

MEASURING NON-FORMAL EDUCATION *

by

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1. LEARNING, EDUCATION, SCHOOLING

1.1. The basic concepts

This is "a preliminary study on the development of a methodology for collecting comprehensive statistics on adult education through measurements of the various inputs and outputs that are to be found in a total delivery system of adult education".¹ Unfortunately, it is impossible to approach this problem without some definitions that preferably should satisfy some general criteria: they should be simple, intuitively plausible, and clear enough to delimit the area of this investigation.

More particularly, it is a question of having an understanding of the relation between the key concepts learning, education and schooling. This has been done many times before,² and there is probably general agreement that schooling is education, but there are also other forms of education, just as education is learning, but there are also other forms of learning. The question is what kind of learning constitutes education, and what kind of education constitutes schooling. This is central to our concern, for it seems reasonable to refer to the type of education that is not schooling as "non-formal education". And non-formal education is the topic of this study, particularly when the learners are adults.

To start with learning: it is any process through which one or both of the following takes place:

- a durable change in the cognitive map the person has of the world
- a durable change in the action repertory of a person.

This is not the place to discuss the many intricacies of such problematic definitions.³ Suffice it only to point out that there is an inner and an outer aspect to learning; a cognitive map that may be referred to as "theory" and an action repertory that may be referred to as "practice". One can have changes in one without changes in the other. A person may learn a lot about family planning without any change in action. But the opposite may also take place: there may be a change in practice, relevant for family planning, without any change in the theory, the "cognitive map". Often, though, one will assume that changes in one are related dialectically to changes in the other. It is important to realize that they can take place both ways in order to avoid the customary intellectual

fallacy of assuming that learning starts with more differentiation of the cognitive map and/or restructuring,⁴ and then release into more differentiated and/or completely restructured⁵ action sequences. It is the interplay between theory and practice, between learning by studying and learning by doing, that constitutes full-fledged learning - and education programs should probably be constructed accordingly.

There are two types of learning: non-formal and formal, and the latter will be referred to as education. Education is the special case of learning where roles as teacher and learner are defined. In other words, there is a consciousness in either party that learning is going on, and even a social bond between them which makes it very different from the random type of learning that takes place whenever a person bumps into the environment - social or non-social - in a new way, and it rubs off in the form of "experience". But from this it should not be concluded that education is necessarily from the teacher to the learner, because the teacher knows more, possesses more learning (in either or both of the senses defined above). This would only constitute vertical education. In addition to that there are horizontal education with teacher and learner at the same level so that they may either rotate between the roles or become learner together, and self-education where teacher and learner is the same person.⁶

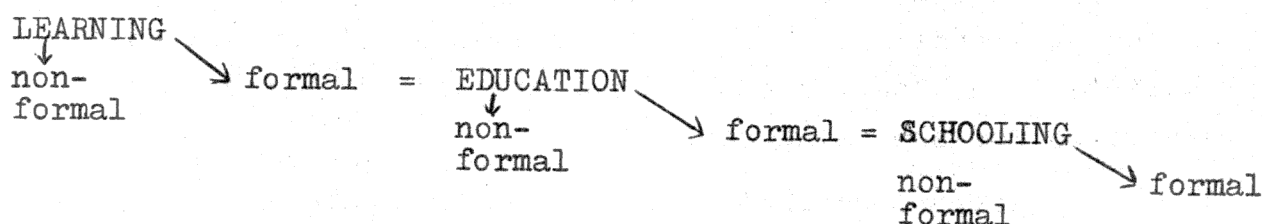
There are two types of education: non-formal and formal, and the latter will be referred to as schooling. Schooling is the special case of education that prepares the learner for a new status as graduate, which entitles him or her (but does not guarantee) access to a job or position as learner in another school. Thus, schooling is a tie between the social sub-system of education, with teachers and learners, and other sub-systems, particularly the production system with its jobs. Schooling sorts students into social positions, horizontally through fields of study, vertically through exams and grading. As a special case schooling is a tie between different schools, the graduates of one become students of the other, a principle that leads to a chain of schools - so far known as primary, secondary, tertiary. In principle that chain could be extended (quaternary, quinary etc.) throughout the life-time of anybody, which could be one meaning given to the term "life-long education".⁷ A society with automated production or a particularly benevolent nature, itself producing and delivering renewable food and energy, might conceivably have the whole population at school

at any time. Whether this leads to learning is an empirical question not to be decided by analysis alone. But by definition it produces graduates - and it is also known to produce learning in how to cope with schools in general and exams in particular.⁸

There are two types of schooling: non-formal and formal, identifying the latter with hard core of education all over the world, the primary-secondary-tertiary chain of educational institutions (=schools including vocational schools), and the former with all other kinds of courses etc. that lead to some kind of certificate that entitles the graduate to something, in other words any kind of educational setting where the learner is a trainee for a specified position in the job structure. This gives us a narrow concept of schooling (formal schooling as defined above), and a broad concept which would also include all such courses - for instance vocational courses on the job, that have to be passed for a change of job in general, and promotion in particular, to take place.

The relation between the three basic concepts, as conceived of here is now clear:

Figure 1. Learning, education and schooling: their interrelation.



or:

L E A R N I N G			
non-formal 0	formal = EDUCATION		
	non-formal 1	formal=SCHOOLING	
		non-formal 2	formal 3

Thus, there are four types of learning according to this approach: non-formal learning, non-formal education, non-formal schooling and formal schooling. They may be referred to as four levels (level 0, 1, 2 and 3) - as indicated in the Figure - since that is the key variable, of formalization. As one now descends down the learning-education-schooling slope indicated in the upper part of Figure 1 there is increasing institutionalization. First, a role-structure

crystallizes (education) as a way of bringing about learning, producing educated people; then a further goal is added, that of producing schooled people, graduates, with a status that entitles them to something; then this is formalized into the schooling system which then proceeds much like an assembly line, processing the unschooled as far as individual and social resources permit.⁹ Thus, schooling does the allocation job for society, being a machinery for horizontal and vertical sorting in addition to being an institution for education and learning.¹⁰ Whereas non-formal learning and non-formal education know of no upper limit there is a limit to both non-formal and formal schooling: the absorption capacity of the rest of the system. The supply of graduates from schooling has to be adjusted, at least within some margin, to the demand for these graduates. This adjustment is a two-way process: it is partly a question of adjusting the processing capacity of schools to the social demands (usually articulated by those in command of the production process) by narrowing or closing some channels and widening or opening others; partly a question of changing the social structure so that all graduates find jobs at least to some extent compatible with the content of their field of study and in rewards roughly proportionate to the duration of schooling.¹¹ Thus, the increasing "tertiarization" of society is no doubt due to increasing output from higher brackets on the schooling chain.

Increasing institutionalization leads to a well known dynamism: it fosters its own negation. Churches produce sects, parties produce splinter groups, schooling produces non-formal education, and education produces non-formal learning. There will be forces that press in the direction of formalization, down the slope ("let us get it into the curriculum!") and there will be forces that press for de-formalization ("deschool society").¹² "the best education is outside school", "the best learning is from experience"). Thus, one may learn to be school-wise as one proceeds in formal schooling, then this wisdom crystallizes and graduates teach eager undergraduates how to act, then this becomes part of the standard curriculum - -. There is a flow up and down the slope in Figure 1, and any society is in some kind of moving equilibrium between the four forms of learning.

This gives us a double perspective on the two intermediate categories: non-formal education and non-formal schooling.

On the one hand they represent types of learning that for some reason have become formalized (at levels 1 and 2), such as courses in "how to win friends and influence people" or in "concientización, in (political) consciousness-formation".¹³ This does not mean that learning did not go on in these fields before, only that it was totally non-formal (level 0). On the other hand they have not become completely formalized (level 4). They are operating with two fronts, so to speak, arguing the necessity of education in the field, "the matter is too important to be left completely to itself"; on the other hand also arguing either that "this is so important that it must get into curriculum" or just the opposite, that "this is so important that schooling must not destroy it".¹⁴ Thus, non-formal education and to some extent also non-formal schooling are in a fighting position: something has come to the social consciousness as a field of education, yet not reached the relative peace of the school curriculum. Many, including the present authors, would argue that this peace tends to be the peace of the cemetery where dust sediments on top of the content, simply because of the contradiction (often but not always present) between being educated and being schooled. We mention this at such length because it brings out the tremendous social significance of non-formal education more clearly.

We can now introduce age in the picture, using three categories: children (pre-school), pupils (school age) and adults (post-school), defining school age as the age of obligatory and customary formal schooling in the country concerned. In some countries this would include universities, in most countries not, nor high schools for that matter. Leaving non-formal learning and formal schooling aside - the former because it is almost identical with life itself (the person who no longer learns, no longer grows, is hardly conceivable although the learning may take form of contradiction of cognitive maps and action repertoires rather than expansion), the latter because so much measurement routine already exists - it is clear that our concern is with non-formal education and non-formal schooling for adults, including when there are some non-adult participants in that education, or the adults participate in educational settings designed for non-adults. What we want to know is simply how much education goes on in society in addition to the formal schooling, and we shall try to develop answers that also might include the non-adult population.

1.2. A discussion

Let us now look systematically at how the approach taken in the preceding pages squares with the approach taken in the document underlying this entire exercise.¹⁵ The basic approach is the same, which is interesting since they were developed independently of each other, but there are some important differences, or emphases, that have some bearing on how one tries to get the problem of measurement.

In the document communication plays a fundamental role in the definition of education, and is defined as "the transfer of information ("messages") by the transmission of stimuli ("signals") from one person to another or others".¹⁶ It is pointed out that "communication may be direct or indirect, and may involve a wide variety of channels of media".¹⁷ There is no objection to this definition, we would only like to emphasize that communication does not have to be by means of symbols (verbal symbols, spoken or written: pictures etc.) but that the "signals" can also be the thing itself, face-to-face demonstration of action sequences - for imitation purposes. Nor does communication have to be from one who has learnt more to one who has learnt less (vertical education), it may be between people at the same level of learning (horizontal education) and also between one person and him-or herself (self-education). This is particularly important to keep in mind because indirect communication, and not only through modern mass media but also through books etc., tends to make the communication process verbal and vertical, for one cannot transmit action at a distance, nor is it easy to establish the type of feedback that makes the teacher a co-learner. Thus, it is important to see many "modern" methods of education, particularly non-formal education, as very special in their method and structure, and this should be reflected in any measurement.

When it comes to learning the document does not make the explicit distinction between the inner and outer aspects, the cognitive maps (information, knowledge, understanding, attitudes)¹⁸ and the action repertory (behavior, skill, capability),¹⁸ which means that one is less forced, by the conceptualization, to explore the dialectics between the two. On the other hand, the definition emphasizes that learning refers to changes "which can be retained and cannot be ascribed to physical growth or to the development of

inherited (instinctive) behaviour patterns".¹⁹ This is an important qualification, and more or less coincides with what we have tried to express insisting on the term "action" rather than "behaviour". We also strongly agree that learning can be "brought about both by response to stimuli from the environment and "may result from internal processes", and that random learning is not education.²⁰

Education is then defined as "organized communication designed to bring about learning".²¹ There is a difference here when it comes to what is meant by "organization": we have used a minimum criterion, the existence of roles as teacher and learner (that may or may not coincide as roles and/or as persons); the document feels that it involves "an educational-providing agency which organizes the learning situation or teachers who direct the communication".²² We feel that the first clause will focus the emphasis unduly on organized education, e.g. with a governmental bureaucracy, and the second clause tends in the direction of vertical education only. This is brought out more clearly when the etymological reference is brought in: "e-ducare (lat.) implies the existence of a 'leader' and followers".²³ It should be noted that this is more an ideology as to how education should take place than a definition, and our argument would be in favor not of a "value-free" definition (that hardly exists in social sciences), but a more pluralistic definition that puts vertical, horizontal and self-education on an equal footing.

The key border-line between formal and non-formal education is drawn at the point where "any of the learners is enrolled or registered for a particular educational programme".²⁴ This is an important distinction, and particularly from the point of view of measurement: it becomes more easy to measure when learners are enrolled, and particularly when they are registered - the problem is measure non-formal education. But the distinction is not sufficiently fruitful theoretically, not enough follows from it - it is more of a technicality. Nothing really crucial happens when there is "recording of the student's name and other particulars in a register, which is often used to record attendances or submission of written material"²⁵ - it may merely reflect a general tendency toward bureaucratization in the society. On the other hand, we very much agree that the distinction between formal and non-formal education should not be confused with informal methods of learning - presumably referring to more emphasis on non-verbal education, and on horizontal and self-education. For the latter the document uses the term "self-directed learning" ("in which no educational agency

or teacher is consciously involved").²⁶ The concept excludes "students enrolled in correspondence, television or radio courses",²⁷ with which we agree - that is indirect, symbolic and vertical education. But the extremely important category of horizontal education is given a somewhat peripheral five words treatment: /self-directed learners/ "are never enrolled in groups for the purpose of learning (e.g. classes), though they may meet together" (italics ours).²⁸

The authors of the document have felt, that a reference is needed to other characteristics of non-formal vs. formal education, and three of them seem to be theoretically highly significant: whether one is "enrolled according to prior educational experience", whether the curriculum is "oriented towards examinations and certificates", and whether the intention is to lay a foundation for further studies, or to complete previous studies".²⁹ These criteria would land the education in what we have referred to as schooling, as a link in the schooling chain, possibly the final link providing the learner with a certificate that entitles him or her to compete for a job. On the other hand, the document has a definition of "regular school and university education" ("the regular progression or 'ladder' of formal education followed by children and young people - -")³⁰ that is identical with our definition of formal schooling. It is pointed out that this type of education is generally designed for a certain age group - 5-7 years old and onwards, depending on how long the chain is - that it is both extensive and intensive, generally full time and of long duration, that it takes place in regular schools and universities, that the teaching methods are adapted for that age group, that the teachers are generally full-time professionals, and that the providing agency is a ministry and/or the universities.³¹ The characteristics, however, are either by definition (school and university education take place in schools and universities) or a reading of today's situation which tomorrow may no longer obtain. Thus, it is quite conceivable that formal schooling may be changed so as to mix age groups, spreading the formal schooling throughout the life cycle rather than concentrating it in the age bracket 5-7 to the early twenties, and that the teachers and learners may coalesce and the teachers become less professional. What makes it formal schooling is the control, the correlation of the sorting with other sub-systems in society, particularly the production process. This may not have to be done by a central ministry, it can also be done at a more local level -

but there will always be an element of power involved.

Hence, the comparison leads to the following conclusion:

Table 1. A comparison of definitions.

Ours	Learning non-formal	Education non-formal	Schooling non-formal	Schooling formal
Document	Learning, random and from experi- ence	Non-formal education, and formal, level 9	Formal education, levels 1-7	Regular school and university education

The levels that are brought in here are the levels of formal education; level 1 being primary, levels 2-3 secondary, levels 5-7 tertiary education; so these would be courses parallel to the formal system, often designed for adults to provide them with a parallel channel. The students would be enrolled according to prior education experience, except for level 9, "education not definable by level". Thus, there is agreement as to what to exclude at either end: formalization levels 0 and 3 in our terms. But there are also some differences, although mainly in terminology, when it comes to the intermediate levels. This does not matter so much since the exercise is about "statistics on adult education", and there is complete agreement when it comes to how to conceive of "adults". The definition in the document seems impeccable; it is "out-of-school education", "provided for the benefit and adapted to the needs of persons not in the regular school and university system and generally fifteen years or older".³² The only objection might be that age is a less important variable than the level of formalization. The task seems rather to be how much education goes on in a society in addition to the regular school and university system, not how much of that is imparted in adults, generally fifteen years or older. The document recognizes this problem and lands on the idea of "out-of-school education" (French: education extra-scolaire).³³

We have gone to this length in developing the taxonomy and in comparing taxonomies because it is important for the purpose of this study. The purpose of a good taxonomy is not only to develop categories that can serve as receptacles for statistically oriented data-collection. The categories also have to be theoretically related so that the data collected become meaningful. Moreover, the categories should also be politically relevant in the sense that they reflect issues, debates. And there is a political issue underlying this taxonomy: the more formal a learning system is, the more legitimate

is central control.

To see this more clearly and give more meat to these cut-and-dried categories two studies have been prepared, as Appendix 1 and Appendix 2 to the present report - The Politics of formal/non-formal Education: A Chilean Experience 1972-73 (by Malva Cifuentes) and Non-formal Education in Norway and Sweden: A Perspective (by Veslemøy Wiese). Being from developing and developed countries respectively they should at least offer some insight into the adequacy and the meaning of the definition offered.

2. WHAT TO MEASURE

2.1. Our approach

We now proceed to the problem of measurement, noting that it concerns "various inputs and outputs that are to be found in a total delivery system of adult education".³⁴ The formulation points to two different ways of approaching the problem, focussing on "various inputs and outputs", and focussing on the "total delivery system of adult education". There is an important difference between these two approaches: the input/output approach is in terms of variables, many of them relatively easy to measure, others more unapproachable whereas the system approach is essentially structural, an effort to conceive of the system in more holistic terms. Structures, however, can also to some extent be expressed in terms of variables, only that these parameters reflect geometrical properties rather than properties of statistical distributions.³⁵ This difference is important, for the first perspective is more compatible with an individualized, actor-oriented approach to the study of society, the second more with a structure-oriented approach.³⁶ If one rides on only one of them there may be hidden ideological biases - hidden because they are usually not evident to the rider - so again we would argue in favor of a more pluralistic, eclectic approach. What is meant by these ideological assumptions will be clear in the following.

Then there is a second guiding principle that should be made explicit. Although the focus is not on formal schooling we shall develop measures that can also be relevant for that part of the total education. More particularly, we shall try to develop measures so that the conventional measures of formal schooling found in educational statistics (such input measures as budget appropriations, no. of teachers, physical facilities available, teaching material and such output measures as enrollment figures for learners, number of graduates, perhaps also measures of their "added learning") will still be there, but only as a part of the total set of measures conceivable, and available with more or less difficulty. It should not be too difficult simply to copy these conventional measures for non-formal schooling and non-formal education³⁷ - but it is strongly felt that something is needed in addition to that.

To start with let us not bother with "how do you get data to measure that", but rather try to understand what we are after so that available answers do not distort the question we ought

to ask. This can be done in a very simplistic manner, proceeding step by step. Thus, let us start with the simplest educational situation possible, a vertical teacher-learner dyad:

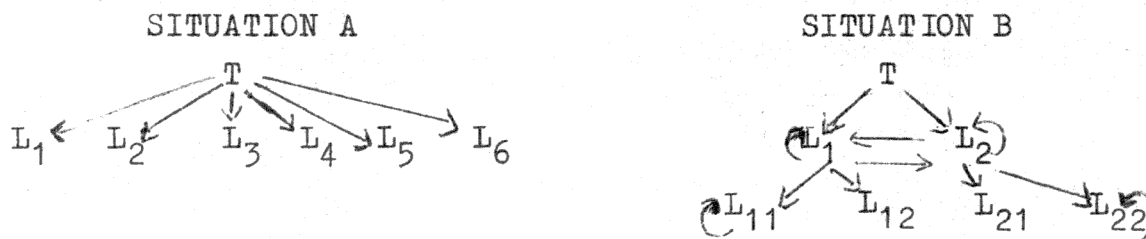
Figure 2. Input/output and the teacher-learner dyad.

<u>Input side</u>	TEACHER(S)
<u>Output side</u>	LEARNER(S)

One could now ask questions about how intensive the education is (how much exposure given to any one learner), how extensive it is (how many learners participate, which would lead to questions about output/input ratios, learner/teacher ratios³⁸ that very often are used - but do not really measure how much education is going on, but possibly cost efficiency).

The picture becomes more interesting the moment one puts a magnifying glass on either part. Let us start with the output side, since that is the most important one - after all the goal is education and that is output; the inputs are means toward that end. We shall compare two situations, both involving one teacher and six learners:

Figure 3. The output side, two images.



In Situation A, a very conventional one, the teacher has six learners, for instance in a class, and teaches all of them. In Situation B he has only two learners, but three important ingredients are added to the vertical education of Figure 3A

- there is horizontal education between the learners
- there is self-education, within the learners
- there is a chain-effect, the learners become teachers and start teaching others.

In the Figure horizontal education could also have developed at the second learner level, there could have been more self-education, and there could be more levels; not only a second but a third, fourth etc. learner generation.

It should be emphasized that these three important processes may or may not take place at the same time as the teacher communicates to learners L_1 and L_2 . We are not so much thinking of horizontal education between L_1 and L_2 as a pedagogical technique they use in order to learn what the teacher has communicated, of self-education as simple homework to be controlled by the teacher afterwards or of the chain-effect as a way of testing out (not to mention of bragging about) new knowledge on outsiders. The crucial point here is to what extent the education has engendered a process of continued horizontal education, self-education or the teaching of others vs. simply dying out the moment the teacher-learner situation is dissolved. Without having anything but introspection and intuition to build on: this seems precisely to be a basic shortcoming in formal schooling - there is so little or no educational momentum beyond graduation. The graduates do not continue studying what they studied at school, they do not seek each other's company for further development in the same (or other) directions, they do not bring the message to others. There are probably two reasons for this: since the setting is predominantly like in situation A they have not learnt how to engage in horizontal education, self-education or the teaching of others, and since so much of the focus is on graduation, on status rather than learning, nor do they care. And this is precisely the reason why somebody who has a message might prefer to launch it in a system of non-formal rather than formal education (not to mention formal schooling) simply because of the desire to engender these three processes (which may or may not be inspired by scarce input resources).

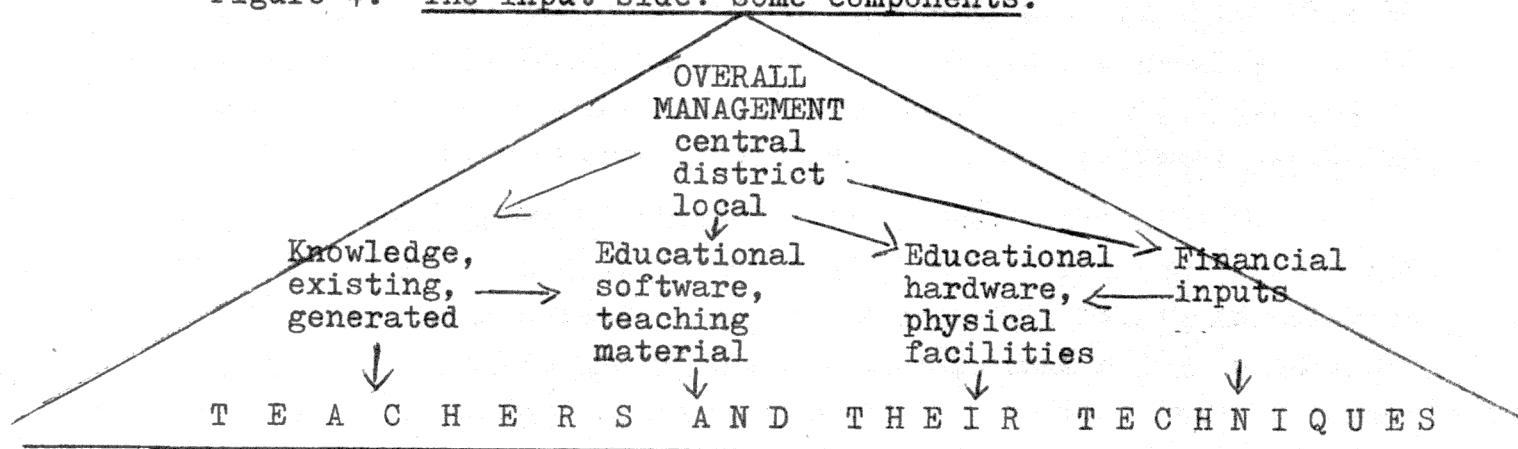
The point is now, simply, that any measure that only reflects situation A characteristics reflects an ideology of education as vertical, defines the learners as the final receptacles as knowledge and skills, and the social output as the sum of individual learning outputs. This may be realistic as a reflection of what goes on in formal schooling, but falls short of capturing non-formal education. There is also in the measure a certain protection of the monopoly on education held by teachers, the assumption being that only teachers can teach and that more is needed to become a teacher than simply to have been a learner, e.g., to be certified.

This should be contrasted with the way in which, for instance, certain medical practices, including acupuncture, are diffused in the Chinese population: there are some centres where teachers meet learners, learners are then taught how to proceed

with their studies, individually or together (e.g. practising acupuncture on oneself and each other, thereby learning how it works), and to bring the knowledge further.³⁹ In Situation B there is also an indirect output to individual learners, and the social benefit is more than the sum of individual benefits: there is also a system benefit, education serves to induce a richer social structure. Not only individuals, the total system learns, adding up to a true learning society.

Let us then apply the same magnifying glass to the input side. It becomes immediately more fuzzy, for it is impossible to try to capture in simple diagrams the tremendous variation found in such input systems. We shall therefore rely on specialists in the field, assuming that they have captured the essential on the input side of a "total delivery system":⁴⁰

Figure 4. The input side: some components.



Just as there is more to learners than what meets the open eye of the teacher in the educational setting, there is more to the teachers and their educational techniques than the learners usually see. First of all, not included in the Figure: the teachers may (or may not) also engage in horizontal education and self-education -- that they teach others is their raison d'être. Just as learners should not be conceived of as a set of detached individuals but as a (potential) structure, so should teachers. Second, teachers do not operate in vacuum but draw on stocks of knowledge, on teaching material, they use physical facilities even if only the shadow of a tree and some cardboard to write on, and there may be financial inputs. Third, on top of all this there may or may not be an "overall management", at the local, district and/or central levels; engaging in administration, research, development.

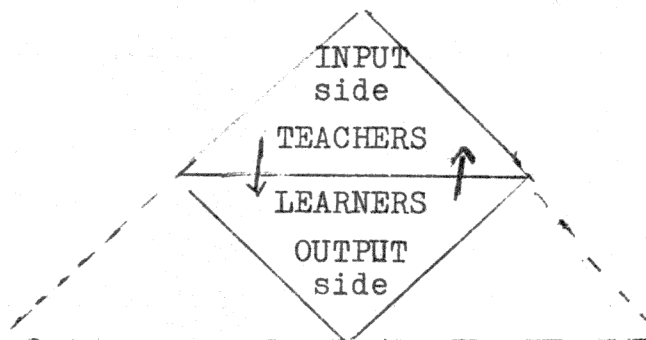
We can now apply the reasoning we used on the output side above to the input side, and ask the germane question:⁴¹ to what extent is this a structure, not merely a set of detached, uncoordinated elements? It is well known that any level in the Figure may live its own life, the bureaucracy may swell, feeding on itself, without generating more inputs that through the teachers can reach the learners. Thus, we have to know the elasticities of this sytem: given, say, a ten percent increase in the overall management (in terms of personnel), how many percent increase do we get in the knowledge, software and hardware that the teachers can make use of in their teaching - more than ten percent, ten percent, less than ten percent, or the not at all inconceivable zero percent, or even negative growth? Similarly for the financial inputs: what is the effect of a ten percent increase? Ideally, the elasticity should be above unity; it should at least not be zero or negative. In general, the question may be formulated as follows: given $x\%$ increase in the inputs, what is the $y\%$ increase in the other inputs, and above all, what is the $z\%$ increase in the total teaching input to the first generation learners?

At this point, however, it should be remembered that inputs are means, the goal is the output in the sense of "added learning", to individuals and the system. Even if the teaching input increases by $z\%$ the learning output may be below $z\%$, even zero or negative simply because of limited absorbtion capacity, saturation and fatigue effects. In some countries the problem may not be too little but too much education, too many programs calling for the serious attention of learners finite both in numbers and capacity to absorb. The result may be a solid crust of apathy,⁴² - a not unreasonable defense against too much non-formal education - and it will show up as very low, zero or negative elasticities across the output/input border in the "total delivery system". And this actually brings out an important aspect of formal schooling, certainly positive to many: in that system education is circumscribed, one knows that somebody has a legitimate demand on one's attention, but one also knows the limitations of that legitimacy. It is very clear when one steps in and out of the role as learner. It is also clear under many forms of non-formal education, but particularly due to the mass media it is possible for teachers to force people into learners by creating an artificial learning environment for them. The major examples here are, of course, commercial and political propaganda⁴³ - and it may be that one should add to the definition of non-formal education

not only that there is a role as learner (and teacher) but also that the decision to enter that role is a (relatively) free one.⁴⁴

We have now explored the input side, the output side, the input-output relation and time has come for the fourth component in a picture of the total structure: the output-input relation:

Figure 5. The total education structure



How can the learners not only react on themselves and other learners, but on the whole input side, and have an impact on it? This depends, of course, on which inputs on the input side. In the first run one may ask what feed-back provisions there are from learners to teachers, meaning simply the possibility of asking questions of clarification, then enter into a dialogue, ultimately even reversing the teacher-learner relationship. The question is of crucial significance not only because of the pedagogical importance for the learner but for the teacher to develop further rather than stabilizing as an unopposed source of learning - and because of the structural implications. A structure where the teacher-learner relation remains vertical for lack of feed-back and because there is always a fresh supply of unspoilt (untaught) learners to play the underdog role when the former have reached the stage where they could "hit back" and left the role ("I am through with the course, nothing more to get there") is a mirror reflection of a stable, vertical society and as such an ideological message.⁴⁵ For we assume, paraphrasing MacLuhan,⁴⁶ that for education "the structure is the message" - not the whole message for sure, but a substantial part of it.

Then there are the other inputs and the possible impact the learners can have on them. Can they affect the knowledge pool, e.g. by generating knowledge in the education process that becomes a part of the stock, in the form of learner experiences (student term papers and exam papers in the conventional university) that

are then used later in an ongoing learning process? Can the contribute to the educational software, encouraged or unencouraged, be their teachers? Can they contribute to the hardware, through volunteer work on the buildings etc., and the closely related question: can they contribute to the financial inputs, directly through fees, indirectly through taxes, perhaps by other contributions as well? And finally, the highly important question: is there any way in which they can reach the overall management, questioning them, complaining, criticising, advising, and so on?

Many would object to these questions that (1) they are ideological, (2) they have nothing to do with education. Imagine, however, that the answers were in the affirmative to all the questions in the preceding paragraphs. This would mean a "total delivery system" where the learners and the teachers:

- can Communicate to the teachers
- can enter into a horizontal dialogue with them
- can have occasions where the learner/teacher roles are reversed
- can contribute to the knowledge stock
- can contribute to the educational software
- can contribute to the educational hardware
- can contribute to the financial inputs
- can influence the overall management.

One might then say that in this case the total structure would be a signal conveying a message of horizontal education and relations in general, and a message of comparative decentralization; compared to the opposite message: that of a totally vertical structure where the management, particularly the central part of it, generates or makes available the knowledge pool, the educational software and hardware and the financial inputs, instructing the teachers how to teach so that they in turn can imbue the learners with the educational message. We would argue that if the eight points above are ideological so are, indeed, their negation and that an evaluation/measurement procedure that fails to reflect these characteristics glosses over an important issue. Not to reflect it is as ideological as to reflect it; when it is reflected in the data one can always argue what is better, the more vertical or the more horizontal structure. There is hardly any doubt where the authors' sympathies are located, and one reason is precisely educational: the conviction that learning in a horizontal, dialogical, subject to subject setting is of a different quality,

deeper and more of a preparation to personal growth and social participation than learning that takes place in a vertical, one-way, subject to object setting.⁴⁷

The points just made become of particular significance when they are used to evaluate, critically, many forms of non-formal education based on indirect communication - written communication through books, magazines, correspondence courses, oral communication through the electronic mass media and movies. First of all, all these forms tend to fragment the learners and bring about the situation depicted in Situation A in Figure 3 - without even loops of self-education, as argued above. Of course, the output-input ratio is considerably higher - one author or speaker can reach thousands, millions - a good indicator of how this measure (derived from an economistic approach) tends to direct our attention in very special, even blatantly wrong direction. Second, seven of the eight questions in the preceding paragraph usually have to be answered in the negative (the eighth being the question of the possibility of contributing to the financial inputs - it is granted, there are usually fees to be paid or at least the price of the book).

Of course, there are well known remedies: the encouragement to study further; the organization of readers' or viewers' or listeners' study groups to discuss and develop further; the possibility of spreading the message through a two-step (or many-step) flow of communication;⁴⁸ the possibility of writing the author/teacher, institutionalized in the correspondence course or the Open University type of TV education; not to mention the more recent innovation of a write-in book that can be returned to the author with comments (or special pages that can be torn out for that purpose);⁴⁹ the possibility of sending ideas to the author and the mass media, even of influencing it substantially through citizens' channels etc. Thus, the point is not that the situation is irremediable, only that these are important issues and that any educational setting should be evaluated/measured in terms of its ability to meet with these requirements. In so doing one will also encourage new ways of horizontalizing any form of education, e.g. more of a push in the direction of two-way TV channels, more use of TV education with call-ins over the telephone, two-way radio in poorer districts, and forms we do not know today - if we knew them we probably would already have them.

Having said this much about indirect non-formal education one might turn to direct non-formal education to take note of its great (at least potential) advantages relative to the indirect form and relative to the formal schooling. If it is operating locally, is not so richly endowed as to afford indirect communication and impressive software and hardware, learners and teachers may form a closely knit, even very horizontal and multilateral group, particularly if the knowledge distance between teachers and learners is not too excessive. At this local level of the ujamaa or sarvodaya or People's Commune villages,⁵⁰ things are possible because the economy is labor-intensive, and they quickly disappear in a more capital-intensive economy. But these potential virtues can also disappear at the poor micro level provided a highly vertical structure is adopted, often in an unreflected manner, simply transplanted from structures found in politics, economic life and - above all - in formal schooling. We mention this partly in order to make the point that this is a field where non-formal education may score very high even when it is neither particularly intensive, nor extensive - and a field where formal schooling may score low regardless of how impressive it is along those dimensions.

2.2 A discussion

Again, to highlight better what is said in the preceding pages, let us make a very brief comparison with the approach taken in another document underlying this exercise.⁵¹ We have been drawing on that document, but have also departed from it, for reasons that will be indicated below.

Very fruitful in that approach is the idea of learning as a system, clearly illustrated in the figures accompanying the verbal presentation.⁵² However, there is a disagreement and a rather fundamental one: the learning system as conceived of in that approach somehow does not seem to include the "primary clients of the system", the learners themselves. Rather, it looks as if the entire learning system, richly endowed with feed-back arrows, is squatting on the top of the backs (or the heads) of the learners, injecting them with inputs of various kinds. In so being it looks more like a conventional formal schooling system where the influence of the children on the school authorities is certainly minimal - and not like a system of non-formal education for adults.

Further, the outputs of the system are conceived of in individualistic terms; only individuals learn ("outputs: the actual "added learning" the participants carry away from the programme over and above what they brought into it!")⁵³ There is no concept of structure that somehow learns by changing, becoming more autonomous, horizontal, multilateral - no concept of system-oriented outputs. Of course, this is in a sense only a more general way of restating the argument made in the preceding paragraph - both of them aiming at the same underlying "actor-oriented" ideology - of which the author may not be aware himself.

But apart from these objections the conceptual apparatus developed was found very useful, particularly in a somewhat simplified version.⁵⁴ Among the many illuminating insights that we feel any measurement system should try to take into account we would like to emphasize the following:

- (1) Too "heavy reliance on full-time professionally trained personnel for local-level instruction".⁵⁵ This tends to create bottlenecks, the problem how to start a process that creates its own "professionals" - and we doubt that this can be done in a system where the individual learner is considered the final receptacle of knowledge.

- (2) The principle of opportunity costs: that the learners may lose something by attending when they have to "assemble at a particular place and regular time"⁵⁶ is important, and should be taken into account.
- (3) "The classroom setting and didactic teaching methods are often far less motivating and conducive to learning than more realistic settings and more dynamic pedagogical approaches"⁵⁷ - again a way of pointing to how non-formal education often may be superior if it manages to get the learners out of the ghetto of the school, and put an end to the sharp division between school and work found in most societies.
- (4) The multi-media, multi-method approach that gives an "opportunity for learners and instructors alike to benefit from a constantly replenished stream of fresh knowledge and stimulation through other media"⁵⁸ - here one might simply count the number of "pedagogical channels used" if somebody could establish a good typology. On the other hand, mass media also have their shortcomings.⁵⁹
- (5) The significance of evaluation, that statistics on non-formal education should be a part of an evaluation process, and that evaluation should be demystified⁶⁰ - which should imply an open discussion of the goals of non-formal education. What kind of individual change? ("Did they get a job utilizing their new occupational skills, or get a promotion and higher wages?"⁶¹ is the type of individual-oriented criterion that takes existing society for granted. "Have they passed their new learning to others?"⁶¹ is better, it includes the system-oriented dimension - but we are still left with the baffling problem of whether the learning deserves being passed on at all.) What kind of system change? - is it the conventional technical-economic growth model of development that will be the implicit or explicit evaluation criterion, e.g. higher productivity? If not, what do we have to offer?
- (6) Many "critical relationships" for possible measurement/evaluation are mentioned⁶²: relation between program and objective needs; between program's content and technology and its objectives and clientele (but we object to the term "clientele"); to what extent the chosen educational technology is used effectively; the relation between input cost and outputs (cost-effectiveness); the relation between input costs and

corresponding benefits of all types (cost-benefit; the relation to other educational programs; the "relation between the size of the clientele actually served and the total clientele that could presumably benefit from the programme"⁶³ and so on.

- (7) Finally, we would like to draw the attention of the excellent recommendation that evaluation should be decentralized⁶⁴ - - that ways and means should be found so that it could be carried out without the participation of highly skilled social scientists - almost inevitably playing into a reliance on central authorities and their criteria.

The problem now is to get as many as possible of these and other useful ideas carried over into concrete suggestions for measures.

3. HOW TO MEASURE

3.1. A survey of the approaches.

Essentially there are only two approaches to the measurement of education, any form of education: a fragmented, atomized approach in terms of measuring input and output variables, and a more holistic, molecular approach in terms of measuring structures. According to the former approach education can be seen in terms of a set of inputs and outputs, each to be measured separately; according to the latter these sets constitutes an input structure, an output structure and a total structure - and measures should be developed precisely of the extent to which these sets are structures, not merely sets of unrelated elements. For that purpose there are two approaches to be recommended: the elasticity approach and the graph-theoretical approach. We shall give some indications on all three - the variable, elasticity and graph-theoretical approaches, and conclude with some additional remarks on how to get the data, and on future research priorities in this field.

3.2. The variable approach.

(1) The input side.

Any form of education bears some similarity to production: capital and workers and knowledge (either in its frozen form as "capital goods" or in its more dynamic form as "skilled workers") are brought to bear on raw materials in order to produce processed goods. In the present case the capital is the nonformal education appropriation split into many components; the workers are the teachers at various levels; the knowledge takes the form of educational hardware (buildings, equipment) and educational software (programs). Behind these three is an entire structure for producing this knowledge: training establishments for teachers of adults, research institutes for adult education, administrative and other support services for adult education, publicity and market research and statistical services.⁶⁵ The "raw materials", then, are the learners; the "processed goods" are the graduates - only with the rather important difference that they are not only able to but indeed have^a right to decide over their own "processing". The metaphor, explicitly or implicitly drawn upon by most people working in this field, serves to order our thinking about the inputs into three categories: total budget, total manpower and the machinery

available to develop and administer budget and manpower.

One might now simply go ahead finding data on capital and manpower inputs at all levels in a pyramid with a local base, a district intermediate level and a national central level.⁶⁶ At the lower level would be the teachers, at the intermediate level, say, the institutions for training the teachers, and at the top level the institutions that generate programs for teachers and for the teachers of teachers, and the resources for the educational hardware and software. One might also develop an index giving more weights to inputs at the top level on the assumption that such inputs would have a higher multiplier effect (this, however, depends on the extent to which one is dealing with a system, and the elasticities of that system, see 3.3). No doubt, these data should be available, but we would nevertheless warn against the approach as an unreflected carry-over from the corresponding approach for the measurement of the amount of formal schooling.

The reason is simply that this would tend to favor a view of nonformal education as something separate from the rest of social reality. A much better approach, it would seem, would be to find out to what extent existing social situations are made use of for their educational potential. Take security precautions at work: where are they best taught, at work, or in a separate setting? When taught at work the teachers/learners are already there, the educational hardware is there -- in other words, there are hidden resources to draw upon, capital-wise as well as manpower-wise. The unit is an educational situation, a pedagogical opportunity not lost; not an accounting unit or a manpower unit multiplied with "level". If nevertheless some input should be measured it should be all kinds of inputs that would stimulate the awareness of people, in any work situation, of such pedagogical opportunities in order to identify them and know how to make use of them. Much more important than night courses for workers in separate facilities (e.g. off-hours use of schools) would be seminars injected into the working routine of a factory, even stopping the factory for that hour. When our thinking is so easily steered in the direction of separate inputs for any type of education it is probably because we tend to see work as sacred and education somehow as its hand-maiden. Work is too important to be "disturbed" by education.

Admittedly this does not lead to any easy answer as to quantity and quality of inputs - but then it may also be that the question is wrong because it is not formulated as a system level. Maybe the problem is that we should rather think in terms of a teaching society where people, all people, are trained to share knowledge and skills and where the social setting in itself is more conducive to learning. Thus, there is much more to learn in an artisan setting than in a routinized factory setting, so the problem may well be to what extent society itself, particularly in the form of work, offers sufficient challenge ("uncertainty", "entropy") to stimulate teaching/learning.⁶⁷ It may also well be that the entire search for nonformal education, deeper seen, is little but an effort to compensate in verbal ways for what has been lost in recent generations through the routinization of work. And this idea, in turn, would lead to ask the following basic question about inputs: what proportion of jobs in a given society have challenge (to be met) and uncertainty (to be overcome through understanding and decision-making) built into them?

Needless to say these two approaches to input variables, in terms of resources (capital and manpower at various levels) and built-in challenge do not exclude each other. There are things that can be learnt from which there is no existing structure in society, at least not in work-situations; and even when there are such settings somebody usually has to point it out and do some initial teaching about the teaching. Hence, all the measures indicated in the beginning of this section on input variables are relevant as long as one does not stop there. But there is still one important problem to be tackled: how shall the costs be calculated, relative to what; if we assume that manpower can be translated to costs - for sake of simplicity - through the mechanism of salaries?

Of course they can all be stated in absolute terms, at constant prices. They should probably not be stated in per capita terms, relative to the population of the country, nor relative to the number of learners. In most cases a nonformal education system is endowed with considerable flexibility and could easily absorb many more learners - as would be the case for most programs making extensive use of mass media. This, however, should make us think more in terms of costs relative to the need, if possible translated into the number of potential learners, than cost relative to the actual number of learners. For the case of formal

schooling one has for a long time evaluated inputs (and outputs, enrolled and graduated) relative to the cohort rather than relative to the total population. In this case with more or less obligatory schooling, it is obvious who are the potential learners; for nonformal education it is often the whole society - for instance the case of insight into what the future might bring.⁶⁸ There is the big virtue of such measures that division by the number of potential learners emphasizes even more fully how little is done, how little is "invested".

Another problem worth mentioning has to do with opportunity costs, the costs born by participants if they could have used that time "profitably" in some other way. If one really wants to get an impression of the total costs this has to be included. But there is also another point involved: opportunity costs are likely to be lower the closer the integration between education and work. Take a labor-intensive economy: has anybody calculated the costs when society is deprived of the working power of everybody 7-15 years old? (not to mention the obvious reverse question - to what extent is the idea of formal schooling a way ^{of} reducing the manpower stock so as to bring less pressure on an increasingly capital-and research-intensive economy?)

Still another problem: we have put the learners on the output side, but the correct formulation (as will be pointed out below) would be learning; what goes on inside and among learners? Learners as "raw material" are on the input side and that raises an important question very easily forgotten: not only how many learners are put into the education machinery, but which ones - quality in addition to quantity? Are they representative of the groups and classes of society, or does the machinery favor some parts of society and disfavor others? For instance, are the opportunity costs borne individually (or by the family) of working class or rural families so high that they cannot afford to participate? In short, what is the social composition of the learners in any form of non-obligatory education?

Finally, it should be pointed out that all these input variables are related to each other, at least potentially. The key question is not only how much knowledge input, but how much knowledge is generated by the system and fed back to the knowledge-store - as pointed out above, and to be translated into measuring strategies below (in 3.3).

(2) The output side

Again, there is the difficulty in saying anything non-trivial. The output side is the society, it consists of individuals and structure and culture. The learners are supposed to learn as a result of their participation, the structure to improve, the culture to grow. Hence, one has to find out whether there is any "added" learning, any impact of the course on the cognitive map (knowledge, understanding, attitudes) and/or the action repertory (skills, capabilities), and any change in the structure. A bad indicator here would be how many learners there were and for how long; the total number of learner-hours of instruction and of independent study. As a matter of fact, this indicator should probably rather be on the input side - it is the learner input in the educative effort. The output must be in terms of what was learnt, and one indicator would be the number who passed the course and complied with the requirements. But this presupposes that there are such requirements. In the case of formal education there are, almost by definition, a rite de passage before one is "born anew", holding a new status, but this is not necessarily the case for non-formal education.

However, even if there were, there is a dimension of retention in learning that would not be reflected in the number of graduates, even when weighted by their examination grades, but is reflected in the insistence on "durable" change in the definition of learning in 1.1. On the contrary, there is even the suspicion that the more emphasis there is on examination, the more distortion will there be in the learning process in the direction of coping adequately with exams, and both intention and retention would suffer. Hence, there should be some measurement after a certain period, say, one year, of how much (and what) added knowledge is retained and how many (and which) skills have been modified. The trouble with this is that it almost has to be a before-after study, subtracting the level of learning before the exposure from the level retained after a certain period.

In addition to this, however, there is the dialectic between the two aspects of learning. It might be worth while to measure not only knowledge and skills separately, but also to what extent added knowledge has been converted into new skills, and modified skills are supported by modified knowledge. In short: has the theory been practiced, and is the practice understood -

not necessarily the way intended by the teachers in accordance with their "pädagogische Zielsetzung", but in some way meaningful to the learners themselves? Here it may be objected that this interrelation does not belong to the definition of learning. But the hunch is that even if it does not it should: since man has the capacity both of symbolic manipulation and of action, and the capacity of relating them to each other, he should be evaluated in terms of his potential - not merely as a computer memory or as a robot. For learning that remains within the individual as a change in the cognitive map does not reach the social level, and learning only in the form of added skills can not so easily be communicated to others.

3.3. The elasticity approach.

Common to this approach is the idea of testing to what extent the set of variables or factors just mentioned constitutes a system by measuring the degree of interdependence. This, then, is done by measuring what effect an increase of one variable has on any other variable, both changes measured in percent of the base value. A time period, for instance a year, has to be specified. In the beginning of the period there is an increase of $x\%$ on the first variable, usually brought in by administrative fiat; by the end of the period one reads off the change $y\%$ on the second variable. The ratio y/x is the elasticity over that time period (and in that variable range); the crucial intervals and points are

- (a) greater than unity: one reaps more than one sows
- (b) unity: one reaps as much as one sows
- (c) less than unity: one reaps less than one sows
- (d) zero: no added harvest, inelasticity
- (e) less than zero: the change was counterproductive

If the finding is (c), (d), not to mention (e) the conclusion should be that there is something fundamentally wrong with the system, - it is weakly connected, unconnected, or counter-connected - or at least that it has come to/is close to its saturation point.

This approach can now be applied to the input side, the output side, and to the total system. Applied to the input side it would tell us something about, for instance, the capacity of the system to generate more teachers given a certain increase in the overall management or the financial input; or to generate more

educational software given the same changes in key inputs. Applied to the output side it would tell us something about the capacity learners have to generate more learners: with an $x\%$ increase in the number of first generation learners, what is the increase in the number of second generation learners? (Of course, it may be zero in any case - Situation A in Figure 3. - and hence also show a zero percent increase). In this case the second generation of learners may mean two different things: ideally it would mean learners trained by former learners (in which case this would be a measure of the chain effect) but it could also mean learners attracted by former learners. Incidentally, in either case it should be remembered that the ideal output measure is not number of learners but amount of learning.

Then there is the major application, to the system as a whole. What increase in input generates what increase in output? It is a rather important question for this is the way of finding the key input variables, which is one approach to the "bottleneck problem". What generates more additional learning, 10% increase in the overall management, in the knowledge stock available, in software, in hardware or in the financial inputs (to the extent that they can be isolated from the other factors)? If one knew, input variables could be ordered according to the size of the elasticities and this would at the same time be a catalogue of strategic significance. However, the ordering may certainly differ from one country to the other, from one course to the other, and for the same course over time: the level of diminishing, even negative returns may be reached for the first variable on the list and one would have to turn to the next.

The difference between the output/input ratio and the output change/input change ratio should be noted. The former is static and tells us how much output we get for a unit input; the latter is dynamic and tells us how much change we get in output for a change in input. There is no simple relation between the two: one may be high and the other low, and vice versa. One measures the cost efficiency, the other how the system is connected as a structure. Both may be useful as measures, but we repeat the warning against the former: it tends to point in the direction of a type of short-run efficiency that may be counterproductive in the longer run, because of the structural poverty is usually

3.4. The graph-theoretical approach

Essentially this is exactly an effort to measure the level of structural richness/poverty in the total system. As an example compare again Situation A and B in Figure 3: in both cases there are seven "elements" (teachers/learners), but B is certainly richer than A in terms of relations linking these elements to each other and themselves. If each arrow stands for "communication", then there are six such communication links in A (from the teacher to each one of the learners), and twelve in B - six for vertical education, two for horizontal education and four for self-education. But whereas six is the minimum number (in general $n-1$, if n is the number of elements), twelve is certainly not the maximum number; 49 is (each one communicates to everybody, including himself), or in general n^2 . That number also includes the possibility of learners communicating to the teacher, not included in the figure. Hence, one simple measure of the level of saturation of a teacher/learner structure would be:

$$\frac{m_2}{n^2} = \frac{(n-1)}{(n-1)}$$

where m is the number of links found (one might also have separate measures for each type of link). The measure varies between 0 and 1 for minimum and maximum saturation, and in Situation B attains the value of 0.39. Needless to say, if n is high the measure will not attain high values: one cannot associate with all.

On the input side this or similar measures can be used to evaluate the relation among the teachers, on the output side among the learners, and in the total system the relation among all of them - as indicated above. However, there are also other elements on the input side, such as "knowledge", "education software" and so on. They could be included in the graph and the link counted, but it would be artificial since this would no longer be an inter-human link of communication. Hence, there is another and very simple method: to look at the last five questions in the list given in 3.1 above, answering them simply in terms of yes/no (or weighted by the number of learners/teachers for whom the answer is yes), adding up the score. It may be objected that they should not be given equal weight, which may be true, but which weights should they then be given? In the absence of any good answer to that question we would prefer equal weights - or a study of the horizontalization profile - comparing one course with another or the same course over time.

3.5. How to get the data.

Three types of data are needed to carry out the measurement/evaluation described in the preceding three sections:

- data on the input and output variables
- data on their change over time
- data on the internal structure of the educational settings.

To get at these data we first have to find out what are these "educational settings". To the extent that they are courses with enrolment, even registration of learners it should not be too problematic. To the extent that they are not, one would have to find out what goes on of non-formal education in society, and this can only be done, it seems, by asking a sample of inhabitants a number of probing questions about what they learnt "last year" in order to find out what learner (and possibly also teacher) roles they had (at formalization levels 1, 2 and 3) - but also how much learning actually took place by testing for retained knowledge and skill.

Once the educational settings have been identified, tentatively referred to as "courses", one would have to proceed collecting data on the input variables. Again, this would have to be done on a sampling basis (except for courses with enrolment/registration) one cannot possibly hope to cover all courses offered in a country. But some should be studied in more depth with a view to estimating elasticities) and observed with the type of methodology known to a social anthropologist to get at the structure of the total system in terms of the various feedback and loops described above.

Thus, there would be two phases in the data-collection: a first phase where individuals in the country/district/locality are sampled with a view identifying the total volume of education going on, as well as the total amount of learning that takes place (here a before-after study would be ideal, but one might also rely on the reports of the respondents); and then a second phase where courses are sampled with a view to measuring the input variables, the output variables for as many participants as possible, their relation over time and the inner structure of the course. From these samples, then, estimates would be made of the total activity in the statistical universe.

In short, we tend to agree with the strong emphasis in the document prepared for UNICEF on case studies rather than a

general statistical machinery for the whole country.⁶⁹ The reason for this is clear from what has been said so many times above: there may be an incompatibility between measurement and the non-formal nature of this education.⁷⁰ Requirements that would facilitate valid measurement might make the system less valid as education precisely because it might become more formal (more registration, more emphasis - on completion of courses, more separation from real-life situations).

In short, we very much doubt that a "methodology for collecting statistics on these elements"⁷¹ should find its inspiration in what goes on in the ministries of education and central bureaus of statistics when it comes to statistics for formal education, particularly for formal schooling. Unless the goal of nonformal education is ultimately to become formal education (like the guerilla army that wants to become a conventional army, or the religious sect yearning to become an established church) the goal of statistics on nonformal education should not be to become like the statistics on formal education. Rather, it should search for inspiration from softer social sciences, from the case studies known to sociologists and anthropologists, with a very open eye and ear for the truly nonformal elements - not devising a statistical grid whereby only the formal elements in such educational settings can be captured.

Such case studies should then be well analyzed for their implications, e.g. along such lines as indicated by the present exercise. But the results should not be permitted to be filed away but should become a part of public debate in order to highlight such issues. The more one could make use of the learners, and the teachers, themselves to carry out such studies, the better. It should not be too difficult to develop an inventory of questions to be asked of any course, detailed enough to provide a basis for systematic comparison between countries, between courses and for the same course over time (as pointed out above)., open-ended enough to give ample opportunity to the researchers themselves to add new dimensions of inquiry more able to reflect the particularities of a given setting.

And this is also our research recommendation: research into what really goes on in nonformal education in the only way of getting not only statistics, but real insight in what happens so as to improve it further; - all the time staying true to the idea contained in the expression nonformal - which asks for nonformal methodology and nonformal statistics.

N O T E S

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1. The formulation is taken from the contract, Dept. ref. 506 754.
2. Thus, we shall have many occasions to refer to the working document prepared by the UNESCO, Office of Statistics: Proposals for the Collection of Adult Education Statistics (COM-74/ISCED 5).
3. For instance, do we really accept all changes in ideas and practice as learning, or do we have some hidden assumption that they should be, somehow, beneficial changes? Hilgard (Introduction to Psychology, 4th edition, New York, 1967, p.270) touches this problem: "Learning could be defined more simply as profiting from experience, were it not that some learning does not "profit" the learner: useless and often harmful habits are learned as well as useful ones". We mention this because it is impossible to discuss learning, education and schooling from a completely value-neutral perspective, particularly when one wants to relate these concepts to "development."
4. The category of "restructuring" is important. Learning has a quantitative aspect, the filling in of more details in an established form (a "paradigm") and a qualitative aspect, the change of the cognitive form (paradigma change). In science the former is known as accumulation, the latter as a scientific revolution (Thomas Kuhn); and everyday learning does not differ from science in this regard.
5. the difference between knowing how to utter more words, and how to formulate sentences and new types of sentences is basic in language learning.
6. This category should not be confused with the pupil doing his homework; for him the teacher is merely absent for the moment.
7. But the warnings against any such definition are clearly voiced by leading educators. Majid Rahnema, for instance, (in Renovation of Educational Structures, Paper presented for Symposium "Renovation of Educational Structures") points out that "The idea of life-long education - - should not be mythified or pursued as a goal in itself. In oppressive societies where schools and "educational" institutions are instruments for strengthening structures of domination or domestication, life-long education has become an even greater threat to man's humanity" (p.6). In Learning to Be (Paris, UNESCO, 1972) the warning is in less political more generally "developmental" terms: "Education from now on can no longer be defined in relation to a fixed content which has to be assimilated, but must be conceived of as a process in the human being, who thereby learns to express himself,

to communicate and to question the world - -" (p. 143). Society tends to develop quickly; that which is taught at school becomes less relevant, and more quickly so than changes in educational curricula. (For that reason the title of the UNESCO book should have been Learning to Become).

8. As Rahnema points out (op.cit., p. 9) : "Students and society at large should not consider school as an institution whose objective is to provide them with diplomas and certificates of privileges". Should not, but the trouble is that they do - and that learning to cope with school and exams is rather important in societies to a large extent built on a basis of schooling.
9. This is developed much further in Johan Galtung, Schooling and Future Society (Chair in Conflict and Peace Research, Papers no. 7).
10. Consequently, schooling has some of the same function in "modern" society as birth and birth order in more frozen caste and class societies; it sorts people.
11. For the latter it is important that schooling is somehow seen as a sacrifice, e.g. as either painful or a way of foregoing gainful employment or both. Some of the tedium of schooling should be seen in this perspective: if schools were more fun, to put it in simple terms, it could be more difficult to claim compensation in the form of higher salary to the more thoroughly schooled.
12. This, of course, is Illich' famous slogan in Deschooling Society. His points can roughly be summarized as follows: schools give formal competence rather than knowledge, they often have monopoly on giving that formal competence, they also make themselves indispensable by teaching people how important it is to be schooled, and schools tend to alienate and marginalize lower class children by making them feel that only school knowledge is real knowledge. Learning to Be (pp. 20-21) quotes such points without necessarily endorsing them.
13. This, of course, is Paulo Freire's basic purpose in The Pedagogy of the Oppressed. One of his basic points is that concienti-zación cannot be developed by means of propaganda, which is a vertical concept. Consciousness-formation can only come through dialogue between those concerned, not as a gift from revolutionary leaders. Rahnema equates this with education: "Education is conscientization; it is a liberating process which addresses itself to both the individual and social dimensions of man".
14. This has very often been the senior author's argument in connection with "peace education" - to get it into the schools would kill it.
15. The document quoted in footnote 2 above, paras 48-60.
16. Para 49
17. Para 49
18. All these terms are taken from para 50 where they are mixed together; we have preferred to distinguish between the idea and practice aspects of learning.

19. Para 50.
20. Para 50, and Para 55.
21. Para 51.
22. Para 51.
23. Para 51.
24. Para 52.
25. Para 53.
26. Para 54.
27. Para 54.
28. Para 54. It is felt that the document's hostility to self-education and horizontal education may simply be due to the fear that acceptance of such concepts would bring one into very unknown territory when it comes to data-collection about them.
29. Quoted from the very useful Table 1, p. 54, rows 6, 7 and 10.
30. Para 56
31. Also from Table 1, p. 54, but from the less useful rows 1-5, 8-9 and 11-13.
32. Para 57.
33. Para 57, note 1.
34. Quoted from the contract.
35. The basic link between geometrical structures and the figures known to everybody in arithmetics is provided through the brand of mathematics (topology) known as the theory of graphs.
36. These concepts are developed at length in Johan Galtung, The True Worlds: A Transnational Perspective, Chapter 3 (in press).
37. This is to some extent done in 3.2 (1) in the text.
38. We prefer learner/teacher ratios rather than the other way round so that a higher ratio means more output per unit input. Adult education, generally more extensive, would lead to a more favorable attitude to high ratios and one might then invert the ratio.
39. In China these aspects of acupuncture seems to be considered as even more important than the precise technique and the theory as to how it works.
40. The figure is a crude simplification of the very stimulating thinking developed in Philip Coombs, Non-formal Education: Building new Strategies for Rural Education (UNICEF draft report 1974, chapter 5).

41. Op.cit., para 78.
42. I am indebted to my friend Horacio Godoy for this important observation, which may also provide some leverage for understanding why what must be the world's most schooled and most educated country, the US, does not necessarily serve as a good case for a clear-cut relation between education/schooling and, for instance, healthy political practices.
43. We are thinking particularly of commercial propaganda located spatially and temporally between news items (and other items of general interest) in printed mass media and in radio/TV, and of political propaganda that cannot be switched off, for instance in trains, streets, squares and other public places - in short, of the use of captive audiences.
44. This of course, raises a basic problem about obligatory schooling, since it can never be entirely free from political propaganda.
45. See Johan Galtung, "Structural Pluralism and the Future of Human Society", Proceedings from the Second International Future Research Conference, Kodansha, Tokyo, 1971.
46. The Medium is the Message.
47. This, of course, is basic in the entire Freire approach.
48. The idea is taken from the famous research by Paul Lazarsfeld and Elihu Katz from the 1950's in patterns of communication: One person, in a household or on the job or elsewhere, gets hold of a news item and then passes it on - often with considerable multiplier effect - but also with considerable distortion. The problem is how to get multiplication and feedback, and dialogue; distortion being less important since that concept presupposes that the point of departure was correct knowledge.
49. Peter Menke-Glückert of the World Future Studies Federation is currently experimenting with the publication of books of that type.
50. In all three the ideas of autonomy, decentralization and horizontality can be found.
51. See footnote 40 above.
52. Figures 5.1-2 pp. 124-5, Figure 5.3 p. 158.
53. Para 8 (3).
54. Our Figure 4 can be seen as that simplified version, of the document's Figure 5.3.
55. Para 32 (1).
56. Para 32 (2).
57. Para 32 (4).
58. Para 32 (5).

59. Some of them are mentioned in Para 38, others are mentioned by the present authors in 1.2. above.
60. Paras 91-105, particularly para 95.
61. Para 103.
62. Para 98, major summary of the document.
63. Para 98 (8).
64. Para 109.
65. These dimensions are taken from the contract.
66. Figure 5.3 gives such a presentation - in the UNICEF document; realistic in its hierarchy, possibly not in its feedback arrow.
67. This theme is developed further in Johan Galtung, Industrial Organization and Future Society (Chair in Conflict and Peace Research, Papers No. 27).
68. For a study revealing the lack of future consciousness in the populations at large see Ornauer, Sicinski, Wiberg, Galtung eds. Images of the World in the Year 2000 (The Hague, Mouton, 1974).
69. Paras 110-112.
70. In other words, some kind of Heisenberg principle of nonformal education!
71. Contract formulation.