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METHODOLOGICAL ASPECTS OF ILLUSTRATING THE COGNITIVE–REFLECTIVE FUNCTION OF AESTHETIC COMMUNICATION

Employing a Structure-Formation Technique with Readers of (Positive) Literary Utopias *

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We discuss the usefulness of the (Heidelberg) Structure-Formation Technique (SFT) for illustrating the cognitive–reflective function of aesthetic communication. Therefore we analyse modifications in readers' knowledge systems caused by the reception and processing of (positive) literary utopias. By taking structural as well as content specific aspects into consideration we outline the qualification and the limitation of the SFT in the realm of aesthetic communication.

1. Aesthetic reactions and their illustration

In an empirical science of literature, there are three 'basic functions of aesthetic communication' (cf. Schmidt (1980: 120ff.)):

'– a cognitive–reflective function,
– a moral–social function, and
– a hedonistic–personal function.'

This trias largely corresponds to the one commonly used in psychology to distinguish the following dimensions: cognitive, conative (behaviour involving actions) and emotional (cf. its application to aesthetics: Groeben and Vorderer (1986)). The hedonistic–personal function is least amenable to being empirically tested as it particularly stresses the emotional dimensions of aesthetic reactions. These, as such, represent, in terms of time, relatively ephemeral phenomena on the one hand, and, on the other, they can be relatively easily destroyed or at least distorted through the process of data collecting. The

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moral–social function manifests itself most clearly in the change (or confirmation) of (behavioural) norms etc. (cf. Schmidt (1980: 122)). Thus, one can illustrate it most lucidly by referring to overt behaviour or actions. At the same time, conative reactions to aesthetic objects naturally represent the most far-reaching effects which can result from the reception and/or processing of aesthetic works. There has been considerable controversy on the occurrence of such reactions (cf. for example the hypothesis on the social inefficacy of 20th century art; Fügen (1970), Kesting (1965)). An essential precondition of aesthetic objects eventually leading to a change in the behaviour of the recipient on a long term basis inevitably lies in the cognitive–reflective function. There will not be any influence (of the aesthetic objects and/or communication) on the reader's behaviour without change in the knowledge and/or reflection system of the reader.

With regard to the relation between the cognitive–reflective and the moral–social function, the former can be designated as an essential precondition of the latter. Concerning the relation between the cognitive–reflective and the hedonistic–personal function, the direction (and/or evaluation) of these functions becomes relevant. Thus, for example, criticism of ideology in so-called trivial literature starts out from the assumption of the separation of these two functions. Trivial literature has an ideological effect (a stabilizing effect in terms of ideology) because a positive personal–hedonistic reaction involves 'cognitive inefficacy' (cf. Dahrendorf (1973), Nusser (1973)). Cognitive inefficacy means that such literature confirms the reader's ideological conceptions, opinions and attitudes etc. Thus, there is no change in the reader's reflection system. From here on, the polar integration (see below) of such concepts as enjoyment and cognition, that is, a positive hedonistic as well as a constructive, cognitive reaction to aesthetic objects, can be explained as a positive idea to be aimed at in constructive aesthetic communication. A cognitive–reflective function in the sense of a constructive change in the reader's mind (overcoming ideology as well as possible) is thus, in relation to the hedonistic–personal function, a precondition for the positive evaluation of this function (and/or functions). Along these lines, the cognitive–reflective function represents the theoretical and empirical core of the trias explained above, which must be taken into consideration when aesthetic reactions are being empirically tested. Thus, in the following discussion on methodological aspects, we will concentrate on this central area.

When the cognitive–reflective function of aesthetic communication is explained in the sense which can only be briefly outlined here, then there is a certain ideal model of the recipient and of the assimilation of the aesthetic object, for example literary texts, bound up with it at the same time. It is the model of a recipient who, while assimilating aesthetic objects, does not function passively–receptively but rather actively takes part in 'forming' just this object (for example, a literary text) and its meaning, a 'recipient' who

'completes' it cognitively and constructively, etc. (cf. the discussion on the new aesthetics, especially on the Reception aesthetics: Iser (1975, 1972, 1976), Jauss (1972), summarized by Eco (1973), Groeben (1980)). Thus she/he is a 'recipient' who uses the models of the world of aesthetic works actively, constructively, consciously, deliberately and with self-determination to broaden, to improve and to change his world experience, especially in the dimension of his (cognitive) world- and self-view. Empirical aesthetics, which, reconstructs as one function of aesthetic objects their contribution to the development of such a qualified 'recipient' and assimilator of aesthetic works, can only tackle this very cognitive–reflective function with procedures which correspond to or at least approach the characteristics of the competent 'recipient' briefly described above. The procedures should not obstruct or even exclude the characteristics. Previous methods used for testing in empirical aesthetics, for the most part, do not meet this requirement, especially in the realm of the cognitive–reflective function. This particularly applies to the classicists in the field of empirical aesthetics such as Eysenck and Berlyne. The procedures previously employed in empirical aesthetics come mostly from the canon of methods of a psychology or rather epoch in psychology characterized by behaviourism, especially when the theory of aesthetics itself, as it is in the case of Eysenck and Berlyne, is oriented toward establishing a biological foundation. For a long time in the theory of methods it had not been made clear that there are assumptions on the character of subjects implicitly contained in the methods used to examine these subjects. However, recently there has been a growing awareness of the problem that there are implications concerning the model of man in the choice of testing methods (cf. Gigerenzer (1980), Groeben (1986)).

Against the background of the awareness of this problem, a criticism of these classical procedures, especially regarding the objectives of activity, awareness, self-determination, etc. of the subjects, could be developed by comparing the above mentioned objectives of the competent reader with the model characteristics likewise arrived at through the classical testing procedures (of experimental aesthetics). It is neither the place nor the time to do a thorough presentation of this here. We would like to generally point out that (according to Gigerenzer (1981: 92ff.)), these classical methods start out with a stimulus-centred so-called bidimensional) approach to measuring, which, so to speak, employs the subject as an instrument of measurement. That, however, neglects the model-construction competency of man, that is one's ability to construct models of the world by oneself through reflection/cognition. Gigerenzer comes to the conclusion that for human beings as objects of research, there is a three-dimensional approach to measuring which is to be followed and which grants the subject the competency to determine the stimuli and their characteristics himself (as demonstrated below with the aid of the Heidelberg Structure-Formation Technique). In the following study, we will

concentrate on these constructive consequences, from which one, making the appropriate demands on classical–behaviouristic measuring procedures, can derive a criticism of the latter.

Along these lines, we have set up the following requirements for a testing procedure which can be adequately employed to illustrate cognitive reactions:

- The procedures must be based on the assumption of the (cognitive) activity and constructivity of the reader with regard to the contents as well as to the structures of the conceptions. This implies that it, above all, must be able to illustrate modifications in the knowledge system most sensitively (on the content side as well as on the structural side).
- It must proceed from the assumption that changes in the reader's cognition system occur with his awareness, which also means that it should enable the reader to perceive them. This implies that the experimental situation should be as transparent as possible (in contrast to the structure of behaviouristic experiments). It also must be possible for the reader to establish the connection between the changes in his knowledge system and the aesthetic object.
- It must grant the reader's self-determination (which he himself is conscious of) free rein. This means that the reader should be able to determine his individual results, in the content as well as in the structural dimension, as much as possible. Thus, those procedures (at least in their tendency) are to be rejected, when the respective results of each individual are produced only by means of more or less complicated mathematical, statistical calculations by the researcher. In such a procedure the subject has neither the right to determine these results with the researcher nor does he have the information. In contrast to this, procedures in which the awareness and self-determination of the subject are taken into consideration, the individual results are decisively influenced by him as well.

2. The Heidelberg Structure-Formation Technique as a method of illustrating cognitive structures

The Heidelberg Structure-Formation Technique (SFT: Scheele and Groeben (1984)) is a method which is decidedly based on a model of man as a reflective subject (as was mentioned above). In the case of the SFT, this model of man is realized in the so-called intuitive psychologists (the 'man in the street'), who is understood analogously to the scientist (after Kelly's model: 'man the scientist'). According to this (pre-)understanding of the model, the average man, just like the scientist, tries to anticipate (prognosticate), to explain and, if necessary, to change events, developments, etc. in the world. Since these are the central functions of theories, the 'epistemological model of man' (Groeben and Scheele (1977), Scheele and Groeben (1984: 2ff.)) is based on the

assumption that conceptions and/or knowledge systems of the ordinary person are to be reconstructed as so-called subjective theories. The SFT was designed as a method to reconstruct such medium-ranged subjective theories. The latter means such systems of knowledge whose structure can be explicated parallel to scientific theories and whose realm of problems (with regard to the contents) is concerned with phenomena on an intermediate level of abstraction (thus, for example, neither individual, concrete situations, nor the most general, extensive concepts). Examples of such medium-ranged subjective theories (see below) which have already been investigated with the aid of the SFT are irony, trust, therapy, etc. The aforementioned target characteristics of a testing procedure geared toward the cognitive constructivity and self-determination of the human subject are attained by the SFT's having been explicitly developed as a method to achieve the theoretical criterion of truth through dialogue consensus (according to Habermas (1968)). That means that the participant in the experiment, like a partner, receives complete information about all the steps which lead to the illustration of his knowledge structure. At the end of the reconstruction process, there is an agreement (dialogue consensus) on the adequately reconstructed subjective theory between the researcher and his 'partner' in the study. The subject's vote has more weight than that of the researcher.

The methodological steps taken to achieve this theoretical criterion of truth through dialogue consensus are, in somewhat condensed form, as follows (cf. the more detailed discussion in Scheele and Groeben (1984: 6ff.)): the structural aspect and the content aspect are recorded separately. First, to collect data on the contents, an interview is conducted using specific categories of questions (an example of the concept 'irony' can be found in Groeben and Scheele (1984: 10ff.). To illustrate the structure, there is a system of rules (see below), which is handed out to the participant after the interview so that he can prove to be as competent as the researcher. The most important cognitive concepts are taken from the interview (and written on cards). First, the researcher and then the participant form a pattern corresponding to the structure of the participant's knowledge system. On the basis of these two drafts, the researcher and the participant have a final discussion during which they try to agree on an adequate illustration of the participant's subjective theory.

That the above mentioned methodological requirements are met by means of the procedure briefly described is, we hope, sufficiently clear. The principle of illustrating knowledge structures (also in a literal sense) is described by Ballstaedt and Mandl (1985: 28) as a 'pragmatic aid for externalizing knowledge'. This aid, used by the participant to determine (according to the requirements mentioned above) for the most part, at least decisively, the outcome of the illustration, consists of the following system of rules, which is given here in condensed form (cf. Scheele and Groeben (1984: 102ff.)):

B.1. Defining relations, determining the meaning of a concept in relation to other concepts: short narrow cards.

1.1. Means: According to definition the concept is equivalent to '...'. To be used particularly to clarify a technical term in comprehensible words (see figure 1).

1.2. Means: Subcategories of a term which is according to these categories, the generic term (see figure 2).

1.3. Placing concepts (cards) next to each other in a horizontal arrangement. Means: 'And'-relation.

1.4. Placing concepts (cards) in a vertical arrangement.
Means: 'Or'-relation; of which there are two possibilities:
(a) 'or' in the sense of 'or as well as',
(b) 'or' the sense of 'either or'.

1.5. Means: Manifestation of the respective concept; these are, in particular, objects, events, phenomena, etc. which can be considered as examples of the respective concept in reality (see figure 3).

1.6. Means: Indicator of those objects, events, phenomena, etc. which are meant by the respective concept; it indicates (like a symptom indicates a disease) the respective object, without being identical to it (see figure 4).

1.7. Means: Intention of an action = aim, purpose for which an action is carried out (not the effect, which might occur or not, but that which the action necessarily strives for, without which one could not talk about a/this particular action) (see figure 5).

1.8. Means: Presuppositions, which are claimed to be necessary for the description of an action and/or which a person necessarily implies with his/her action (i.e. not conditions upon which the occurrence of an action/event is contingent but those which are taken for granted) (see figure 6).

1.1–1.8. Remark concerning the method of the structure-game: All the defining relations described may occur in the definition of one single concept but they do not have to. Only those cards should be used which illustrate the relations discussed during the interview.

B.2. Explanatory relations between concepts, i.e. relations which model empirical dependencies: long, narrow cards. (Instead of the red quadratic cards there are the variables A, B, C,... used in the following explications.)

2.1. Means: A causes B, i.e. B is dependent on A and the direction is positive (the higher A, the higher B and vice versa). 'Causes' does not only mean that A occurs before B but also that A gives rise to B (see figure 7).

2.2. Means: A causes B, i.e. B is dependent on A and the direction is negative (see figure 8).

Fig. 1.

Fig. 2.

Fig. 3.

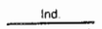

Fig. 4.

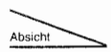

Fig. 5.

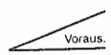

Fig. 6.

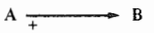

Fig. 7.

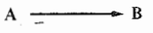

Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.

Fig. 13.

Fig. 14.

Fig. 15.

Fig. 16.

Fig. 17.

Fig. 18.

2.3. Means: Interdependency of A and B and the direction is positive, i.e. the simplest example of an ascending spirale (see figure 9).
2.4. Means: Interdependency of A and B and the direction is negative, i.e. the simplest example of a vicious circle (see figure 10).
2.5. Means: Curvilinear dependency of B with respect to A. For an ascending A the direction is positive but becomes negative after having reached a maximum. I.e.: with an increasing intensity of A, B will rise until it reaches its maximum at a medium ascent of A and then decline with an ever increasing A (see figure 11).
2.6. Means: Curvilinear dependency of B with respect to A. The direction is negative when A starts to increase and turns positive after having reached a minimum (at a medium ascent of A) (see figure 12).
2.7. Means: There is a dependency of B with respect to A but only when condition C is given simultaneously (i.e. the dependency of B on A increases when C is given); the direction of the dependency is positive (see figure 13).
2.8. Means: There is a dependency of B with respect to A but only when condition C is given simultaneously (i.e. the dependency of B on A increases when C is given); the direction of the dependency is negative (see figure 14).
2.9. Means: There is a dependency of B with respect to A but only when condition C is not given simultaneously (i.e. the dependency of B on A increases when C is not given); the direction of the dependency is positive (see figure 15).
2.10. Means: There is a dependency of B with respect to A but only when condition C is not given simultaneously (i.e. the dependency of B on A increases when C is not given); the direction of the dependency is negative (see figure 16).
2.11. Means: Interaction = the effect of A on C is positive or negative, according to the specificity of condition B. It is positive when B is low (B −) and negative when B is high (B +) (see figure 17).
2.12. Means: Interaction = the effect of A on C is positive or negative, according to the specificity of condition B. It is positive when B is high (B +) and negative when B is low (B −) (see figure 18).

2.1–2.12. Remark concerning the method: All the relations described may occur in the description of a specific concept's explanatory structure but they do not have to. Only those cards should be used which illustrate the relations discussed during the interview.

With this system of rules, very different subjective theories have already been investigated in the form of the dialogue–hermeneutic method (see above). According to the definition of subjective theories, this is concerned with the contents and systems of knowledge which the reflective subject has constructed during the course of his cognitive development (and, with that, his life). The starting point looks somewhat different when it concerns cognitive contents that have come about as the result of the reception and processing of given texts. In this case, conducting an interview seems superfluous as the contents are, to a large extent, given by the texts. Similarly, it is possible to omit also the phase of the agreement on the reconstruction of the structure, and the participant can be permitted to lay his structure by himself, which is then established as an adequate recording of the knowledge structure. We call this procedure the 'monological application' of the SFT (as it does not imply a dialogue between the participant and the scientist). The possibility and use of this monological application of the SFT to diagnose learning progress during the processing of informative texts were demonstrated by Ballstaedt and Mandl (1985) in two studies. In the following study, we will try to find out whether such a monological application of the SFT is possible and useful with regard to the cognitive–reflective function during the processing of literary texts as examples of aesthetic objects.

3. Example employed: illustrating the construction / modification of cognitive structures through the reception / assimilation of literary utopias

As literary texts which are best suited to evoking the cognitive–reflective functions (of expansion, change, etc. of the individual knowledge system), we selected positive literary utopias. The methodological question is whether or not the SFT (in its monological application) is able to record (and illustrate) the modifications in the knowledge systems of the readers caused by the reception and processing of these literary texts. We tried to answer this question by setting up our investigation in the following way: the literary texts comprised the material dealt with in a course on the model of man in psychology in the future held during the winter semester 1985/1986 at the University of Heidelberg. Thus, the model of man in future (in reality and psychology) was fixed upon as the object of knowledge structure. It was the task of the participants to illustrate, at certain points of time, their personal utopian model of man with the aid of the SFT system of rules. The points of time were before as well as after the (interpretive) discussion of the individual literary texts and/or text categories in the seminar mentioned above. In this manner, the investigation was to test whether the SFT was able to illustrate the changes in the individual knowledge structures in dependence on the literature utopias which were read and interpreted. As the development of each individual knowledge system of the participants is tested in dependency on treatments that follow one another in time, one can call this structure of the investigation 'experimental casuisty' (cf. Dörner et al. (1983), Ballstaedt

and Mandl (1985: 22)). The sequence of the observations and the sequence of literary texts were, in our case, as follows:

t1: Utopian model of man: structure 1 ('preliterary' utopian model of man)
Text 1: B.F. Skinner, *Futurum Zwei (Walden Two)* (1972), Rowohlt,
t2: structure 2
Text 2: A. Huxley, *Eiland (Island)* (1984), Piper.
t3: structure 3
Text 3: (A. Camus, *Der Fremde (The Outsider)* (1969) Rowohlt.) M. Tournier, *Freitag oder Im Schoss des Pazifik* (1982), Fischer.
t4: structure 4
Text(s) 4: U.K. Le Guin, *Planet der Habenichtse (The Dispossessed)* (1976) Heyne; J. Thompson, *Wunschweltende (Conscience Place)* (1984) Rowohlt.
t5: structure 5

Five participants in the above mentioned seminar agreed to lay structures throughout the winter semester 1985/1986. In order to show the results, we have included the first and fifth structures of one of the subjects (no. 1) in the appendix. The quantitative initial data are shown in table A1 in the appendix.

As can be seen from this table, we have collected and evaluated the following parameters in order to illustrate the knowledge structures of the subjects:

- The number of concepts. This involves the counting of the concept cards marked by the participants and placed in the corresponding structures. All language items whose edges were marked by the subject were counted as concepts, regardless of how many points (for example, also sub-points) were included. A special kind of such concept card is given by the representation of the so-called 'polar integration' of personality traits, as these occur particularly often in the structures of subject no. 1 (see the appendix). This description of 'polar integration' (see below) was introduced in the discussion on the SFT following the corresponding symbolization in Groeben and Scheele (1984).
- The number of defining relations. Those are relations B1.1. to 1.8. of the SFT. Here the corresponding relation cards employed per structure by the subjects were counted (however, so that inter-personal differences in the manifestation of that which was intended were made uniform). For example, some participants laid only one 'indicator card' for a (subjective, theoretical) concept for several indicators; others used a corresponding card for every indicator. Here, the second procedure was assumed to apply uniformly to all participants.

- The number of the simple empirical relations. Those are relations B.2.1. to 2.6. We took over this differentiation between simpler and more complex relations from Ballstaedt and Mandl (1985), in whose study it proved very useful.
- Mediated empirical relations. These concern relations B.2.7 to 2.12.
- The number of polarly integrated personality traits. This concept refers to a reconstruction of complex utopian constructs by Groeben (1981). Based on the research on creativity, two each other empirically contradicting traits (empirically negative relation) are claimed to be polarly integrated if they could be transferred into a positive relation (in one construct). The integration of (psychopathological) fears and, at the same time, a high degree of ego-strength in the personality of creative writers (according to Barron (1967)) serve as a paradigmatic example of this (cf. Groeben (1981: 109f.)). In accordance with the topic of the seminar, this concept of polarly integrated traits was introduced as a potentially central constructive means of interpreting positive literary utopias.
- The number of not-polarly integrated traits: this means all traits which can be set up as 'traits' of a human subject within the framework of a so-called dispositional explanation in psychology (cf. Groeben and Westmeyer (1981: 91ff.)). Among these are, above all, abilities, attitudes, (such as hopes, desires, values, etc.), behavioural competence and structures, as well as 'structural' emotions and/or emotional tendencies; not included among these are situational conditions, single events, single actions, current states (especially of an emotional nature), current reflections as well as the effects (of actions or dispositions) of the actor himself or of others.
- Methodological inexactness and/or errors. This concerns those aspects in the structures, in which the rules of the SFT were used incorrectly or unclearly. An ambiguous use occurred, for example, when concept cards were marked next to one another in such a manner that one could not decide whether to count them as belonging to a row of indicators or to the (subjective) theoretical concept. A relatively obvious mistake occurred when, for example, mediated empirical relations were illustrated with only two cards (concepts) having been used (instead of the three given in the definition).

Referring to these aspects of measurement of the structures selected for the purpose of demonstration, we can make an inferential statistic interpretation of the data matrix which allows us to estimate the usefulness of the SFT for this thematic area of aesthetic (cognitive) reactions. However, in no way are we striving for completeness, but rather we would like to present a few illustrations of the SFT's usefulness in the following discussion. We would like to concentrate on, in keeping with the general question and the investigation's structure already outlined, the influence of literary texts, that is, on testing the differences of the data distribution in dependency on the observations.

Table 1
Number of concepts.

	Observations					Total
	t1	t2	t3	t4	t5	
Subjects						
Subject 1	12	12	14	37	45	120
Subject 2	6	13	31	34	94	178
Subject 3	44	41	48	61	66	260
Subject 4	12	25	41	45	150	273
Subject 5	11	48	45	74	99	277
Total	85	139	179	251	454	

Since the number of subjects is very small and the single frequencies per subject and observation are often between 0 and 5, one cannot start out from the assumption of a normal distribution. Thus, we applied non-parametric procedures as test statistics (cf. Lienert (1973)). For these, there are two procedures applicable. If the number of frequencies is added for all the subjects, the chi-square test may be employed. If one wants to proceed from the data of the individual subject, the two-way analysis of variance by ranks according to Friedman (Lienert (1973: 345ff.)) is the most suitable method of evaluation. The structure of this ANOVA by ranks can be demonstrated with regard to the first dimension of measurement (number of concepts): 'The Friedman-test serves (...) as a means of non-parametric evaluation of one-factor-block designs (...) in which N persons are subjected to K levels of a factor (for example K different treatments)' (translation of Lienert (1973: 345)). The 'K different treatments' are, in our case the five different observations which represent the influence of four different texts (and/or text combinations) concerning literary utopias. If one arranges the persons (in our case five) as lines and the (likewise five) treatments as columns, it results in the matrix of observations table 1.

Under the condition of a Normal Distribution, such a data matrix would be evaluated by means of an ANOVA. In the non-parametric case, one must 'transform the values of each line into ranked values ranging from 1 to K (...) and see whether the sum of the column of these ranked values turns out to be very similar or very different'. (translation of Lienert (1973: 346)). If it turns out to be very different, that speaks for a systematic influence of the treatments, in our case of the observations and, thus, of the literary texts and their assimilation, which manifest themselves in these results. The corresponding matrix (see table 2) hence shows the transformation of the absolute frequencies into a ranking list of frequencies for each subject.

As test statistic we compute the value of the $\chi(r)$ square for small K and N (according to Lienert (1973: 347)). For the data (of table 2) $\chi^2(r) = 18.28$,

Table 2
Number of concepts: transformation into ranked values.

	Observations					Total
	t1	t2	t3	t4	t5	
Subjects						
Subject 1	1.5	1.5	3	4	5	15
Subject 2	1	2	3	4	5	15
Subject 3	2	1	3	4	5	15
Subject 4	1	2	3	4	5	15
Subject 5	1	3	2	4	5	15
Total	6.5	9.5	14	20	25	(75)

when $df = 4$ and the hypothesis is tested one-tailed. As probability for the insignificance of the given distribution: $p < 0.0025$.

Hence the number of concepts within the subjects' structures increases very significantly with the repeated observations.

The corresponding analysis of variance by ranks for the number of defining relations computes $\chi^2(r) = 17.29$, when $df = 4$, $p < 0.0025$; thus, there is also a highly significant increase throughout the observations.

Not all that clear is the pattern for the empirical relations. With regard to the simple empirical relations, we obtain the matrix of ranked data as shown in table 3: $\chi^2(r) = 9.92$, when $df = 4$, $p < 0.025$. As the rank totals show, there is no steady increase between t2, t3 and t4 with regard to the ranks. Although the whole distribution shows a systematic increase according to its empirical relations (with $p = 0.025$) it may be assumed that this systematic increase is due particularly to the difference between t1 and t5 on the one and t2 through t4 on the other hand. This assumption can be examined by adding the absolute frequencies of all subjects at each observation and comparing the

Table 3
Simple empirical relations: ranked values.

	Observations					Total
	t1	t2	t3	t4	t5	
Subjects						
Subject 1	2	2	2	4.5	4.5	15
Subject 2	1	3.5	3.5	2	5	15
Subject 3	3	1	5	3	3	15
Subject 4	1	3	4	2	5	15
Subject 5	1	2	3	4	5	15
Total	8	11.5	17.5	15.5	22.5	(75)

Table 4
Simple empirical relations: chi square.

Observations	Observed number	Expected number	Difference
t1	16	40.6	−24.6
t2	31	40.6	−9.6
t3	41	40.6	−0.4
t4	43	40.6	2.4
t5	72	40.6	31.4
Total	203	203	

empirical distribution to theoretically expected Uniform Distribution. This may be performed with the classic chi-square test (according to Sachs (1972: 252f.)). The corresponding matrix of data is given in table 4. For the whole table $\chi^2 = 41.6$ (when $df = 4$, $p < 0.00025$). Also a so-called partition of chi square is possible by testing t1 and t5 on the one hand and t2 through t4 on the other hand separately. Then, for t1 and t5, $\chi^2 = 39.19$ (when $df = 1$, $p < 0.30$). Hence there is no significant ascertainable increase in simple empirical relations in the subjects' structure ascertainable between t2 and t4.

Parallel to that, partly even a little bit clearer is the pattern for the mediated empirical relations. According to the ANOVA by ranks $\chi^2(r) = 8.44$ (when $df = 4$, $p < 0.05$), i.e. significant at the 0.05 level. The chi-square value for the test against Uniform Distribution is highly significant (26.66; $df = 4$, $p < 0.00025$), also the chi-square value for t1 and t5 (25.83, $df = 1$, $p < 0.00025$), though the value for t2 through t4 is unambiguously insignificant (0.83; $df = 2$, $p < 0.70$). In the simple as well as in the mediated empirical relations, there is a systematic increase throughout the observations, which can be traced back

Table 5
Methodological inexactness/errors: absolute frequencies.

	Observations					Total
	t1	t2	t3	t4	t5	
Subjects						
Subject 1	0	0	0	2	2	4
Subject 2	0	0	0	1	6	7
Subject 3	2	5	5	6	6	24
Subject 4	1	3	1	8	69	82
Subject 5	4	1	3	4	6	18
Total	7	9	9	21	89	
Number of concepts	85	139	179	251	454	

to, above all, the differences between t1 and the plateau from t2 to t4, as well as between this plateau and observation t5. On the plateau (t2 to t4) itself, there is no increase to be found, more than can be accounted for by chance, in the empirical relations of the structures.

With regard to the personality traits in the structures, the results are, on the other hand, very clear, i.e. very significant for all. With respect to the polarly integrated traits the ANOVA by ranks according to Friedman computes $\chi^2(r) = 16.16$ ($df = 4$, $p < 0.0025$); the corresponding values for the other (not-polarly integrated) traits are: 15.25; $df = 4$, $p < 0.0025$.

The distribution still appears to be somewhat different, considered from the methodological inexactness/error aspect. Since this dimension is particularly relevant for the methodological assessment of the usefulness of the SFT in the realm of aesthetics, we cite, for the sake of clarity, the initial matrix of the absolute frequencies (see table 5).

Since the relation to the absolute number of concept cards will become relevant to the chi-square analysis (partition), this number (summed up together for all subjects) has been added as the last line. The ranked data are shown in table 6. For the whole matrix $\chi^2(r) = 14.52$ ($df = 4$, $p < 0.005$). The inspection of the rank totals however clearly shows that this significance is not due to the differences between t1, t2 and t3 (since there are actually no differences: an ANOVA by ranks for these three points of measurement by itself computes $\chi^2(r) = 2.05$ (when $df = 2$, $p < 0.15$)). At this point however, the distribution of methodological errors is, in comparison to Uniform Distribution, not methodologically interesting, but in dependency on the number of concepts contained in the structures. Therefore, the corresponding chi-square analysis was conducted with regard to the relation between these two distributions of frequencies (see table 7).

For the whole table, $\chi^2 = 35.67$ (two-tailed testing, $df = 4$, $p < 0.0005$); for the partial table of the first three observations however, $\chi^2 = 2.14$ (two-tailed

Table 6
Methodological inexactness/errors: rank values.

	Observations					Total
	t1	t2	t3	t4	t5	
Subjects						
Subject 1	2	2	2	4.5	4.5	15
Subject 2	2	2	2	4	5	15
Subject 3	1	2.5	2.5	4.5	4.5	15
Subject 4	1.5	3	1.5	4	5	15
Subject 5	3.5	1	2	3.5	5	15
Total	10	10.5	10	20.5	24	(75)

Table 7
Methodological inexactness/errors in relation to number of concepts.

Observations	Number of concepts	Number of errors	Total
t1	85	7	92
t2	139	9	148
t3	179	9	188
t4	251	21	272
t5	454	89	543
Total	1108	135	1243

testing, $df = 2$, $p < 0.20$). For the first three observations there is no significant relation between the increase in the concepts and the distribution of methodological inexactness/errors. The relation exists, however, for the distribution of observations t4 and t5. Since, from the perspective of the methodological inexactness/errors, no increase in errors represents the methodological aim, these results are to be interpreted in the following manner: the procedure upon which these results are based creates no problems with structures having an average number of about 36 concepts per structure (see table A1 : t3). However, from an average number of concepts of 50 upwards (see table A1 : t4), methodological inexactness/errors clearly increase more than can be accounted for by chance. During the overall interpretation and evaluation of the SFT (below) we will come back to this point.

With that, we would like to complete the evaluation of rather formal aspects of the structures presented. We would like to emphasize once again that, by no means, have all possible aspects of analysis been outlined. So, for example, it is possible to change the lines with the columns in table 1 to investigate differences between the participants, which (as table A1 in the appendix shows) are clearly present (cf. Lienert (1973: 349)). Since the evaluation of the methodological usefulness of the SFT is of primary interest here, we do not want to pursue this aspect of the analysis any further. For investigations in which a hypothesis is being tested and which deal with theoretical problems regarding differences among readers (and therefore more extensive data), this procedure is not only possible but even indicated.

Instead, we would like to take issue with two further aspects which could give us some clues as to an analysis which might be especially relevant in the realm of aesthetic questions, namely, one concerning the quantitative and the qualitative effectiveness of the aesthetic objects (in this case: literary texts). Thus, one could ask, from a quantitative point of view, which of the given literary texts demonstrated a greater or smaller potential to stimulate the readers' reception and processing of it. This can be investigated by means of the proportional increase in the size and in the extent to which the structures were 'structured' during the five observations. Table 8 shows the data of this

Table 8
Increase in number of concepts and relations.

Observations	t1		t2		t3		t4		t5
Number of concepts	85		139		179		251		454
Difference		54		40		72		203	
Number of relations	41		86		116		165		288
Difference		45		30		49		123	
Mean of differences		49.5		35		60.5		163	

proportional increase in the number of (content) concepts, as well as in the sum of the (defining as well as empirical) formal relations.

The table shows in each case (for the concepts as well as for the relations), the absolute frequencies (per observation, summed up together for all the subjects) and then the differences between these frequencies. The resulting four differences represent, so to speak, the (absolute) proportion of stimulation of the four literary texts (and/or text combinations), which were read and interpreted between the corresponding observations. The last line shows the mean (value) of the differences from the increase in the concepts and relations. These differences can be tested again against a theoretical Uniform Distribution (see table 9).

This shows that the texts (and/or combination of texts) discussed had varying stimulating effects ($\chi^2 = 132.3$; $df = 3$: $p < 0.0001$). The first three texts had a lower than average stimulating effect; the last text combination caused a much higher than average increase in the size and degree to which the structures were structured. It might be interesting to note that the text by Huxley, which is clearly closest to classical schoolbook psychology, even if it refers to a certain direction (namely Humanistic psychology) had the least stimulating effect. The fact that the text by Skinner developed more effectiveness on the readers just does not fit, as Skinner, with his behaviouristic orientation, represents a conception of psychology, which (at least) the students in this seminar reject. Thus, we have interpreted the first difference in

Table 9
Differences in the number of concepts and relations (between observations).

Differences between observations	Observed number	Expected number	Difference
t1–t2	49.5	77	−27.5
t2–t3	35	77	−42
t3–t4	60.5	77	−16.5
t4–t5	163	77	86
Total	308	308	

the following manner: the critical resistance was combined with the beginning activity of confronting utopian suppositions on the model of man and so formed a greater proportion of stimulation than Huxley's *Island* was able to. However, in comparison to Uniform Distribution, this proportion of stimulation is clearly less than average. Next to the Uniform Distribution value comes the (quantitative) effectiveness of the existentialistic text combination. The socio-political, anarchistic text combination clearly had a higher than average stimulating effect, which certainly can be attributed in part to the size of these two works and the problems they addressed. In order to compare the texts with the others, these texts should have been dealt with separately. However, it cannot be ruled out that especially those students who are interested in a utopian model of man in and for psychology, find socio-political topics particularly interesting.

In order to illustrate and test those questions involving content in more detail, a further investigation of the structures by content analysis can be recommended. Through such a combination as that of the SFT and content analysis, it is possible to transgress the limits of the 'experimental casuisty' in the direction of a test of general nomological hypotheses. Since this investigation presented here is only a methodological pilot study, this possibility can only be illustrated with a simple example. With regard to that, we want to concern ourselves with the question of which literary texts had the greatest influence on all of the participants' utopian model of man. We will hence limit ourselves to the last, most extensive structure, on the one hand, and to the polarly integrated traits, which are present in these structures, on the other hand. For these personality traits we will set up five categories of provenance, which, on the one hand, correspond to the aforementioned philosophical schools of ideas of the four literary texts, and/or text combinations, and which, on the other hand, also take issue with the philosophical background used by the teacher conducting the seminar to approach and interpret the literary texts. The five categories of provenance are as follows:

(I) Behaviouristic. This means personality traits, that originate in a learning theory/behaviour theory oriented conceptualization, which was represented by behaviouristic psychology for a long time after World War II, and which found its most extreme expression in Skinner's publications (not only, but also in *Walden II*).

(II) Humanistic/philosophical (Eastern philosophy). This means traits pertaining to a model of man which, on the one hand, is represented by a so-called humanistic psychology, Anglo-American in its hue; on the other hand, it shows connections to certain schools in Eastern philosophy, as they were clearly drawn by Huxley in *Island*.

(III) Existentialistic. This concerns the model of man, as it was established by the existentialistic philosophy of life (especially represented by the French school both in philosophical as well as literary form). Particularly the positive-hedonistic consequences in the manner of Tournier can be included here.

(IV) Socio-political/anarchistic. This means a model of man which has a sociological and to some extent socio-revolutionary point of departure, but which pursues this constructively (in contrast to Marxist models, for example) to the point of developing an anthropology of the individual (for which the texts by the two female authors, Le Guin and Thompson, should be paradigmatic examples).

(V) Action theory oriented/epistemological: this label conceals the model of man of a newer, anti-behaviouristic conception of psychology which perceives and 'constructs' man as a potentially rational subject capable of language, reflection, communication and action (cf. Groeben (1986)). The teacher based the interpretation of the literary texts primarily on this model of man, in which the polar integration plays a central role.

The polarly integrated personality traits in all subjects' structures (of t5) were put into these five categories of provenance. Since we (the authors of this study) are concerned here with the methodological possibilities rather than with the testing of content-specific hypotheses, we undertook this categorization based on a consensus of opinion. Because of the concept of polar integration, certain specific difficulties arise for such a classification. It may occur that one trait of the polarly integrated constructs belongs to one category and the other to a different one. In such cases, especially when the polarly integrated concept was present in the structures of several subjects, we added it alternately to the one or to the other. The list of polarly integrated personality traits taken from the last structures of the subjects has been included in the appendix (including the categorizations (I)–(V)). In order to avoid misunderstandings, we would like to emphasize that these personality traits illustrate the understanding of the construct of polar integration that the participants developed during the course of the seminar. Whether or not it corresponds to the theoretical explication by Groeben (1981) is not the question here and thus should not be assessed. At the same time, the content analysis refers only to the aspect of the provenance of the polarly integrated traits, not, for example, to a summary of particular content characteristics for all the participants together. Table 10 shows the empirical distribution into the categories of provenance: $\chi^2 = 17.87$; $df = 4$: $p < 0.005$. On the basis of this content analysis, it becomes clear that Skinner's behaviouristic utopia, as already assumed, in no way contributed to a utopia model of man for psychologists (in this seminar). That is a manifestation of the interpretation unequivocally and unanimously arrived at in the seminar, namely that Skinner intended his model of a future world as a positive literary utopia, but that (today) the text is only readable as a negative utopia.

With regard to the humanistic-philosophical school of thought, it becomes apparent (at least concerning the polarly integrated traits) that this text was, indeed, not as stimulating for the participants in the psychology seminar, as one might have spontaneously expected it to be. The reason could be relatively easily found in the fact that students of psychology who are interested in a utopian model already know the humanistic school of thought in psychology and so absorb and expand the appropriate impulses at most in a further developed form (for example, along the lines of category (V)). With regard to the existentialistic and/or socio-political/anarchistic perspectives, the data, qualitative in terms of content, show a balance between both categories of provenance (which, by the way, lies only marginally above the quantity, which one could expect under aspects of Uniform Distribution). In any case, these two perspectives were the most important conditions of stimulation in the dimension of polarly integrated personality traits for the participants in the seminar (apart from the interpretive work within the framework of an action theory oriented model of man, that is starting from the literary texts). It is not surprising that the action theory oriented model of man, in comparison to the four other categories, clearly had the greatest influence, seen against the background of the fact that the interpretation of literary texts was approached by the teacher from this perspective throughout the semester. This allows us to estimate the relevance of the interpretation as a deeper level of text processing in contrast to the reception, which remains close to the text.

From this point, even with such a small set of data as given here, there are a lot of further questions, with regard to which the given study may be analyzed: for example, it is thoroughly possible that the distribution of the categories of provenance for the polarly integrated personality traits necessarily give the action theory oriented model of man a headstart, as it also includes the concept of polar integration. Thus, it is possible to investigate whether the distribution of the not-polarly integrated traits would be just the same and/or if it were different, it would be possible to compare the distribution of the categories of provenance for the polarly and the non-polarly integrated traits.

Table 10
Polarly integrated traits: categories of provenance (in t5).

Categories of provenance	Observed number	Expected number	Difference
I	0	8.2	−8.2
II	4	8.2	−4.2
III	11	8.2	2.8
IV	11	8.2	2.8
V	15	8.2	6.8
Total	41	41	

Also the assumption could be made that the category of the action theory oriented model of man was built up little by little during the course of the seminar and as a result of the constant elaboration of the interpretation by the teacher. Thus, the corresponding distribution of the categories throughout the observations could be assessed. But we would like to leave it at the reference to these possibilities (which, likewise, could also be extended considerably further), since what only matters here is to outline the principle methodological possibilities and, with that, the productiveness of the SFT for use in the realm of empirical aesthetics. The illustrative approaches to evaluating which were presented here allow us now, in closing, to assess the methodological usefulness and productiveness.

4. Methodological assessment: the usefulness of the SFT in the realm of empirical aesthetics

For an assessment of the usefulness of the SFT in the realm of empirical aesthetics we will proceed from the assumption that, through the chosen design of the investigation, the cognitive structures of the subjects, with regard to a utopian model of man, become more extensive and differentiated, in content as well as in regard to formal structure, from observation to observation. If one assumes this precondition, the method of the SFT proves to be principally suitable to 'externalize knowledge' (Ballstaedt and Mandl (1985: 28)), also for the illustration of aesthetic reactions. It is capable of recording the quantitative growth of concepts in the cognitive structure as well as (with certain limitations, see below), the increase in the formal differentiation and structure. This illustration occurs in a way which is transparent to the subject, that is, the participant constructs the content as well as the formal structure of this illustration (in a literal sense) actively and consciously, so that she/he herself/himself, within the framework of 'experimental casuisty', is responsible for the individual outcome of the investigation. So far, the SFT is basically able to meet the target requirements explicated at the beginning of this study, for a testing procedure in the realm of empirical aesthetics (specified for the illustration of cognitive reactions).

The data resulting from our investigation also point out limits beyond which it does not appear possible to meet these requirements satisfactorily. From a discussion of these, it is possible to derive some clues as to how the conditions should have to be set up, so that the SFT would promise the greatest productive use in the realm of empirical aesthetics. The first result to be mentioned regarding this is the relatively obvious quantitative limit of the number of concepts with which the nomological use of the SFT leads to unambiguous structures and/or beyond which methodological inexactness or errors occur. In the data rate here, the boundary lies somewhere between 36

and 50 concept cards per structure. Thus, it could be stated that with an appropriate use of the SFT (within the framework of experimental casuisty for similarly complex 'objects', which a utopian model of man is), there can be at most 50 concept cards in a single structure, otherwise the task of structuring becomes too difficult for the participant. The data presented indicate a further lack of clarity with regard to the illustration of empirical relations in the mean size of the structures. One would have likewise expected, in accordance with the assumed requirements mentioned above, a (comparatively steady) increase in the extent to which they were structured, which, during this application of the SFT, could not be illustrated. We interpret these insufficient results in the following manner: The SFT was explicitly introduced as a method of testing medium ranged subjective theories (Scheele and Groeben (1984: 6f.)). The subject of a 'utopian model of man', however, might be classified as a subjective theory of greater range, so that the size of the structures, in terms of quantity, at least at the end of the analysis (of a sequence of literary texts), became to great. The limitation to certain dimensions (such as, for example, morality, language or the structures of social relations of future man) would not have demanded so much from the subjects. In addition to that, the application of the SFT undertaken here implied the problem that defining and empirical relations between the individual concepts were not clearly elaborated, neither in the literary texts, nor in the interpretive discussion in the seminar. Thus, the subjects had the multi-dimensional task and difficulty of correctly illustrating not only one structure present in their knowledge, but rather to create the structure while laying it. This could be, however, at least partially, too great a demand, even for a cognitive-constructive, reflective subject.

Thus, we derive from the results of this pilot study two central methodological consequences. On the one hand, the use of the SFT in the realm of aesthetics is to be limited to cognitive subject domains (problems, structures, etc.) of medium range, otherwise it results in methodological inexactness and errors (especially in a monological application) at a range of 40 to 50 concepts per structure. On the other hand, we must test whether such special problems eventually still require a relatively far reaching processing of literary reception. If that be the case, then the participants will eventually be confronted with demands that are too difficult. In this case, it would be more suitable to change over to the dialogue(-form) application (for which the SFT had actually been developed), because in this variant, a more intensive communicative transparency of the rules for the SFT can be attained through the reconstruction efforts of the researcher. If one takes these two methodological consequences into consideration, there is a useful and productive procedure to be found in the Heidelberg Structure-Formation Technique which can be used to illustrate cognitive reactions in the realm of empirical aesthetics.

The pilot study presented here, moreover, makes it clear that and how one can employ the SFT to analyse individual cases as well as to test nomological

hypotheses. For questions going beyond the individual reader, we suggest the combination with the content analysis (as some by Scheele and Groeben (1984: 46), a suggestion already taken up by Ballstaedt and Mandl (1985), for use in the area of learning). Elaborations by means of content analysis naturally imply that it goes beyond the individual subject and his structures. This, however, does not contradict the requirement of the greatest possible degree of self-determination for the reader, as this (see above, 1) was applied all along the way up to the final individual results. The analysis of the data in the direction of nomological perspectives, however, implies an integration of information from several individuals, that is information which the individual does not possess during his participation in the investigation and to which the requirement of self-determination, thus, cannot be extended. If one combines the results of content analysis, given through the cognitive structures recorded by means of the SFT in this manner, then one has in the SFT a procedure which is able to achieve the polar integration of the contrary approaches present up till now in empirical experimental methodology, especially the integration of ideographic and nomothetic perspectives, as well as those of qualitative and quantitative analysis models. Naturally, we hope that this very ability of integration represents a fruitful potential for the realm of empirical aesthetics.

Appendix

List of Polarly Integrated Personality Traits

Subject 1
bedrohende-/zärtliche Einsamkeit (III)
Einsamkeit/Geborgenheit in Interaktion (III)
kognitive Schärfe/kognitive Zärtlichkeit (V)
präsemiotische Wahrnehmung/Bedeutungskreativität (II)
Bedeutung schaffen/Ästhetik (III)
Ästhetik/Moral (V)
Ästhetik/Arbeit (IV)
Ästhetik/Sexualität (III)
Kognition/Emotion (V)
Psyche/Soma (II)
Leiden (an der Welt)/Hoffnung (auf Utopie) (IV)
Lebensbejahung/Bewußtsein in bezug auf den Tod (IV)

Subject 2
kognitive Schärfe/kognitive Zärtlichkeit (V)
Emotion/Kognition (V)
Moral/Hedonismus (V)
nicht-egozentrische Interaktion/Wahrnehmung eigener Bedürfnisse (IV)

Ästhetik/Vitalität (III)
Körper/Bedeutung (III)
präsemiotische Wahrnehmung/Bedeutung schaffen (III)

Subject 3
kognitive Schärfe/kognitive Zärtlichkeit (V)
Kognition/Emotion (V)
Ästhetik/Sexualität (III)

Subject 4
Sprache/Handeln, Verhalten (IV)
Psyche/Physis (II)
Vitalität/Bedeutung (III)
formelle-/informelle Normen (IV)
weibliche-/männliche Normen (IV)
Ästhetik/Moral (V)
Wahrnehmung eigener Bedürfnisse/Message für alle (V)
Privatsprache/Faszination (V)
Leiden an der Welt/Begeisterung (V)
kognitive Schärfe/kognitive Zärtlichkeit (V)
Denken/Argumentieren (IV)
Moral/Hedonismus (V)
Moral/Wissenschaft (IV)
Ästhetik/Bedeutung (III)

Subject 5
Privatheit/utopische Beziehungen (IV)
(utopische Beziehung): terra inkognita/Vertrautheit (III)
integre Gerechtigkeit (Argumentation) für und gegen andere/-für und gegen sich (IV)
präsemiotische Wahrnehmung/Bedeutung schaffen (II)
sachlich-kognitiver-/emotional-konstruktiver Sprachgebrauch (IV)
Leiden, Verzweiflung an der Welt/Begeisterungsfähigkeit (V)

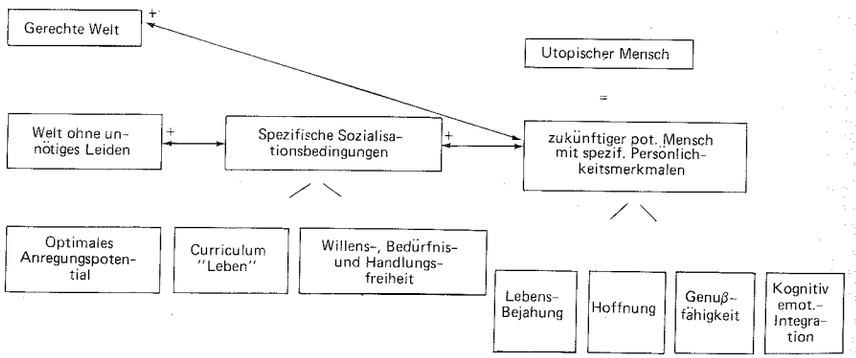

Fig. A2. Pattern of knowledge structure (subject 1, t1).

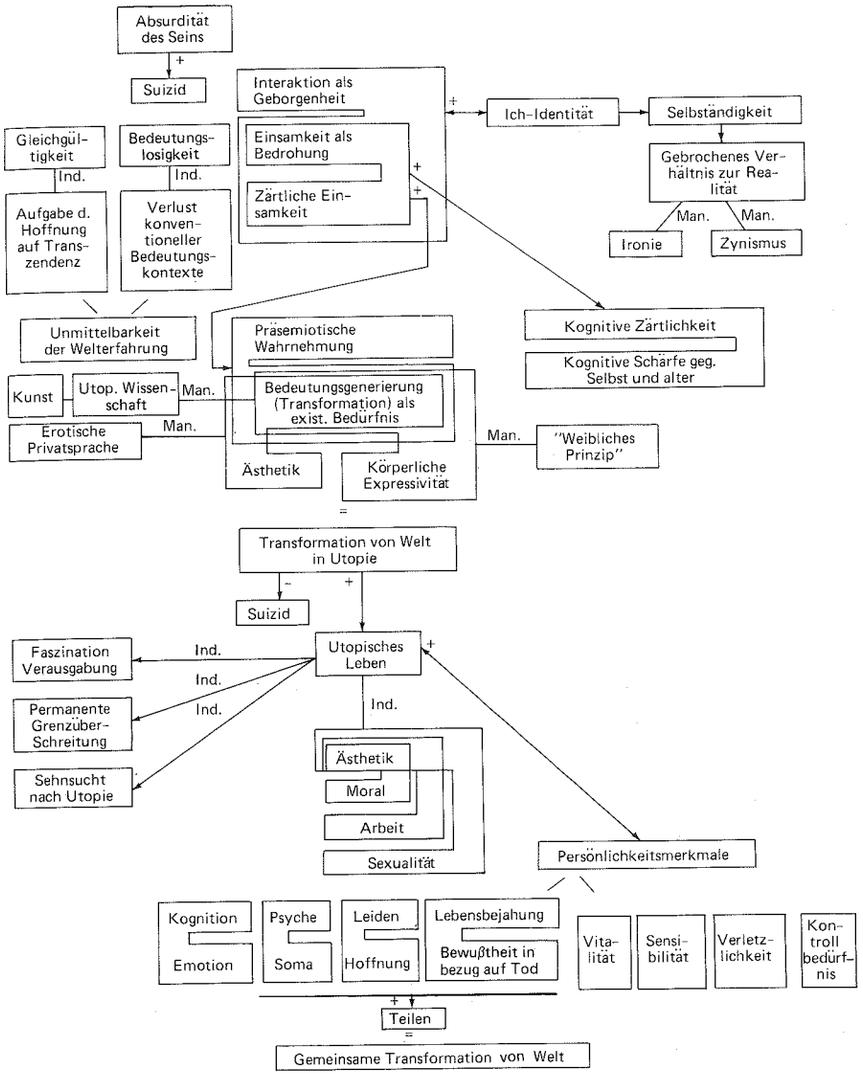

Fig. A1. Pattern of knowledge structure (subject 1, t5).

Table A1
Initial data.

Observations	t1						t2						t3					
Subjects	1	2	3	4	5	$\bar{x}$	1	2	3	4	5	$\bar{x}$	1	2	3	4	5	$\bar{x}$
Number of concepts	12	6	44	12	11	17.0	12	13	41	25	48	27.8	14	31	48	41	45	35.8
Number of defining relations	4	3	7	5	4	4.6	4	3	12	7	20	9.2	4	12	15	11	23	13
Number of simple empirical relations	3	0	13	0	0	3.2	3	5	10	6	7	6.2	3	5	18	7	8	8.2
Number of mediated empirical relations	0	0	2	0	0	0.4	0	0	5	1	3	1.8	0	2	4	3	1	2.0
Number of polarly integrated traits	0	1	1	0	1	0.6	4	1	0	1	1	1.4	6	3	1	1	0	2.2
Number of not integrated traits	4	2	27	8	3	8.8	0	5	29	15	18	13.4	0	12	36	24	13	17.0
Number of methodological errors	0	0	2	1	4	1.4	0	0	5	3	1	1.8	0	0	5	1	3	1.8

Observations	t4						t5					
Subjects	1	2	3	4	5	$\bar{x}$	1	2	3	4	5	$\bar{x}$
Number of concepts	37	34	61	45	74	50.2	45	94	66	150	99	90.8
Number of defining relations	16	21	23	16	35	22.2	16	38	28	64	44	38.0
Number of simple empirical relations	9	3	13	5	13	8.6	9	10	13	22	18	14.4
Number of mediated empirical relations	0	0	4	4	3	2.2	1	5	3	10	4	5.2
Number of polarly integrated traits	11	6	3	4	3	5.4	12	7	3	14	6	8.5
Number of not integrated traits	9	11	36	18	28	20.4	11	30	38	45	42	33.2
Number of methodological errors	2	1	6	8	4	4.2	2	6	6	69	6	17.8

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EYSENCK'S VISUAL AESTHETIC SENSITIVITY TEST (VAST) AS AN EXAMPLE OF THE NEED FOR EXPLICITNESS AND AWARENESS OF CONTEXT IN EMPIRICAL AESTHETICS

Jane GEAR *

Eysenck's test of visual aesthetic sensitivity (also referred to as a measure of 'good taste') was introduced at the International Conference of Psychology and Art held in Cardiff, England in 1983. This response is critical of the test which, incidentally, exemplifies a number of problems to which the field of empirical aesthetics is vulnerable. Major questions raised by the test include whether judgments made with reference to degree of perceived 'harmony' can reasonably be taken to reflect degrees of 'aesthetic sensitivity', and whether a measure of level (of aesthetic sensitivity) can, at the same time, be taken as a measure of value (of 'good taste'). VAST is actually seen to be more likely to be a measure of some bias or kind of 'visual aesthetic sensitivity', 'taste' or perception of 'harmony' – as all are polymorphic terms – rather than a quantitative measure to which absolute value-judgments can be applied. Weaknesses in the test design are seen to derive from a variety of sources, including dependence on responses to an extremely limited range of visual stimuli, i.e. black and white shapes. It is argued, however, that the crucial weakness is not simply that the test reflects such a limited position on the nature of both aesthetics and man; rather, it is not actually a test of visual aesthetic sensitivity at all, but a test of something else, which can be defined.

Just as introspection was rejected and revealed as an inadequate means of investigation by the Behaviourist psychologists earlier in the century, so can resort to experimentation, 'hard data' and the methods of science also be regarded as inadequate under certain circumstances. However, the criticism which follows is not to deny the value of either experimental psychology in general, or the relatively new field of psychology called empirical aesthetics in particular. There can be no doubt about the fact that scientific methods have enriched all areas of psychology. But it must not be forgotten that, on the one hand, some of the biggest advances have been theoretical advances (Gregory (1974: 543–546)) and on the other, no one method of investigation can be deemed to be intrinsically perfect.

The validity of the empirical approach can very easily be brought into question under two sets of circumstances, both of which can be seen to underlie the phrase 'blind empiricism'. The first is when apparently little

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