour movement and the rule of colour tonality.
The present second volume comprises the 'General system of pictorial media combined with nature study'.
It consists of the continuing lectures during the winter semester of 1923/24. In between lay the brief summer semester of 1923. In the summer of 1923, following colour theory, exercises in this field were presumably held for advanced students.

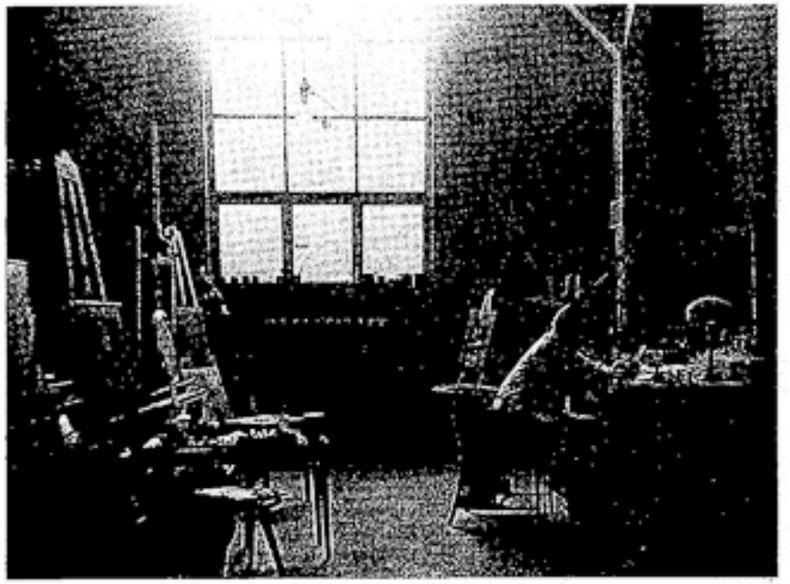
At the beginning of every preliminary course Klee always went back to basic theory, while the 'General system' represents preparation for an advanced semester.
The dating of the lectures makes it possible to view the written notes in chronological order and thus fit them into the Klee papers as a whole. The sequence of the text in this second volume is based on this approach.



Paul Klee's studio in Weimar, 1925.

The basic organisation of media is the same in both lecture cycles: 'line, plane, tone value, and colour'.
Only three brief sections in Volume 1 are devoted to the theory of tone value:
'The movement of tone value (from white to black)' p.421.
'The movements of colour tonality' and
'Synthesis of tonality-movement and temperature contrast' p.423.
In the 'General system' (Volume 2) the theory of tone value took up approximately a full semester.
The section on tone value has been supplemented with examples, mainly from the 'Special system' (60/1–121). In view of the volume on Klee's colour system, which is in preparation, the section on colour has not been included in this volume.

Paul Klee's studio in the Bauhaus, Weimar, 1925.



Klee's colour theory might be suitably characterised as a 'system of colours conceived of as an organic whole at rest and in motion'. It breaks new ground in two areas: colour movement and colour relativity.
Klee represents his colour globe rather like the terrestrial globe in space, on which colour movement takes place peripherally, diametrically, and along the polar axis, or with colours orbiting the globe like satellites or delimiting it like meridians.

A note (8/12) outlines four exercises, suggesting what such practical exercises may have been like, following the summer semester's colour seminar.[1]

'Exercises:
1 Scale of tone values
2 Peripheral colour scale
3 Three diameter scales
4 Three major polar colour scales.'

[1] Cf. 'Order and nature of pure colours', Volume 1, pp.485–511.

The two parts, 'Towards a theory of form production', in Volume 1 and the 'General system' in Volume 2 overlap and supplement each other, although emphasis and focal points differ. In subsequent semesters Klee used both manuscripts together and alternately.

Numerous marginal notes and page references suggest that he kept reorganising his material in new ways, using it over the full range from preliminary to advanced courses.

Klee's teaching from 1921 to early 1924 was very much of a piece, and what he discussed may be supplemented from both parts.

In the light of his experiences during the early semesters, Klee, in the 'General system', increasingly reverted to nature study as his starting point, representing thought and creative processes in simplified, more immediate and more graphic form.

His geometrical and constructional contributions, on the other hand, further enriched and complicated these processes. It was not until his Bauhaus period that Klee, stimulated by the demands of the lecture hall, began to go deeply into the basic theory of two-dimensional extension.

'Towards a theory of form production'
(Volume 1)

	p.
14 November 1921	99
21 November 1921	121
28 November 1921	123
5 December 1921	149
12 December 1921	197
9 January 1922	215
16 January 1922	217
30 January 1922	295
6 February 1922	323
13 February 1922	325
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22 May 1922	443
12 June 1922	444
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26 June 1922	447
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28 November 1922 (colour theory)	467
19 December 1922 (colour theory)	485

'General system or methodology of pictorial means'
(Volume 2)

Tuesday 23 October	1923
Monday 29 October	1923
Tuesday 30 October	1923
Monday 5 November	1923
Tuesday 6 November	1923
Tuesday 20 November	1923
Tuesday 27 November	1923
Tuesday 4 December	1923
Tuesday 11 December	1923
Tuesday 9 January	1924
Tuesday 15 January	1924
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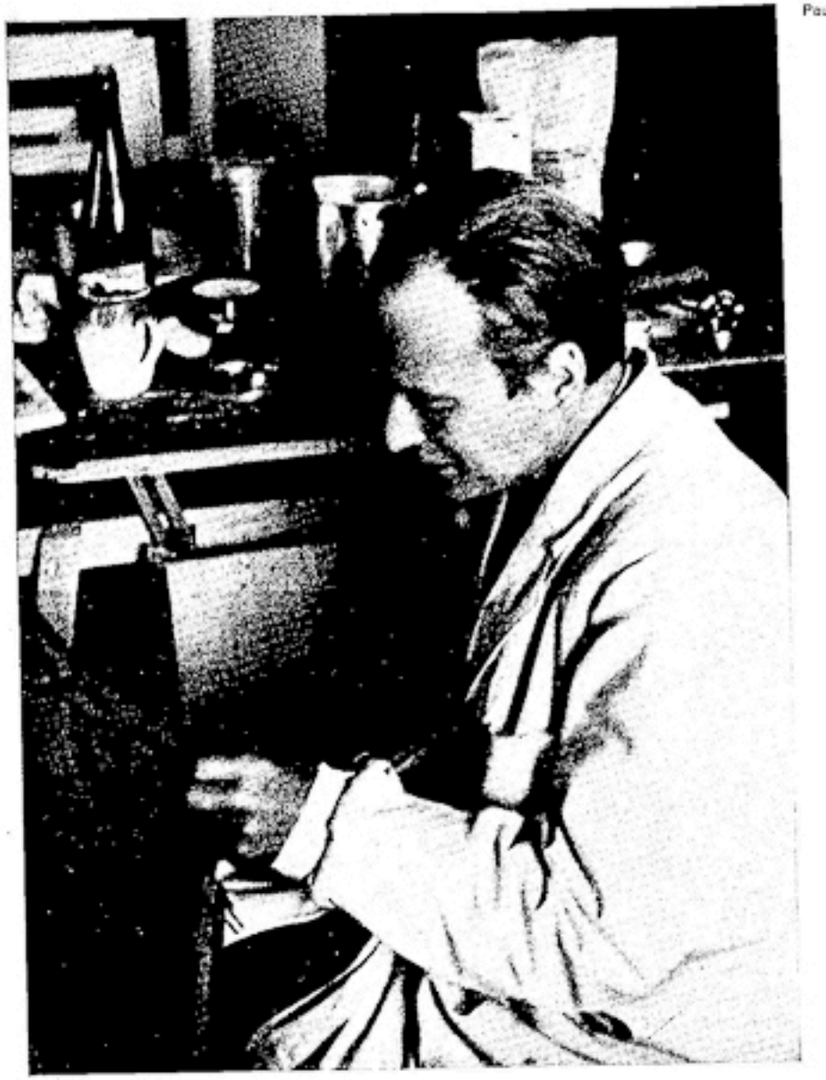
Tuesday 29 January	1924
Tuesday 5 February	1924
Tuesday 12 February	1924
Tuesday 19 February	1924



Paul Klee in 1939.

Among Paul Klee's unpublished papers, only the manuscripts on 'Statics and dynamics' or 'Pictorial mechanics and theory of style' (45/1–165) are continuously dated. In time they follow directly after the 'General system'.

Statics and dynamics

(Pictorial mechanics or theory of style) 45/1–165)
Dates of lectures
Friday 29 February 1924
Tuesday 4 March 1924
Tuesday 11 March 1924
Tuesday 18 March 1924
2 July 1924
Concluding lecture.

Current dating of lectures ended with the one on Statics and dynamics delivered on 2 July. The corresponding collection of notes, supplements, and sketches, superscribed 'Current material on statics and dynamics' 21/1–89, no longer contains any further complete pieces and running dates.

Primordial approaches to form, 5/1–70

Contains no lecture dates. One chapter is marked 'written in the summer of 1927'.

Style, archestyle, 20/1–59

Deals with the structure, balance and rotatability of static and dynamic elements. Stylistic elements are characterised *ab ovo*, i.e. from their basic forms on up and their behaviour is examined from the static and dynamic point of view. There are no running dates.

Special system of pictorial means, 60/1–121

Contains for the most part examples of specific mobility of means in respect of both tone value and colour. There are no current dates and no lecture texts, apart from the discussion of several concepts.
Both 'Style, archestyle' and 'Special system' also constitute documents Klee addressed to himself, with reference to his own creative interests.

Organisational theory, IV/1–195

With an incomplete separate part on the same subject, largely identical with his voluminous 'Constructive theory of composition'. No current dates. Used in teaching for the sections on articulation and structure, rhythmics, dividual and individual divisions and their connection. The main parts have been published in Volume 1.

Klee intended to publish 'Statics and dynamics' (or 'Pictorial mechanics') as one in the series of Bauhaus Books; and in 1925 the Bauhaus Publishing Company repeatedly announced the volume.[1]
Expressing the basic duality of form, the term 'Statics and dynamics', often used by Klee himself, describes the substance of the notes with greater precision than the title 'Pictorial mechanics'.

[1] The concluding lecture of 2 July 1924, was first published in the catalogue of the Paul Klee exhibition at the Basle Kunsthalle in 1967.

1

2

People today have become much more aware of the idea of static versus dynamic form than was true in the twenties; and thus these two terms as opposites, as applied to pictorial content, are more appropriate than the ambiguous term 'mechanics'.

Views of Klee's studio on the Kistlerweg, Berne, taken around 1939.
[1] Foreground, Bimbo the cat; centre picture on the back wall *Scholar (self-portrait)*, 1932 z 6 (*cf.* Volume 1, frontispiece).
[2] Corner cupboard with painting supplies. On top, two reliefs now at the Paul Klee Stiftung, Berne.

General and special system
Behaviour of pictorial means at rest and in motion

After 1924/25, the 'General system of pictorial means' formed the counterpart to the 'Special system of pictorial means' (60/1–121).
The 'General system' reviews the conceptual means before they are used in form production, in a state of rest.
In the 'Special system' movement is associated with the means. Form-producing tensions and contrasts among various individual forms result in the special kind of mobility that effects the first step from form to form production.
'This reorganisation picks a few characteristic passages from the "General system" and reshuffles them by new criteria.'

2

Paul Klee in his Berne studio.
[1] In 1938.
[2] In 1939.

'Special system
or methodology
of pictorial means

First step from
general to specific methodology
based on the concepts:

Limitation
Interruption
Rearrangement
Disproportion

By movement (direction of movement)
Unilateral
Parallel movement
Movement and countermovement

Modes of movement

Interruption:
Gliding
Striding
Leaping
Central figuration without discontinuity
Jumps

Rearrangement:
By shift
Rotation
Reflection
Complementary

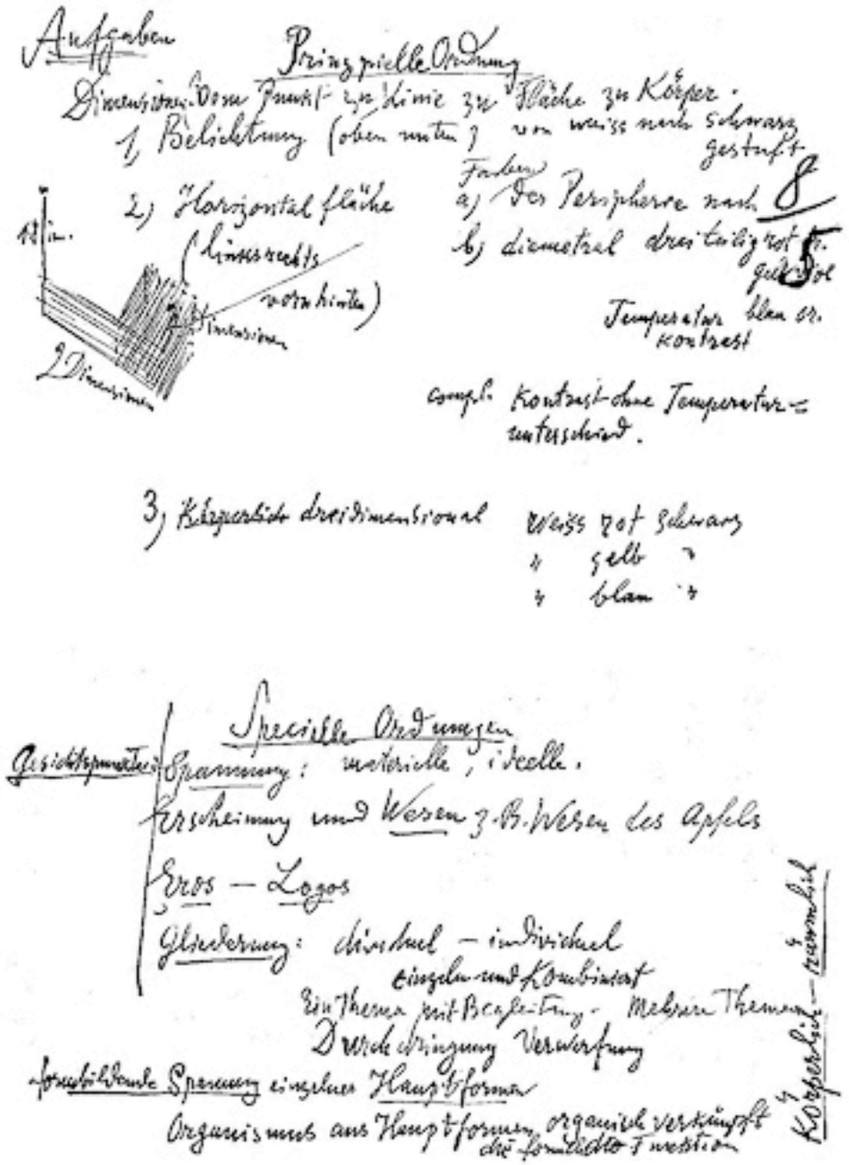
Limitation or superfluity and
disproportion
Major-minor, majority, minority

Direction of movement:
Composite unity
Movement and countermovement
Composite unity in two
dimensions'

'Figuration must be connected with the concept of movement. In the general case mobility ends in rigid rest. As primary values, formative means as such are elementary by nature, but when they become secondary or lesser values, they move to and fro among the firm primary values.
'Movement of the means is itself a to and fro between firm points, and this may in turn result in more firm points, like grey, green, orange, etc.
'Once established, the whole "structure" of formative means is immovable, immutable, unique. Hence the term general.
'One cannot say: Let us do this once again in a different or better way. Perfection is absolute here.
'One principle predicates everything else: The manner of mobility in a composite principle is completely balanced in itself. It achieves this through the regular spacing of the firm points and by the equivalence of the to and fro of movement among the firm points. Thus the whole appears to be governed by a kind of rigidity.

View of the studio in the Kistlerweg, Berne. On the wall, early under-glass paintings. On the easel at right, one of Paul Klee's last designs (now in the possession of his son Felix).

'The structure of a general system of means is bound to be an organism of great rigidity and precision, an assemblage of contingencies expressed in terms of "tonality" and of "colour". It thus provides a kind of topography of "light", "dark", "lightened colour", "darkened colour" and "coloured light" and "coloured dark".
'Such an organism, however, is marked by an immutable rigidity, a unique perfection.
'Living, moving figuration proper must therefore cast loose from the general system. One or more organs of that organism must be singled out and reorganised into an organic perfection of their own. The scope broadens into infinite variability.
'In this process it (the primordial element) must settle on the intended scope of its newfound specific mobility'.



The hand-written text is transcribed in print on the facing page.

Exercises

'General system

Dimensions:
From point to line to area to solid.

1 Lighting (above–below)
Graded from white to black

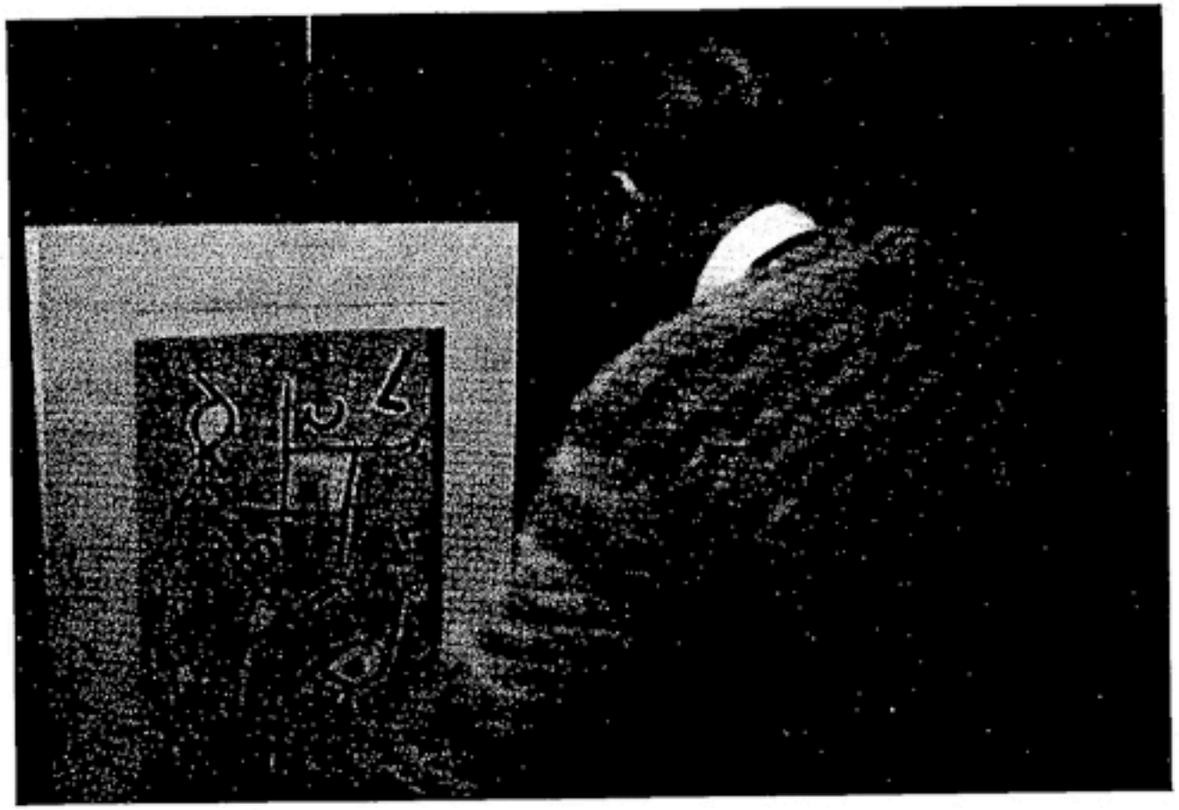
2 Horizontal extent (left–right/front–back)
a Peripheral colour
b Diametrically tripartite red, green, yellow, purple
Warmth contrast: blue–orange
Complementary contrast without warmth differential

3 (Solid) three-dimensional
white red black
white yellow black
white blue black

Special systems

Aspects:
Tension: physical, mental
Semblance and essence, e.g. of an apple
Eros–logos
Articulation: dividual–individual,
single and combined
Single theme with accompaniment–several themes
Interpenetration, mutual exclusion
Creative tension of major individual forms
Organism organically linked from major forms
Formal function physical-spatial'

This contrast of 'General system and special system' (8/5), outlining practical exercises for advanced students, was written on the back of a letter to Klee from the Berlin Nationalgalerie of 1 March 1926, and can thus be approximately dated. Conceptually, basic and specific aspects may be distinguished in 'Towards a theory of form production' (Volume 1), as well as in the 'General system', but in practice this would scarcely be possible.



Paul Klee in his Berne studio in 1938.

Paul Klee's studio in the Kistlerweg, Berne, in 1939.

In both lecture cycles presentation of primary values was followed by demonstrations of the special mobility inherent in figuration. The two were indisseverable.
Klee's theory of tone value gives elementary examples, but going on from there brings in the element of special mobility. Tone value subsists on movement between the poles of black and white, on tension, on interpenetration, on transition. But for movement, polar contrast would be lifeless and rigid.

Klee opposes 'constructive' figuration to 'impressive'.

constructive i.e. causally real	– impressive virtual (i.e. in appearance)
constructive by nature	– constructive by semblance

'Constructive representation provides certain invariant valence relationships, while impressive representation reveals a naive joy in expression.'

constructive integrated with the warp of construction	– impressive – by semblance without the warp of construction

Klee uses the term 'constructive' as a simplification of the precisely defined concept: 'Normal format, rigidly adhered to, with constructive internal relations, as the canon of the ground plan. The canon as the standard and rule.'
Constructive compositional approaches serve to establish norms and directives in the formative process, and any departure from the acknowledged system must be logically justified.

Klee distinguishes these constructive compositional approaches:	'Schematically fully constructive partially constructive, applied schematic partially constructive figuration: free choice of detail. (Or partially constructive play. Irregular random movement.)'

Partially constructive figuration avails itself of a schematic basis from which it chooses what it deems suitable for free figuration.
'The partially constructive manner', Klee writes, 'happens to be productive in a form-creative sense, but only by calling on the help of the destructive principle. The productive ruin.'
To avoid rigidity and gain a new and freer structure by creative freedom of choice, the schematic basis must be destroyed.
Pride of place is given to order and structure, to organic and heuristic links. In second place comes the application of formative means, whether elementary or mixed, in sum, 'Irregularity', departure from the canon, from the norm.

[1] *Cf. Exact experiments in the realm of art*, Volume 1, p.69, and *Law*, Volume 1, p.71.

In the section on 'rules', Klee discusses irregularity as a departure from the constructive norm.[1]
'Irregularity means greater freedom without transgressing the law. The conflict between universal and restricted application.
'Partial choice has expressed itself as an absolute structure (omission of the universal) or as a relative structure. Accented, but at the same time susceptible of being measured by the law which forms part of it. All figuration relates the general to the particular. It is more personal or less, according to the nature of the relation.
'But if the priests ask sternly: "What is this shocking anomaly you are producing?" – the absolute structure makes it possible to prove after the fact that the law has been observed, while the relative structure includes the proof, rejects the question and makes the proof unnecessary.'

[2] Cf. text, next page.

The overall plan of the general theory of pictorial composition (8/27 and 8/28)[2] suggests many possibilities that stem from linking the theory of constructive composition with the stylistic plane.
It was long an open question what weight should be given the theory of constructive composition combined with nature study, compared with the theory of form and figuration.

Klee's calendar for the years 1928/30 carries entries on his lessons at the Dessau Bauhaus made over several terms. They suggest that constructive-geometrical instruction took up much more time than has been hitherto believed. It should be considered on a par with his earlier preparatory texts.
This in turn suggests a shift of emphasis from the form and figuration examples prepared in writing during the early Bauhaus years to the constructive basis of two-dimensional figuration. This shift culminated in the years 1929/30 in Dessau and was concluded during Klee's tenure at the Düsseldorf Academy in 1931–33.

'The general theory of pictorial composition falls into two parts:

A Theory of constructive composition
B Theory of style

Line of the theory of constructive composition (in general outline):

A Fixed normal relations within static and dynamic forms (full and partial constructions). Slight departures, i.e. random movements about the normal interior pathways (side paths).
To A: Fixed in the static sense means rigidly bound to the vertical. Fixed in the dynamic sense means tranquil harmonisation of free mobility.

B Sharp departures, i.e. movement against the normal interior pathways.
To B: Sharp deviations in the static sense are local deviations from the normal orientation of the vertical and the horizontal, but always in the form of verticals and horizontals.
Sharp deviations in the dynamic sense are essentially central shifts and shifts of locales dependent on the centre, avoiding the plumb-line and its closest forces.

Link between the theory of constructive composition and the stylistic plane.

A Theory of constructive composition.

Questions:
1. Are the interior constructive relations of form and format maintained? Are there random deviations?
2. Is there a complete departure from interior constructive relations? Is this done while coincidentally normal constructive relations are also given form? Or are the latter omitted?

B Theory of style

Questions: Are verticals and horizontals present? Rectangles? Are centres and peripheries present? Sextiles?'
(8/27 and 8/28).

Nature study and constructive approaches to composition
Duality treated as unity

Constructive compositional approaches, being exact experiments in the realm of art, provide an additional element to the themes treated in Volume 1.
In *The nature of nature* constructive compositional approaches and nature study are contrasted and summarised.
Both bases, the natural and the geometrical rules, are represented in balance, insofar as possible.
'Contrasting locales,' Klee emphasises, 'are fixed. They permit gliding movement. Treat dualism not as such but in its complementary unity.'

To a considerable extent Klee translates into the constructive realm insight about growth and mobile processes gained from nature. Basic geometrical forms are studied by the same criteria as plants, in respect of their causation, their mobile potential, their interior.
Beginning with the elements at rest, centres and random points are set in motion, to the end of reaching efficient organic relationships.
In the pictorial sense, the dynamic forces of natural growth and the tensions of basic forms have this in common: function, movement.
In Klee's œuvre the two poles alternate in holding the upper hand, just as they alternate in the stylistic development of the twentieth century.
It is in the formative process that the duality of nature study and constructive compositional approach achieves creative harmony and synthesis.

'Algebraic, geometrical, mechanical tasks are training elements en route to the essential, the functional, as against the impressive. One learns to look behind the false front, to go to the root of things. One learns to perceive the flow underneath . . . to dig deep and lay bare. To find reasons, to analyse.'

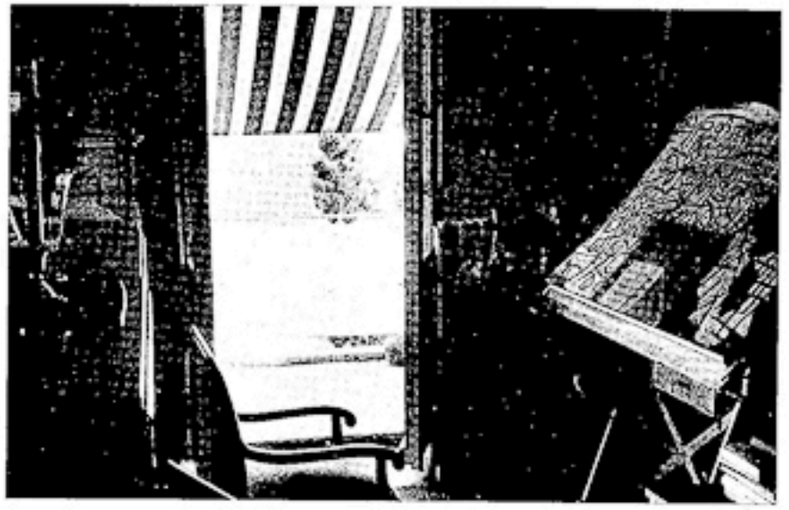
The Dessau Bauhaus schedule 1928/29

Klee's calendar from the years 1928/29 includes current entries about his lectures. In this fashion an overview of the Dessau syllabus has been preserved. Among Klee's papers, this is the only trace of how the various term courses were built up over two years, and it demonstrates that the geometrical part must not be separated from the text preparations. In practice both increasingly formed a mutually complementary unit.
From the preliminary course to the fifth term there is an alternation of portions from the theory of articulation, the general and the special systems, the theory of organization, and of statics and dynamics as related to questions of style.
The constructive aspects of planimetrical figuration bulked large in Klee's lectures.

View from the terrace of the Berne studio on to the gardens of the Ellenau.

View from the rear of Klee's Berne home (1931–40) on to the Kistlerweg and Ellenau in winter.

View from Klee's Berne studio on the Kistlerweg on to the terrace and garden in summer.



The Dessau lecture plan for 1928/29 is incompatible with any sharp division of Klee's theoretical papers into the verbal and the geometrical-constructive and with the view that the latter were intended more for his own orientation and exercise. The two display an increasingly coincidental relationship, arising from their function as pole and counter-pole.[1]
The link between invariant relations and the stylistic level gives rise to new steps towards multidimensional simultaneity, in the individual form elements as well as in the whole art concept. This was always one of Klee's fundamental concerns.

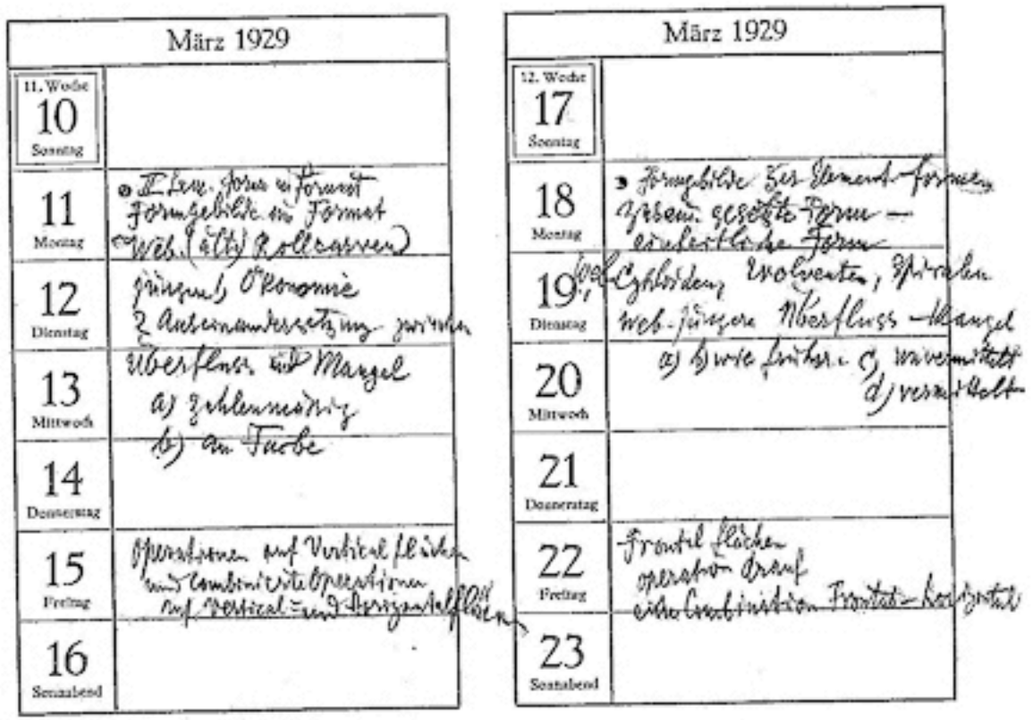
[1] *Cf.* the diagram of Bauhaus organisation: 'Art – Organisation – Pure science', Volume 1, Introduction, p.33.

Monday	1928 9 January	Examples of dividual–individual combined. Tension as formal genesis.
Monday	16 January	Weaving.
Monday	23 January	Weaving: basic theory, elementary form. Form in format. Form structures in format.
Monday	30 January	Weaving: inferring the exterior from the interior. Basic theory: form structures from three elementary forms.
Monday	6 February	Form as sum.
		Preliminary course: decentralisation of form structure from three elementary forms. Composite form.
Monday	13 February	Subtraction. Random movement on rails. Six mechanical variations.
Friday	17 February	Weaving: trapezoid.
Monday	20 February	Weaving: composite form with surface contact (and after) points.
Monday	27 February	Second semester: arches and straight lines. Irregular progression.
Monday	5 March	Preliminary course, second semester: last lecture. Style, problems.
		Weaving: subtraction, rhythmic patterns.
Monday	12 March	Weaving: division.
Thursday	22 March	Preliminary course participants turn in problems.
Friday	23 March	Preliminary course exhibition is installed.
Monday	26 March	Entrance examination 10 o'clock.
Wednesday	28 March	Select items for permanent collection.
Monday	16 April	10 o'clock, second semester begins.
		General system. Tonality, colour.
		First part.
		Weaving: junior course: theory of articulation by measurement.
		Senior course: multi-unitary centres.

No further entries to the beginning of the summer holidays, 14 July 1928.

Tuesday	1928 4 September	Second part of summer term begins.
Monday	10 September	Preliminary course: composite form based on sexti-, quadri- and tripartite circle.
		Weaving: ditto.
Friday	14 September	Conchoids.
Monday	17 September	Rotation, irregularity by use of varying threads.
		Weaving: Composite form and rotation.
Monday	1 October	Second semester: irregular form structures in fulfilment. Chapter 13.
		Multi-unitary centres, as departures from inside. Chapter 14.
		Lastly: departures from outside, irregular circumference divisions. Chapter 13a.
		Conclusion of theoretical instruction.
		Weaving: Chapter 10.

Monday	1928 8 October	No theoretical instruction in basic theory.
		Weaving: addition.
Monday	15 October	No theoretical instruction.
Friday	19 October	Construction of the exhibition.
Monday	22 October	Master council, entrance (of students).
Thursday	25 October	End of term.
Tuesday	30 October	Beginning of the winter semester.
Monday	5 November	Second semester: introduction and black-and-white.
Tuesday	6 November	Open painting class.
Monday	12 November	Second semester: colour sphere.
		Weaving third semester: black-and-white scales.
		Fourth–fifth semesters: division in complex case.
Tuesday	13 November	Open painting class.
Friday	16 November	Subject: spatial representation in two dimensions. Representation of the front-to-rear dimension.
		Front-to-rear as intersection lines with more emphasis or less.
Monday	19 November	Second semester: exercises, diametric colour stages.
		Weaving 3: gliding, striding, leaping.
		Fourth–fifth semesters: formal mediation with tonality.
Tuesday	20 November	Open painting class.
Friday	23 November	Advanced semesters.
Monday	26 November	Second semester: major–minor.
		Third semester: major–minor.
		Fourth–fifth semesters: formal mediation.
Tuesday	27 November	Open painting class.
Friday	30 November	Advanced semesters.
Monday	3 December	Second semester like third semester on 3 and 10 December.
		Third semester: unequivocally directional movement based on major–minor.
		Fourth–fifth semesters: ellipses – interior construction.
Tuesday	4 December	Free painting class.
Friday	7 December	Two hemiprogressions on grey base.
Monday	10 December	Second semester: shifting, reflection, rotation.
		Third semester: as on 3 December, but based on different values.
		Fourth–fifth semesters: interior construction of ellipses.
Tuesday	11 December	Free painting class.
Friday	14 December	Advanced semesters. Only one student, exercise called off.
Monday	1929 21 January	Second semester: articulation. Proximity of members. Rhythmics.
		Weaving: ellipse, shift, reflection, rotation.
Friday	25 January	Advanced semesters (five students).
		Combination of point and line progression.



Two pages of Klee's calendar notes for 1928/29. In addition to key words for his lectures, the calendar carries precise entries about Klee's trip to Brittany in July and August 1928. From Dessau to Nanterre, Bagneil, Quimper, Quiberon, Paris, Berne. Also about his trip to Egypt, December 1928 to January 1929. Also noted are numerous visits to the opera, theatre, and concerts.

Klee's time schedule at the Dessau Bauhaus, 1927–29. Instruction comprised eight hours a week for each semester.

		Winter semester 1927/28
Monday	11–13 h	Weaving
	15–17 h	Second semester
	19–21 h	Life class
Thursday	15–17 h	Painting class
		Open studio
		Summer semester 1928
Monday	10–12 h	Second semester
	15–17 h	Weaving
Tuesday	15–17 h	Open painting class
Friday	10–12 h	Fourth semester
		Winter semester 1928/29
Monday	10–12 h	Second semester
	15–17 h	Weaving: fourth and fifth semesters
	17–18 h	Weaving: third semester
Tuesday	15–17 h	Painting class
	(17–19 h)	Studio
Friday	12–13 h	Creative figuration
		Fifth semester

Monday	1929 28 January	1. Number categories of articulation. 2. Theory of proportion. Weaving: ellipses, conclusion. Parabola (whole integers). Younger: exercises (held over).
Monday	4 February	Exercise: theory of organisation (articulation). Weaving older [semesters]: parabola, continued. Weaving younger [semesters]: cancelled.
Saturday	9 February	Bauhaus festival.
Monday	11 February	Cancelled.
Monday	18 February	Exercise: organisation, homophone–polyphone. Weaving older [semesters]: hyperbola. Weaving younger [semesters]: inner reversion, complementary.
Monday	25 February	Called off on account of cold.
Friday	1 March	Operations at horizontal levels of various heights.
Monday	4 March	Second semester: genesis of elementary forms. Tensions, etc. Weaving older course: hyperbola–asymptotes. Normals and tangents. Three concholds, circular concholds. Weaving younger course: augmentation by complementary reversion.
Friday	8 March	Terminology of measurements of height, width and depth.
Monday	11 March	Second semester: form in format. Form structures in format. Weaving older [semesters]: rolling curves. Weaving younger [semesters]: 1. Economy (of means). 2. Conflict between superfluity and deficiency. a) Numerically. b) In terms of colour.
Friday	15 March	Operations on vertical surfaces and combined operations on vertical and horizontal surfaces.
Monday	18 March	Form structure of three elementary forms. Composite form – unitary form. Weaving older [semesters]: cycloids, evolvents, spirals. Weaving younger [semesters]: superfluity – deficiency. a) and b) as before. c) Immediate. d) mediate.
Friday	22 March	Frontal surfaces, operations thereon. Single combination frontal–horizontal.
Friday	29 March	Spring holidays begin.
	9 April	Semester begins.

Klee's studio after his death on 28 June 1940.
On the easel is the background, what is probably his last oil painting, on black background, 1940, untitled.
Cf. colour plate, Volume 1, p.405.

There is but one reference to 'basic theory before figuration' (8/20), from Portfolio 8/1–31, which bears the title 'Introduction'.
The reference is fragmentary, as are numerous titles in this portfolio. In many cases neither plan nor design was followed up.

'Chapter 1. Before figuration.
'Spatial order of ideal pictorial means at rest.
'The objective ends of pictorial means are effective, even when reduced to points. This is less true of the intermediate stages. They require more scope to become sensibly perceptible and measurable, or weighable and critically perceptible. (Or sensibly criticisable.)'

It is almost impossible to draw a sharp line between the ideal means at rest and the concept of the theory of form. The basic premise must be a principle, but the living figuration must be separated from the general principle.

Sequence of stages

Form	the formal element *per se*, elementary, as a static phenomenon
Act of forming	must be based on primary process
Figuration example	straightforward coincidence of forms, based on a process, e.g. a function
Figuration process	higher combination of formal elements and pictorial processes

This demonstrates the borderline where statics end and event passes into motion, is indeed inconceivable without the mobile process.

In a section on 'Active craft-related movement', Klee characterises this relation: 'The relation between form and the act of giving form, perceived and gained even on the micro-scale, retained its fundamental significance even in subsequent studies, precisely because it is a matter of principle. I should like to capture this significance in one sentence: The approach to form, supposedly dictated by some internal or external necessity, is more important than the goal, the end of the path. . . The act of giving form determines form itself, and the process is more important than the form.
'Form must never and on no account be considered disposal, result, end product, but rather as genesis, essence, growth . . . Good means form as movement, action, active form. Bad means form as rest, as end point.'
What really interested Klee were the processes of thinking and forming, and their functions, the act of forming in terms of living examples.
In essence it is the results that retrospectively set the foundation for basic theory.

Anteil Klee an der Grundlehre
(fällt unter II Formlehre)

8/6

I Theoretisch (Vorträge)

A Vor der Gestaltung
Übersicht und Orientierung auf dem Gebiet der ideellen bildnerischen Mittel (Linie, Helldunkel und Farbe); ihre räumliche Ordnung im Ruhezustand.

B. Gestaltungslehre (mit Naturstudium verbunden)

a. Allgemeine Begriffe der Gestaltung
Spannungen von Weg zu Ziel, Wesen und Erscheinung, Natur und Abstraction.
Zielkräfte-Grenzen

b. Gliederungslehre
primitive Rhythmik, Stufung der Werte*, dividuelle und individuelle Teilungen oder Structuren und Proportionen (und deren Verbindungen)
* melodisch — thematisch

c. Bildnerische Mechanik (Statik und Dynamik) und die Ableitung des Begriffes Stil.

II Praktisch

Zu allen obigen Abschnitten gleichzeitige Übungen (auch Aktzeichnen), welche sich auf das Gebiet der ideellen bildnerischen Mittel (Abschnitt A) beschränken.

Dessau Sept 1925 K

Outline of basic theory by Paul Klee. Cf. lower part of facing page for transcription.

Structure of the basic theory

By contrast to the fragmentary and undated reference 8/20, three outlines bearing the general title 'My share in the basic theory' have been preserved.

'My preliminary theory, my share in the basic theory', 45/66a.
This hastily drafted outline follows the concluding lecture of 2 July 1924 in the manuscript 'Statics and dynamics' (pictorial mechanics), or was subsequently inserted at this place.
A second signed outline (9/3) is more explicit. It is at the beginning of the 'General system' and was thus probably done during the winter term of 1923/24.
The outline reproduced in facsimile opposite (8/6) and entitled 'Klee's share in the basic theory' is dated 'Dessau, September 1925'. It is apparently a final version from the two earlier drafts (45/66a and 9/3).
The essential content of the three versions scarcely differs. In the final version, in Section b, theory of articulation, following 'primitive rhythmics, gradation of values', a reference, 'melodic or thematic, leadership and accompaniment, counterpoint', has been omitted together with the drawing here reproduced.

melodisch oder thematisch
Kontrapunkt

Klee's share in the basic theory. Dessau, September 1925. K. (8/6)
(Comes under formal theory II)

I Theoretical (Lectures)

A Before figuration.
Survey and orientation in the area of ideal pictorial means (line, tonality and colour), their spatial order at rest.

B Theory of figuration (combined with nature study).

a General concepts of figuration.
Tensions of means and ends,
Essence and semblance,
Nature and abstraction,
Dynamic forces – limits.

b Theory of articulation.
Primitive rhythmics, gradation of values, melodic–thematic.
Dividual and individual divisions or structures and proportions (and their links).

c Pictorial mechanics (statics and dynamics) and the derivation of the concept of style.

II Practical

With all the sections above, simultaneous exercises (including drawing from life), although these are to be limited to the field of ideal pictorial means (Section A).

Discrimination in the Basic Theory.

A Before figuration and
B Theory of figuration combined with nature study, general concepts, tension from way to goal

points in turn to the conceptual distinction which we have discussed in connection with the 'Basic theory before figuration', and which in the practical use of the lecture manuscripts are closely linked to one another.
The summary, done in 1925 after the conclusion of the dated written lectures, shows the overall conception, but scarcely the weight and volume occupied by the theories of tonality and colour.
The structure of the contents corresponds to *The thinking eye* and to the present second volume, except for the as yet unpublished text part, complete in itself, under the heading 'Pictorial mechanics, statics and dynamics, and the derivation of the concept of style'.

The reverse side carries the title

II Theory of form – theory and practical exercises (8/6a).
There are sketchy remarks relating to the part on practical exercises.

'(Nature)
'II Theory of form.
'Theory and practical exercises.
'Analysis of formal elements (orientation, designation, terminology).
'Organic and heuristic contexts (rules, construction, structure).
'Directions for abstraction. Directions for abstract thought and form elements (semblance, essence, schema).

'Distinction among elementary, primary and secondary figuration. Elementary and mixed application of pictorial means.
'Exercises relating to the mutual effect of the elements.
'Figurative exercises: Drawing, painting, modelling, space.
'Draughtsmanship, painting and spatial exercises in form.'

The reference 'comes under formal theory II' under the main title on the obverse (*cf.* pp.44/46) cannot be clearly distinguished from the enumeration on the reverse.
The concepts of basic theory, theory of form and theory of figuration occasionally overlap and essentially delimit the same material.
The first section of a passage on 'The concept of artistic creation' in Volume 1[1] does seek to clarify these distinctions:

[1] *Cf.* Volume 1, p.11.

'The study of figuration deals with the ways that lead to form. It is the study of form, but emphasises the paths to form rather than the form itself. The word *Gestaltung* suggests as much. "Theory of form" (*Formlehre*), as it is usually called, does not stress the principles and approaches. "Theory of formation" (*Formungslehre*) is too unfamiliar. Moreover, *Gestaltung* in its broader sense clearly contains the idea of an underlying mobility, and is therefore preferable.
'For another thing, *Gestalt* (over against form) means something more alive. *Gestalt* is in a manner of speaking a form with an undercurrent of living functions. A function made of functions, so to speak. The functions are purely intellectual. A need for expression underlies them. Every expression of function must be cogently grounded. Then there will be a close bond between beginning, middle, end.'

Retrospects

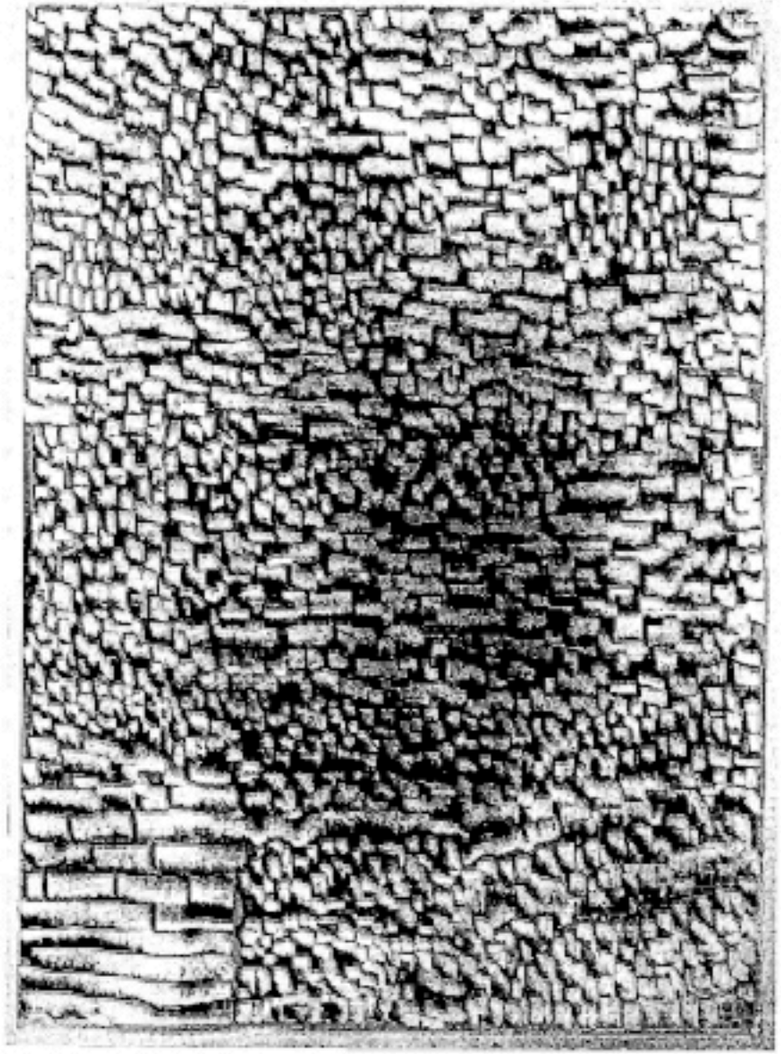
Klee's retrospect of the last Weimar preliminary course of the winter of 1924/25 again suggests that he kept changing the sequence of his preparatory texts. The logical sequence remains the same in these changes, in which abstract thought and form models alternate with the immediacy of new points of departure that are close to nature.

'In the last Weimar preliminary course in the winter of 1924/25 (8/10), I adopted the following sequence.[1]
'Theory of pictorial means (order in a state of rest).
'Line
'Tonality
'Colour.
'A general example of figuration: From source a (seed corn) paths are foreshadowed, with concomitant effects I–IV (from within or without).

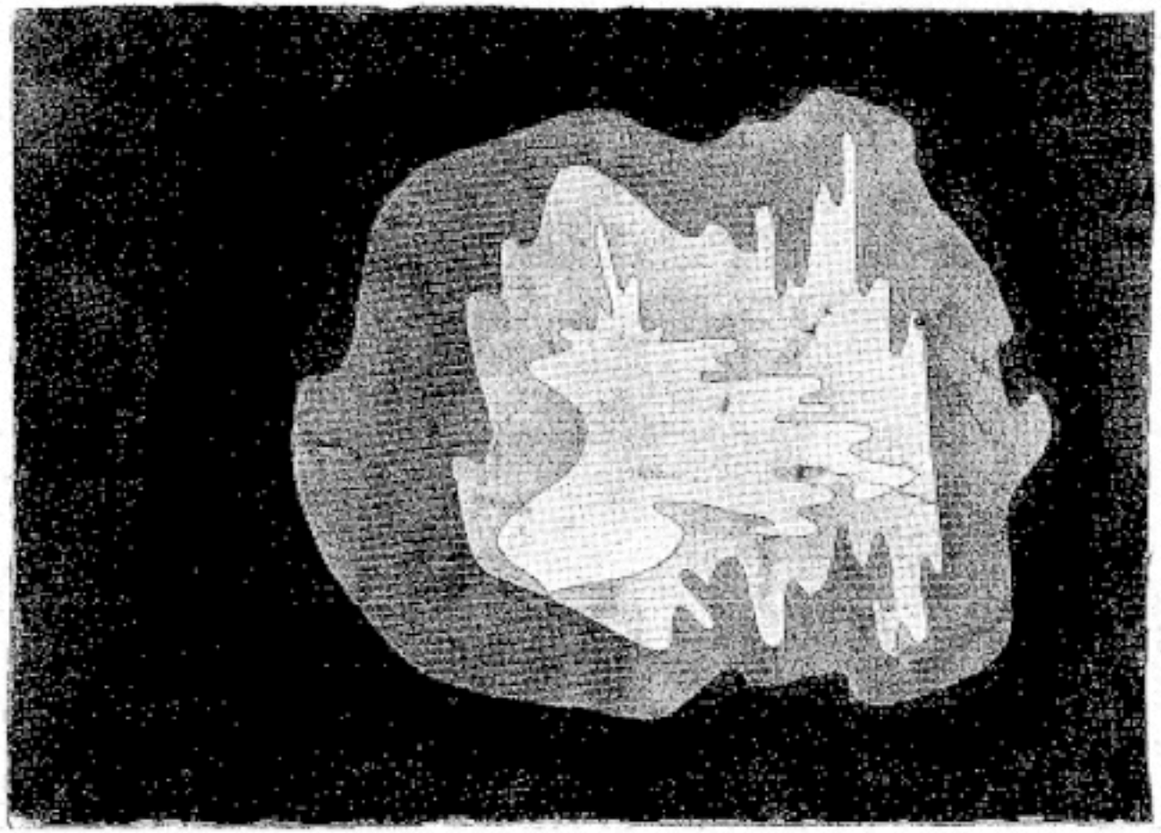
'The point begins to move, and an essential construct arises, stemming from figuration.
'The end is but part of the essence (the appearance).
'True essential form is a synthesis of figuration and appearance.
'The snail: Because of its need for shelter, it is joined to a growing shelter.
'The apple: From blossom to fruit ("Casing"!). The violin. The umbrella.'

[1] In Retrospect 8/10 *cf.* pp.117 and 119 and the Appendix to p.117.

A second retrospect (8/7), dated 12 November 1926, is reproduced in facsimile on p.56 of this introduction. The text is transcribed on p.149 of the main part. A third retrospect, 'done March 1927', (8/4 and 8/4a), numbered 1–9, is given on pp.120–122, as a summary of essential creative possibilities.



1933/Z9: *Desert of stone.*
Coloured paste on ingres paper. 48 x 34·3.



1929/ ca 10: *Scarlet halo.*
Watercolour. 23 x 31.

8/3

Pictorial theory of figuration (8/2) transcribed on opposite page.

Overall summary
Theory of form and figuration

Two overall inventories of the theory of form and figuration are preserved (8/2 and 8/2a), as well as a slightly condensed final version (8/3), reproduced in facsimile opposite. The two are undated. They were probably composed in the years 1924–26 and document the growing development and expansion of Klee's theoretical writings, especially on the geometrical-constructive side.

There is a threefold division:
I General part (concept of the theory of figuration).
II Planimetric figuration.
III Stereometric figuration.
This threefold division as well as the general organisation apply by and large to all of Klee's theoretical papers that have been preserved.
Sections II and III are voluminous and purely geometrical-constructive in nature.

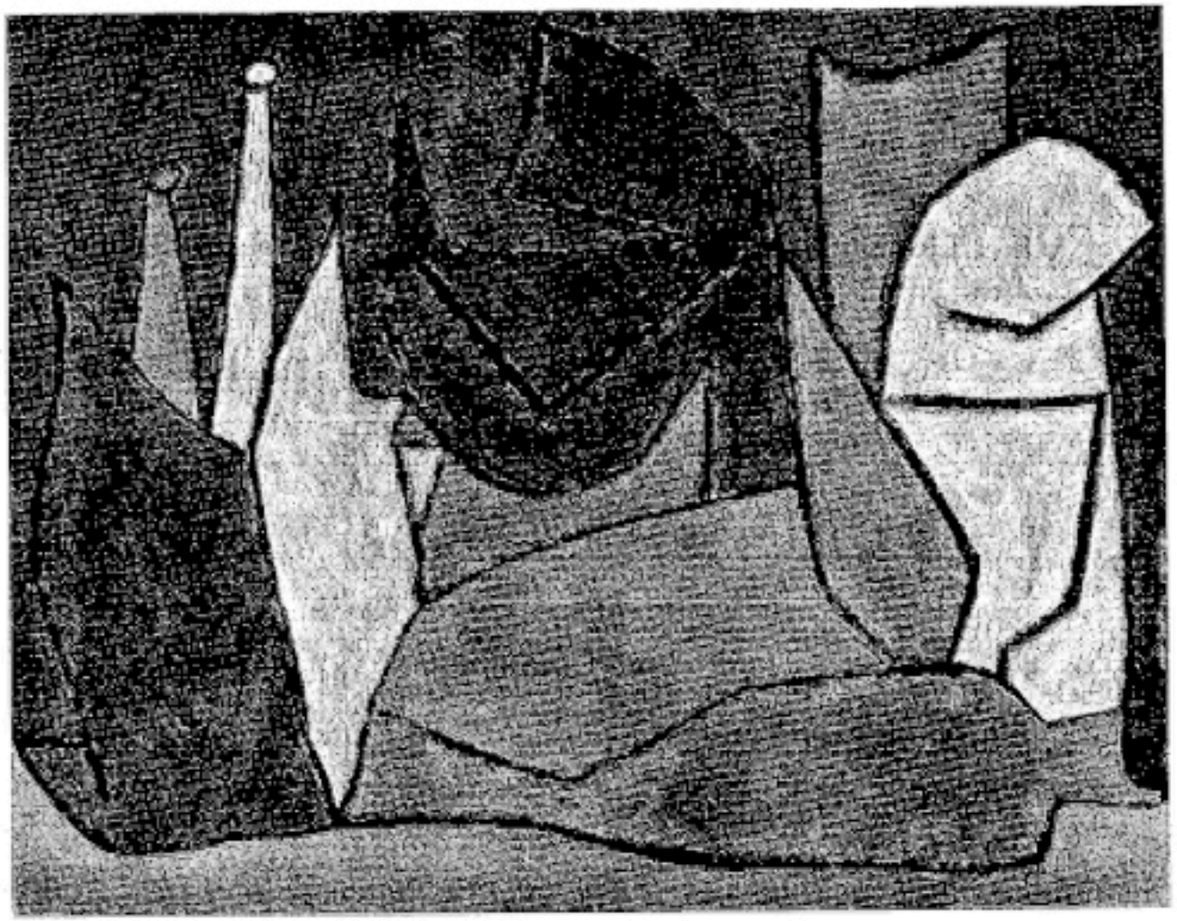
Pictorial theory of figuration (8/3)

Table of contents

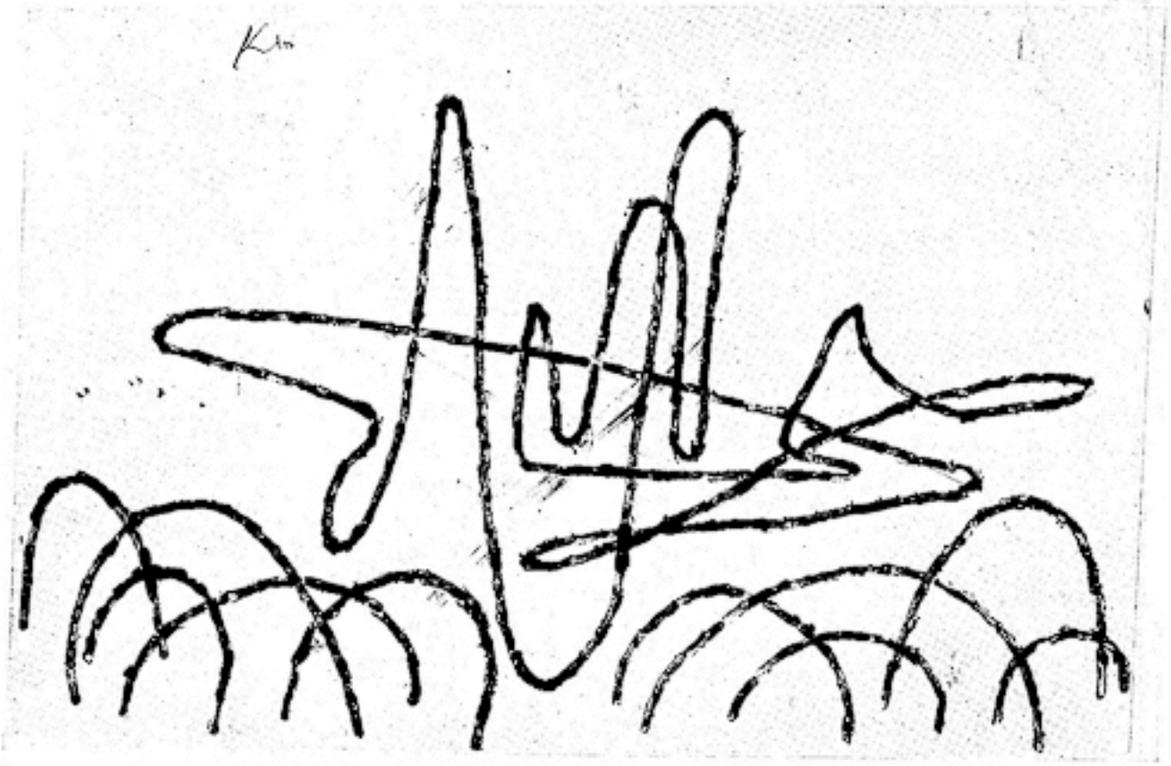
I General part
Chapter
1 Concept of theory of figuration
2 General system
3 Special system
4 Articulation
a Rhythmics
b Execution, etc., etc.

II Planimetric figuration
Chapter
5 Approaches to form, tension processes
6 Elementary form
7 Form in format
8 Form mediation
9 Form structures
10 Composite form
11 Departure from the norm
12 Change of position
13 Irregular form structures
14 Multi-unitary centres
15 Free irregularity
16 Conic sections
17 Wandering centres
18 Pathology
19 Progressions
20 Statics
21 Dynamics, mechanics
22 Interpretations
23 Collection of exercises

III Stereometric figuration
Chapter
24 Stereometric figuration.



1940/L 8: *Giant plants.*
Coloured paste on paper. 48 × 60·5.



1934/N 4: *Of sere twigs.*
Sepia, brush and pen drawing. 27·5 × 47·2.

Publication of the complete table of contents is planned, but transcends the scope of this introduction.
The two tables that are preserved constitute the sole indications of the structure and logical organisation of Klee's literary estate.

Following Klee's flight from Düsseldorf in December 1933, his voluminous writings and drawings were brought to Berne in a steamer trunk.
This trunk, containing more than 4,000 sheets and the lecture manuscripts, remained in Klee's last studio in the Kistlerweg, Berne, until his death in the summer of 1940.
Frau Lily Klee's[1] numbering of the portfolios and manuscript sheets was done in the order in which the material was found in the trunk after Klee's death, rather than by any system.
In 1956, following publication of the first volume, *The thinking eye* (in the German edition), Paul Klee's heirs gave the whole of his theoretical papers to the Paul Klee Stiftung in Berne; and the Foundation and the editor took over Frau Lily Klee's numbering system without change.

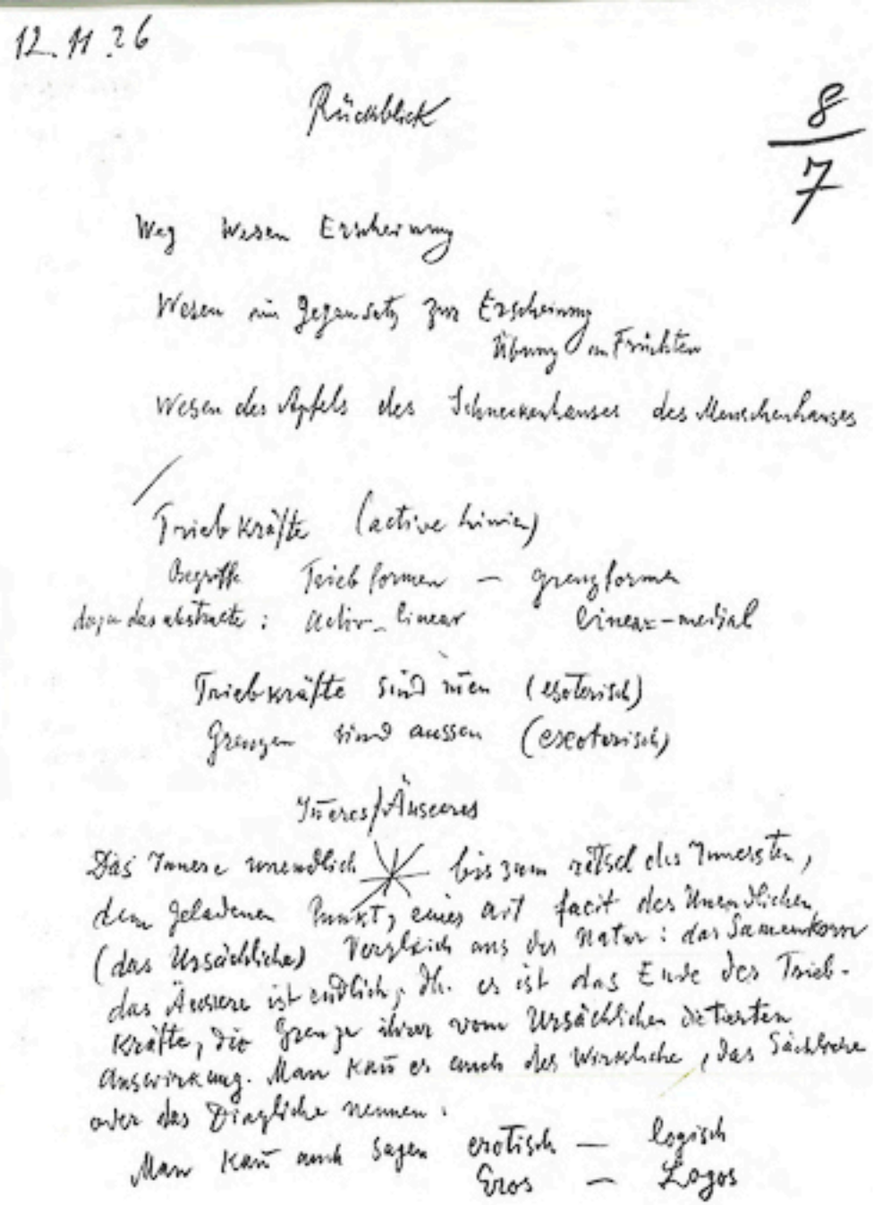
At Düsseldorf, following his departure from the Bauhaus,[2] Klee was no longer obliged to deliver regular lectures requiring thorough preparation, as was the case during the preceding decade.
In Düsseldorf Klee was given a painting class, combined with a seminar of several hours.
There was no prescribed subject matter for the painting class and Klee had a completely free hand.
During the last two years at Dessau, 1929/30, Klee did some geometrical drawings of considerable complexity, which were probably meant to provide an additional basis for his own creative work rather than for use in the classroom: combinations of a higher order, as a logical demonstration and foundation for his own form-giving. They include 'Shifting viewpoint' and 'The subjective way' (Volume 1, pp.173–175). One of these sheets is dated 2 July 1929, others are sketchily signed with a 'K' or 'ee', apparently to underline the special importance Klee gave to them.
Klee was seeking insight into the problems of multidimensional simultaneity, the loosening of earthly statics, for which he sought evidence. These drawings form an important intellectual basis for his later work.
When Klee's Bauhaus period ended in Dessau in 1930, his notes and supplements for his teaching activities began to dry up.
Outlines for themes and exercises were still being written down in Düsseldorf, like the one here cited, dated 27 August 1931.[3]

[1] Lily Klee-Stumpf (1867–1946). A pianist from Munich, Lily Stumpf became engaged to Klee in 1901 in Tegernsee, Upper Bavaria. They were married in Berne in the autumn of 1906.

[2] On Klee's departure from the Bauhaus, *cf.* the quotation from V. Kandinsky, Volume 1, Introduction, p.40.

[3] 'Painting class at the Düsseldorf academy (13/1–2).
Cube from nature, and similar things.
a Superficial
b Transparent
c Analytically-plastically reunited.
Cube joined to its environment.
Surface images, cube
a As they appear in the real and the ideal position.
b In transparent polyphony.
Cube bodies, cube-interior space.
Cube-exterior space.
The cube and its reflections.'

1925/U 6: *Youthful park.*
Oil on gauze on cardboard. 34·3 × 50·2.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Rückblick

8/7

Weg Wesen Erscheinung

Wesen im Gegensatz zur Erscheinung
Form an Früchten

Wesen des Apfels des Schneckenhauses des Menschenhauses

Triebkräfte (active Linien)

Begriffe Triebformen — Grenzformen

dazu das abstrakte: aktiv-linear linear-metrisch

Triebkräfte sind innen (esoterisch)
Grenzen sind aussen (exoterisch)

Inneres/Äusseres

Das Innere unendlich ✳ bis zum reinsten des Innersten,
dem gelebten Punkt, einer art facit des Unendlichen
(das Ursächliche) Vergleich aus der Natur: das Samenkorn
das Äussere ist endlich, ist es ist das Ende der Trieb-
kräfte, die Grenze ihrer vom Ursächlichen diktierten
Auswirkung. Man kann es auch das Wirkliche, das Sächliche
oder das Dingliche nennen.

Man kann auch sagen erotisch — logisch
Eros — Logos

Handwritten notes, 8/7
For transcription, see p.149

Following his return to Berne in December 1933 and the complete reorganisation of his living and working situation in 1934, Klee made no further additions to his papers dealing with the theory of art.
Frau Lily Klee states that during the years in Berne Klee did occasionally take out one of the portfolios and revise certain problems; but despite his expressed wish that his theoretical papers be published after his death, he did not himself prepare any inventory of them, nor did he leave any general outline of their context.

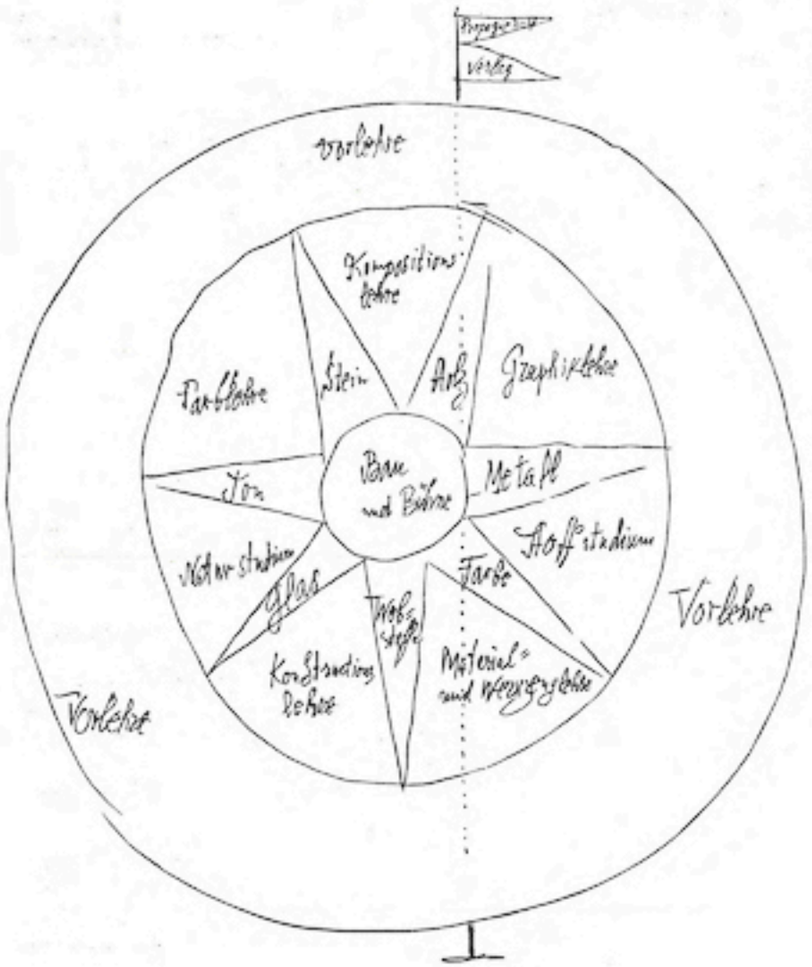
The summary tables of contents that have been preserved therefore provide the only coherent indications of the systematic structure of Klee's theoretical work, as he planned it in the course of his years at the Bauhaus.
Nevertheless, many uncertainties remain, in the absence of such a general outline, even taking into account such numbers and titles as Klee did provide for certain sections and portfolios among his papers.
The actual period during which these theoretical writings were done began in 1921, after Gropius called Klee to the Weimar Bauhaus (October–December 1920), and ended when he left Dessau in 1930.

The negotiations that resulted in his appointment, on 1 April 1931, in Düsseldorf, had begun as early as 1929, and with them his interest waned. He emphasised that in the long run he was finding it hard to combine creative work and teaching at the Bauhaus. He seemed to be already inwardly adjusting himself to the impending change.
Some additions to the papers were still made in 1929/30, but these included scarcely any major new areas.
The main portions of the written as well as the geometric papers were thus done in the nine years from 1921 to 1929, side by side with Klee's teaching and creative work.

The main purpose of the present survey of Klee's whole conceptual approach to his work as a teacher is to integrate the scattered papers, making comparisons possible for the first time.
Many among Klee's surviving Bauhaus students should be able to supplement these papers, either from memory or from notes.

During Klee's decade at the Bauhaus a sweeping correspondence developed between his theoretical and creative work.
To compare these two areas would be a task of considerable interest as well as difficulty. Such a comparison might show the degree to which Klee's theoretical thinking influenced his creative work, thus providing graphic evidence of just how much Klee the artist got from Klee the teacher.[1]

[1]Such a scheme was outlined for the Stuttgart show of 1968, commemorating fifty years of the Bauhaus. Insurmountable difficulties kept it from being executed.



Scheme of Bauhaus set-up

Clockwise:

'Preliminary theory	Wood
Compositional theory	Metal
Graphic theory	Colour
Study of materials	Woven fabrics
Study of materials and tools	Glass
Construction theory	Clay
Nature study	Stone'
Colour theory	

Cf. a similar scheme on p.28 of the catalogue of the *50 Jahre Bauhaus* show, Württembergischer Kunstverein, Stuttgart, 1968 (editions in several languages).
Cf. also a scheme of Bauhaus organisation dating from 1929/30 reproduced on p.33 of the introduction to Volume 1.

Concerning the editing of Volume 2

The editor's main task, in bringing out Volume 1, was to provide access to the foundations of Klee's formal and pictorial world and to demonstrate the correspondence between his thinking and creative processes.
The goal was to make the contemporary world aware of the sweep of Klee's ideas.
His paintings were already widely known, but only a very few knew that Klee was a thinker with the gift of precise conceptualisation and formulation. Klee has been for too long assigned a place of intellectual and sociological insignificance. Cubism and the Bauhaus alone seemed to provide a basis from which the formal idiom of abstract art could be given the broad scope in creative history it deserves in the light of Klee's concepts.

Typography

Guidelines for the typography of Volume 1 were provided by the series of Bauhaus books, including the *Pedagogical Sketchbook* edited by Klee himself and published in the series in 1925.[1]
Klee actually prepared the final designs for the *Pedagogical Sketchbook* from his own rough sketches.
Volume 2 seeks to get away from the model of the Bauhaus books and a certain geometric rigidity which they exemplify. All of Klee's examples and drawings are reproduced in facsimile. The goal was to present the original intact, insofar as possible.

[1] Laszlo Moholy-Nagy was responsible for the typography of the *Pedagogical Sketchbook*. With Gropius, he was also editor of the Bauhaus books.

Even the alternation of casual sketches and precisely executed drawings has been retained, and some of Klee's notes are also shown in his own hand.
Unlike the manuscripts for the first volume, *The thinking eye*, the texts for *The nature of nature* are on loosely assembled sheets, which are in a rather parlous state, owing to the poor quality of paper during the postwar period and the period of inflation in Germany. Done for the most part in pen-and-ink, the texts and sketches show through the crumbling brownish woodpulp pages. It was often necessary to touch up the sheets to obscure the traces showing from the other side.

Constructive and geometric drawings

The constructive drawings shown in facsimile are Klee originals, reproduced unchanged. They are done in very fine pencil lines, often in two colours, black and red.
The passages and the form and figuration examples relating to nature study have been extracted from the entirety of Klee's papers. This is true also of the constructive-geometric drawings and formal approaches belonging to this sphere or calculated to throw light on it.

Volume 2 is thus not limited to the lecture notes proper of the years 1923/24. Related areas, problems and notes have been included, giving the book more of a workshop character and presenting parts of the voluminous posthumous theoretical papers for the first time.
The road from nature study to constructive-geometric figuration (from naturalistic or objective representation to geometric interpretation) opens up the range and polarity of the kind of creative thinking that leads to abstraction and its synthesis.
This polarity characterises the duality of seeing and knowing, which Klee, in 1923 in *Wege des Naturstudiums* (Ways of nature study), captured in this passage: 'An object expands beyond its semblance, by virtue of our knowledge of its interior constitution – by our knowledge that any thing is more than its exterior reveals.'

Sources

All portfolio and page numbers for the texts and drawings in the present volume relate to the Klee papers. The first figure gives the folder or chapter, the second the page – for example, 17/118a (p.9). The numbering system is the one which Frau Lily Klee applied to the papers after her husband's death. The running text and drawings in *The nature of nature* are not designated separately. Unlike the supplements scattered throughout the papers, they are readily looked up in the original manuscript 9/1–71.
A few illustrative examples have been repeated from the 1200 in Volume 1, where this was necessary to make the context clear. They serve to show that some of Klee's forms have more than one function and validity at more than one level.

To cite a few aspects:

In planar permeation
or spatial transparency.
In structural articulation,
as a mobile process (function).

Certain notes relate to the textual and pictorial context of Volume 1.

Parallel layout

Verbal statements, basic algebraic-mathematical examples from the basic theory, geometric-constructive approaches, demonstrations of form, form-giving and figuration and actual creative work are all shown side by side with the pictorial work proper. This kind of confrontation often shows the striking correspondences and multiple levels of the various media. The arrangement also brings out the equivalence of thought and creative processes, relating Klee's formal ideas directly to his artistic output.
In the 'Study of the creative stages of the work', analysis and synthesis often appear as ranges of tension, which supplement rather than mutually exclude each other.

Structure and dates of the General system

The chronological sequence of lectures and problems does not always conform to the organisation of the subject matter.
The reason is that Klee, in his lectures, included material from the 'Theory of form production' (Volume 1), using it alternately with parts of the 'General system'.
According to whether he was teaching the preliminary course or advanced students, Klee altered his syllabus and redistributed the emphasis given to nature study or formal theory.[1]
Nine text portions and four problems from the 'General system' lectures are dated. Six general subjects are undated, as are the supplementary notes on nature study and constructive approaches to composition, assembled from the papers found in Klee's literary estate.

Cf. the Dessau Bauhaus schedule of 1928/29, pp.38–41 of this introduction.

A few subjects and two exercises do not fit into the general structure which follows in the main the following basic scheme:

1 linear – (single dimension)
2 planar – (two dimensions)
3 spatial – three-dimensional or the spatial-objective case – (three dimensions)

Second to observance of this basic scheme, the material is structured by organic order and ranking of the subjects.

Chronological sequence

			p.	
Tuesday	23 October	1923	3	
Monday	29 October		5	
Tuesday	30 October		23	Exercise
Monday	5 November		25	
Tuesday	6 November		39	Exercise
Saturday	10 November		223	
Tuesday	20 November		289	Exercise
Tuesday	27 November		43	
Tuesday	4 December		69	
	11 December		153	
	8 January	1924	327	Exercise
Tuesday	9 January		253 also 327	
Tuesday	15 January		335	

Contents by main themes

Forces of form-creating and form-articulating nature
Elements of structure and articulation
From the structural element to higher proportions
The orbit. Composite media
Individual proportions, related to one another and the whole
Vivid creation of individual proportion
Dividual and individual structural elements
Dividual–individual synthesis
Structural symbols and articulation elements, linear and planar
The simplest synthetic order – the chessboard
Governing proportions as final form
Form determination and form realisation
Linear, planar and spatial structures
Structure and individual as contrasts
Tripartition of pictorial means
Theory of tonality

The lecture of 10 November 1923, 'Structural symbols and articulation elements, linear and planar, the chessboard' (p.223), has been substantially expanded; and since (with weight and measure) it concerns area, it has been put at the end of 'Elements of structure and articulation'.
Two exercises were removed from the dated context and placed more logically at the end of appropriate general subjects.
The dates of the lectures have been left unchanged.

Evolution of a theme:
Trees as rendered by Klee
from his youth to his maturity

Paul Klee was born on 18 December 1879 in Münchenbuchsee near Berne. The earliest drawing reproduced here dates from 1896, when Klee was a 17-year-old student at the Gymnasium (high school) in Berne, from which he graduated in 1898. The Munich studies fall into the years 1898–1901, when he was working with Knirr and Franz von Stuck. He was appointed to the Bauhaus in Weimar in 1920. In 1931 he became a professor at the Düsseldorf State Academy. In 1933 he returned to Berne.
Klee died on 29 June 1940 in Muralto-Locarno.

1896/Estate: *From the Elfenau.*
Pencil drawing from a sketchbook.

1897/Estate: *Winter landscape on the River Aare near Berne.*
Pencil. 10 × 13.

1899/Estate: *A group of trees.*
Oil on cardboard. 35 × 49.

1900/Estate: Untitled (*Landscape on the River Aare*).
In five parts. Oil on canvas. The middle part.
Each part 144 × 48.

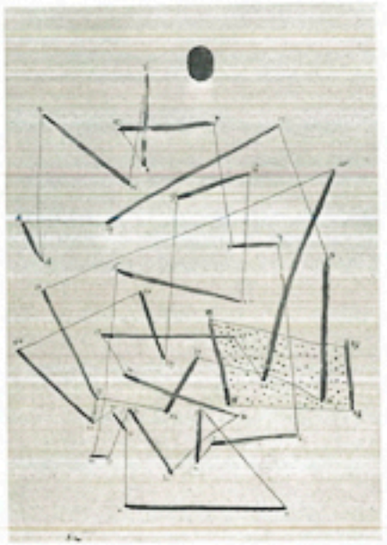
1906/Estate: *Scene in the Elfenau near Berne.*
Oil on chalk-grounded paper. 33·5 × 24·5.

1910/Estate: *Country lane with young trees*, first version.
Etching. 15·2 × 21·7.

1912/166: *Landscape, yellow horse and purple signpost.*
Pastel on engraving paper. 15 × 18·5.

1929/y 4: *Young palm tree.*
Pencil. 32·9 × 20·9.

1933/L 18: *Tree of wire and small rods.*
(24 each)
Pen-and-ink. 43 × 32·3.



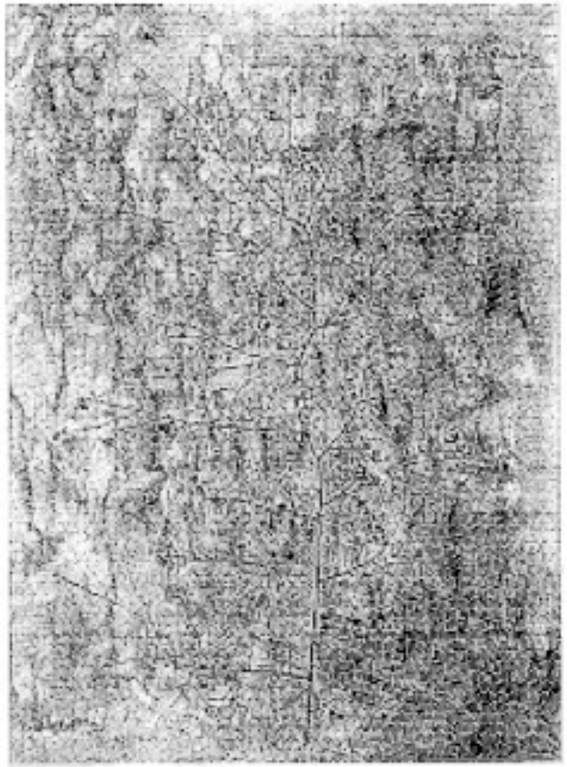
1938/M 4: *Trees.*
Charcoal. 44 × 30.

1940/T 6: *Fir tree.*
Zulu crayon. 29·5 × 21.

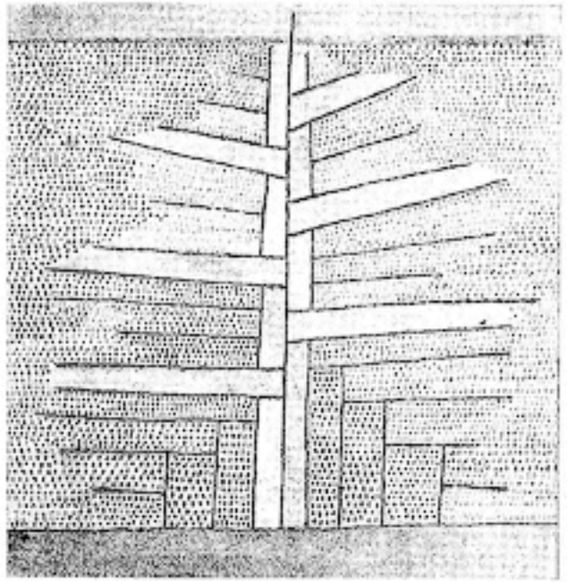
1940/V 17: *Tree U.*
Zulu crayon. 29·5 × 21.

1929/k 10: *Fig tree.*
Watercolour. 28 × 21·3.

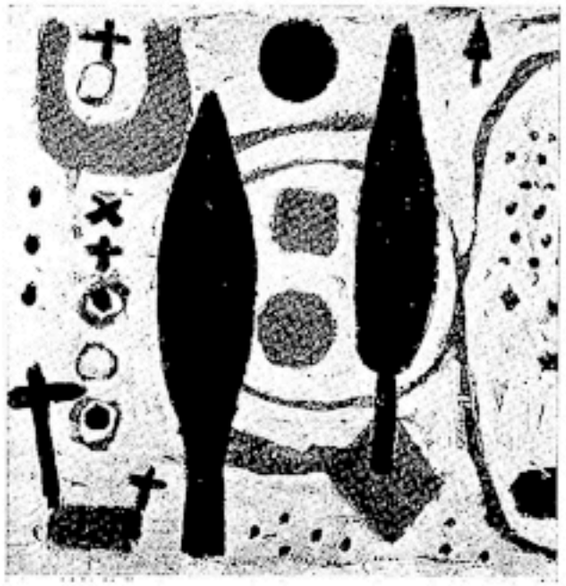
1932/113: *Young tree* (*Chlorandhemont*).
Watercolour with plaster on chalk-grounded paper.
48·4 × 36·7.



1932/k 8: *Lone fir tree.*
Oil on cardboard on plywood 53 × 51.



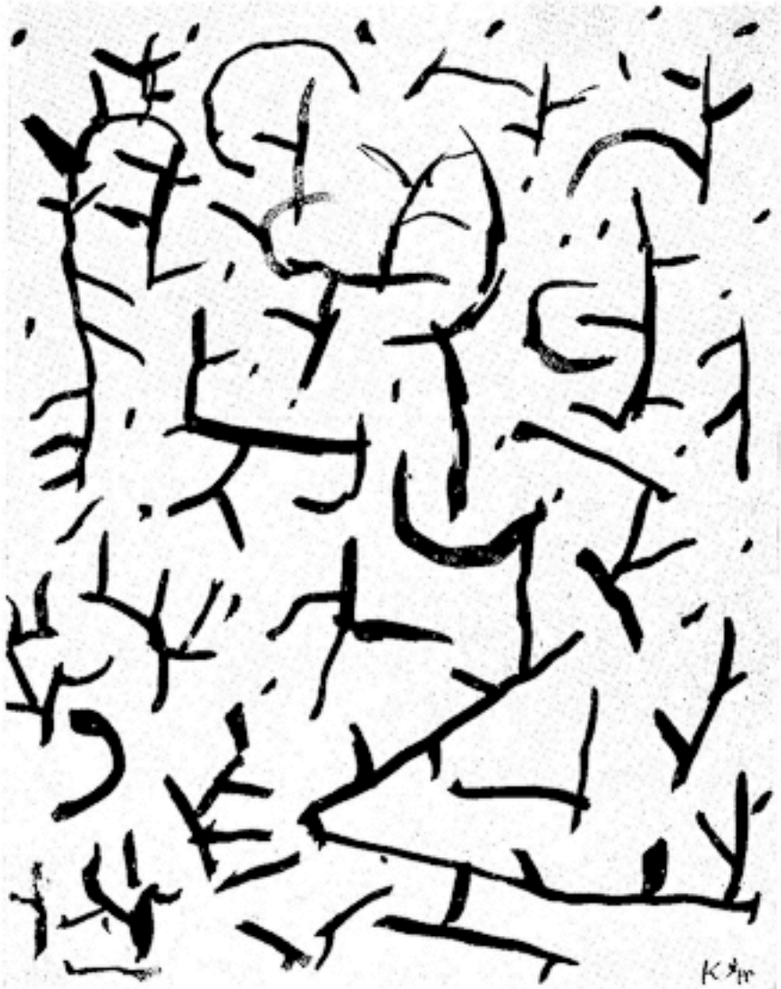
Detail from 1930/KK 13: *Cemetery.*
Coloured paste on paper. 37 × 49·6.



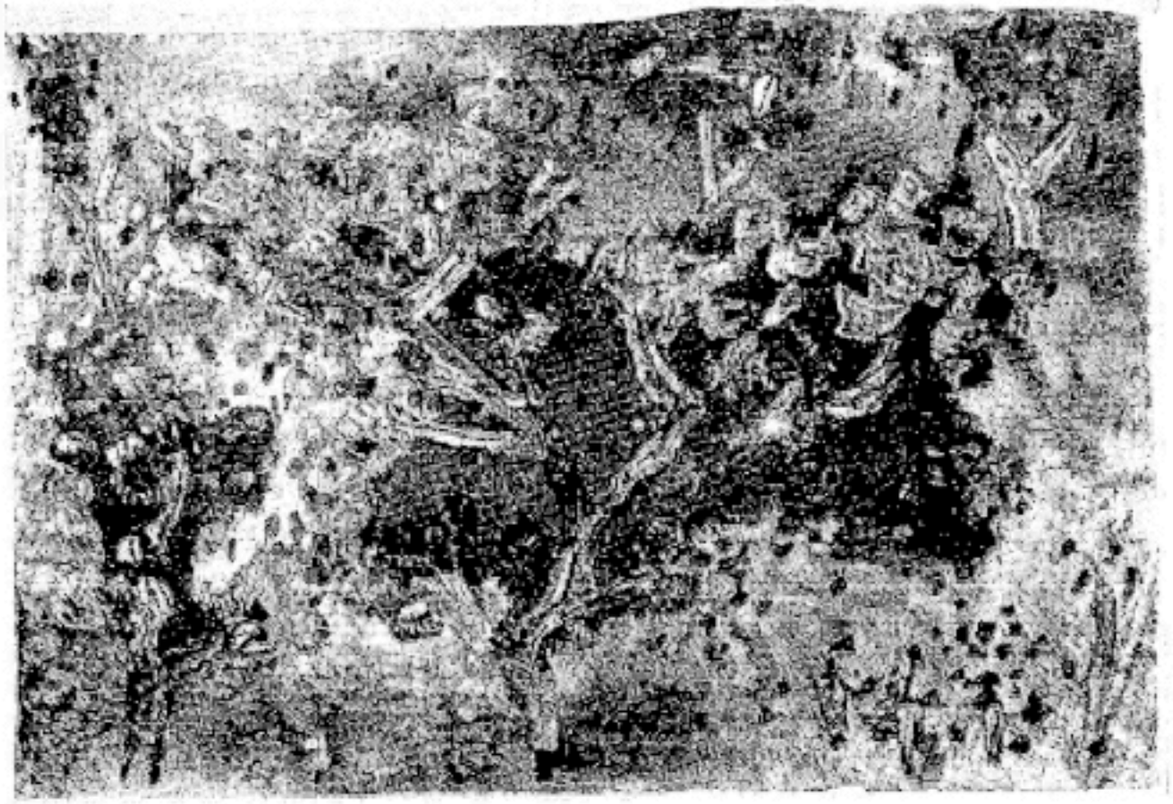
1998/CC 17: *Hunting tree.*
Oil on canvas. 100 x 80.

1998/J 9: *Park near Lu[cerne].*
Oil on newspaper on jute. 100 x 70.

1931|N 7: Trees in October.
Oil on paper. 35·7 × 48·9.



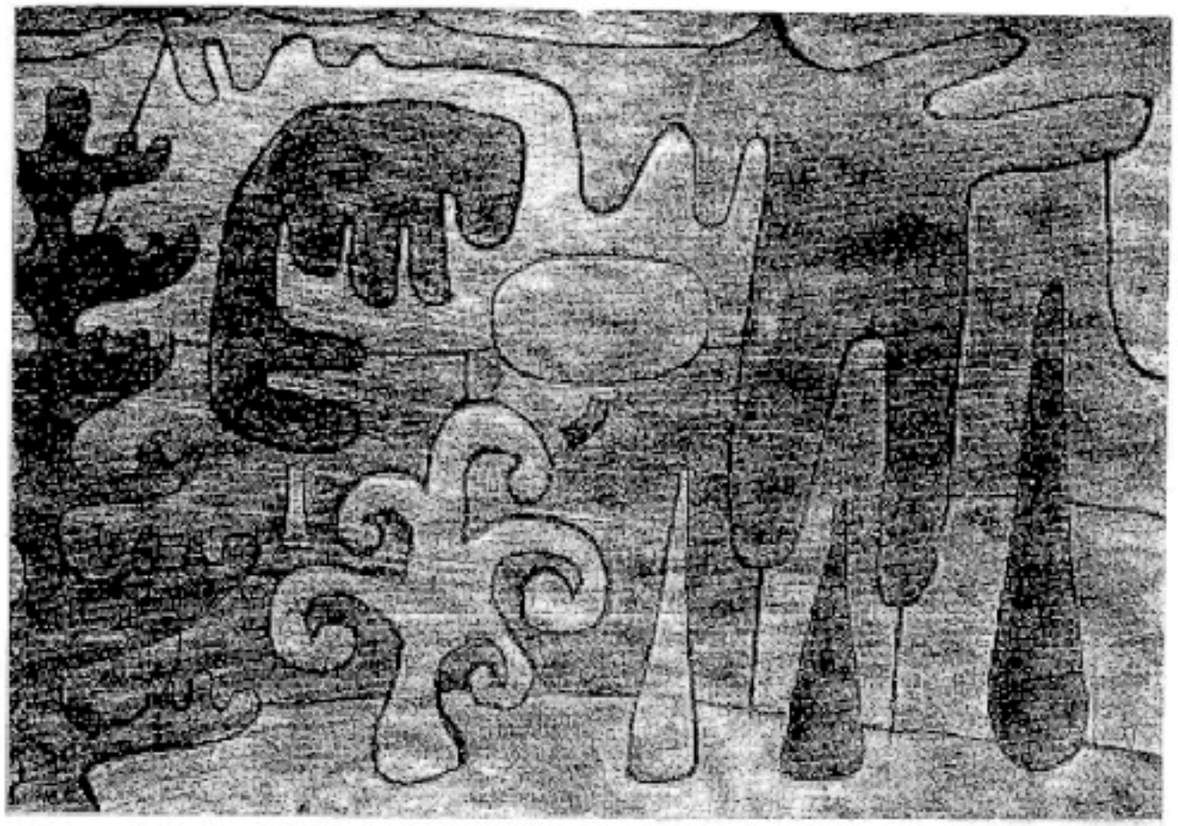
1938|R 8: Overgrowth.
Black watercolour. 27 × 21·5.



1931/M 4: *Aged trees.*
Oil and mixed media on paper. 31 x 45·4.

1938/ou 2: *New growth*
Black paste. 27 x 21.

1934/k 3: *Landscape near Pilamb.*
Watercolour and pen-and-ink on Ingres paper.
64 × 49·3.



1935/k 20: *Botanical garden (exotic trees section).*
Coloured paste and watercolour on paper. 14 × 20.

General system and methodology of pictorial means
Constructive approaches to composition

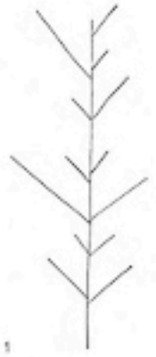
1934/T 13: *Sparse foliage.*
Mixed media and watercolour. 32×48.

Movement in the terrestrial realm requires force
Line and plane and their organising forces

Tuesday, 23 October 1923

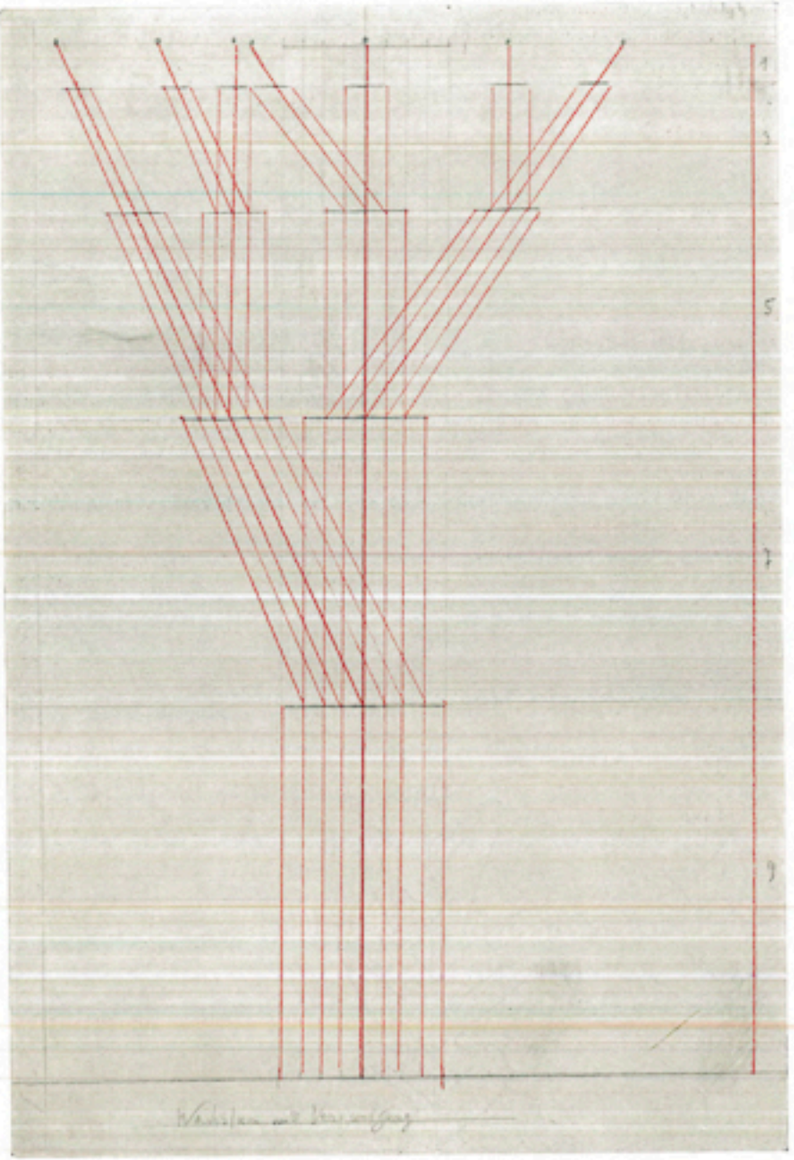
Draw leaves from nature, taking into account the organising forces of the veins. Combine with an attempt to classify the differing compartmentalisations of the various species.
Growth means the progression of matter by new accretions to the static substance.
Movement in the terrestrial realm requires force.
Analogy with stroke, line and our other pictorial elements like plane or tone and colour, etc.

[1] Veins of a leaf.
[2] Same interior form with outline 9/12b.
9/12b. See Volume 1, p.64.



1

2



Growth and ramification [1] (natural growth).
17/118a.

Primary forces of form production,
form-creating and form-articulating nature
Linear forces and planar form
Part and whole

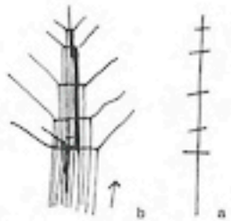
Monday, 29 October 1923

[1] Crossed out: '... still a certain main type may be established, stem shorter, central vein longer.'

A leaf is part of the whole. If the tree is an organism, the leaf is an organ. These small parts of the whole are again articulated in themselves. In this articulation, articulate ideas and relations prevail that reflect on a small scale the articulation of the whole.
The articulation of the whole is defined by roots, trunk and crown. The articulation of the crown is defined by branches, twigs, leaves, flowers, fruit. The articulation of a leaf is defined by stem, veins and leaf tissue.
Leaf, stem, and veins belong together, especially stem and central vein, indeed, the central vein may be described as a continuation of the stem. This whole line is thus divided into stem and stem continuation.

Base and dividing lines (horizontal zones of spread and progression) from the figuration example 'Growth and ramification' [1], represented separately [2].
17/119.

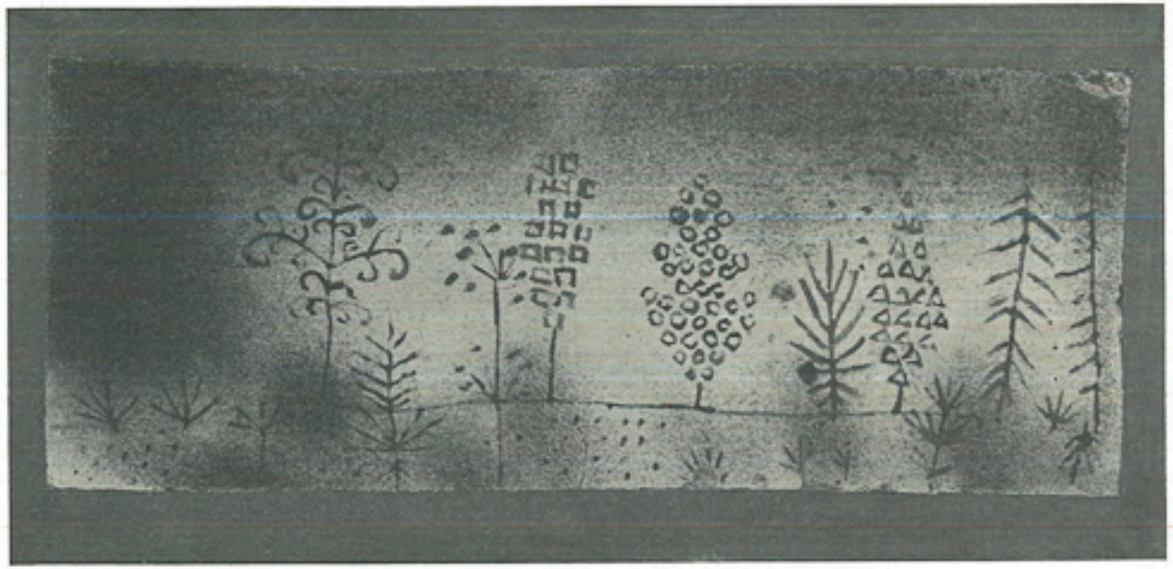
2



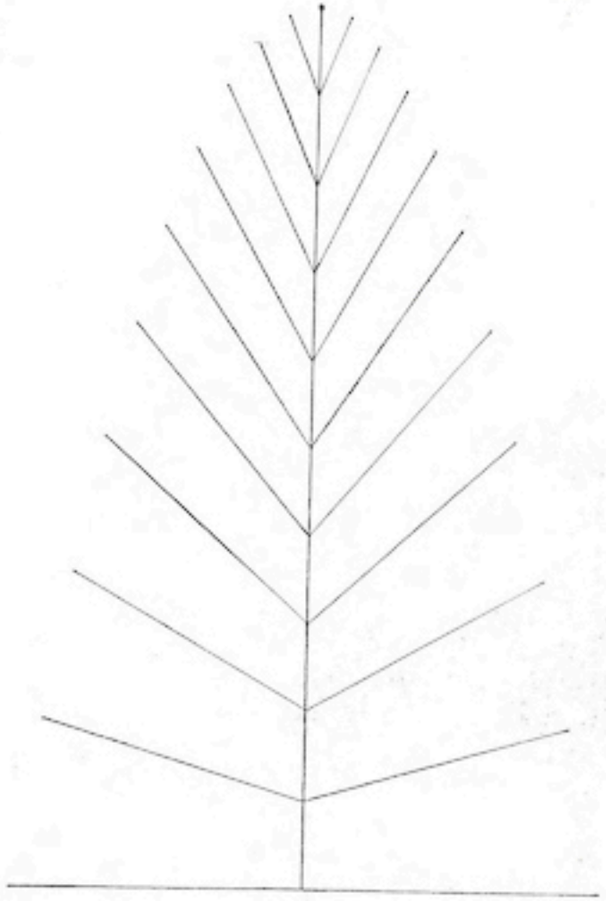
b a

The subdivisions of this line are ever different in the different leaves,[1] but even division is certainly rarer than uneven. This division of the main line of leaf stem to central vein, however, is not the only one [a]. In the simplest type, new divisions ensue by the branching of new veins to the left and right, which additionally articulate the central vein or leaf spine. Note that the line is charged with force especially at the point where it must produce as many branchings as possible, namely at the beginning, close to the stem [b].

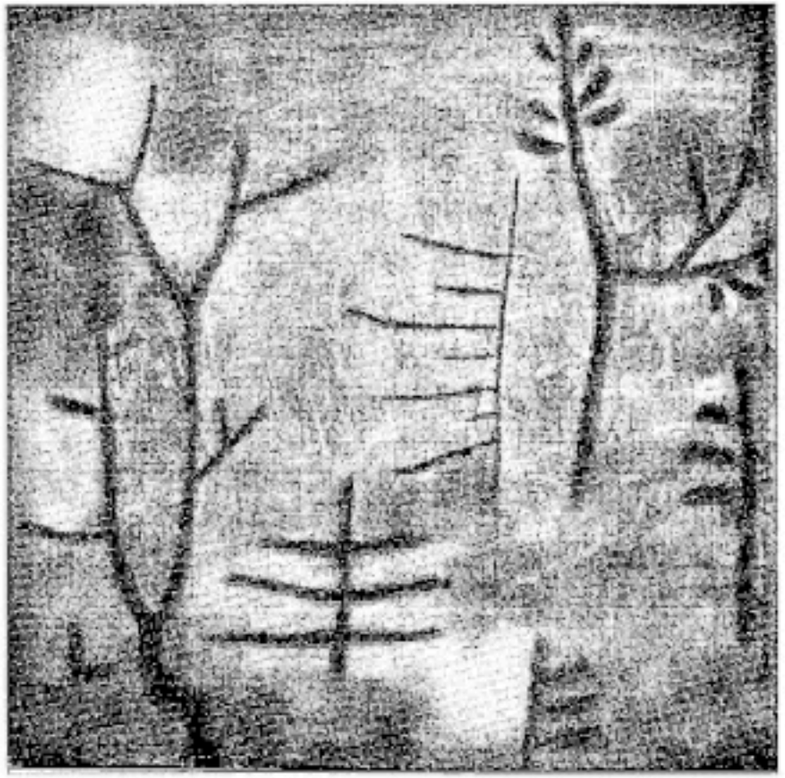
1928/N 9: *Row of trees in a park.*
Watercolour on plaster-grounded gauze. 19 x 49.



Diagonal motion within a parabola at a rate of 1:3 (parabola tree). 16/228.

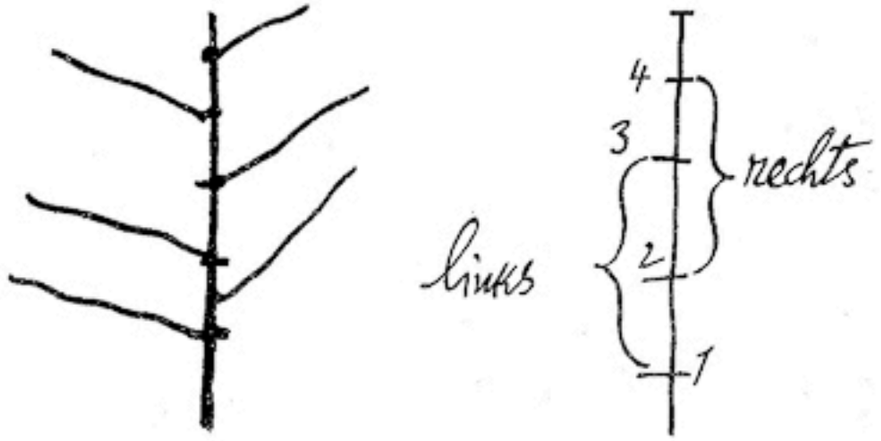


In this way reciprocal relations arise between the articulating intervals and the strength or force of the lines (proportionate measure and proportionate weight).
The lateral veins, moreover, undergo their own articulation by measure and weight. The same applies to their further branchings on both sides. The intervals and the dynamic forces dwindle to the point of no return. The tracing eye can no longer distinguish the last ramifications as lines and abandons the pursuit. The particles become confusingly small and are sensed as planar elements rather than linear forces.

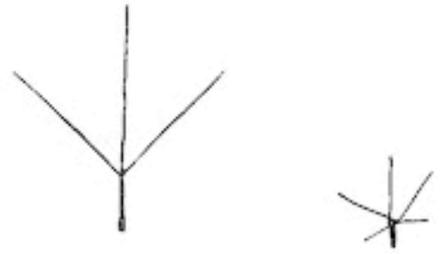


1935/N 12: *End of the forest.*
Oil on chalk-grounded gauze. 46 x 48.

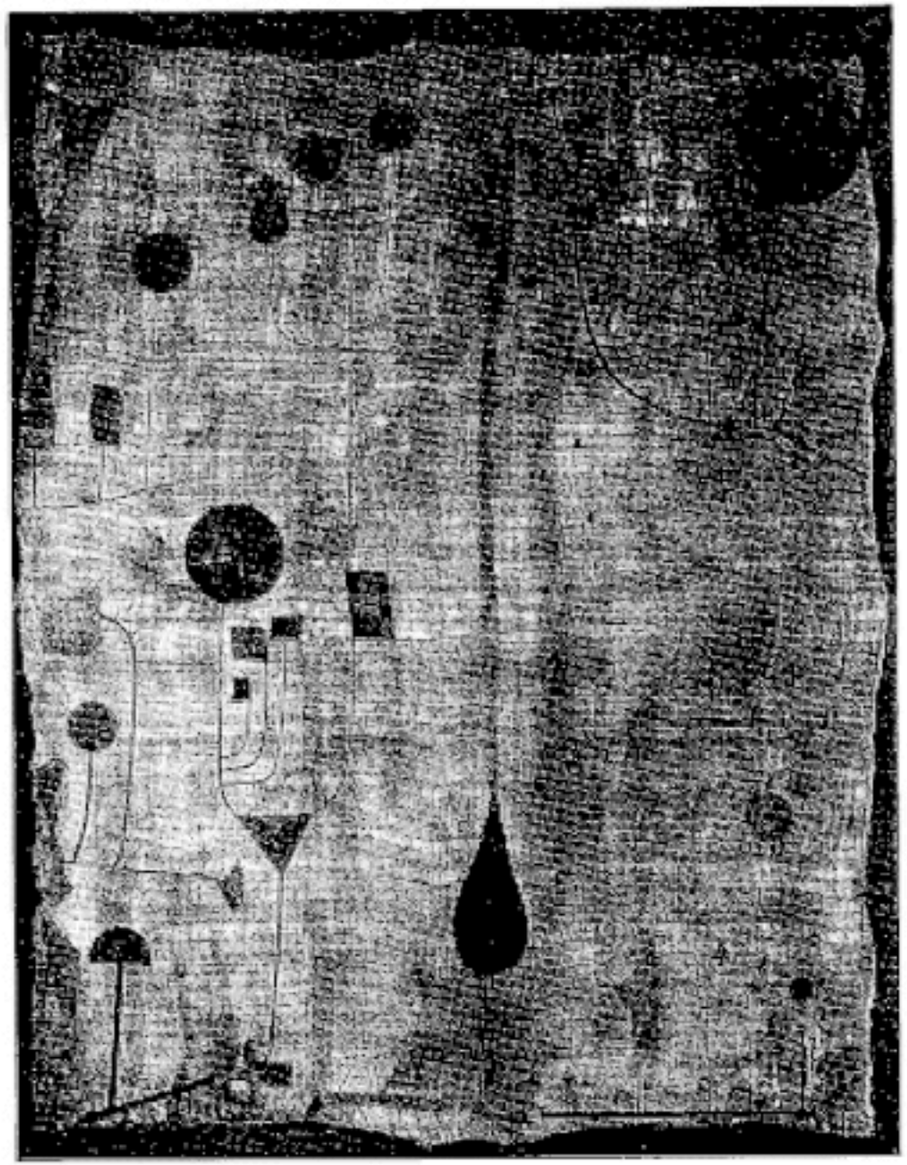
Reverting to the main line, we note that the branchings may arise, not at the same points, but alternately on either side, a form of articulation that emphasises the element of halving the area, though even without it the basic two-dimensional organisation is one of halving.



For the left side, points 2 and 4, for the right side, points 1 and 3 are of subsidiary importance. Things are even more complex with leaves that combine the alternating and opposing forms of articulation. Yet this is still a rather primitive basic type.
Another major type departs from the pattern in that initially two of the side veins seek to appropriate the power of the central spine.

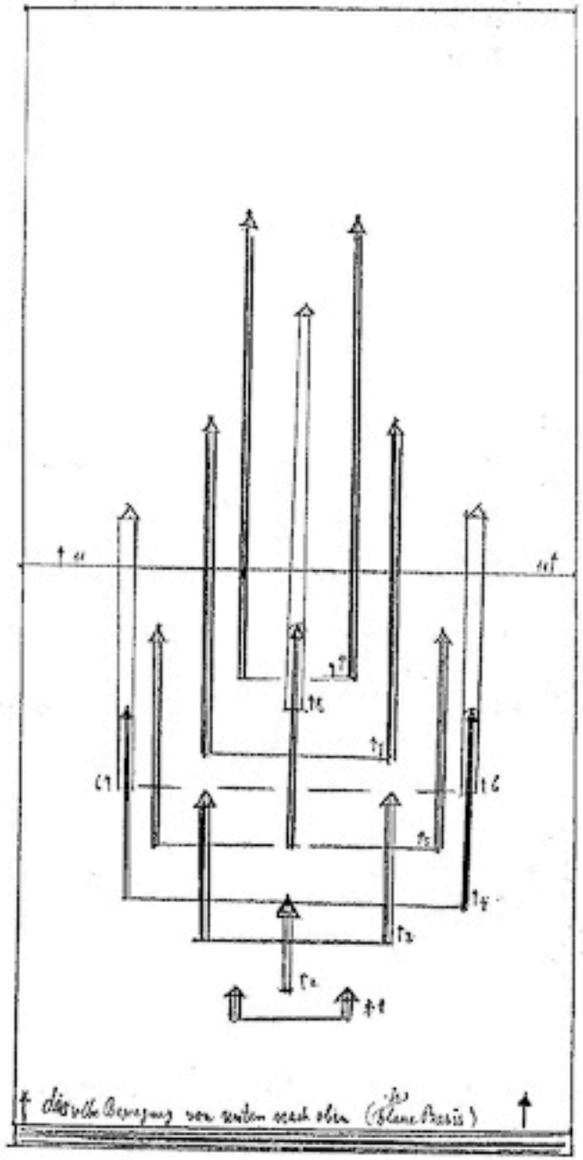


In still other types two further veins usually follow suit.
These side veins embark on their mission at an early stage, asserting their autonomy at the very point where leaf joins stem.

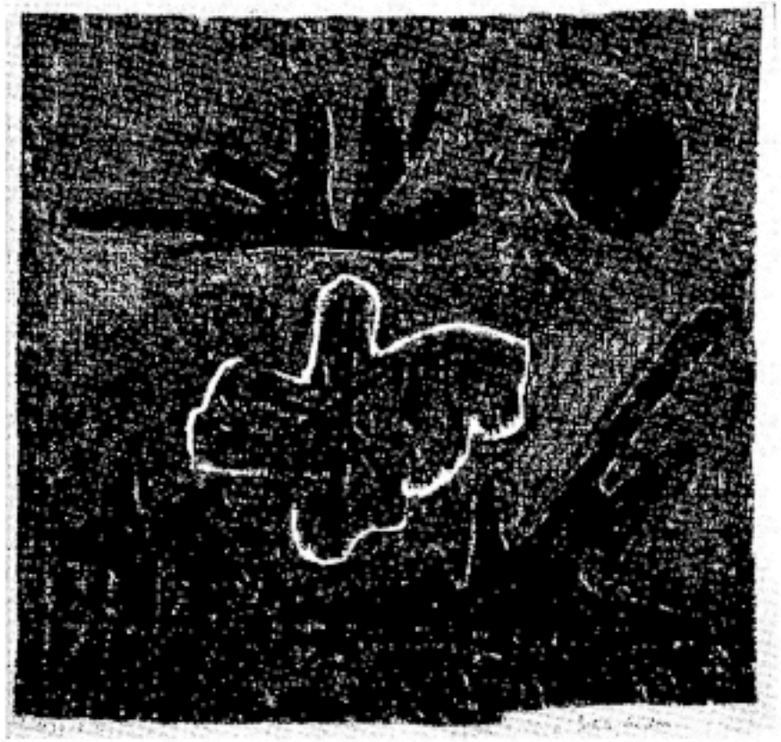


1930/263: *Fruit on red background. (The fiddler's kerchief.)* Watercolour on silk on cardboard. 61·2×40·2.

Progressive motion,
the same motion from bottom to top
(from square to oblong,
each on blue base[1]). 17/116.
From Progressions 17/105–120.



[1] In the original the horizontal base lines are drawn in blue.

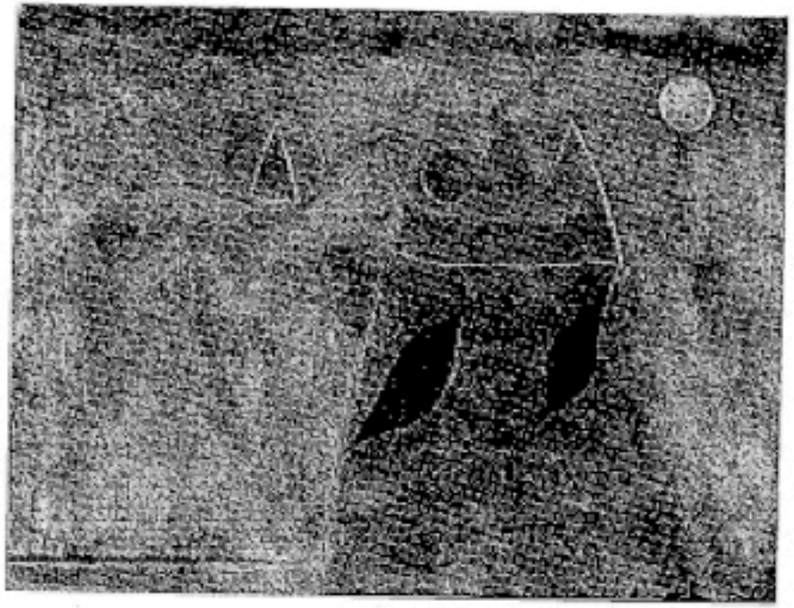


1934/k 14: *Leaf leaves.*
Pastel, red chalk and charcoal on cotton. 33·5 × 38.

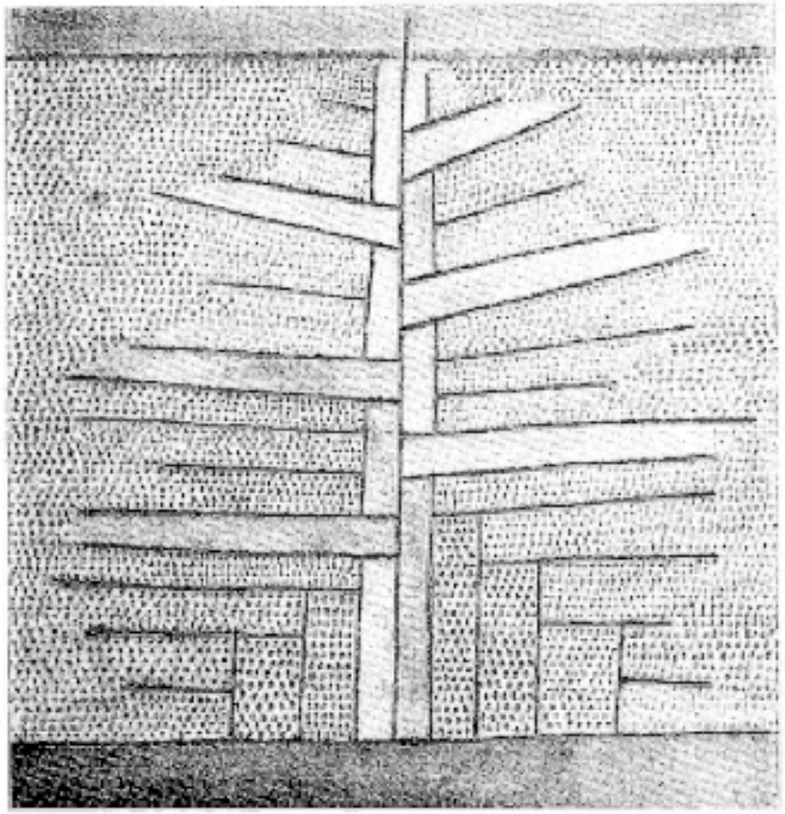
[1] Crossed out: 'struggle'.

1933/Eelate: *Vegetational.*
Oil on canvas. 67·5 × 90·5.

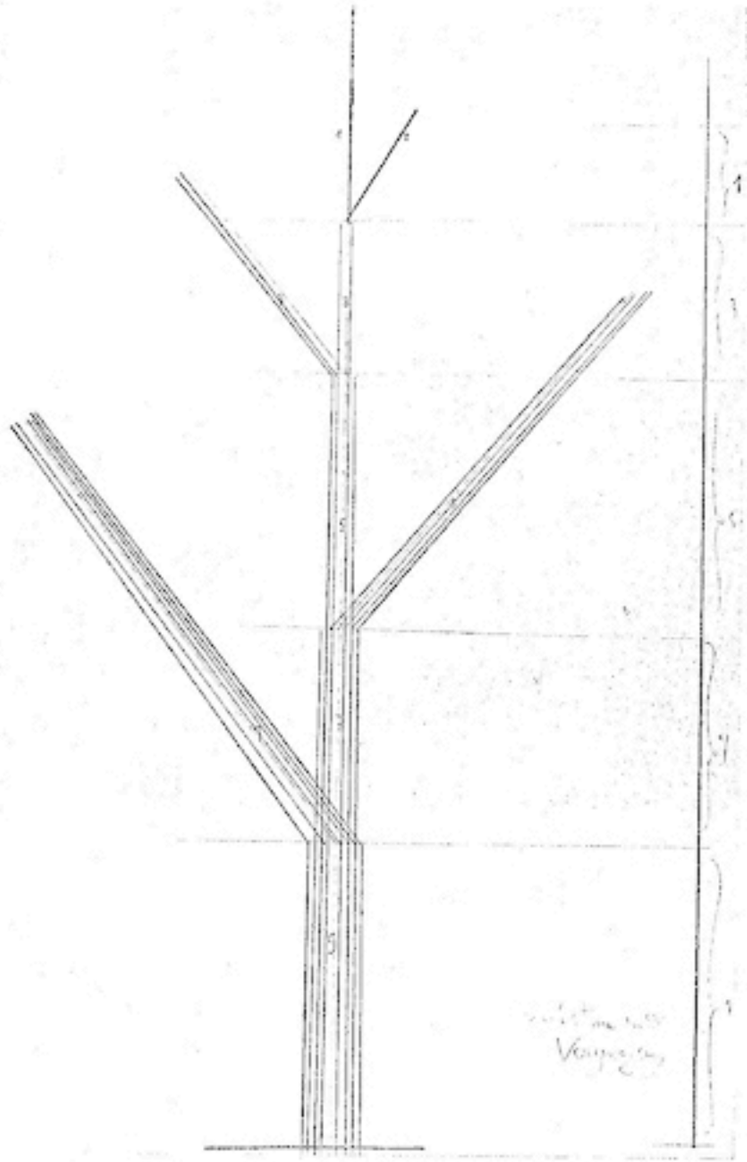
The leaf organ's stem connection with branch and tree as a whole never permits complete co-ordination. Even though the side veins may equal the central vein in size, symmetry is always preserved. In other words, the supremacy of the centre is preserved.
Our concept of the veins as constructive, articulating forces entails thinking of the evolution of a leaf (in the pictorial sense) as an argument[1] between linear force or peculiarity and two-dimensional massiveness or multiplicity.
The planar massiveness is the element that to the eye no longer appears linear, but is distinguished as a separate element by its tangle of lines. As against linear definition, this element may create an impression of softness.



This line system reaches into the other element, finely forked or sievelike, and enough of it sticks.
The planar form that arises is then independent of the inreaching linear radiation.
And where linear power ends, there arises contour, the limit of planar form.

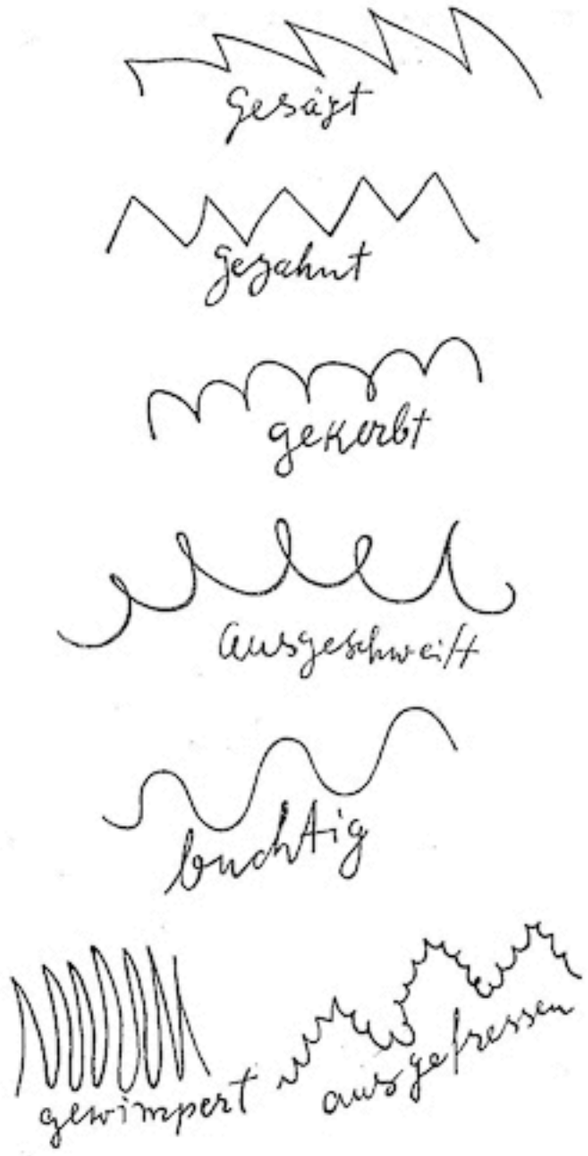


1982/k 8: *Lone fir tree.*
Oil on cardboard on plywood. 88 × 81.

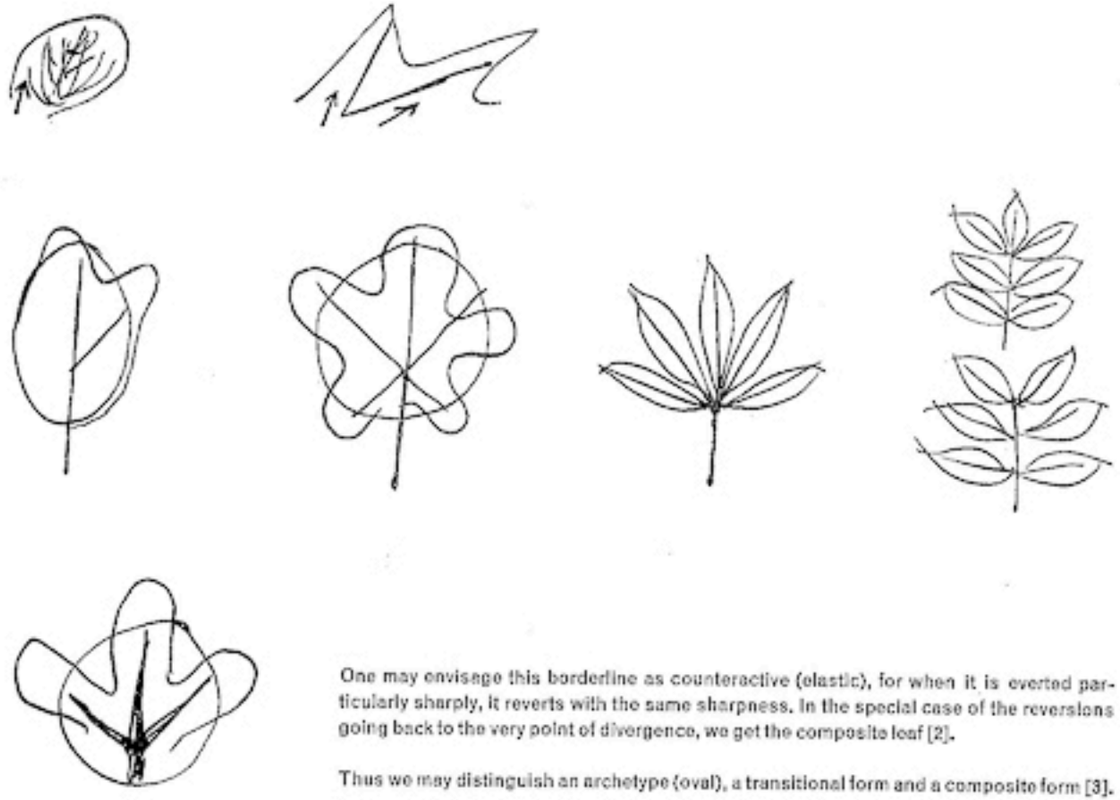


Growth and ramification. 17/120.

Saw-toothed
Serrate
Scalloped
Dentate
Sinuate
Fringed
Frettled
9/12 b-i-c



Once traced, this limit figures also as a line, but it takes on a new character with the radiant energy of the interior line formations as its element. It is not active, it does nothing. It is passive, it is tolerated.
As a tolerated form, however, it provides reflexes from the aggressive linear forms. As the spokes poke out more sharply, in the maple or plane tree, the angles of the limiting line grow more acute. When this display of energy takes place in more rounded fashion, the contours tend to be quieter [1].



One may envisage this borderline as counteractive (elastic), for when it is everted particularly sharply, it reverts with the same sharpness. In the special case of the reversions going back to the very point of divergence, we get the composite leaf [2].

Thus we may distinguish an archetype (oval), a transitional form and a composite form [3].

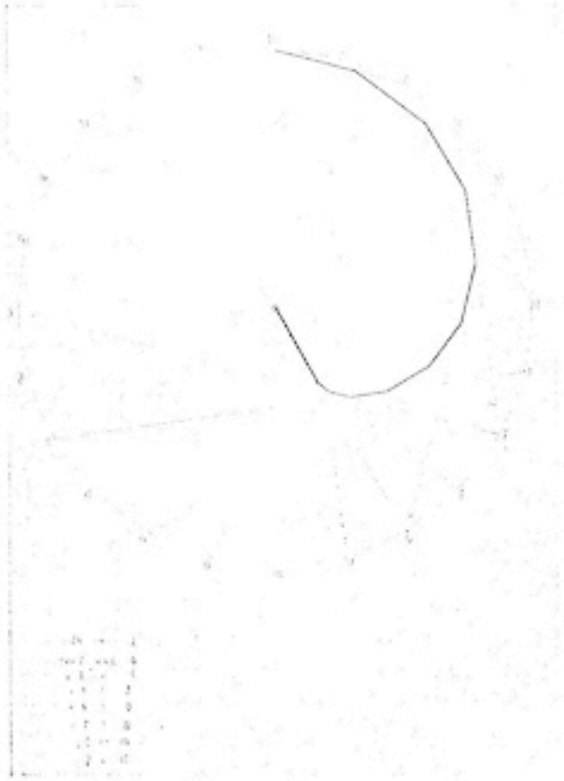
Progression within a quadripartite circle. 17/92.

from 24 to 2
from 1 to 4
from 2 to 6
from 3 to 8
from 4 to 10
from 5 to 12
from 6 to 14
from 7 to 16
from 8 to 18
from 9 to 20
from 10 to 22
(from 11 to 24)

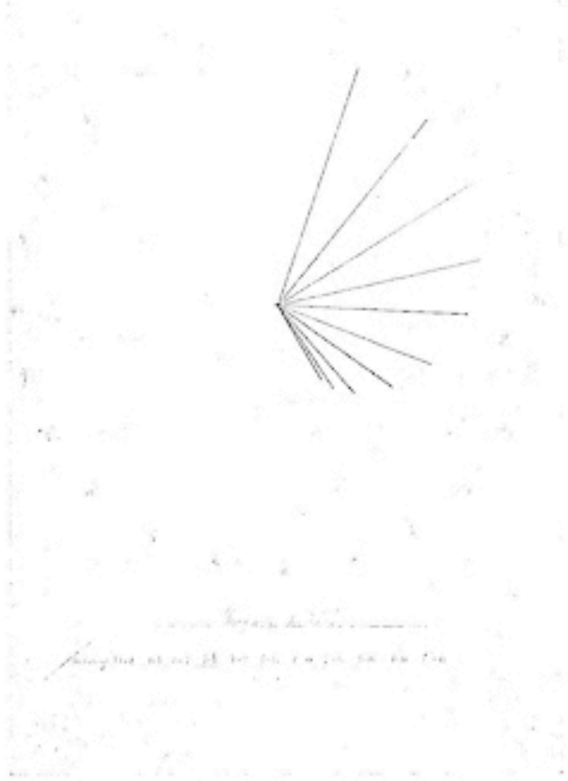
Progression of the radii. 17/93

Connection
24–2
1– 4
2– 6
3– 8
4–10
5–12
6–14
7–16
8–18
9–20
10–12

1



2

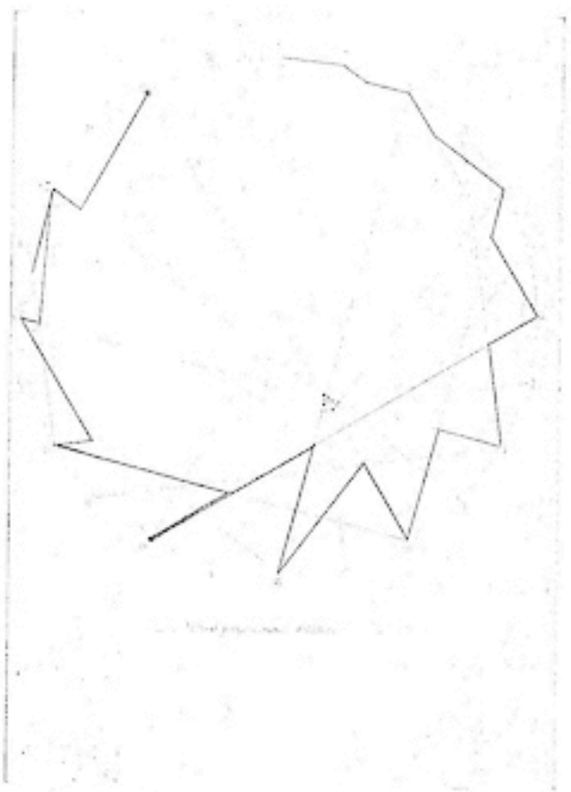


Angle progression and angle regression. 17/94.

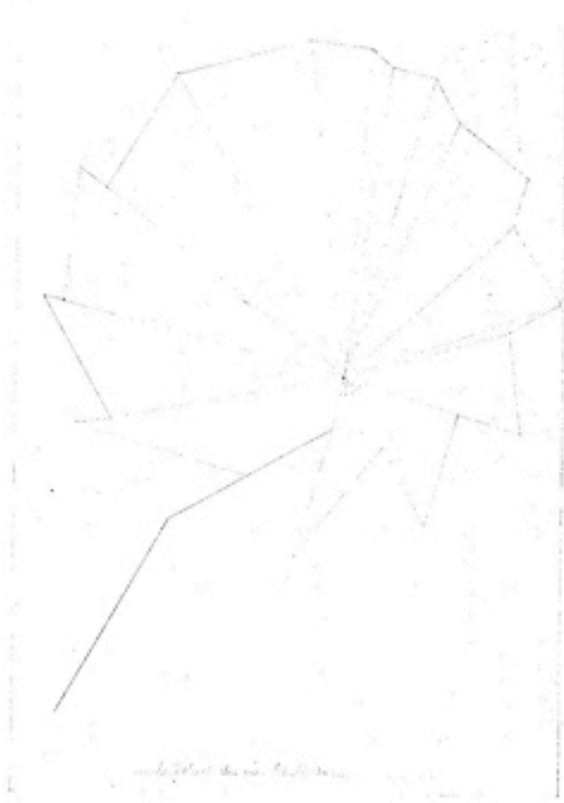
The truth about palm-leaf fans. 17/95.

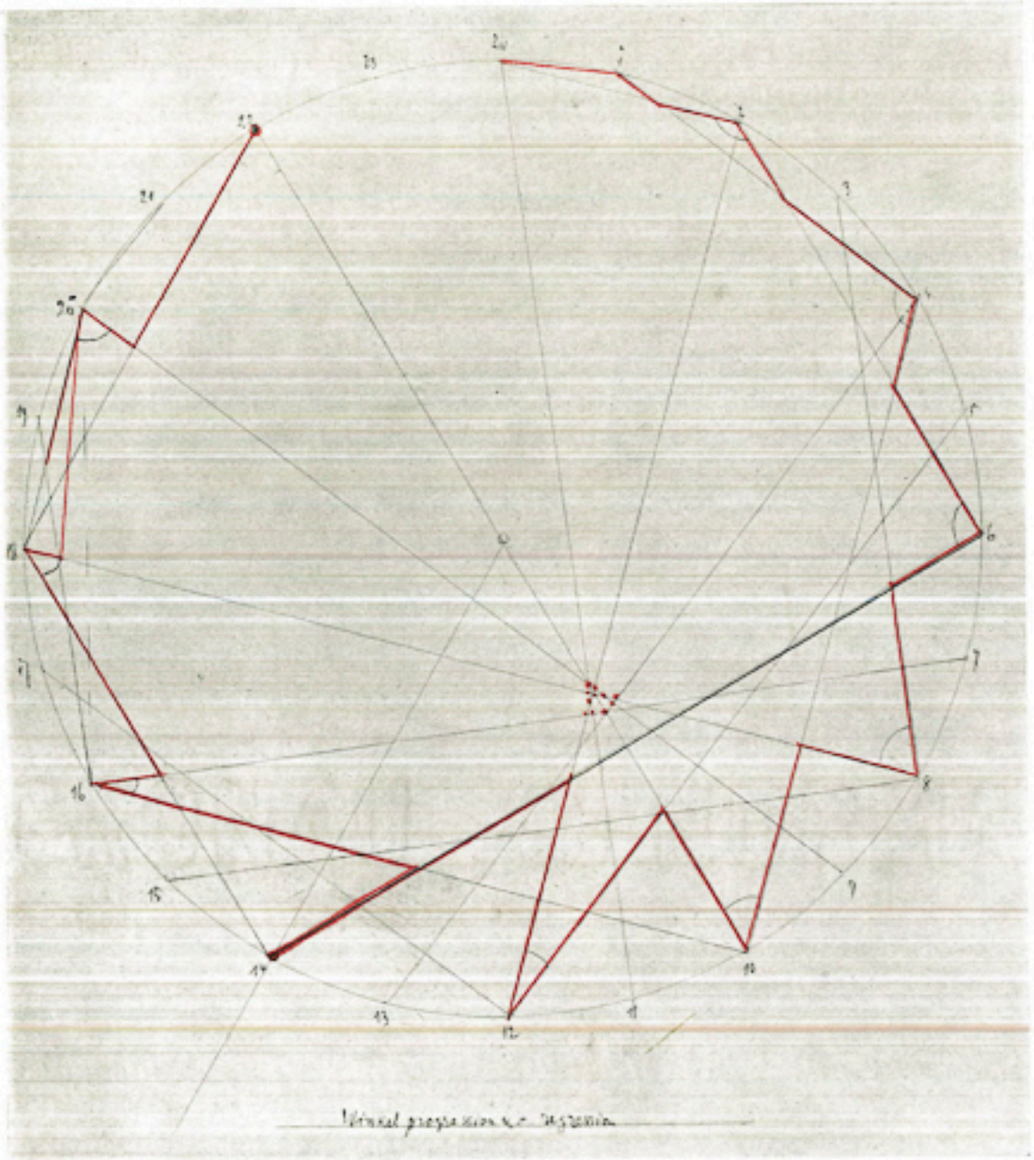
This sequence of constructive examples 17/92–95 is from the section 'Progressions within a circle (spirals)' 17/83–99.

3



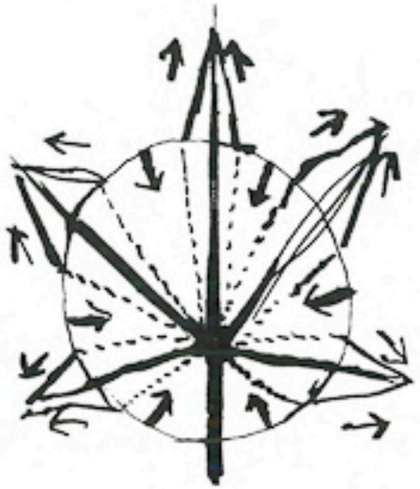
4



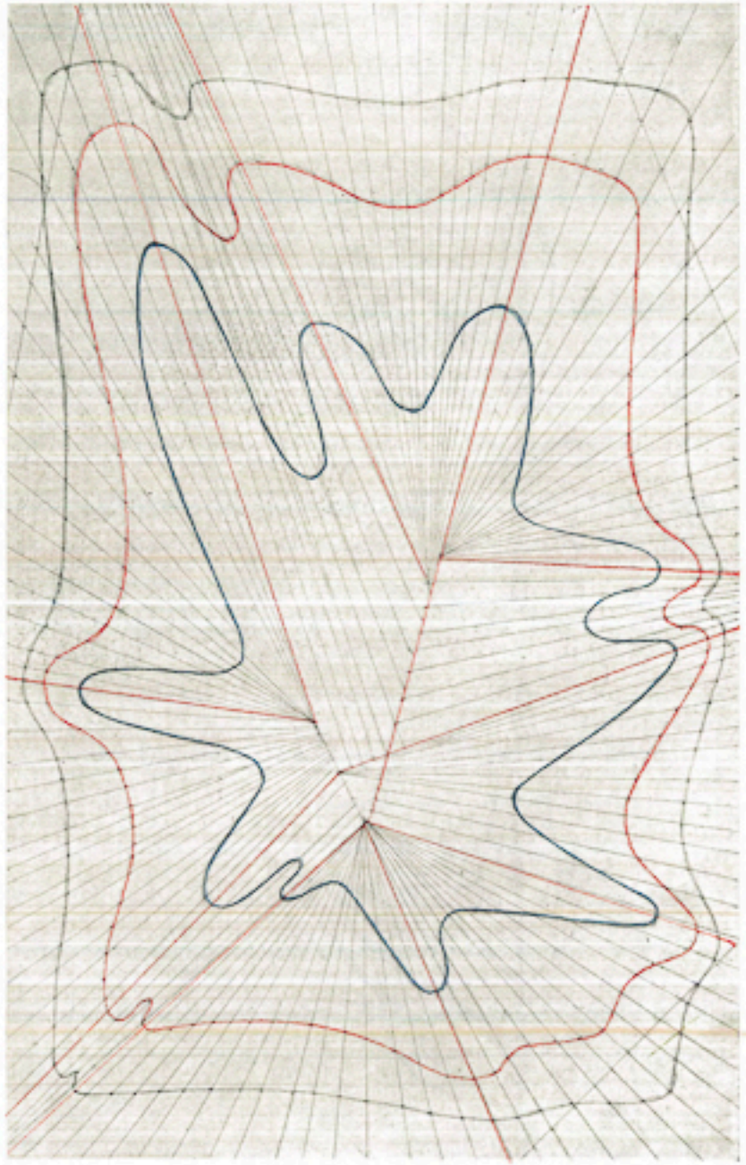


Angle progression and angle regression. 17/94.

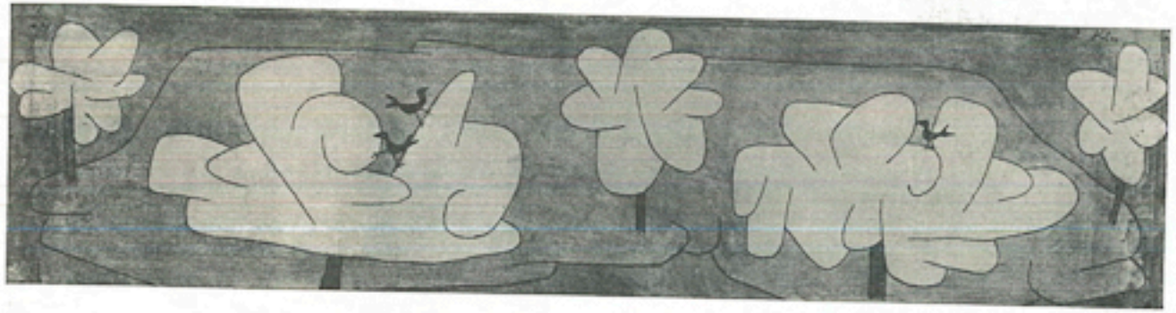
All three radii push the given area measurements beyond the normal limits, and in consequence the material between the radii is no longer sufficient and the borderline becomes deeply scalloped. With particularly strong radiant energy, tears may reach all the way back to the base of the radii.



Tear to the base of the radii



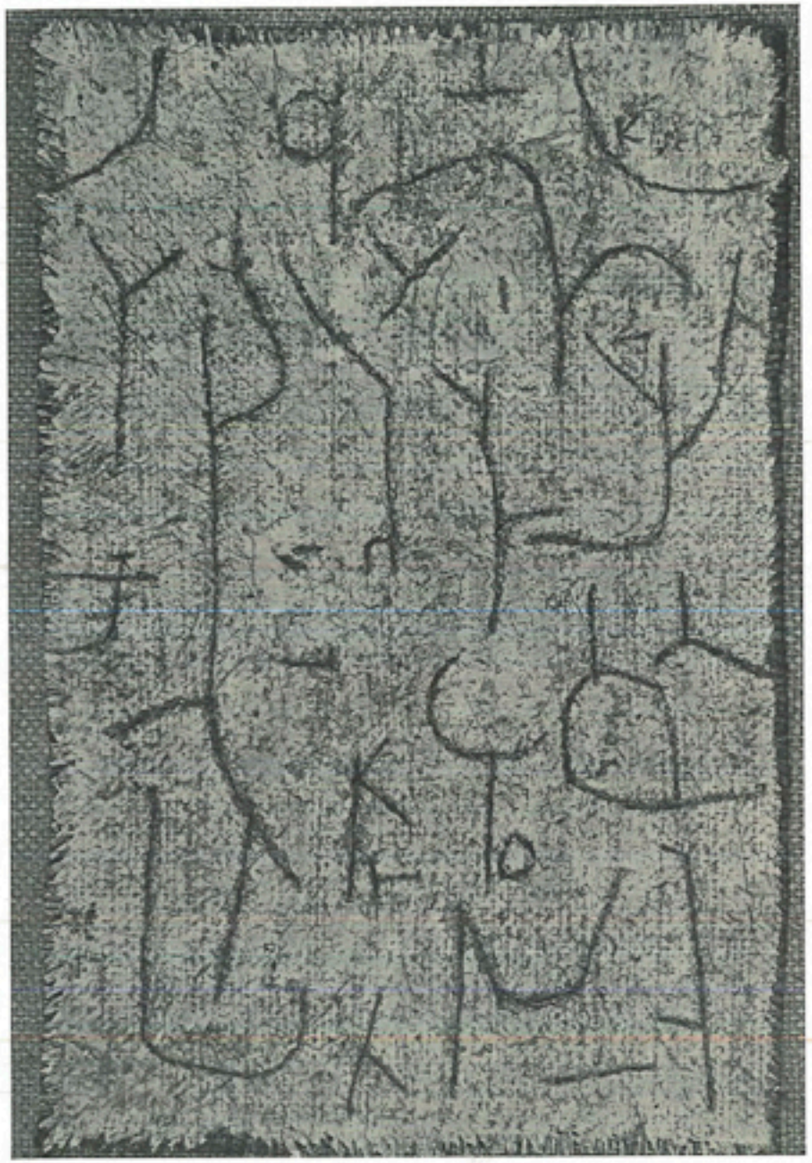
Figuration example 51/7 for the exercise set on Tuesday, 30 October 1923: 'Imaginary leaves on the basis of the foregoing insight into basic rules.'
A free geometric-aesthetic effort.
In place of a single basis for the radii, there are several.



1939/Estate: *Birds in a water park.*
Watercolour on muslin on wood. 16·5 × 65.

Tuesday, 30 October 1923

Exercise:
Imaginary leaves on the basis of the foregoing basic rules.



1938/v 1: *Awakening things.*
Oil and watercolour on plaster-grounded jute.
37·5 × 26·1.

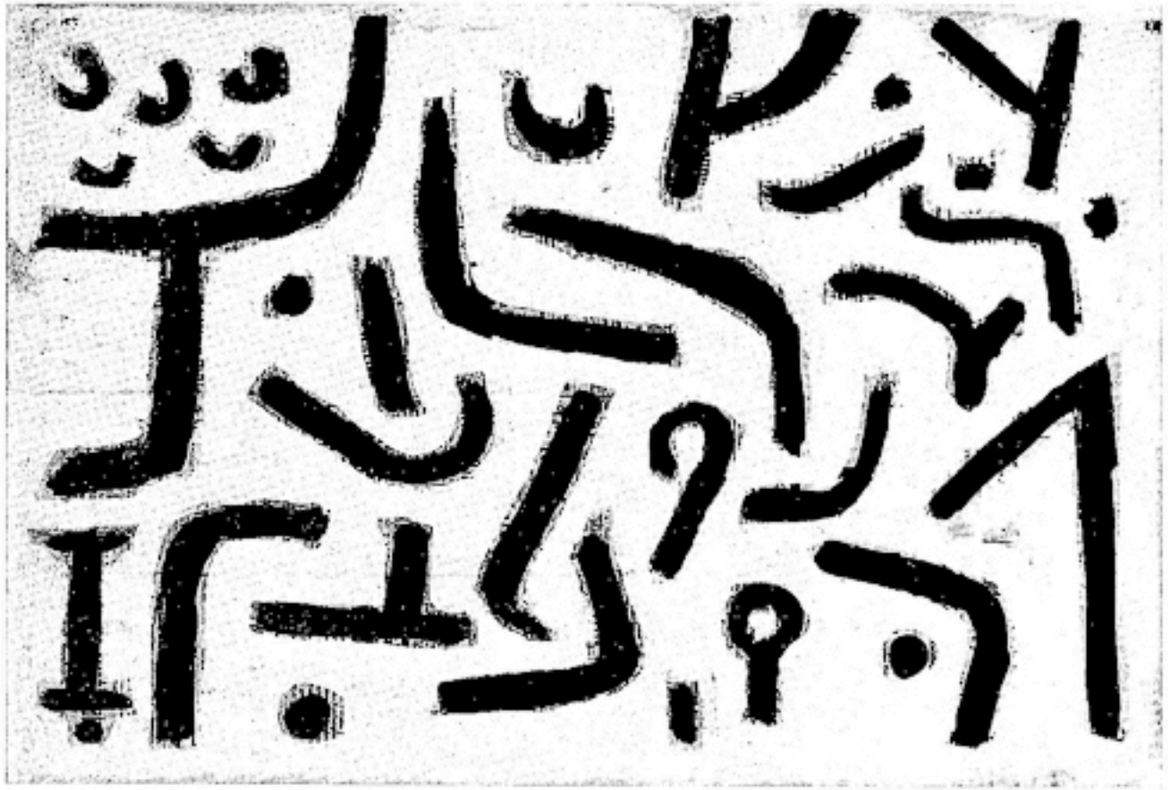
(Published by Nello Ponente(Skira without corresponding œuvre catalogue number under the title 'Spring's awakening'.)

1938/M 6: *Locks.*
Zulu crayon. 9·1 × 38·7.

The energy centre
The irritated point as latent energy
Motivation for form-creation and articulation
Inner necessity as the basis for form-creation
Structural and articulation elements

Monday, 5 November 1923

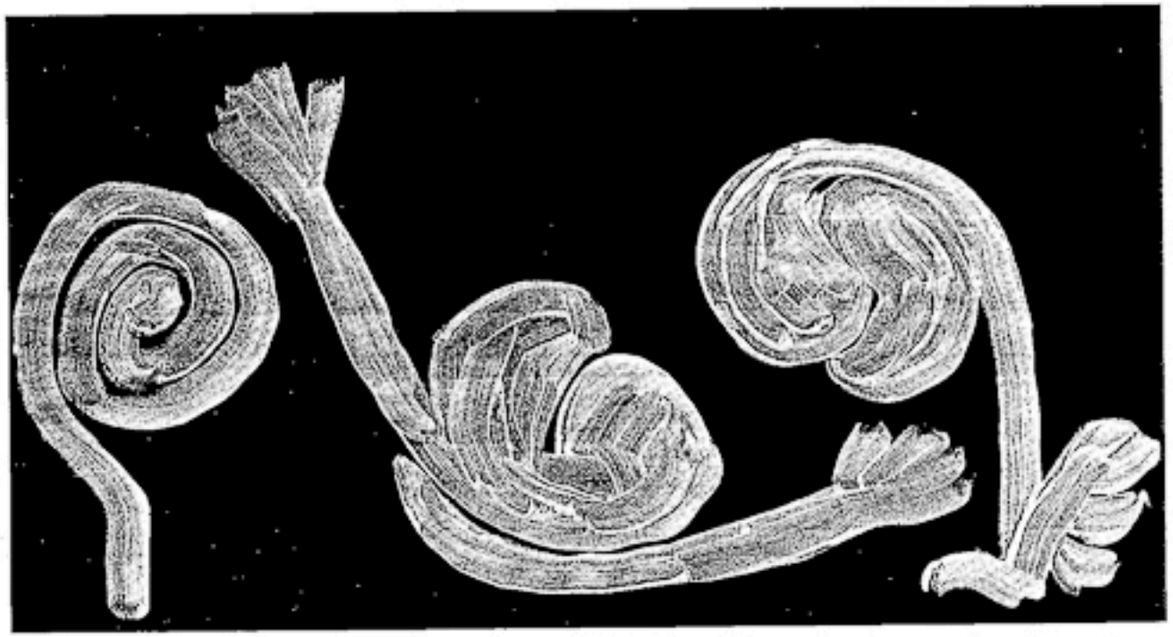
So far we have dealt only with the primitive energies of form creation. These are formational and at once articulating.
At the primary level, they were highly economical actions, initial movements communicating themselves to the hand. Their primitive character also arises from their close propinquity to the original formal idea. In this connection, I should like to cite the example of a seed. Despite its primitive smallness, a seed is an energy centre charged to the highest degree. It comprises ineluctable impulses that will give rise to entirely different and highly characteristic forms. One seed will grow into a violet, another into a sunflower – not in the least fortuitously, but by its very nature – the one always a violet, the other always a sunflower. (So reliable is this that seeds may be sorted, packed, labelled and marketed.) Each seed is the spin-off of a certain species and a talisman for the regeneration of that species.



1939/78: *Growth stirs.*
Coloured paste on newspaper. 33 × 48·5.

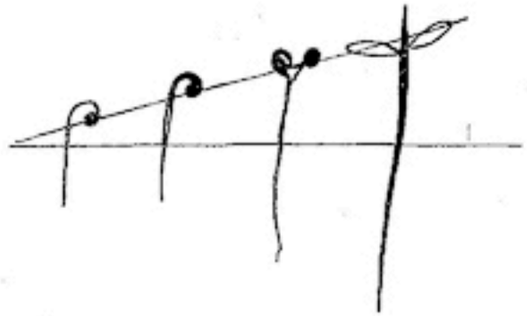
1939/CC 14: *Deep in the woods.*
Watercolour and egg emulsion on oil-grounded canvas. 50 × 43.
Fine leaf and fruit motifs, dynamically accented in keeping with the style of Klee's late work.

1939/v 1: *Dramatic germination.*
Coloured paste on paper, 25·4 × 4·84.



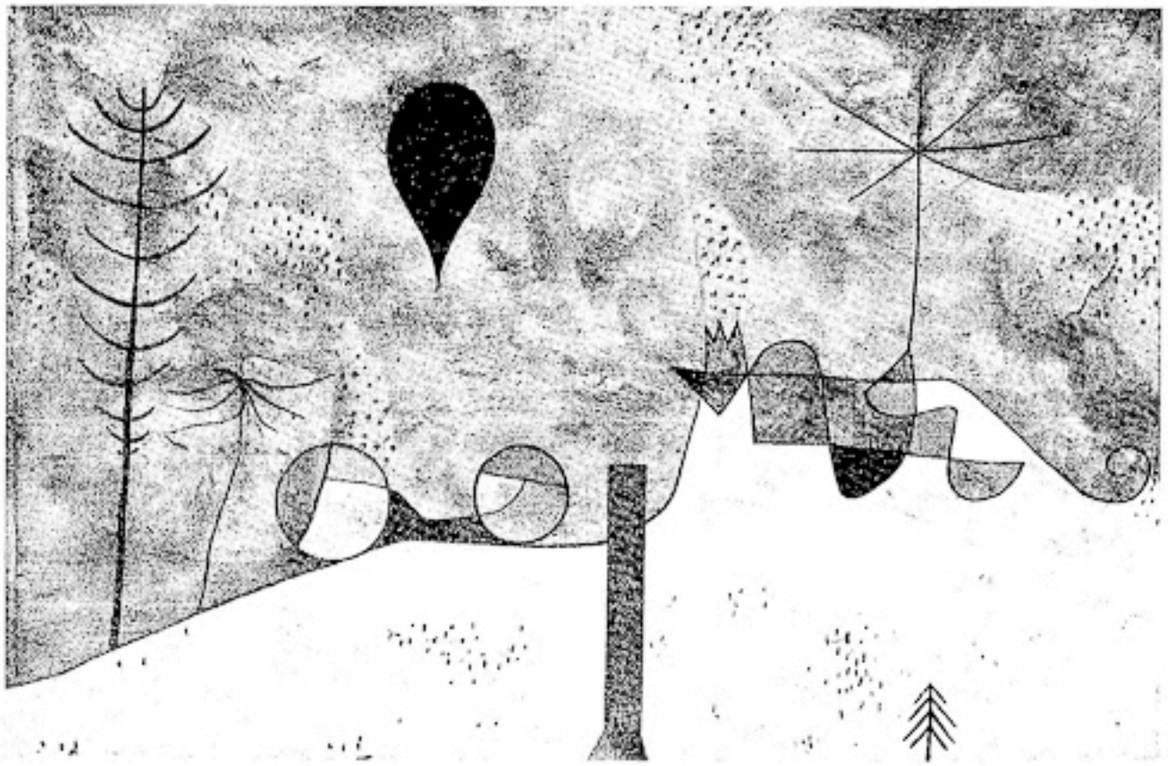
A certain impetus from without, the relation to earth and atmosphere, begets the capacity to grow. The slumbering tendency towards form and articulation awakens in predetermined precision, determined with reference to the underlying idea, to the logos, or, as the translation runs: the word, which was in the beginning. The word as a promise, as the idea required for the genesis of a work. In abstract terms, what we have here is the irritated point as latent energy.

At the slightest impetus, the point is about to emerge from a state in which its mobility was concealed, to move onwards, to take on one or more directions. It is about to become linear.



In concrete pictorial terms: The seed strikes root, initially the line is directed earthwards, though not to dwell there, only to draw energy thence for reaching up into the air.
The next effect of contact with the soil is that the seed rises, and this is often followed by a kind of split (dicotyledons[1]). This division becomes the beginning of further upward motion. The spirit of this form-creation is linear.

[1] Dicotyledons: plants with two seed lobes, a major division of the angiosperms. In the germination phase these plants have two or more seed leaves.



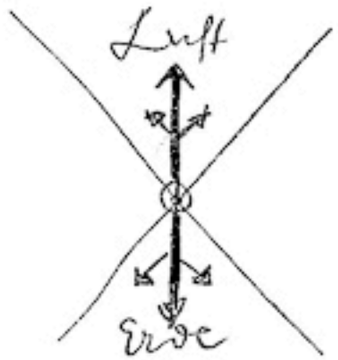
1930/d 6: Winter scene. Gouache on cardboard.

To (2): Earth, water, air.
From 'Towards a theory of form production'.
Cf. Volume 1, p.315.
E: Earth
W: Water
L: Air

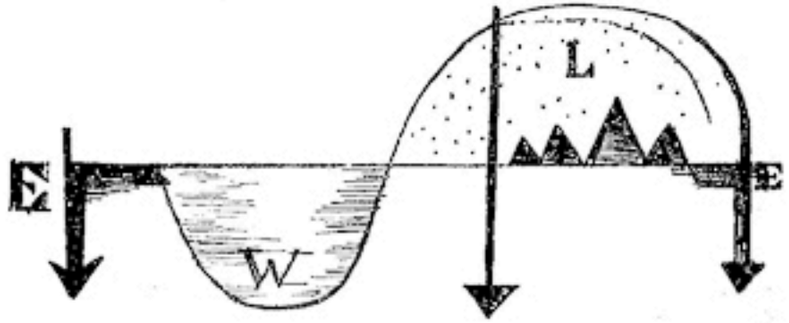
In order to spread and gain power over large areas of space, the linear unit branches.
In order to irrigate, the stream divides. The dynamic force is space hunger – space hunger as juice hunger underneath the ground, space hunger as air and light hunger in the atmosphere [1].

Extensions in the air space and within the soil are interdependent, just as in developed organisms the functions of nutrition and respiration are interdependent. A broader nutritional base may give rise to large respiratory organs, while greater breathing-space may enlarge the nutritional organs (mutuality, reciprocity) [2].

1



2

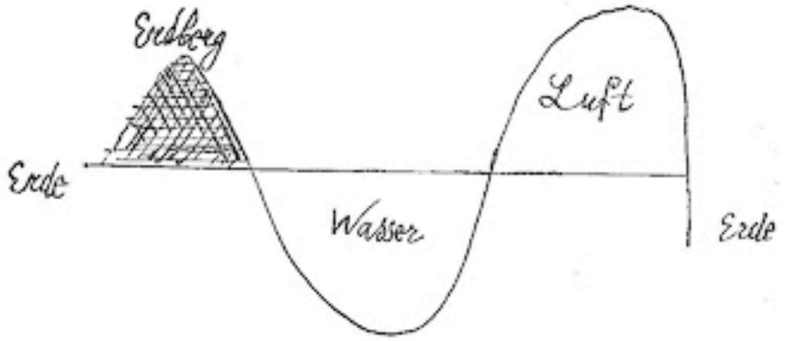


3

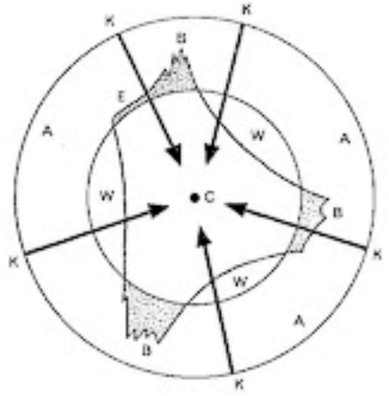
Competition with other creatures, or the struggle for existence, to use a more dramatic term, provides the impulse for the enhancement of energy production. As far as light requirements are concerned, altitude plays a certain role [3].
The point of origin between soil and atmosphere stretches out, and the generalised plant image becomes tree, root, trunk, crown.
The trunk is the medium for the rising of the sap from the soil to the lofty crown.

1930(x 8: *Hill and air, synthesis.*
Watercolour. 25·5 × 31.

Earth,
water,
air
seen in cross-section.



Earth,
water,
atmosphere
seen in elevation.
Cf. Volume 1, pp.313-315



C Centre of the earth
W Water
E Level ground
B Hills
A Atmosphere
K Gravitational forces

1932/113: *Young tree (Chloranthemum).* Watercolour on chalk-grounded paper. 48·4 × 36·7.

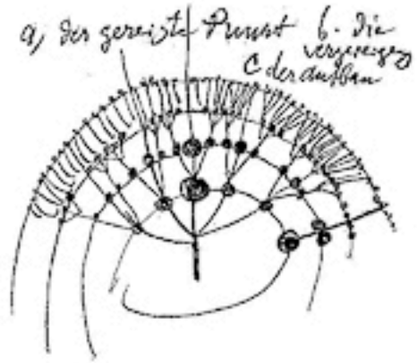
The linear forces gather within it to form a powerful stream, and they radiate outwards, in order to pervade the air space at free height. Henceforward articulation naturally becomes more and more ramified and open, to make the best of air and light. Leaves become flat lobes, the whole thing begins to resemble a lung or gills, porous, subdivided, for a single purpose.

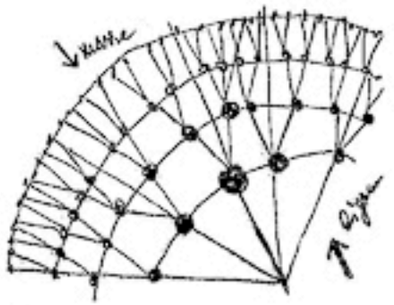
Let this entire organism now become an example to us – a structure functioning from within to without or *vice versa*.

Let us learn: The whole form results from a single base, the base of inner necessity. Need is at the bottom.

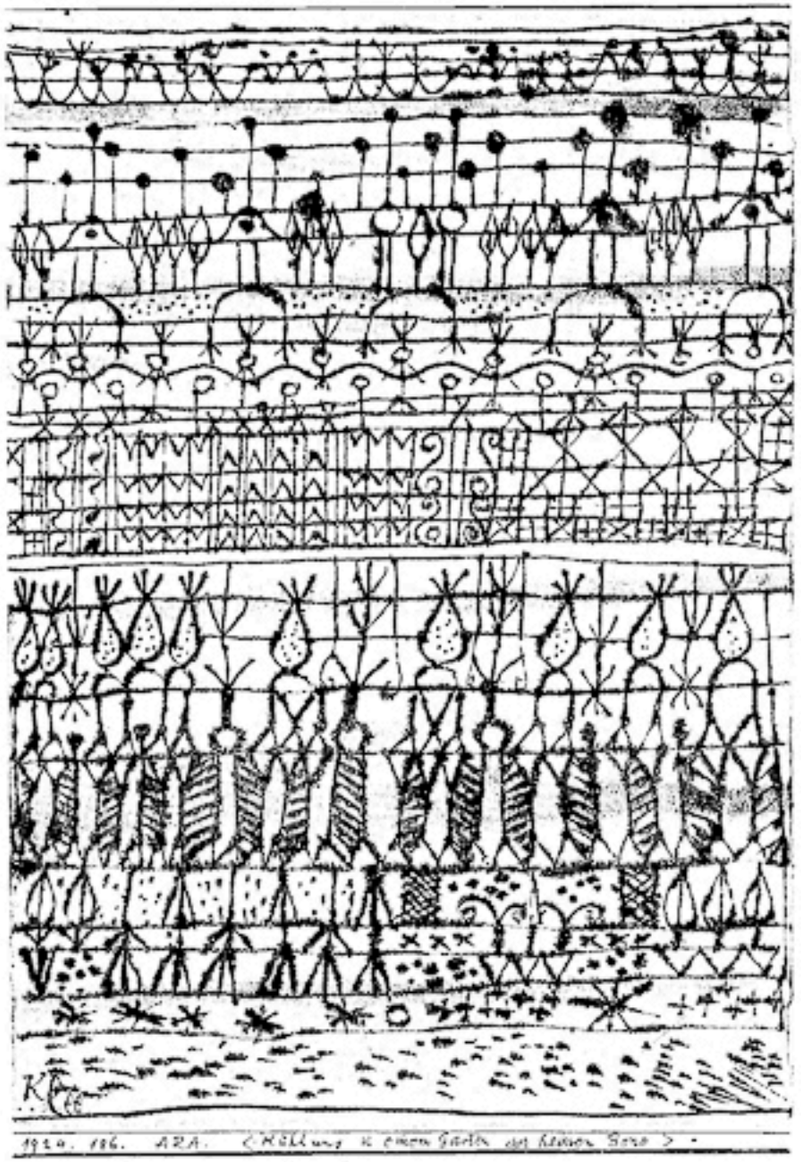
There is no random toying with results. The active path towards form and inner structure is ineluctable. Considering the articulation on its own and recalling the leaf, we can observe successive changes in the character of articulation, as we move from the main limb to the side limbs. Beginning with the element of singularity we arrive at the character of plurality.

In terms of form production, the line between linear and two-dimensional elements must lie somewhere. In terms of form articulation the line between singular articulation and mass articulation must lie somewhere.





a The irritated point
b The ramification
c The structure



1924/186: *ARA.*
Cool breezes in a garden in the torrid zone.
Pen-and-ink drawing with watercolour. 23 x 21.

It is less important to localise this precisely than to regard the two elements as being in contrast, e.g. the singular as moving forwards, the masslike as moving backwards.

The disparity between the two then leaps to the eye. The mass element I should like to call structural character. The articulated aspect of mass should be envisaged as the massive repetition of values that are of a similar order of smallness.

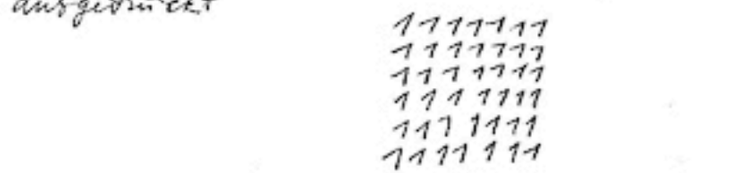
In linear aspect thus

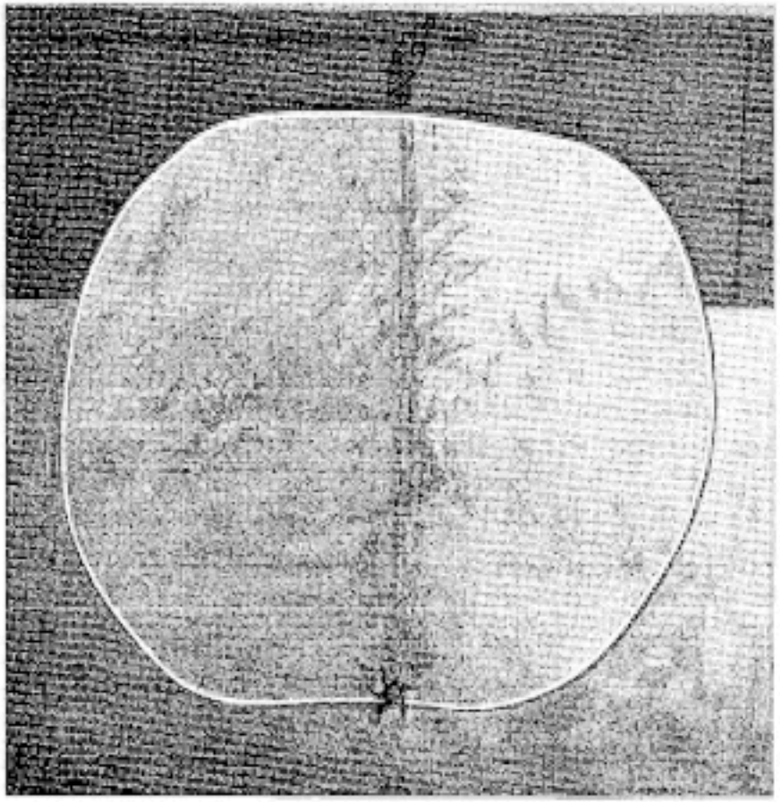
or thus

or in two directions at right angles

in other words, planar

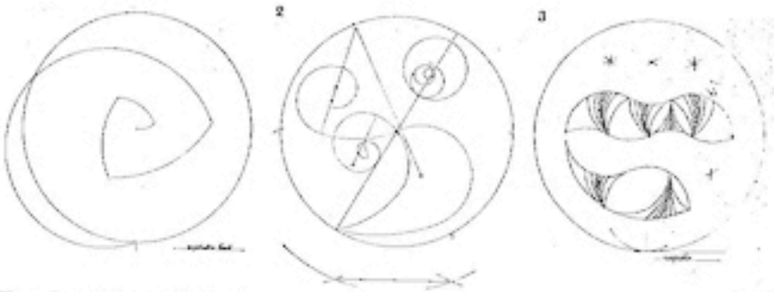
both dimensions combined and expressed in figures





1934/U 15: *Prize-winning apple.*
Oil on muslin on plywood, 55 × 55.

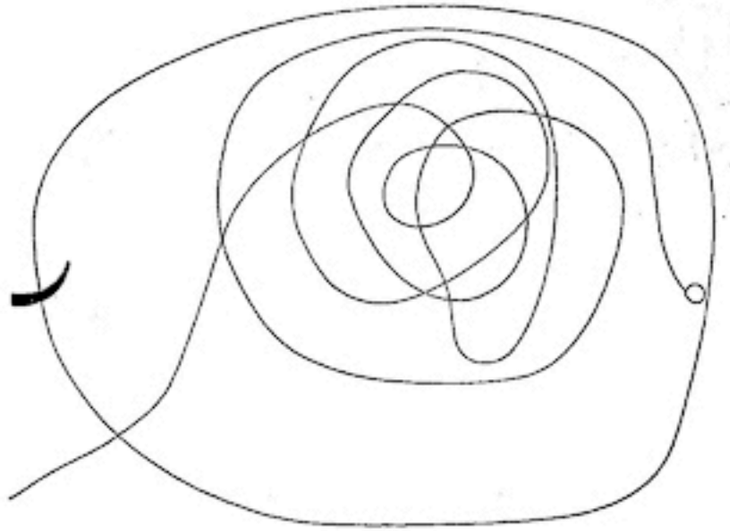
'Along the whole line of development that leads to the fruit, longitudinal cuts constitute typically static images and cross cuts typically dynamic; but once we get to the fruit itself, the static aspect vanishes. All cuts become dynamic.'



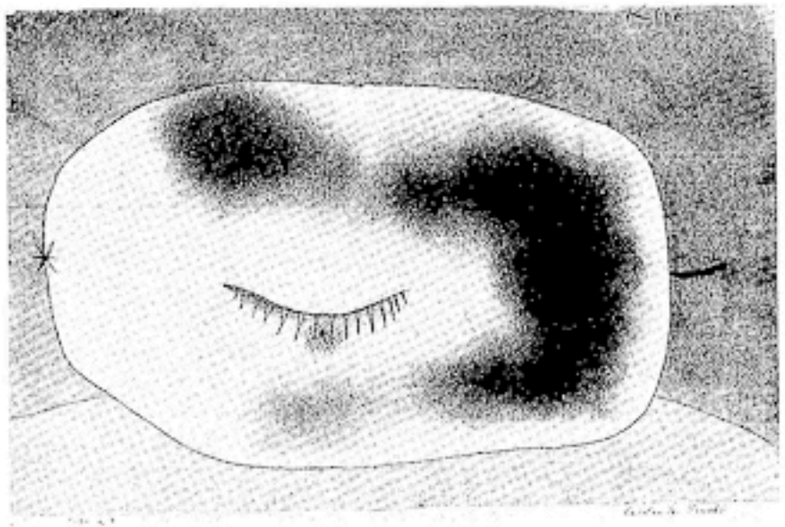
[1] *Fruit, cut into.* 49/10.
[2] Cross-sectional, inside and out at the same time. 49/5.
[3] *Pupated.* 49/12.
Drawings from *Frei Geometrisch-Ästhetisches*, 49/1–17.

Tuesday, 6 November 1923

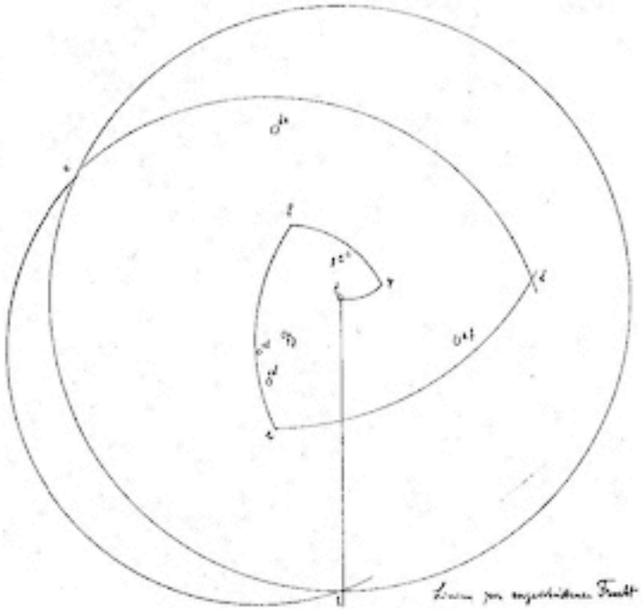
Drawing apples.
a longitudinal section
b cross-section
c spatial-three-dimensional drawing.
The apple [from blossom to fruit ('capsule')].
Along the whole line of development that leads to the fruit, longitudinal cuts constitute typically static images and cross cuts typically dynamic; but once we get to the fruit itself, the static aspect vanishes. All cuts become dynamic. 45/66.



[4] Spatial-three-dimensional drawing.
Excerpted in line from the painting 1932/y 4: *Fruit.*
Cf. Volume 1, p.8.



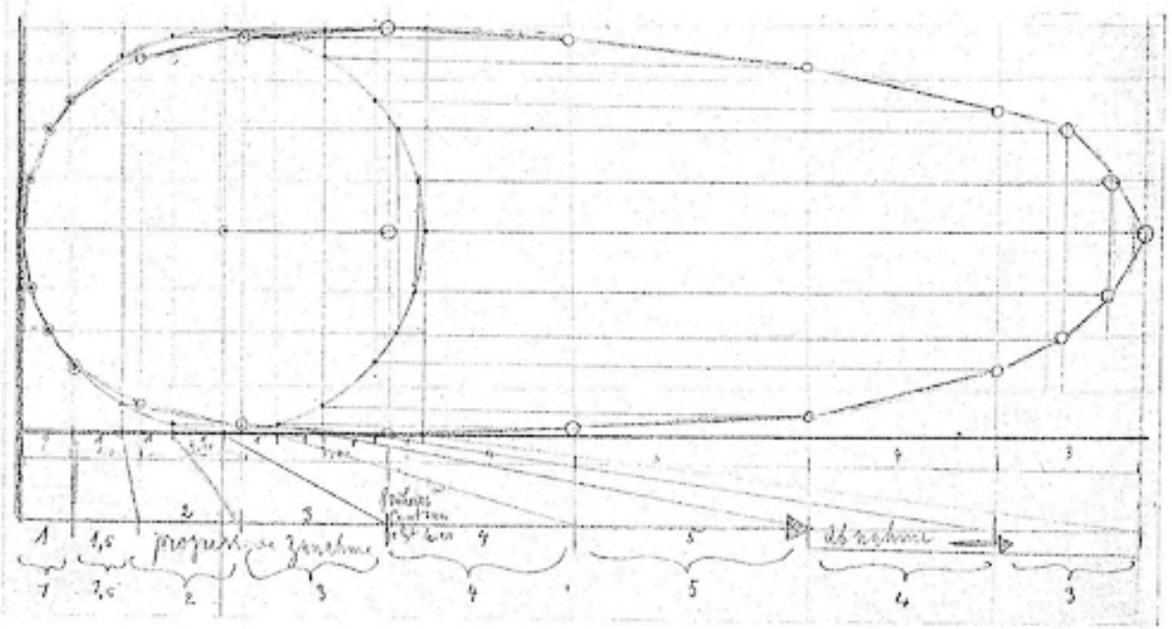
1934/3 7: *Suffering fruit.*
Watercolour, oil and pencil, 30 × 45 5.



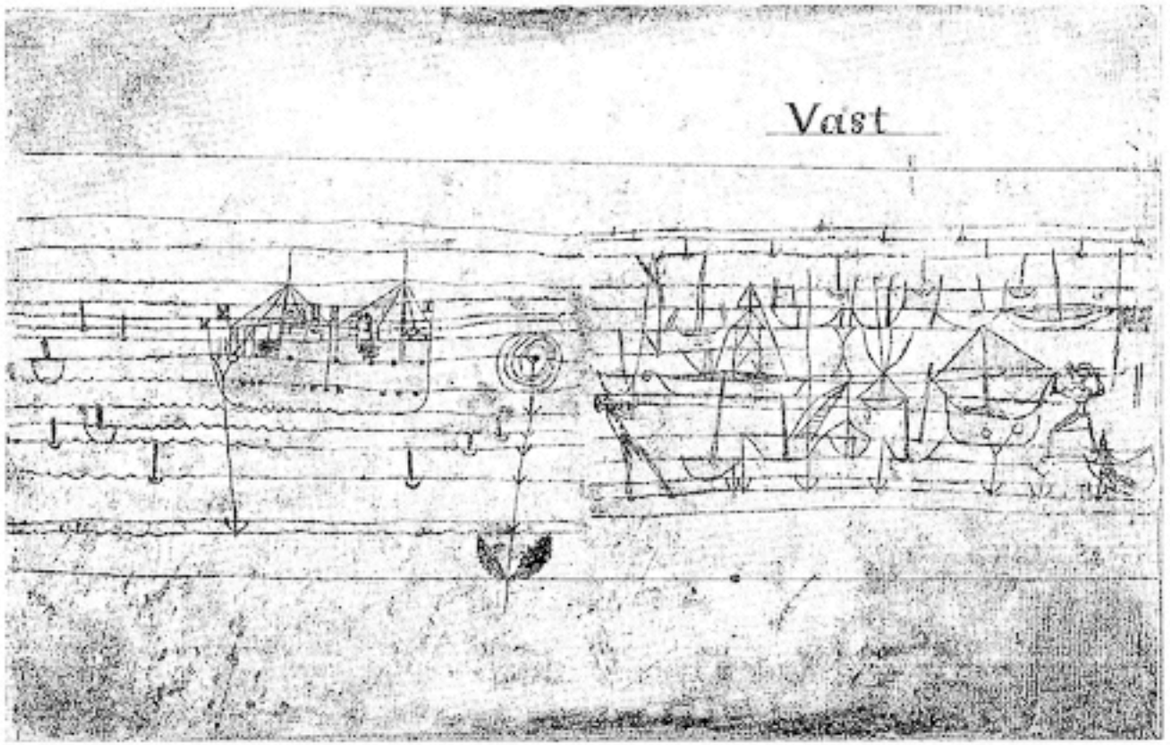
Lines for the cut fruit.
17/77a.

Cross-section and longitudinal section of a fruit

Union of norm and of movement away from the norm
Progressively waxing and waning side movement (with the centre shifted)
Progressive increase: 1 1·5 2 3 4 5 decrease → 4 3
Former centre (between 2 and 3) now here (between 3 and 4). 17/114.



1925/0: *Vast* (Rosenhafen).
Oil drawing and watercolour on plaster-grounded gauze on board. 36 × 58.8.

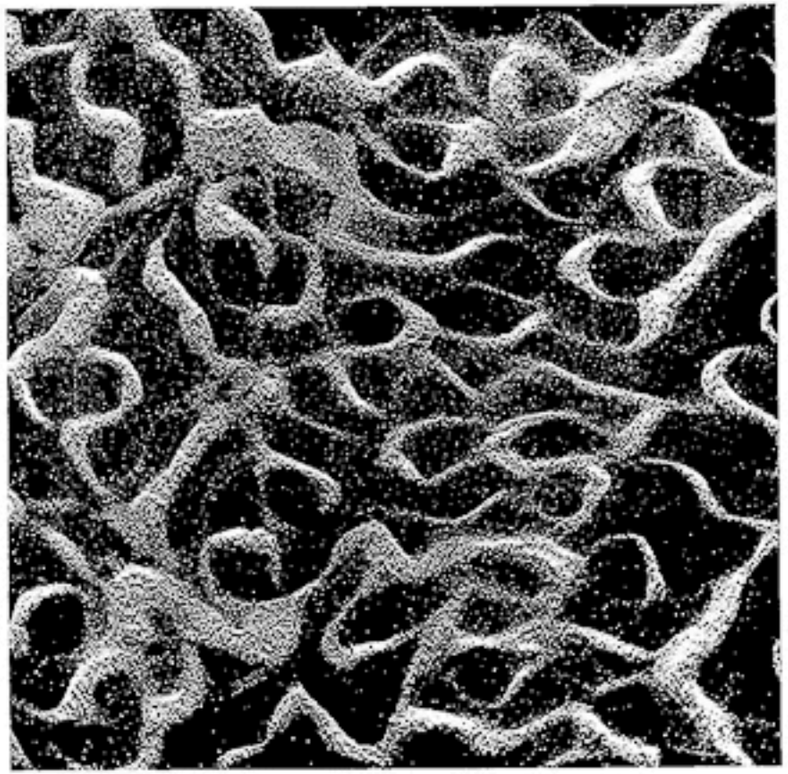


Structural rhythmics and higher articulation,
linear, planar and three-dimensional
Form-determining activities
Suitability of matter for given purposes and its movement potential
The question of the causal
The act of forming rather than form itself
Ideational originality

Tuesday, 27 November 1923

What I saw by way of your theoretical exercises in the field of structures was not very rewarding, in terms of spontaneity. A certain trend towards rigidity predominated, often resulting in chillingly symmetrical ornamentation. I think that is a slippery area, and for the time being, should still like to discourage you from entering it; for initially it is hard to retain life in such abstractions. One tends to ignore altogether the bridge that leads from natural and inherently coherent rhythm to its precise representation.
The ultimate flowering of ornament is precisely such an end, arising on the basis of what is supposed to have happened, which one should not tackle directly, in my searching view of form-production. Instead, it is an end one should allow to grow, like the natural process, as the result of form-determining activities. Here too it is the act of forming rather than form itself, form in the process of growth, as genesis, rather than as the ultimate appearance.

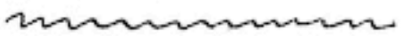
Many of you will know the pretty experiment with sound figures. First spread a layer of fine sand on a thin plate of wood or metal. Then draw a violin bow across an edge, making the plate vibrate. This vibratory impulse is the heart of the matter. It causes the sand to arrange itself in a corresponding rhythmical order. First, in other words, the vibratory impulse, the will or need for living action, then the transformation into a material event, and lastly its visible expression in the form of newly rearranged material.

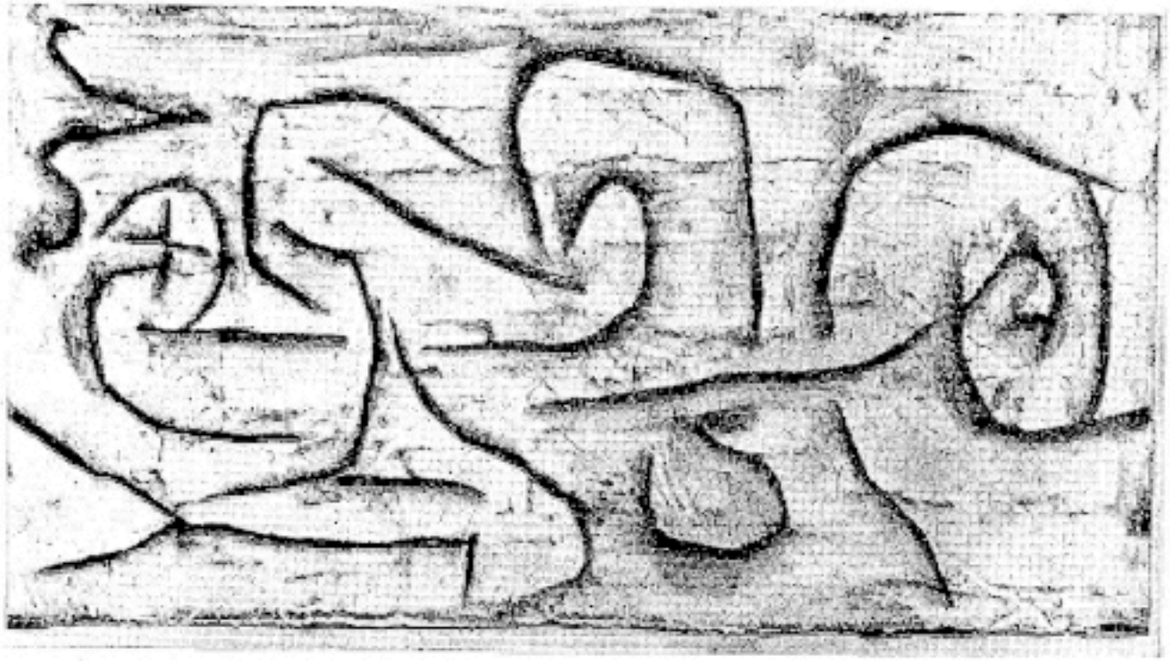


Sand figures do not represent sound figures in the ordinary sense. Rather, the grains of sand are in flowing motion. The excitation is by means of oscillating crystals. (A steel plate 0·5 mm thick, 25 × 33 cm, was used, at an oscillation frequency of 10,100 Hz.)
From Hans Jenny: *Cymatics. The structure and dynamics of waves and vibrations*, p.31.
Cf. note in the appendix.

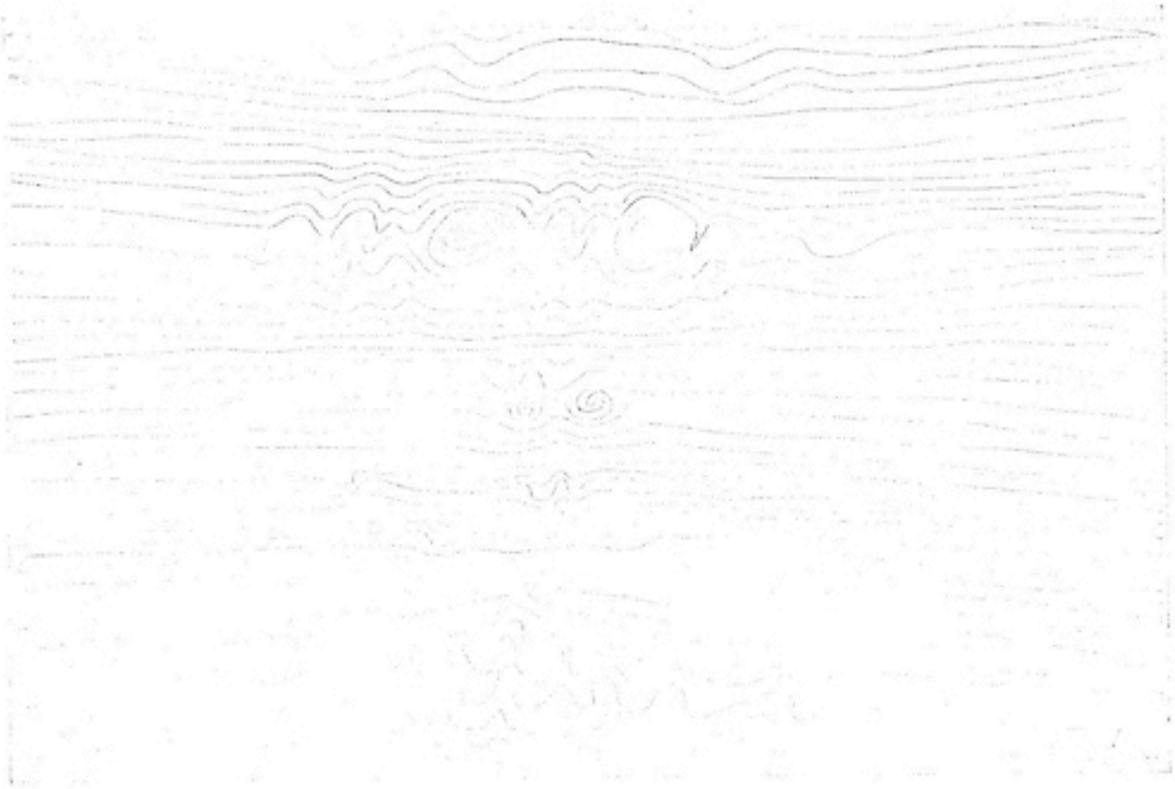
We are the bow, we represent the expressive impulse, mediated by the substance, with the sand figures as the final formal result. The main context embraces the bow (vibrations) and the physical material. It is as though matter were being fertilised and became invested under this dictate with a kind of life of its own. The sand is the annexe, the outer layer, the secondary stratum.
To revert once more to structures and avoid the lifeless in advance, I should like to choose as the symbol of structure

in place of

rather this wavy line. 



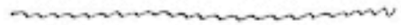
1937/L13: *Coastal formation.*
Mixed media on paper. 12 × 22·5.



1933/3: *Random movement of water.*
Pencil 17·8 × 25·9.

Wave motion arises by the emphasis on small scope versus larger scope (contrast of normal and departure from the normal). The sum total of the lines turns into a surface effect.
Cf. another example: 1929/UE 9: *Movement in locks*, p.48, as well as the form-creative example on p.75.
60/21: Widest contrast span.

To revert once more to structures and even here avoid the lifeless,

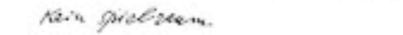


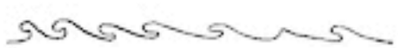
I should therefore like to establish this wave structure as the symbol of minutely divided animation. If matter is to be swept up into it, however, it must be suitable, in which event it will swing into action at full force.
The suitability of matter for a given purpose consists in its particles being amenable to movement. Function resides in movement itself. For us, who build neither clocks nor robots, the material emphasis falls on mobility; but to build tiny shelters for movement, we must in turn proceed from movement itself, from the need for such shelter.

Rigid guideline through matter

Mobile guideline through matter
Movement potential
predicates a certain scope
for the guideline

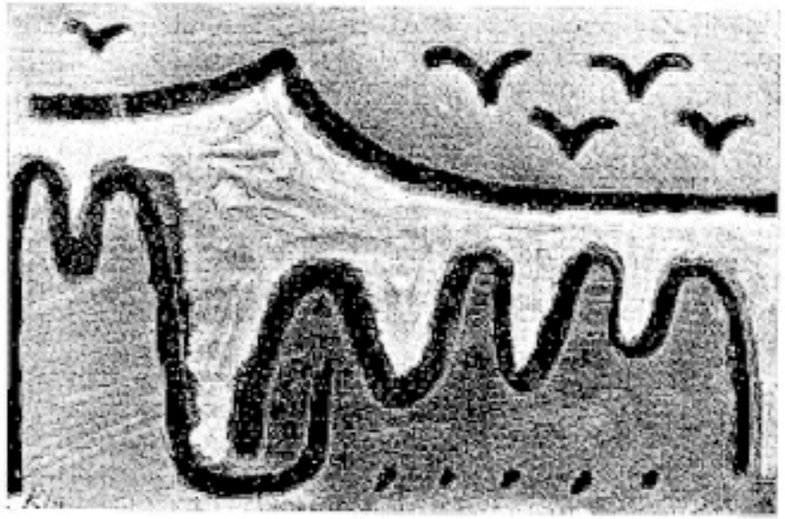
No such scope





Scope for movement

Well, now, how is matter to be swept up into this first expression of life? The question of the causal arises.
In the case of a highly porous and loose material like sea sand, one can observe with great clarity how this process takes place. The wafting air communicates itself and forms waves of smaller and larger size. The water flowing out with the tide leaves its signature with striking subtlety and decision, in its whole context of 'streaming'. One observes both linear and plastic formations that are the very essence of streaming.

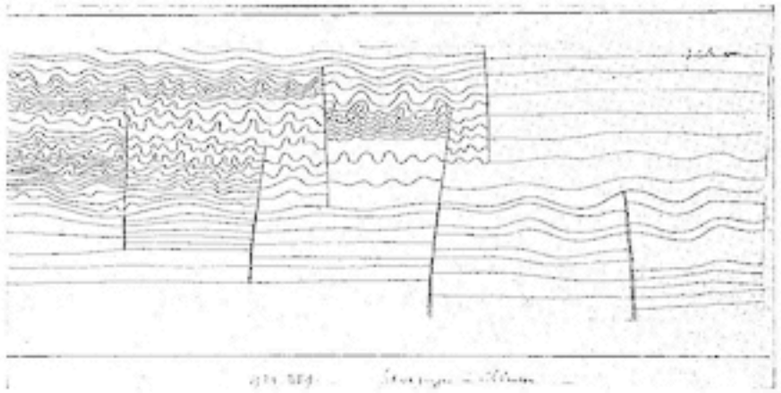


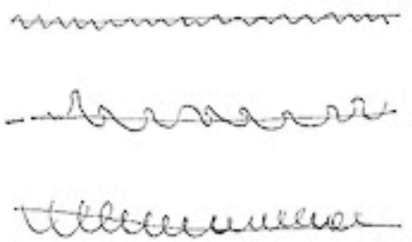
1938/2: *The wave.*
Coloured paste on paper.

In such a case, one can envisage guidelines for the attack on matter. Yet it need not be as sharp as all that, it may be matter in growth, burgeoning, adapting itself, little on little, to a living idea, taking shape after it while still soft and impressionable.
This disposition, the fitness of matter, consists in a propensity for motion of its particles. These particles adapt themselves to the guidelines of the living attack and form themselves into small structures that may be described as channels, pipelets.
In this wise: first life, then the shelter for it – that is the way it happens even on the minuscule scale. Early adaptive union of idea and matter yields matter animate. At this momentum, the originally straight line of attack changes into a lightly oscillating, vibrating wave line. The attendant friction is overcome by a first flickering rhythmisation.

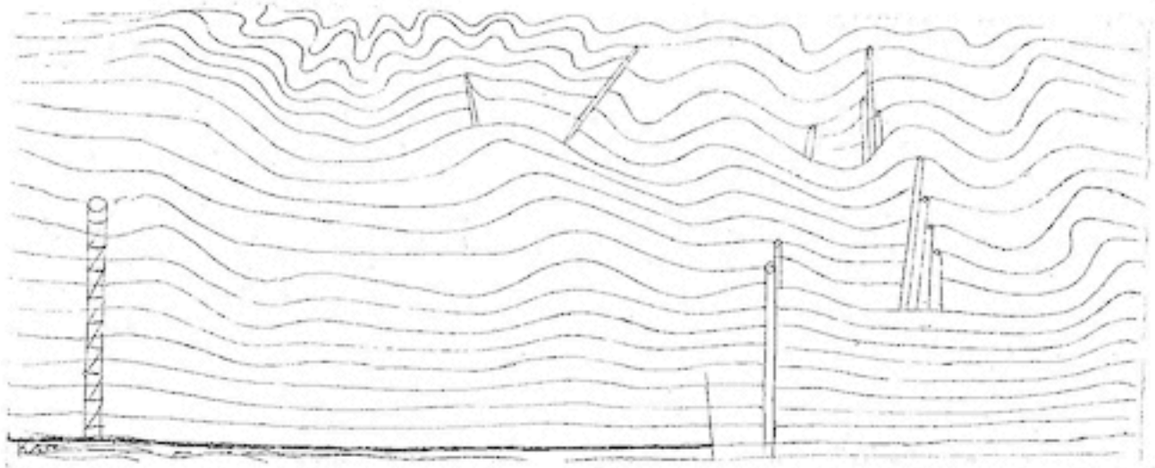
1926/UE 9: *Movement in locks.*
Pen-and-ink. 11 × 90.

The normal and the departure from the normal ('rigid guideline and mobile guideline') are opposed as structural elements. Increase and decrease of flow are emphasised by structural alternation in the higher articulation (the six vertical locks).
Cf. 1925/3: *Random movement of water*, p.46, and the form-creation example 60/24, p.75.





A line needs scope in which to move, because it has been swept up into movement.



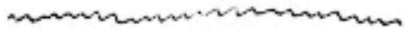
1928|UE 7: *Floods.*
Pen-and-ink. 12 × 30.

highest
intermediate
lower
} tone

animate tone
perceptible

Each form of matter permits itself to be permeated in the sense of such leeway for movement, though not always in a way we can perceive.

Let us assume that wave motion is minute and even smaller. It will still be there, but only imperceptibly so.

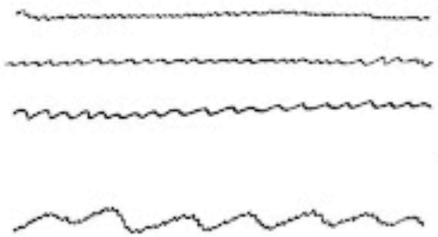


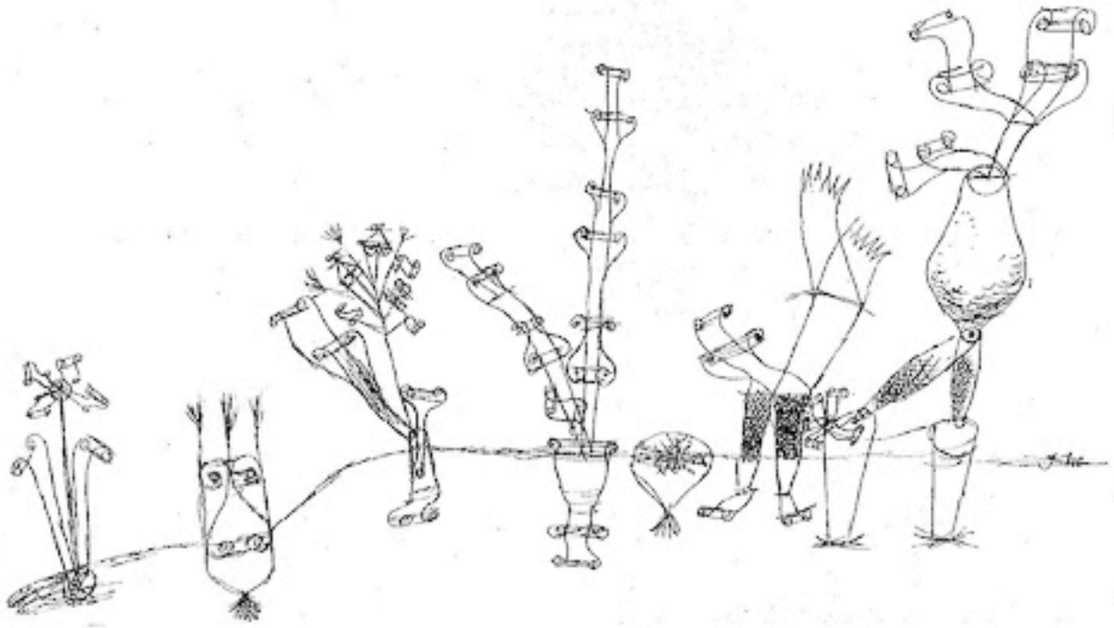
A musical tone is in itself already a wave motion, but one that cannot be perceived. Only an added vibrato renders it perceptible. Every form of matter permits of this leeway, but not every form allows us to perceive it.
The remedy is to transmit the movement to somewhat larger, perceptible dimensions.

Perhaps you have noted how the tone of a singer or string player quakes or vibrates or turns on a tremolo. It is the same thing. Every sound is already a vibration of the material air, so subtle that on its own it can be perceived only as a higher or lower tone.
Such melodic music-making would be sensed as inanimate. It is precisely the vibrato that alters this chilly impression.

höchster
mittlerer
tiefer
} Ton

belebter Ton
Wahrnehmbar





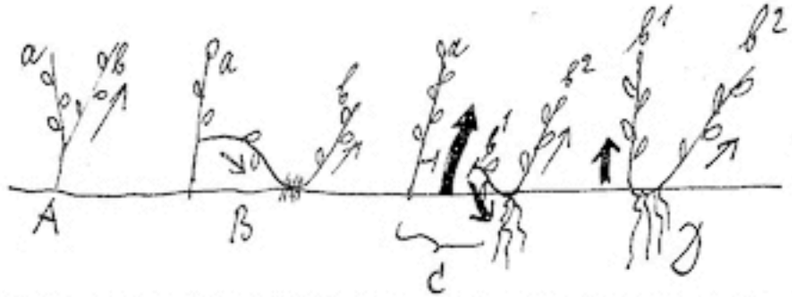
1921/166 Pflanzen auf dem Acker II.

1921/166: *Plants in the field II.*
Seven growths in a row side by side.
Pen-and-ink. 26·6 x 14·6.

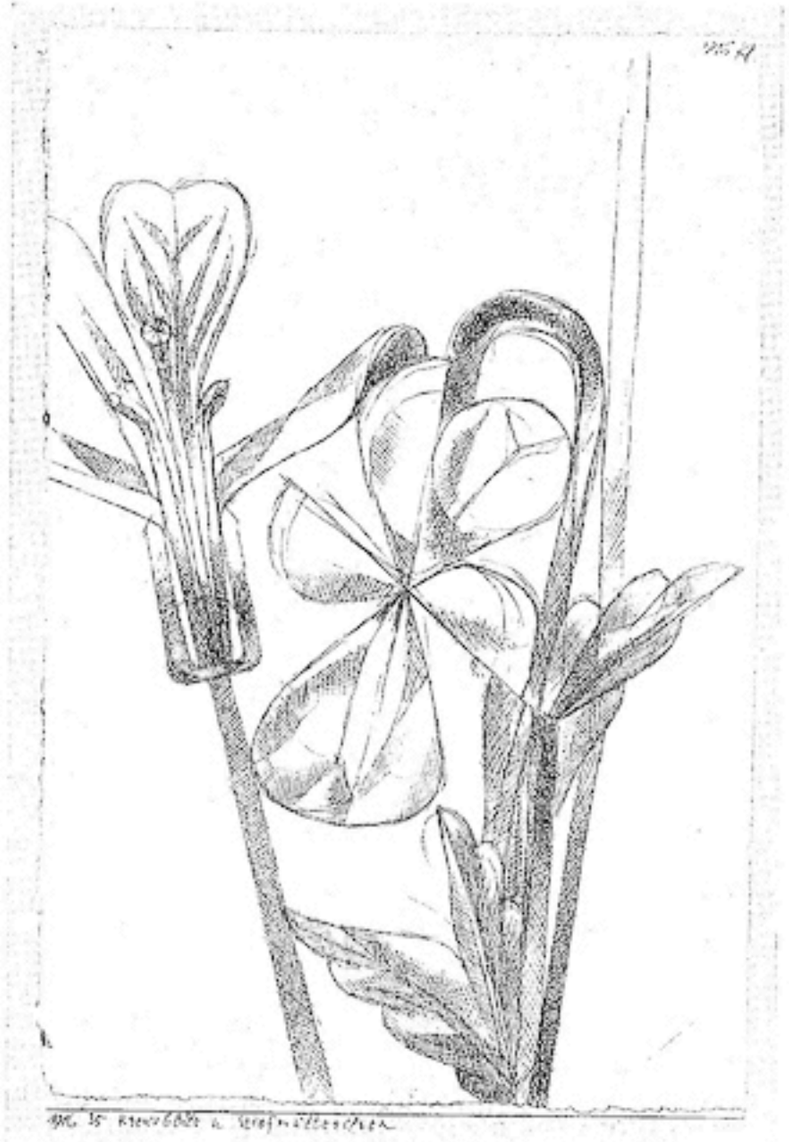
Diary entry, 1906/772:
'I am lovingly caring for the pear seplings brought from Italy and have actually transplanted one vigorous branch. This form of growing also constitutes a pretty experiment in capillary action.'

A particle, in other words, must be shaped in such a way as to lend itself to movement and conduction. For particles have no separate existence, merely serving in support of larger functions. They mediate – they are the middle links that receive and transmit.
A particle subserves some higher process that is capable of further development. It is a building-brick in a higher order which it transmits in several directions, over into three dimensions.

In the matter of plants: On one occasion, for example, I managed to root a slip in the following manner:



The original plant A had two branches, a and b. When it had reached stage B, I bent branch b down into the soil, where I secured it in the middle. After a lapse of time sufficient for rooting, I cut branch b close to branch a (Stage C), thus gaining a separate new plant with the branches b1 and b2. At Stage D, these two branches are shown having grown further, b2 in the original direction, b1 in the one opposite. I conclude that the appropriate structures must adapt themselves to these two directions, so that the sap may flow both up and down.



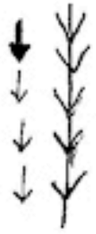
1915/35: *Milkwort and pansy.*
Pen-and-ink, 15·5 × 23·7.

tubelet

Sap rises and falls in a plant.

Such structural elements (tubelets) are capable of being used for movement both up and down. They receive and transmit in either direction. Water flows uphill only in certain circumstances. Among these is the state of being divided into tiny particles – the capillary system.

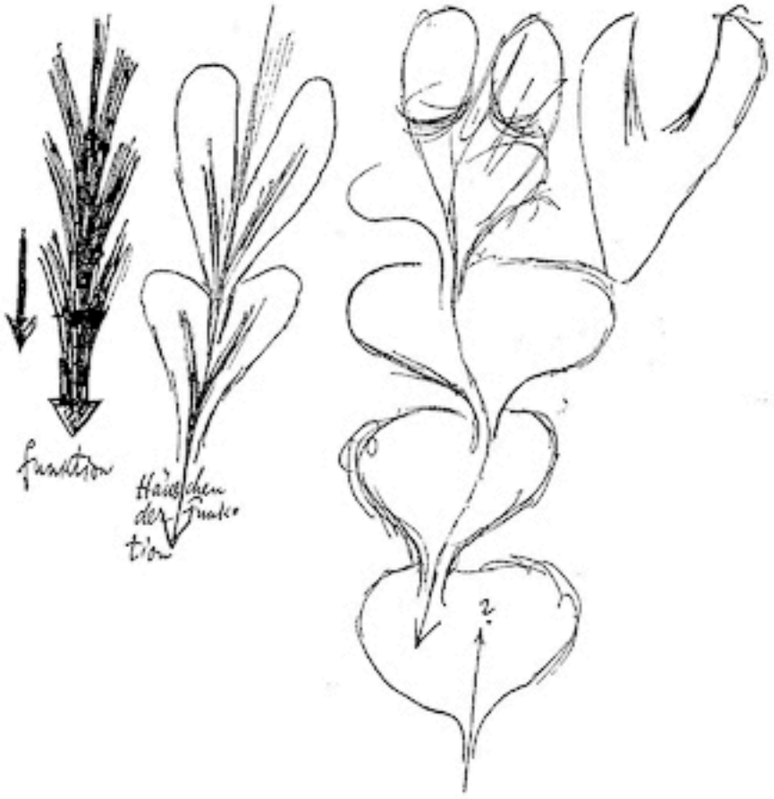
1925/x 7: *A beetle.*
Pen-and-ink with wash. 36 × 21.



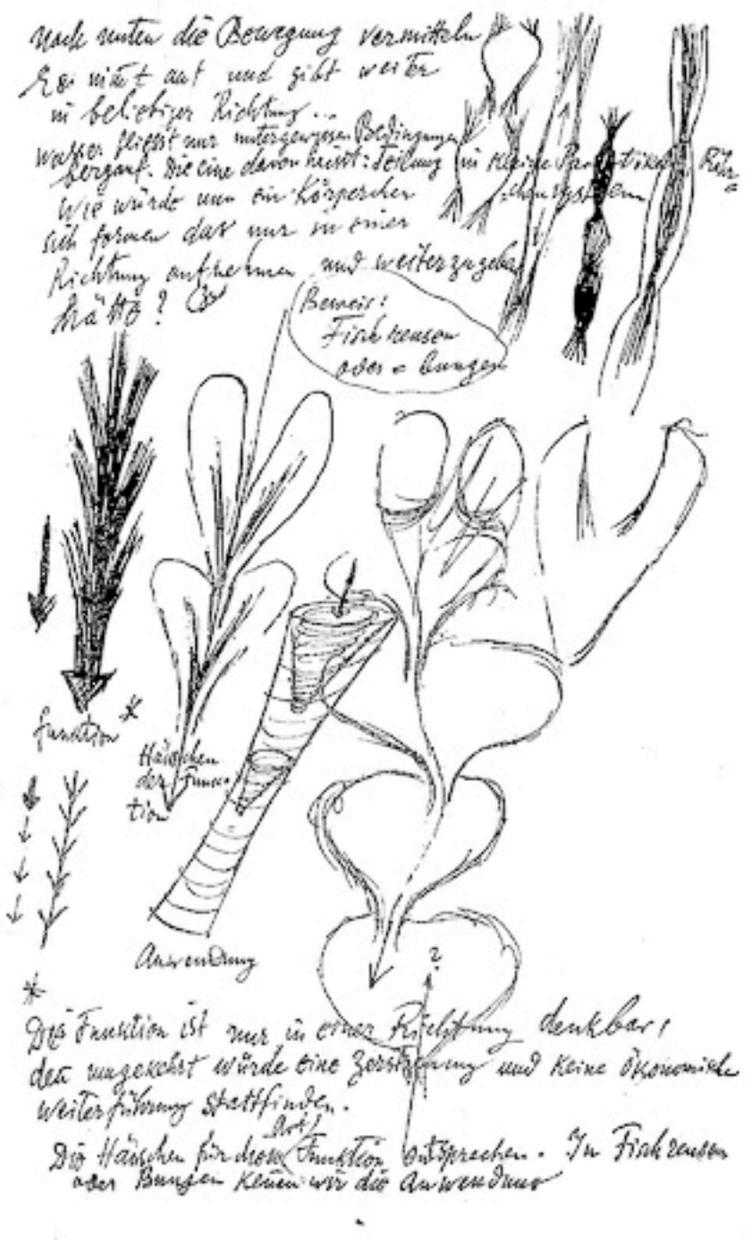
Function

Shell for the function

What would be the shape of a tubelet capable of receiving and transmitting in only one direction?



Function is here conceivable in only one direction, for if it were reversed there would be scattering and no useful transmission would take place.



Sheet 9/12 from Klee's manuscript of the General system.

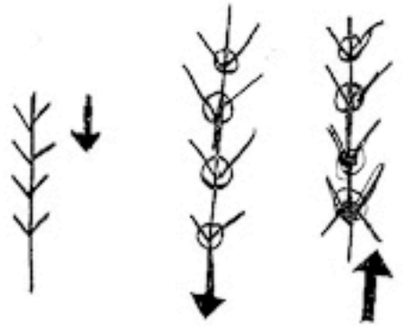
[1] Fish trap: a kind of cylindrical net stiffened with rings of wood or metal and equipped with one or more funnel-shaped openings that admit fish in such a way that they cannot get out again. Lobster pots contain similar devices.

Shells for this type of function are shaped rather like fish traps or lobster pots.[1]

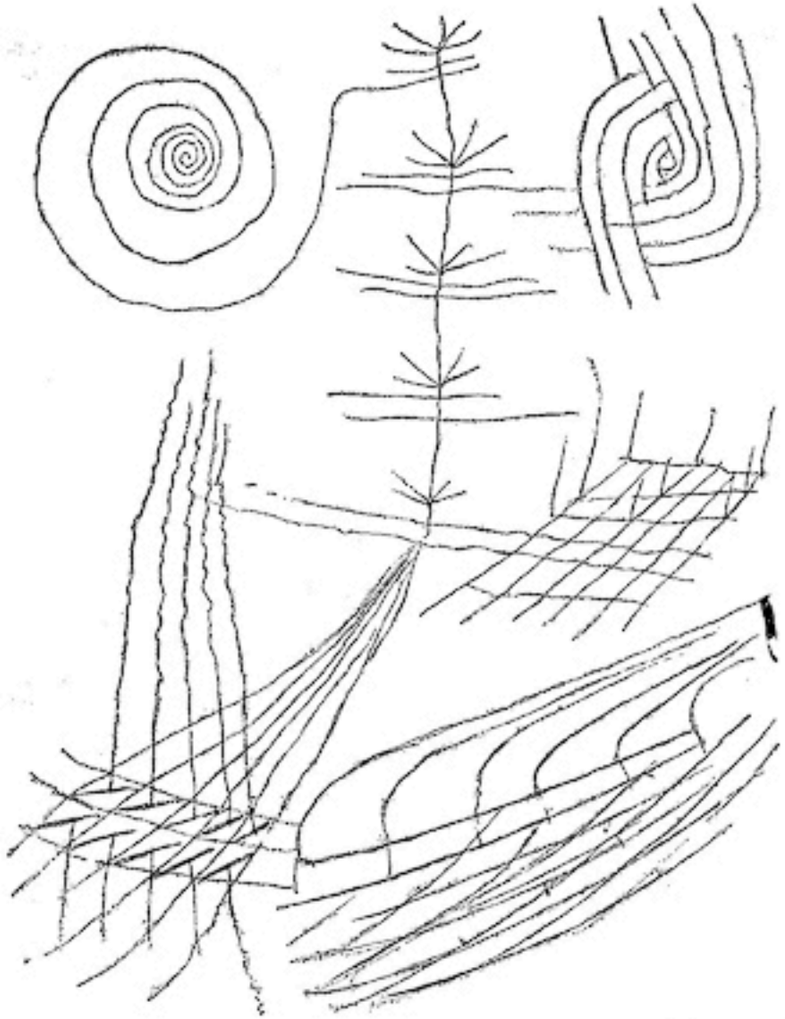
Demonstration: in fish traps or lobster pots

We can see how movement in such devices is channelled in the natural direction, fish passing through successive openings from compartment to compartment.

Fishes moving in the opposite direction will invariably miss the opening and get stuck, while others will move in.



The likelihood of making progress is smaller than that of getting stuck.

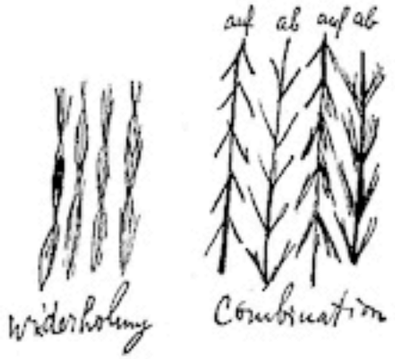


A page of sketches from the Theory of form production, 45/86a: *Simple and composite structural movements.*
[1] and [3]: *Interrupted flow.*
[2]: *Growth.*

1 2 3

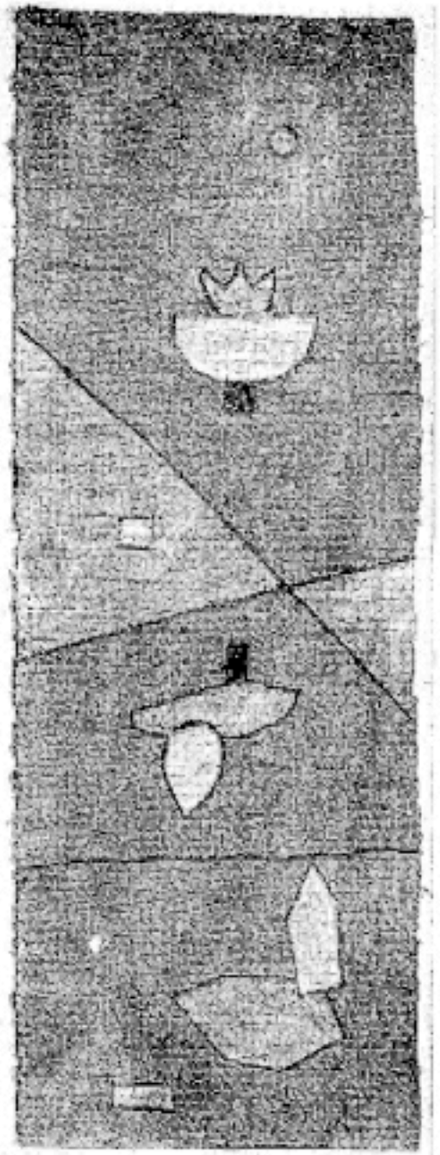
By repeating or combining channels that transmit in one direction or the other, or in both, we leave the area of the linear for the planar, whence we ultimately reach three-dimensional space.

a Repetition
b Combination: up, down, up, down



Shift towards denser two- or three-dimensionality

And now all manner of structural rhythms may once again work together, greatly enhancing variability – though managed only in this sense: No dead little cells must be strung together. The minor living functions must first be given room and shape, the tiny shelters being built around them only subsequently.
As in an apple or a snail shell.
This much as an attempt at stimulation for more vivid figuration.



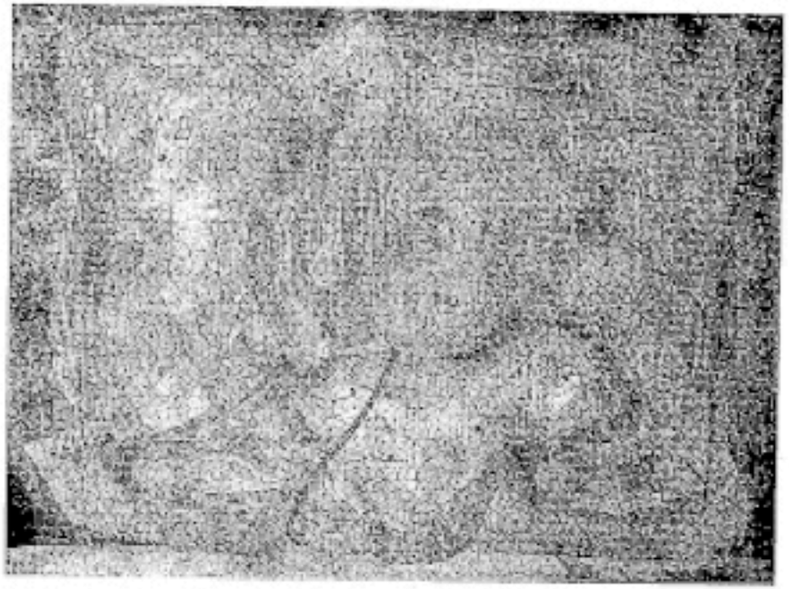
1932/v 9: *Vegetational-analytical.*
Gouache on canvas. 53·5 × 19.

For commentary, *cf* p.65.

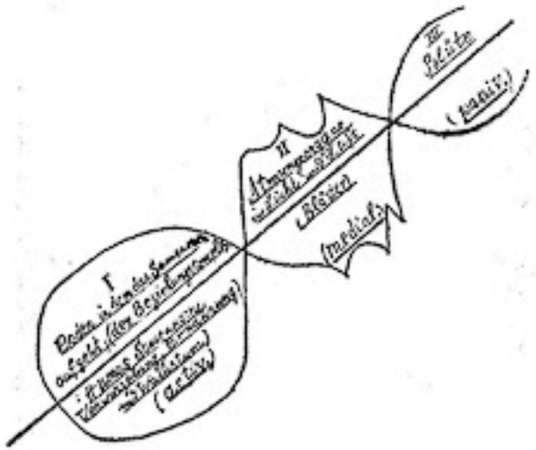
Creative power is ineffable. It remains ultimately mysterious. And every mystery affects us deeply.
We are ourselves charged with this power, down to our subtlest parts. We may not be able to utter its essence, but we can move towards its source, insofar as at all possible. In any event, it is up to us to manifest this power in its functions, just as it becomes manifest within ourselves.
In all likelihood, it is itself a form of matter, although it cannot be perceived with the same senses as the more familiar kinds of matter. Yet it is in these familiar kinds that it must reveal itself. It must function in union with matter. Permeated with matter, it must take on living, actual form. It is thence that matter derives its life, acquiring order from its minutest particles and most subordinate rhythms all the way to its higher articulations.

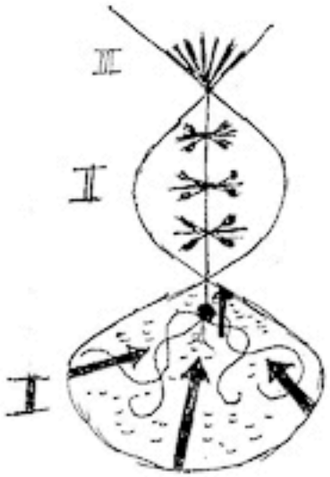
1934/u 8: *Supervegetational.*
Waxed watercolour on plaster-grounded jute.
68·5 × 80·5.

From one of Klee's notes on nature study:
'Dynamic forces are inward (esoteric), limits are outward (exoteric). Core, interior space, material rind, exterior space. Concepts: dynamic form – limitational form. Additionally, the abstract: active – linear, linear – medial.'
1934/u 8: *Supervegetational:*
Synthesis of firm and relaxed rhythms. The individual form of the core layers is firm. The structural elements are looser and more flowing than the surrounding layer.

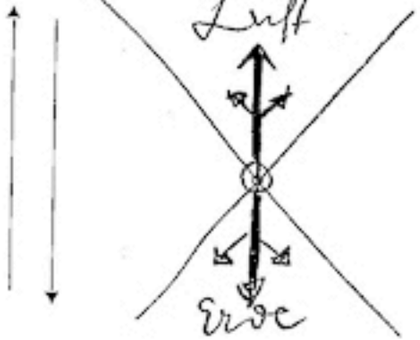
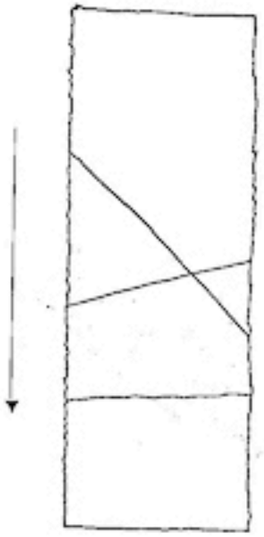


In 'Contributions to a theory of pictorial form', Volume 1, pp.343–351, the 'appropriate choice, formation and accentuation of organs is treated. The nature of real forms of movement and the organic connection between them'.
Klee demanded 'that the organic context must be plain to perceive, first through the very form of the organs, and again by the emphasis given these forms in their representation'. This is demonstrated by the example of plant forms:





'I Let the active force be the soil in which the seed opens: The complex: soil, seed, nourishment, growth, roots, which produce the form (I).
'II Rising into the light and open air the breathing organs form: one or two tiny leaves, and then more leaves and more leaves.
'III Result, the flower. The plant is full grown.'

Comments to 1932/V 6:
Vegetational-analytical, p.62.
The growth process from seed to flower, synthetically represented, conversely suggests an analytical approach, from the flowering of the plant to the inorganic and mineral realms.

In 1932/ *Vegetational-analytical*, the analytical representation uses diagonals to create four zones. (*Cf.* 'Pictorial schemata of the 1st, 2nd and 3rd laws of statics and the possibilities of compensation in upright construction', Volume 1, p.414; also 'Mutual interdependence of extension in the airspace and on the ground', pp.29 f.) The 'product' has been dissected into the stages of its current phenotypes. The phases of growth, delimited in space and time, are represented individually, in sequence (analytically). *Cf.* the paradigms for synthetic form representation: 1920/166: *Plants in the field*, Volume 2, p.42, and the example of form creation on the opposite page.
1920/205: *Sketch for realm of the plants, earth and air*. Pen-and-ink. Volume 1, p.314.
'The object grows beyond its appearance through our knowledge of its inner being, through the knowledge that the thing is more than its outward aspect suggests. . . The sum of such experience enables the "I" to draw inferences about the inner object from the optical exterior and, what is more, intuitive inferences. The optical-physical phenomenon produces feelings which can transform outward impression into functional penetration more or less elaborately, according to their direction. But there are other ways of looking into the object which go still farther, which lead to a humanisation of the object and create, between the "I" and the object, a resonance surpassing all optical foundations.'
For the full text, *cf.* 'Ways of Nature Study', Volume 1, p.83.