Distance education and distance learning: some psychological considerations

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Face-to-face education and distance education, viewed as differing sets of organisational provisions for the fostering of learning, emphasize different kinds of learning processes, and depend upon somewhat different psychological properties in learners. Nonetheless, all practical learning settings, whether they are labelled 'school', 'adult education', 'distance education', or something else, involve a mixture of face-to-face learning and distance learning. The psychological difference between the two kinds of setting is thus not purely qualitative in nature, but is also quantitative: for instance, certain learner characteristics which are useful in face-to-face learning (discussed in detail in the body of the present paper) are indispensible for distance learning, while certain processes which are at the heart of distance learning (also discussed in detail later) are often given little emphasis in face-to-face settings, although they are in principle possible and even desirable there. The question thus arises of whether it would not be desirable to give more emphasis in face-to-face settings to psychologically desirable aspects of distance learning.

Education traditionally involved close face-to-face contact between teacher and learner. Before the advent of institutionalized education in its current form people were educated by others who possessed desirable knowledge or skills, usually members of the family, tribe or some other similar group. Emergence of highly organized, formal school systems led to reductions in the closeness of the personal relationship between learner and teacher, changing not only the organisational conditions under which learning takes place, but also such factors as the degree and nature of contact with other learners, the nature of learning materials, the feedback or evaluation processes, etc. In recent years it has become apparent that the needs of learners

who are not in a position to take part in formal face-to-face education (to take one obvious example: adults in full time employment) must be met. This perceived need has emphasized the importance of distance education, a further extension of the existing process in which contact between learner and teacher has become more and more remote.

'Distance education' as the term is used here refers to a kind of education based on communications procedures which permit the establishment of teaching/learning processes even where no face-to-face contact between teacher and learner exists. The physical distance between them can, in principle, be very large, and there is no limit to the number of students who can learn simultaneously from the one teacher. Many of the elements of the learning or teaching situation (such as its location, the difficulty level of materials, learning speed) can, in theory, vary in as many ways as there are learners, thus permitting in a certain sense, a high degree of individualised learning.

For the purposes of the present paper 'distance education' and 'face-to-face education' are conceptualized, not as encompassing particular sets of organizational provisions aimed at promoting learning, but as involving particular kinds of learning processes which are facilitated by the presence in learners of certain psychological characteristics and which at the same time promote the growth of such characteristics. In order to avoid confusion the term 'distance learning' will sometimes be employed to refer to these special processes and characteristics. This would mean, for instance, that an institution which was, from the administrative/organizational standpoint by definition dedicated to face-to-face education (such as a conventional school), could in principle make use of learning activities of the distance kind. In other words, from a psychological standpoint, the possibility exists that distance learning processes can also occur in face-to-face institutions.

The purpose of the present paper is to compare and contrast distance education and face-to-face education in terms of a number of selected psychological dimensions. This is done partly to draw attention to those aspects of learning processes in which distance education differs from face-to-face education. A second purpose, however, is to show that distance education may have characteristics which, far from being disadvantageous, are favourable to learning: furthermore, many of these characteristics are already seen in existing face-to-face education, albeit scarcely acknowledged, or are in principle capable of being introduced there. Finally it is hoped that the present analysis will suggest a set of psychological dimensions in terms of which theory and research on distance education could be further developed, although as will become apparent, it is by no means exhaustive.

GUIDELINES FOR A PSYCHOLOGICAL ANALYSIS

The present analysis concentrates on isolating special psychological characteristics of distance education. This means that certain aspects of systematic teaching and learning, although undoubtedly important, have not been taken into account, because their psychological effects are only marginal or are indirect: examples are financing of distance education, accreditation of qualifications obtained through distance education, or staff development for distance education. This deliberate limitation is not meant to imply that such issues are unimportant, or even that they have no psychological significance, but has been adopted in the interests of achieving focus and brevity. A further limitation has also been imposed, again in the interests of clarity and conciseness: no attempt has been made to provide an exhaustive listing of all possible psychological dimensions in terms of which distance education (or for that matter any kind of education) could be analysed. The approach of the following sections is to select psychological 'core dimensions' of the teaching/learning situation, and to compare distance education with face-to-face education along these selected dimensions. The analysis is also limited in that factors which are not themselves special aspects of distance education, but of the people engaged in it (e.g. personality, IQ, cognitive style, etc.) have not been dealt with in detail.

CORE DIMENSIONS OF TEACHING AND LEARNING PROCESSES

The core dimensions of teaching and learning processes which form the basis of the present analysis are as follows:

- **Organization of learning** (How are learning activities related to each other, how is available time organized, etc.?);
- **Motivation** (What energizes or mobilizes learning?);
- **Learning processes** (What kinds and forms of learning do students engage in?);
- **Communication processes** (How do learners and teachers exchange information and ideas?);
- **Didactic activities and materials** (What teaching activities do teachers engage in and with what materials do they support them?);
- **Evaluation and feedback** (How are students informed about the success or failure of their learning activities?). Once again it should be noted that the following discussions of each of these core dimensions are necessarily limited by the impossibility of reviewing all relevant psychological theories in a brief article of the present kind; the result is that the material presented here reflects the interests and competencies of the present authors, and has no claim to exhaustiveness.

Organisation of learning

Forms of face-to-face education are imaginable (indeed they have existed and continue to do so), which are not based on complex organizations. Nonetheless, a critical aspect of face-to-face education as it appears in practice nowadays is its institutionalization which determines when and where it takes place, the way in which different kinds of activities are related to each other, in whose company learners learn, and so on. At the system level, this structure dictates, for instance, that learning activities take place at certain times and on certain days of the week (details vary of course from system to system), that it usually takes place in separate buildings, that certain subjects are presented in certain sequences, and so on. At the institutional level it determines that teaching and learning activities are carried out in groups of a particular size, that activities take place according to a schedule, that a certain number of hours are devoted to mastering a particular content, etc.

On the positive side, this organizational structure frees learners from the necessity of making decisions about when and what to learn, provides them with standardized learning conditions, makes sure that materials and resources are available when they are needed, and so on. On the other hand, it leads to a high degree of inflexibility and rigidity of teaching and learning activities: it compels some learners to move on to new content before they have mastered the old, others to linger longer than necessary, permits the consulting of learning resources such as text books only under specific conditions, requires all learners to combine the same, or approximately the same, content areas in a fixed daily schedule, and so on. Many important decisions may even be based on the needs of the institution or system itself rather than those of learners. The organizational structure of face-to-face education thus tends to compress all learners into the confines of a particular structure, and in so doing tends to make their learning dependent upon the structure, or even to lead them to equate worthwhile learning exclusively with the organizational structure. This continues to be true despite efforts of educational theorists and planners to break away from the conventional equating of learning with schools and school-like institutions.

By contrast, distance education offers the prospect of individualizing many aspects of learning. For instance, learners engage in learning activities, not when the organizational schedule says they have to, but when they want to. They can go over materials repeatedly, if they wish to, or consult additional sources, can polish and rework material which is to be evaluated until they are satisfied with it, etc. In fact, differences of this kind provide the most striking contrast between distance education and face-to-face education. In a purely concrete sense, they define the two conditions. The present analysis, however, is not concerned with organizational and structural differences between distance education and face-to-face education in themselves, but with their consequences for teaching and learning activities, and especially for the psychological forces at work in these activities. In particular, it will be argued that in distance education the forces which set learning behaviour in motion, direct and guide its course, and keep it running, are in principle different from those at work in traditional face-to-face education. This process of activation, guidance and maintenance of learning activities can be referred to as involving a 'psychodynamic' of distance learning.

In the following five subsections, the consequences of this crucial organizational aspect of distance education, namely that it is conducted at a distance, will be outlined in terms of the five remaining 'core' psychological aspects of teaching and learning processes already listed.

Motivation.

In the present paper, the term 'motivation' refers to factors regulating people's readiness to expend energy on a particular task at a particular time, not directly to their longterm goals or expectations, which could, in principle, be identical for distance education and face-to-face education. People engaged in conventional face-to-face education are surrounded by familiar cues associated with learning (a physical setting specifically dedicated to learning activities, the presence of a professional teacher, books and other learning materials, etc.): To put this more plainly, face-to-face students, even the unwilling ones, find themselves in a situation where the normal and natural thing to do is to engage in learning activities. By contrast, the distance learner is likely to be in a situation where different behaviours are more usual (for example watching television, working around the house, playing with the children, etc.). The habits called forth by the setting in which the learners find themselves, the appropriate behaviour for their physical surroundings, are thus quite different in the two situations. Distance learners are also usually isolated from other learners, although distance education in a group setting is by no means theoretically impossible and, in fact, certainly exists. This isolation from other learners means that motivating forces of a 'social' kind such as competition, fear of looking foolish in front of others or the desire to gain status or the fear of losing it, pressure to conform to group norms etc., are either entirely absent, since neither teacher nor peer group is present, or take on forms which differ from those typical of face-to-face education.

A third important factor is that teachers in distance education are not in a position to adjust learning tasks and materials to the momentary situation of particular learners or, on the other hand, to 'adjust' learners to the task in question, for instance by giving hints, or by raising or lowering anxiety levels by means of reassurance or criticism, and the like. Motivation is largely determined by levels of previous success or failure and expectations of present

or future success or failure. Thus, the presence of a teacher who is in a position to waken hope of success, remove frustrating blockages, or restructure a task so that an initial success can be obtained, is of considerable importance in motivating learning.

What this means is, among other things, that distance learners are thrown back upon their own motivational resources to a greater extent than is the case with face-to-face learners, since many of the factors which provide external motivation are absent or present only in an indirect form in distance education. Internal motivation is a highly desirable thing in face-to-face education, but is a necessary precondition in distance education. To some extent, distance education methods and materials can be planned with these issues in mind, but it is readily apparent that the learner in face-to-face contact with a skilful teacher has an enormous potential advantage — nonetheless, it must be admitted that distance education might well be superior to face-to-face contact with a particularly bad teacher! The development of materials, activities and organisational sequences capable of responding effectively to the motivational issues just mentioned is an important area both for research and practical development in distance education.

Learning processes

Although it is artificial, since different kinds of learning are seldom clearly distinguishable in real life settings, a distinction will be made here between simple stimulus-response learning, learning by imitation, and learning by identification. These are taken as examples of learning processes, selected for the purposes of a comparison between face-to-face and distance education.

By stimulus-response learning is meant learning in which the teacher structures a situation in the hope of eliciting certain responses from learners (correct answers), learners respond, and the teacher provides feedback, usually in the form of information about the adequacy of the response in question. In the distance education setting, both stimuli and responses contain little peripheral information about such things as social relationships, the feelings of the people involved, etc. There is also usually a delay between emission of responses by learners and provision of feedback by teachers (for instance because students' exercises and teachers' comments are exchanged by mail). This means that an important set of reinforcing stimuli is absent (for instance a smile on the face of the teacher upon receiving a correct answer), while interactions are formal and abstract, whereas in face-to-face education they may have a certain spur-of-the-moment quality. On the other hand, the teacher's reactions can be carefully structured, and largely confined to the content in question. Distance learners also experience the disadvantage that they may be exposed to a variety of competing stimuli such as those con-

nected with membership of a family, which the face-to-face teacher can partly control or even entirely eliminate.

Learning by imitation involves copying the behaviour of models. Whereas in face-to-face education the actual behaviour of other people (both teachers and fellow learners) can be directly observed, this is true to only a limited degree in the case of distance education. The opportunity of extensive imitation which is offered by face-to-face education means that the learner can concentrate on a wide variety of actions relevant to the particular content in question, learning not only from what models say, but also from what they do. In the case of distance education, imitation is normally limited to copying formal features of learning materials such as terminology, prose style, etc. In learning by identification the situation is similar to imitation, but here values, attitudes and other personal characteristics of the model play an important role. Whereas in face-to-face education direct personal contact occurs between learner and model, in distance education identification can only occur by indirect contacts, for example, through learning materials. In face-to-face education these contacts can support or inhibit the desired learning outcomes and turn them in wanted or unwanted directions. By contrast identification learning via learning materials (which also occurs in face-to-face education) can more easily be foreseen and planned by the distance educator. Thus distance education offers the possibility of avoiding certain undesired effects of teacher/learner relationships, although it also suffers under the disadvantage of not being able to capitalize fully upon them.

Communication processes

The most obvious aspect of communication in distance education is that it is not face-to-face! As a result, teacher and learner exchange information mainly by written language backed up by diagrams and the like (frequently printed learning materials), less commonly by spoken language (audio tapes, film, video tapes, etc.)- and even less commonly non-verbally. Communications are usually carefully planned by both parties, with heavy emphasis on transmission of content. Although learners may be in a position to stop reading, listening or looking when they want to, distance education does not readily offer teachers the opportunity to modify the flow of information on the basis of moment-to-moment feedback from learners (such as obviously flagging attention), as is the case in face-to-face education. Communication via 'body language' is also non-existent, as are spontaneous expressions or reactions to momentary situations. As a result, communication processes in distance education are mainly dependent upon language, heavily structured, formal, and largely impersonal. In this respect they differ markedly from those in face-to-face education. Recent advances in educational technology which permit 'home learning', may perhaps offer the possibility of avoiding some of these communication problems.

Didactic activities and materials

Communication between teachers and learners consists, in any educational setting, largely of participation by learners in organised activities aimed at promoting learning (didactic activities). These activities not infrequently involve the use of 'aids' introduced by the teacher in the hope of facilitating the learning in question (didactic materials). Although these activities and materials suffer several obvious disadvantages in the case of distance education (for instance, they cannot be modified on the spot as a result of immediate learner reactions), they constitute, along with special communications procedures, the essence of distance learning: this consists essentially of people carrying out specially designed learning activities with the support of special materials, the whole procedure depending on special communication channels (especially print and electronic media) which replace face-to-face contact with a teacher.

These aspects of distance education represent its greatest strengths and weaknesses. In the ideal distance education setting, learning activities and supporting materials are carefully thought out, since they need to present content in ways which make it 'learnable' for learners of widely differing ability, background knowledge, previous experience, etc. They are usually planned, tested and improved, with the result that they are often well organised, clear and striking. On the other hand, they are formal, impersonal, rigid, and so on. As has already been mentioned, various communication possibilities exist which, to some extent at least, offer the possibility of more personalised didactic activities and materials - whether or not careful preparation in this area can compensate for the lack of moment-to-moment contact with a skilful teacher is a question of considerable importance for distance education. On the other hand, well designed distance education materials can be used with profit in conventional face-to-face settings.

Evaluation and feedback

The effectiveness of learning activities, indeed whether or not learners continue to engage in them, is largely determined by the information that learners receive about their efforts. This information is referred to here as 'feedback'; the term 'evaluation' will generally be used to refer to assessments of performance whose purpose is to assign marks or grades. The relevant information may range from informal feedback (a smile or a gesture of irritation), to highly formal evaluation (a written comment on a completed exercise, accompanied by a mark). In general, evaluation and feedback can contain information about mastery of the learning task itself, about a particular learner's standing relative to the members of a group (such as class mates), or about fulfilment of expectations of the teacher or of the institution. Actual learning behaviours are affected by this information (for instance a learner who is informed about inadequate mastery of a list of French irregular verbs may spend extra time going over the list). In addition, motivation (willingness to continue; a feeling of being spurred on to greater efforts; a sense of hopelessness, etc.) and attitudes to the particular content to be learned or to the materials and activities through which it is to be learned (it is stupid to learn French verbs, anyway; the text book is incomprehensible) are affected. Finally, the image of oneself as a learner depends to a considerable extent on feedback (I am too stupid to ever get it right; this is exactly the kind of thing I am good at). Evaluation also plays a 'diagnostic' role in determining what future didactic activities are called for, whether a particular learner advances through the system, etc.

As has already been mentioned, a major area of difference between distance education and face-to-face education lies in the communication channels available in the two settings. A face-to-face teacher can convey both verbal and nonverbal information, can adapt the message to the momentary details of the situation, and can provide immediate feedback. Since feedback in distance education is mainly formal, impersonal, strictly task-oriented and abstract (usually written) — its effects on learners in this setting are necessarily restricted by comparison with face-to-face education. This suggests that the beneficial effects of feedback in distance education would be strongly dependent upon learners' maturity, far-sightedness, internal motivation, ability to plan, etc. This does not mean that these properties are not desirable in face-to-face education, but that their absence can more easily be compensated for in that setting.

Although provision of feedback in distance education is often delayed and formal, whereas in face-to-face settings the teacher can more readily perceive and diagnose learners' difficulties, strengths, special needs, etc., and relate the teaching and learning activities to them, distance education also offers advantages. The setting makes it possible, for instance, for learners to control what is evaluated, since they can choose what they send in for evaluation. In principle, this state of affairs permits more exploratory behaviour on the part of learners, and has the potential to encourage greater autonomy and independence from the teacher. The remoteness and relative freedom from the tight organisational restraints of conventional face-to-face education also offer the opportunity of much more self-evaluation on the part of learners, indeed this is essential: in principle, learners can carry out whatever activities they wish, offering for evaluation only those aspects of their work which they choose to communicate and being evaluated purely on the basis of this work. Face-to-face learners, on the other hand, are typically subjected to a much more comprehensive evaluation which, to some extent at least, also measures their ability to fit in in certain organizational and social arrangements. Self-evaluation is, of course, not impossible in the face-to-face setting, but seems to be less necessary there for achieving conventional goals.

The 'psychodynamics' of distance learning

The concept 'psychodynamic of distance learning' has already been mentioned: what is meant is that learning activities are propelled by certain forces (such as the wish to learn), which get learning started, steer it in a particular direction, keep it going even when the first enthusiasm has faded, and so on. The previous discussions were intended to draw attention to these forces in education in general, and to emphasise contrasts between distance education and face-to-face education. The two settings were treated in a global, almost stereotyped, way in order to permit a general discussion, without having to deal in detail with the large number of variations which are seen in practice. The special characteristics of the two settings are contrasted in Table 1.

In general, in face-to-face education the motivating, steering and maintaining forces are usually controlled by teachers. The psychological picture of distance education learners is, by contrast, that of people who are obliged to take considerably more responsibility for their own learning: at least to a certain degree, they are required to be 'self starters' who are capable of carrying out a learning activity, such as working through a section in a handbook, without direct supervision, who make their own arrangements about when and where to learn, who resist tempting alternative activities, who largely provide their own encouragement or rewards, etc. Psychological traits, such as internal motivation or skill in self-pacing, self-evaluation, goal-setting and the like, thus take on a special importance in the distance education setting. These traits closely resemble those referred to in the psychological literature in connection with 'self-directed learning', although it is apparent that the ideal distance learner is not, strictly speaking, purely self-directed - the content and internal organization of lessons' is usually determined by outsiders, learning materials are largely planned by other people, ultimate decisions about adequacy of learners' efforts are made by external authorites, etc.

The psychological prerequisites for distance learning which have just been mentioned are also highly valued in face-to-face settings: the ideal distance learner would thus not only possess the prerequisites for distance education, but would also be well equipped for face-to-face education. The crucial point for the present discussion, however, is that the traits in question seem to be absolutely essential for distance education. To put this differently, certain features of face-to-face education, such as the presence of the teacher, can compensate for learners' weaknesses in the areas just mentioned, or in a somewhat more negative vein, inhibit the emergence of traits such as self-evaluation, whereas in distance education the degree of compensation which is possible is considerably less. The result is that the traits in question are merely desirable in face-to-face education but are indispensable in the distance setting.

Face-to-face education	Distance education
Immediate, personal contact between learner and teacher	Contact through communications media
Teacher can readily adapt to learner's immediate behaviour	Adaptation delayed
Learner's environment is primarily designed to support learning activities	Learner's environment is designed to serve other purposes (distractors)
Metacommunication between teacher and learner is possible	Metacommunication is difficult
Personal relationships can moderate learning	Personal relationship is of little importance
Direct control of learner by teacher is possible	Teacher's influence is indirect
Learning materials can be of low didactic standard	Learning materials must be of high didactic standard (well organized, clear, etc.).
Learners experience limited degree of freedom	Learners experience a high degree of freedom
Wide opportunities exist for imitation/identification learning	Few opportunities exist for imitation/identification learning
Communication need not be planned to last detail	Communication is usually highly planned
Information is provided by a mixture of cues (personal, content-related, organization-related)	Information is mainly provided by content and organisation
A high degree of evaluation and feed-back from the teacher is possible	A comparatively low degree of evaluation and feed-back from the teacher is possible
Internal motivation,self-direction self-evaluation, planning, etc. can be low	Internal motivation, self-direction, self-evaluation, planning ability, etc. must be high
Willingness and ability of learner to work without direct supervision may be low	Willingness and ability of learner to work without direct supervision must be high

TABLE 1

In institutions dominated by face-to-face learning (such as schools and universities), characteristics listed in the right hand column of Table 1 will ap-

pear less frequently, whereas in settings devoted to distance learning they will be more common. However, if existing institutions are examined carefully, it becomes apparent that there is usually a mixture of the two types of characteristics in all settings: even primary school pupils experience some distance elements, while learners in distance education settings experience some face-to-face conditions.

The relationship of face-to-face and distance elements in various practical educational settings is presented graphically in the following figure:
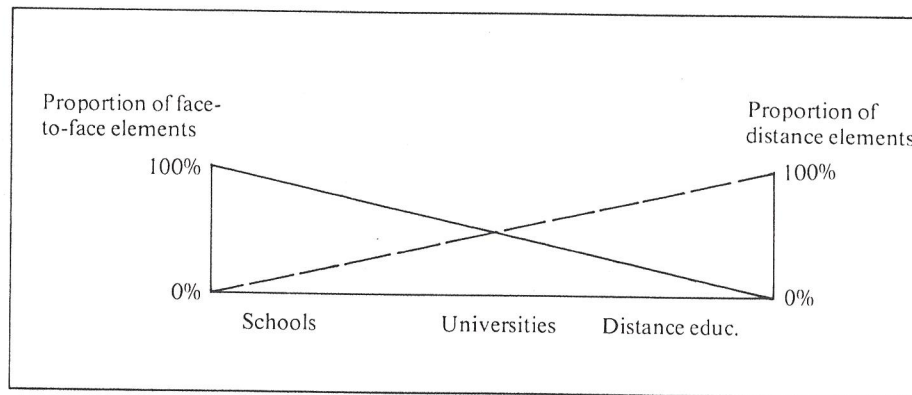

Figure 1:   Educational practice as a mixture of face-to-face and distance elements.

At the extreme left hand pole lies an idealized, presumably non-existent variant of education characterized by being completely face-to-face. Learners would work under the perpetual supervision of teachers and in the company of other learners. At the extreme right hand pole lies an idealized, also presumably non-existent, distance education involving learners who always work alone without any kind of contact with teachers or other learners. Real life practical educational settings, such as conventional schools, occupy various intermediate positions between the theoretical ideals.-

In practice, then, neither set of principles emerges in a pure form. Although schools are dominated by face-to-face principles, they also offer many opportunities for the application of distance education principles: the teacher can leave the class temporarily without supervision, can assign different tasks for different students at the same time (individualisation), can ask them to plan their learning activities partly by themselves, to select materials by themselves, to follow written instructions, etc. Although the basic face-to-face nature of learning in university settings is guaranteed by the fact that it is still largely dominated by personal contact between students and teachers, this setting offers more opportunities of learning without direct supervision (studying books and articles, working out exercises alone, etc.), so that a cer-

tain degree of participation in distance education activities occurs. Thus, learning settings usually include a mixture of face-to-face and distance elements, the important difference between typical examples of face-to-face practice (schools) and of distance education being the proportions of the various elements in the different settings, not their total presence or absence.

Although the figure suggests that this fact is readily apparent, in typical face-to-face practical settings, for example. school classrooms, the distance elements are largely ignored, or may even be regarded as undesirable - for instance teachers may attempt to structure independent work far beyond the level necessary to provide pupils with an orientation or starting point. Thus, the interesting question arises of how to improve face-to-face education practice by recognising distance education elements already present, as well as by incorporating further desirable elements of this kind (see Table 1). This would not only improve learning processes in face-to-face education, but would also prepare students for efficient distance learning. Thus, there is a need not only to strengthen distance education by making use of face-to-face elements there, but also to exploit more fully the educational possibilities that lie in distance education. A further interesting, if provocative, question is that of the degree to which school-like education can gradually be replaced by distance education - answers to this question are of great importance for the promoting of autonomy in students, fostering of lifelong learning, provision of universal education in Third World countries, etc.

A final interesting notion is that an analysis of educational institutions, aimed at ascertaining the proportions of psychological elements of the kinds discussed in this paper, might show that certain institutions, although designed and planned for distance education, are actually dominated by face-to-face elements. In other words, the name of an institution and the intentions of planners, teachers, etc., should be distinguished from the characteristics of the teaching-learning processes that actually take place there. It is these processes which determine the institution's 'psychodynamic.'