EVALUATION THEORY AND LITERARY THEORY

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Introduction*

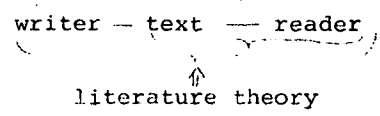
One of the important areas of study in literary theory research is the characterization of literary texts. Such research allows the attainment of a scientific quality with the elimination of subjectivity: the text is replaced by a formalized text, the investigation of which becomes free of subjectivity:

text
↓
formalized text ⟸ (formal)
literature theory

Thus, there is no direct relation between the literary work and the reader. In contrast, the connection between the text and the formalized text finally contains the element of subjective selection, by formalizing an aspect which represents a value.

The logical study of the possible fields assumes implicitly the consistency of the text as a value.

In the present work, investigations are made with the aid and utilization of values. The level of science is attained not by regarding the values of the examiner as determining, but by disclosing the text - reader relation, taking into account both the values of the text and the values of the reader; instead of the above scheme, we have



Naturally, here too there is a need for the formalized text, but also for the formalized "reception". The formalization is value-centred, i.e. the formalization is determined by the values.

In the operations on the values, it is seen that the rules of logic do not hold for them.

First, it is advantageous to exchange the dual-valued system for a many-valued one, and secondly to make use of the theory of many-valued decisions. With the introduced aggregative operator, it is shown that a derivation is not possible from classical logic. Thus, the transition of classical theories to the field of literature theory is only partially possible. Setting out from the tasks of literature theory, it is purposeful to construct the means.

(Formal) literature theory renounces an essential category, "experience", since this can not be grasped only in the text,

whereas it is contained in the reader - text relation.

Since the reception is not static, but proceeds in time, altered value relations arise in the reader in the course of the processing of the value relations of the work; these changes (or their recognition) may be interpreted as the basis of the experience.

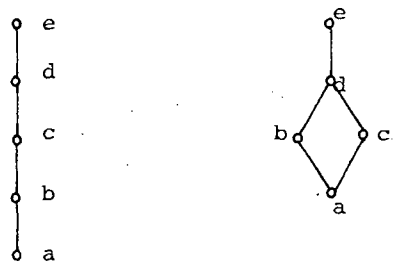
As a result of the strictness of its concepts, (formal) literature theory is completely divorced from the descriptive classical methods. Accordingly, literary works largely represent transitions between the various categories, and a characterization must be introduced for the transitions, or the strictness and rigidity of the categories must be solved. Use is made of the connection of logic and set theory, and it is shown in this paper that this contradiction can be resolved with the "many--valued" set theory.

The question arises as to how it is possible to determine and interpret values. All events may be taken into consideration from several aspects. Thus, there are legal, moral, religious, scientific, etc. aspects. These will be referred to below as fields (the field of morals, for instance). These values are in a conflicting situation, the outcome of which is the result of the decision. Our aim is to discover the correlations of the decisions and the values, without any application to the concrete value structures existing.

The fuzzy sets

In the following an attempt is made to characterize decisions based on values.

Even in the course of everyday decisions (e.g. relating to shopping) values are ascribed to objects. The most elementary form of evaluation is to carry out the characterization on the basis of the existence or non-existence of various properties. In reality, however, not only the existence of a property, but also the extent of its existence is determined. The true and false values are succeeded by a structure of values. It is natural to assume that the values constitute an ordered set. Let us assume further that any two values (relating to the same property) can be compared (chain ordering). In fact, however, structures may occur in which not every value can be compared (lattice ordering).



Chain and lattice ordering

The qualifications of the properties may be regarded as if we were dealing with a spectrum of logical values instead

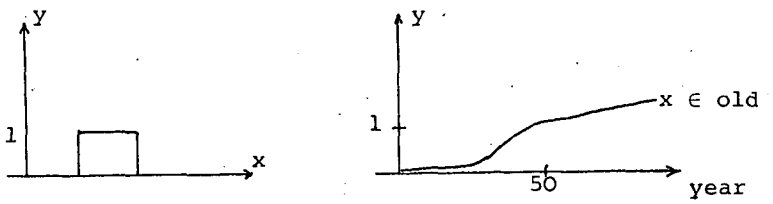
of logically true and false ones (many-valued logic). This generalization has another advantage. A set of objects belonging to the designation of a given property is not a subset in the classical sense; the objects naturally feature with an evaluation with respect to the property, and there is not boundary to the set, just as the set of "elderly people" is not an exact concept in everyday life. Thus, the classical mathematical concept of the set also becomes generalized.

Classical sets may be typified via their characteristic functions. From the isomorphism of the operations performed on the set and its characteristic function:

$$\chi_A(x) = \begin{cases} 1 & \text{if} \quad x \in A \\ 0 & \text{if} \quad x \notin A \end{cases}$$

The isomorphism of the operations may be utilized to characterize inanimate sets by means of the generalized characteristic function (membership function):

$$\mu_A(x): X \to [0,1]$$



Classical and generalized characteristic functions

We shall now carry out examinations from the aspect of many-valued logic. This conceptual structure model is certainly appropriate for literature theory.

Connectives of many-valued logic

Many-valued logic is regarded as a generalization of dual logic. The principle of permanence holds for all generalized operations, that is if only values of 0 and 1 are used, the result should be the same as that obtained with dual logic, and should be continuous.

It is customary to assume that a negation decreases strictly monotonously, and thus is order-reversing. To all such negations we may ascribe a neutral value ν, for which

$$\overline{\nu} = \nu$$

The negation transforms values below ν to values above ν, and conversely; by definition, ν is left unchanged. The ν value may be considered as an expectation level.

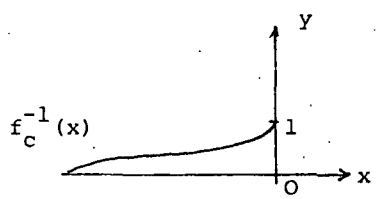
Another two types of connectives are the "and" ($\wedge$) and the "or" ($\vee$) (conjunctive and disjunctive operators). The operators are naturally monotonous according to the variables of their arguments. In the present work, for the sake of simplicity, only the strictly monotonous case is dealt with, and it is assumed that the arbitrary classification of the arguments participating in the logical operation (without a change in the sequence) does not alter the result, i.e. $\wedge$ and $\vee$ are

associative:

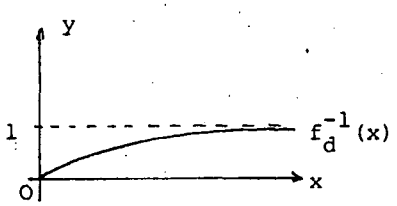
$$x \wedge (y \wedge z) = (x \wedge y) \wedge z$$

(It is customary to use the notation $x \wedge y = c(x,y)$.) All such operators can be constructed with the aid of a generator function:

$$x \wedge y = f_c^{-1}(f_c(x) + f_c(y))$$
$$x \vee y = f_d^{-1}(f_d(x) + f_d(y))$$



The aggregative operator



The generator function of the conjunctive and disjunctive operators

It holds for all such operators that

$$x \wedge y \leq \min(x,y) \qquad x \vee y \geq \max(x,y)$$

It may be seen that in the practical case when the connection of two values may lead to a result between the two values, a dicision of a compromise nature is not satisfied by any operator.

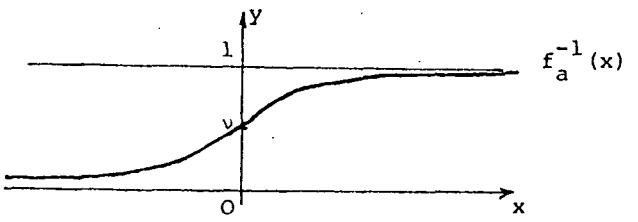
Since the monotonousness, associativity and continuity are natural restrictions, it appeared appropriate to vary the permanence principle with dual logic. It may be assumed that the same result is given by the two different types of decision

relating to the properties of the object: that based on the goodness of the properties, and that based on the avoidance of the goodness of the properties.

$$x \Diamond y = \overline{\bar{x} \Diamond \bar{y}}$$

Such operators are termed aggregative operators, which can be constructed by means of a generator function:

$$x \Updownarrow y = f_a^{-1}(f_a(x) + f_a(y))$$



Generator function of the aggregative operator

The aggregative operator is not compatible with dual logic, for the aggregation of 0 and 1 is not defined.

Some properties of the aggregative operator:

$$x \Diamond \nu = x$$

$$x \Diamond \bar{x} = \nu$$

i.e. the neutral value has a special role. The most interesting property of the aggregative operator is that if the two values

to be aggregated are smaller than ν, then the aggregation functions as a conjunctive operator in the interval $[0,\nu]$. The aggregation of values above ν is a disjunction in the interval $[\nu,1]$. The result is aggregative or a compromise in nature if the two values flank ν.

The generality of the aggregative operator

If $\nu = 1$, then the aggregative operator is a conjunctive operator, and if $\nu = 0$ it is a disjunctive operator; this is confirmed by the shapes of the generator functions. At the same time, a new characterization of the logical operators may be given. The conjunctive operator may be applied in the event of a maximum expectation level. As an example, it may be mentioned that such a decision is involved when technical equipment is bought. If ideal values of all parameters are known, then every concrete object may possess only a poorer characteristic than this, i.e. the goodness of the properties is their less bad nature. The conjunctive operator is used in such cases and, in accordance with its property, the values are negative and hence weaken each other. (Scientific examinations strive to maximize the expectation level.) For the disjunctive operator the expectation level does not exist. It is very difficult to find an example for this. However, analysis of a work of literature may be considered as such. The proposition of an expectation level is simultaneously the rejection of novelty and individuality, just as impressionism

can not be evaluated on the basis of the expectations of classical painting. Here only positive values exist, which strengthen each other. The laudatory attributes employed in textbooks on literature are consequences of this principle. It is another question that no guidance is given as to how to orientate in the plethora of modern works, and the students become sceptical.

The most frequent decisional procedure is aggregation, where a lower or higher expectation level exists, but this is not the ideal (not conjunctive) and there is expectation (not disjunctive).

The connectives can thus be derived from the aggregation, from a single operator (not derivable from classical logic), through the change of the expectation level or the transformation of the values. The logical function of the decision is therefore the successive application of various operators with neutral values. Decisions that are not "logical" become interpretable.

We next turn to the examination of another logical operation, implication. Similarly to aggregation, this can be given generally.

Dual determination of the evaluation

Works determine the values of different fields, i.e. at a given moment the relation to the values of the fields can be characterized. From the aspect of the reception, however,

these fields are of different importance as concerns the relevance of their own existence. For just this reason, the evaluations of the work are transformed during the reception, and the receiver performs operations on these transformed values.

It may readily be demonstrated that the transformation is not independent of the operator applied in the decision. Even the simple law that the value should vary in a monotonously increasing manner with the importance can not be accepted generally.

The possibility arises of the determination of these values of (secondary) importance. The answer is positive: the values can be determined (or more exactly, circumscribed) in the knowledge of global preferences.

A similar problem has been raised by the mathematical establishment of shape recognition and medical diagnosis. In this latter context we propose a general model which may also be of use for literature theory.

The problem of medical diagnosis (literature evaluation) relates to a group of given patients (literary works). These may be characterized via their symptoms (values of the fields), which can be described with a currently not more closely defined grammar). The diagnosis class must be sought to which the symptoms belong (it must be established how acceptable the work is to a reader). The importance of the symptoms may be ascribed to each diagnosis class from the aspect of the extent to each diagnosis class from the aspect of the extent to

which the given group of symptoms belongs to it. Further, the various intrinsic logical structures of the diagnosis classes are used to check the extent to which the described disease belongs to the diagnosis class. (The value structures of the readers are different from those of the works, and the degree of acceptance is determined by a different logical structure for every reader.) This structure can be described well by means of automata. The question, therefore, is the extent to which the given automata accept the grammatics.

The degree of determination of automata is ensured by convention (and culture).

The previously outlined conception requires further modification when literary works are examined. The process of acceptance and the automata themselves vary during the processing of the grammatics. Primarily the importances change, and consequently the subsequent processing is performed in a different manner, but the internal structure of the automata too may alter. Through the recognition of these changes and the description of the variations in state of the automata themselves, the experience permits a description of a concept that is difficult to grasp.

Two points of interest may be mentioned. It has been seen that both the concepts and the values have moved away from the values of dual logic, and have given rise to indefiniteness and blurring. A measure may be introduced which determines the distance from classical logic (decisional measure). In the

event of the application of an aggregative operator, its property means that the stability of the decision decreases in response to the use of the sharper data (the outcome of the decision varies following small changes in the values). Thus, the sharpness and the stability are complementary in character. The acceptance of this lack of precision is therefore virtually obligatory.

The concept of classical mathematics connected with classification also requires modification (the principle of a uniform basis). The giving of a diagnosis is the giving of a classification, but all diagnoses consider a given fact in different ways.

A system similar to this was selected for study: for the solution of shape-recognition problems; this operated with surprising effectiveness.

The conception described here needs many more additional examinations. The research can be no means be said to be completed and finite. It is only to be hoped that a partial answer is provided to the questions raised by literature theory, and that further incentives are given as concerns the direction of subsequent development.

The basic aim is to make an attempt to determine the framework of an appropriate system, setting out from literature theory, on the basis of the solution possibilities revealed by research into artificial intelligence.

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Note

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