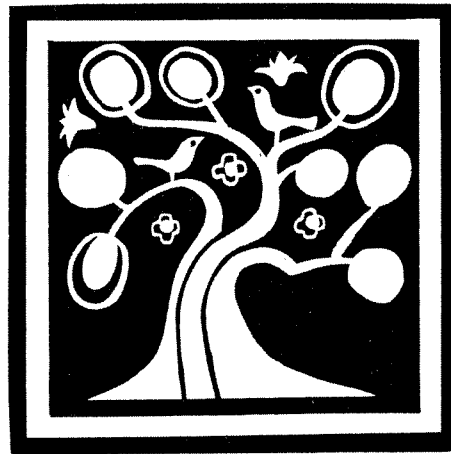


Being and Becoming: The ANISA Theory of Development



BY MICHAEL F. KALINOWSKI AND DANIEL C. JORDAN

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MAN REPRESENTS the highest expression of the organization of matter in the universe. And as part of the universe, he is describable by the same properties as other forms, but with one important exception—namely, human consciousness. Julian Huxley affirms that man is “the only repository of cosmic self-awareness in the universe,” and that makes him “managing director of the biggest business of all, the business of evolution.”¹

In order to accommodate theoretically the mystery of life, let alone the phenomenon of consciousness as its most highly evolved attribute, most biologists have adopted “an ‘organismic’ position which holds that while organisms are one with nature in being composed of matter, there is ‘something more’ which is yet not disjunctive with matter.”² Thus, if education is to address the problem of fostering the development of the child, it must deal with that “something more.” It must impart to each child the knowledge that it is his nature to be within the world and yet to transcend it; that of all things, man is the vehicle of the evolution of the universe and the highest expression of dynamic unity in all existence—an expression which constitutes the process of his becoming.

But how can our schools be reconstituted to facilitate and support that process? To provide each child with the experience and knowledge that will ultimately enable him to direct the process of his own becoming and to cope with the tests and difficulties he must face as he strives to transcend himself and change his world, we need a *mise-en-scène*, a guide, a theory that explains the nature of becoming, a theory of development.³ Without such a theory, there is little hope that our own advancement can be deliberately directed with any consistency and predictability.

The ANISA Model is a blueprint for a new comprehensive educational system. It is based on a philosophy that defines man as a spiritual being and a coherent body of theory concerning development, curriculum, teaching, and administration consistent with the philosophy. The New England Program in Teacher Education, Durham, New Hampshire, has provided \$242,000 toward the development of the Model currently being undertaken at the Center for the Study of Human Potential, School of Education, University of Massachusetts, at Amherst.

1. Julian Huxley, *Knowledge, Morality and Destiny* (New York: Mentor Books, 1960), p. 13.
2. Dale B. Harris, “Problems in Formulating a Scientific Concept of Development,” in Dale B. Harris, ed., *The Concept of Development: An Issue in the Study of Human Behavior* (Minneapolis: Univ. of Minnesota Press, 1957), p. 4.
3. The word “*mise-en-scène*” comes from the theatre and refers to a production scheme through which the director breathes life into a text, thereby transforming the written word into the poetry of a total theater experience for both performer and audience.

Education today lacks that theory. Although child psychology possesses a vast body of information, the field is relatively deficient in explanatory theory. As Paul Henry Mussen, John Janeway Conger, and Jerome Kagan lament:

There is no single comprehensive theory encompassing the vast body of accumulated data in the field of developmental psychology. A complete theory would have to include explanatory concepts accounting for the origins, as well as the mechanisms of development and change, of all aspects of psychological functioning—motor, cognitive, emotional, and social. It may be impossible to construct such an ideal theory; certainly no one has accomplished it yet.⁴

That no one has accomplished it yet is perhaps understandable; that so few have even attempted it is lamentable.

Of the few theoretical attempts that have been made, most have assumed a final state or culmination in development. Such closed-system models do not adequately explain the dynamic process of development because they give no satisfactory explanation of novelty or creativity. We believe this to be a serious weakness because it fails to account for one of the most fundamental characteristics of development, its very open-endedness. Furthermore, most of the descriptions of human life developed to date seem to leave almost no room for the kind of self-determination that can transcend the programming of family, culture, and tradition. In other words the possibility of what Whitehead calls the "creative advance into novelty" has been ignored.⁵ The phenomenon of transcendence has been disregarded.

For a theory of development to be useful, it must explain the phenomenon of transcendence and be applicable to all men; it must be able to

identify the sequential steps between two levels of maturity, to explain how one is transformed into the other, to discover the variables that effect the transformation, the factors that either facilitate or retard its occurrence, and the uniformities and differences by which it is characterized.⁶

To be comprehensive, it must arise from a philosophy that incorporates a view of man full enough and rich enough to account for and illumine the concrete experience we have of our own transformation over time as we interact with the environment. The ANISA theory of development is derived from just such a philosophy.⁷

ANISA Definition of Development

WE CONSIDER "*development*" synonymous with the process of becoming—the process of translating potentiality into actuality. It is comprised of any changes which have a continuous direction and which culminate in phases that are qualitatively new.

One of the main philosophical principles underlying the ANISA Model is that

4. Paul Henry Mussen, John Janeway Conger, and Jerome Kagan, *Child Development and Personality*, 3rd ed. (New York: Harper, 1969), p. 16.
5. Alfred N. Whitehead, *Process and Reality: An Essay in Cosmology* (New York: Macmillan, 1969), pp. 41, 151.
6. David P. Ausubel and Edmund V. Sullivan, *Theory and Problems of Child Development* (New York: Grune & Stratton, 1970), p. 3.
7. Daniel C. Jordan and Raymond P. Shepard, "The Philosophy of the ANISA Model," *World Order*, 7, No. 1 (Fall 1972), 23-31.
8. Alfred N. Whitehead, *Modes of Thought* (New York: Free Press, 1968), pp. 99-100.

"existence" cannot be dissociated from "process." The notions of process and existence presuppose each other. As soon as the notion of process is admitted as basic to an understanding of existence, the idea of potentiality becomes indispensable. Alfred N. Whitehead has written that

If the universe be interpreted in terms of static actuality, then potentiality vanishes. Everything is just what it is. Succession is mere appearance, rising from the limitation of perception. But if we start with process as fundamental, then the actualities of the present are deriving their characters from the process, and are bestowing their characters upon the future. Immediacy is the realization of the potentialities of the past, and is the storehouse of the potentialities of the future.⁸

There are two basic classes of potentiality, biological and psychological; the character of the actualities of both are derived from biological and psychological processes respectively. A *process* refers to the ordered expression of a potentiality. Much remains to be discovered about the precise nature of that ordered expression. E. S. Gollin has thus defined the primary task of developmental research as providing

observations which will be useful in clarifying the character and properties of central *processes* and in establishing their role in the determination of functional relationships throughout development.⁹ (Emphasis added)

There are, no doubt, an infinite number of potentialities, each one of which may become actualized (i.e., translated into a power of the organism) through a process. We have no way of determining them all. Instead we must identify those processes which are central—those which have the greatest importance for the subsequent life of the individual. The importance of a process is defined by two criteria: (1) the degree to which it engenders effectance (i.e., the degree of control over the environment it brings to the organism), and (2) the extent to which it is fundamental to other processes (i.e., the extent to which it creates or extends potentiality).¹⁰

Processes themselves are initiated and maintained through interaction with the environment. This point of view is a central thesis in behavior genetics and brings a fresh perspective to the controversy over whether the underlying growth of organisms is due to external (environmental) or internal (genetic) causes. The dichotomy between heredity and environmental influences is not a useful or realistic distinction. It is more productive to understand how the expression of genetic endowment presupposes environmental influences and why the nature of environmental pressures

9. E. S. Gollin, "Developmental Approach to Learning and Cognition," in Lewis P. Lipsitt and C. Spiker, *Advances in Child Development and Behavior*, II (New York: Academic Press, 1965), 161.

10. Robert White introduced the word "effectance" in his seminal paper on competence and motivation. He wrote: "My proposal is that activity, manipulation, and exploration, which are all pretty much of a piece in the infant, be considered together as aspects of competence, and that for the present we assume that one general motivational principle lies behind it. The word I have suggested for this motive is effectance because its most characteristic feature is seen in the production of effects upon the environment. At first, these effects may consist of any changes in sensory input that follow upon activity or exertion, but before long the child becomes able to intend particular changes and to be content only with these." See Robert W. White, "Competence and the Psycho-sexual Stages of Development," in *The Nebraska Symposium on Motivation* (Lincoln: Univ. of Nebraska Press, 1960), pp. 102-03. See also White, "Motivation Reconsidered: The Concept of Competence," *Psychological Review*, 66, No. 5 (1959), 297-333.

cannot be understood apart from the genetic predisposition of the organism and the modification of the environment due to the organism's presence within it.

This reinterpretation has major implications for the study of development, shifting the focus of inquiry away from the study of innate vs. acquired characteristics as separate elements and concentrating rather upon the nature of the interaction between the organism and its environment. The quality of the interaction determines, in large part, the quality of the expression and therefore has extensive implications for the definition of teaching and a curriculum rationale. If the basic proposition in the ANISA theory of development is the definition of development as the processes of translating potentiality into actuality—processes which are sustained by interacting with the environment—the theory must define the nature of potentiality and actuality, explain the meaning of environment, and disclose the essentials of interaction. We thus proceed by classification of the phenomena under consideration and definition of the key terms used to explain relationships among them.

Classification of Potentialities

AS NOTED ABOVE, we have established two basic categories of potentialities—biological and psychological. The ANISA theory of development fixes nutrition as the primary element in actualizing biological potentialities and identifies learning as the main factor in the actualization of psychological potentialities.

The assimilation of nutrients and oxygen from the external environment is the basic form of interaction that sustains the processes underlying the release of biological potentialities. If the interaction and the environments are right and if there are no genetic deficiencies, the biological integrity of the organism will be safeguarded. Without that integrity psychological potentialities cannot be developed fully. The implications for education should be fairly obvious.¹¹

The psychological potentialities of man have been organized into five categories: psychomotor, perceptual, cognitive, affective, and volitional. We have identified what we believe to be the central processes that underlie learning competence in each category and are the means through which these potentialities become actualized. The ANISA Model is functionally defined by specifications which have been written on each process. These specifications form the basis of the process aspect of the curriculum and are the foundation for the ANISA competency-based teacher preparation program.¹²

We believe the quality of any educational system of the future will be determined by the extent to which it can help children translate potentiality into actuality—a process Whitehead describes as "conrescence." Conrescence not only includes everything normally conveyed by the word development but goes beyond it to encompass

11. See S. P. Raman, "Nutrition and Release of Human Potential: Implications and Challenges for Educational Planning," *World Order*, 7, No. 3 (Spring 1973), 27-35, for a fuller discussion.

12. See Donald T. Streets and Daniel C. Jordan, "Guiding the Process of Becoming: The ANISA Theories of Curriculum and Teaching," on pages 29-40 of this issue of *World Order*, for a detailed explanation of how the theory of development translates into teaching practice and curriculum development.

man's unique ability to go beyond himself—the ability to accumulate the past and bring it to bear on the present while structuring the future, thereby moving perpetually beyond any present state of being. Learning is the means of that “moving beyond”—the “creative advance into novelty.”

Without learning competence it will become increasingly difficult to cope with the rapidity of social change. Without learning competence “future shock” will become a more pervasive, destructive force. Without learning competence, we will not only lose control over evolution but will likely atrophy and regress ourselves.

Any educational system staffed with teachers who do not have a clear understanding of the nature of learning competence and its power in facilitating the release of potentialities is not assuming responsibility for preparing its students to shape their own destinies and manage the future wisely.

Classification of Environments

DEVELOPMENT never occurs in a vacuum. It is always the result of an organism's interaction with an environment. Since the nature of the interaction is determined not only by the organism but also by the kind of environment, it is necessary to gain some conceptual clarity about the nature of the environment. We have thus established four classifications of environments:

A. The Physical Environment. This includes everything except human beings. It can be broken down into three sub-categories: mineral, vegetable, and animal.

B. The Human Environment. This includes all human beings.

C. The Unknowns. The ability to know when we do not know is a natural phenomenon associated with consciousness. Ordinarily we feel compelled to find out how we are related to unknowns; we have curiosity built into us.

These three categories—the physical environment, the human environment, and the unknowns—are hierarchically conceived. The human environment contains physical matter; and both the physical and human environments have unknown aspects to them. There is, though, a fourth environment.

D. The Self. The physical, the human, and the unknown environments are all represented in the self. The body is composed of physical elements; the self we are discussing is a human self, and the unknowns in a Self include its as yet unexpressed potentialities, its future, and the phenomenon of its own personal mortality. The self is a special case of the human environment, special because for a particular person it becomes the most constant aspect of his total environment. It can never be abandoned or left behind. Though constantly present, it also is changing. Whitehead reminds us that process and a Self require each other; in separation all meaning evaporates and neither can be understood. The forms of process derive their character from the individuals involved and the environments in which they exist; the characters of the individuals can only be understood in terms of the process in which they are implicated.

As the self interacts with the environment, its potentialities (expressed through the processes) are actualized—that is, they become powers. Because development is ordered, these powers are not expressed in random fashion; they are structured. And as they are structured, factual information (which, for the most part, is the culture being transmitted to the next generation) is fused and structured with them to form the

attitudes and values which constitute the character and personality of the human being. The norms of a culture appear in the values (structuring) of personalities that make up the society in which the culture inheres. Thus there is a definite, though not complete, congruence or isomorphism between personality and culture. When there is a very high degree of congruence, both personalities and the society they comprise will be very stable. There will be a low toleration for innovation, and change or creativity will be practically nonexistent. When there is little congruence, both society and the personalities comprising it will be highly unstable. In extreme cases personal identities crumble, and the social system collapses. Thus novelty by itself is devastating. Potentialities must be ordered as they are actualized; otherwise the power they represent becomes suppressive of further potential. Powers without structures are like rivers without banks; they are destructive.

The basic requirement for releasing the potentialities of individuals and societies at an optimum rate is therefore maintenance of a balance between order and change. Whitehead has explained that

The art of progress is to preserve order amid change, and to preserve change amid order. . . .

Order is not sufficient. What is required, is something much more complex. It is order entering upon novelty; so that the massiveness of order does not degenerate into mere repetition; and so that the novelty is always reflected upon a background of system.¹³

The optimal structuring of personality thus reflects the balance between order and change. The structuring occurs in relationship to the various environments with which the self is interacting, including its own self. Thus different value systems reflecting these environments emerge. We can therefore have an effect on the structuring and its rate by arranging the environment in particular ways.

In summary, the development of a Self—the structuring of process fused with content, the formation of values—is the fundamental expression of creativity inherent in all human beings. The quality of this integrated structuring determines personal effectance—its mastery in relating to the environment and thus the capacity for self-transcendence and continuing development.

The Rhythm of Development

THE PROCESS of becoming presupposes movement. That movement has a rhythm. The essence of rhythm is pattern and timing. We will deal with pattern first.

Pattern. In development, pattern is reflected in sequence. Because development is an orderly process and because we conceive it to be any change which has a continuous direction and which culminates in a phase that is qualitatively new, we define a *developmental sequence* as the order of those changes in an organism that yield relatively permanent but novel increments not only in its structure but in its modes of functioning as well. These changes involve passage through successive stages, each of which presupposes its antecedent and is in turn a prerequisite to its successor. A developmental sequence is said to be *invariant* if the order of passage through its successive stages is universally constant. A *stage* is a section of a developmental

13. Whitehead, *Process and Reality*, pp. 399-400.

sequence circumscribing a basic unit of change in an organism. In the actualization of both biological and psychological potentialities, a stage—the basic unit of change—consists of differentiation and integration. In psychological expressions, a sub-stage, generalization, is added. The most obvious example of this on the biological level is the differentiation of cells and their integration into particular organs, bones, or tissues.

In our efforts to define these sub-stages on the psychological level, we reviewed the major theories of learning and development and found the processes of differentiation, integration, and generalization common to and implicit in all of them. These then became the attributes of a single stage in the expression of psychological potentialities; and the conscious ability to differentiate, integrate, and generalize aspects of experience became the criterion for judging learning competence.

Differentiation is the ability to break down experience, whether internal or external, into separate contrastable elements. *Integration* is the ability to combine those elements in a new way thereby providing new information, new feelings, new skills, and new perceptions which may or may not become expressed immediately in some form of overt behavior. *Generalization* is the ability to utilize that recombination in other situations. Through these processes potentiality is translated into actuality, and another stage is negotiated. Control over them constitutes learning competence.

The processes of differentiation, integration, and generalization are neither random nor haphazard. The orderly process of development is guided by conscious or unconscious intention or subjective aim, which determines what becomes abstracted, and how the abstracted or differentiated elements are then integrated and generalized. In other words, purpose inheres in subjective aim and has effects on the material world as well as on the structuring of personality.¹⁴

The changes that occur in the growing human being can only be comprehended in their entirety if development is regarded as a continuum, sequence being the general hierarchical pattern in which this creative advance into novelty is accomplished. The development of a human being depends on a combination of a genetically determined series of stages, which he has in common with his biological ancestors, and processes of learning that provide the means by which new stages with new properties can be developed over a single lifetime.

Completing one stage prepares the organism for the next stage in the sequence. Higher units acquire new properties in the same sense as the combination of hydrogen and oxygen under certain conditions leads to a new substance, water, with new properties that were not manifest in either of the separate constituents. It is a basic characteristic of the hierarchy that each higher level is related to the next lower level by what Michael Polanyi calls boundary conditions. The higher level can gain control over the lower level only by controlling the operations which are left open, not completely determined, by the operations at the lower level. A higher level therefore can only come into existence through a process not manifest at a lower level. Polyani refers to the hierarchical structure of creation, rising from inanimate to the living and on to

14. The function of purpose in development has been the single most troublesome issue confronting theorists. Whitehead's organismic approach deals with both efficient and final causes and thus deals with both mechanistic (deterministic) and organismic (teleological) issues. For a further discussion of the problem see Ernest Nagel, "Determinism and Development," in Harris, ed., *The Concept of Development*, pp. 15-24, and Margaret A. Boden, *Purposive Explanation in Psychology* (Cambridge: Harvard Univ. Press, 1972).

the subsequent layers of each biotic level, as the process of emergence which has culminated in the reality of man.¹⁵ In Whitehead's terms, the already realized data of the antecedent world forms the basis of the occasion of immediate experience which, when fused with subjective aim or purpose, enables one to transcend that "boundary" and attain a higher level of organizational complexity. In other words, aspiration, ideals, hopes, or sense of purpose cannot be dismissed from a science of man and are essential to any theory of human development.

Timing. The ANISA theory of development emphasizes the importance of timing—the other major aspect of the rhythm of becoming. Though each child actualizes potential within a general pattern shared by all children, regardless of whether he lives on Lake Atitlan in the highlands of northwest Guatemala, near the Ravine of Pirre in the mountainous northeast corner of Uganda, or within walking distance of Harvard Square in Cambridge, he does so according to his own unique timetable and in his own unique style.

The dimension of time is an intrinsic property of process; it is a crucial factor in releasing potentialities at an optimum rate. The idea is not new. Plato, Quintilian, Plutarch, Pestalozzi, Huarte, Fenelon, Watts, Fordyce, Vives, Comenius, Rousseau, Montessori, and Neill, to name but a few, were aware that timing played a role; and each contributed to the understanding of the importance of that role.

Gradually evidence that there are different categories of timing in the expression of both biological and psychological potentialities has accumulated. A *sensitive period* is a limited period during which an organism is particularly amenable to certain experiences that will usually bring about significant and lasting changes in tissue growth, physiological functioning, and/or psychological functioning. Maria Montessori claims to be the first to "discover the sensitive periods of infancy and make use of them from the standpoint of education," and attributes her interest to the Dutch biologist Hugo deVries.¹⁶

With the advent of experimental embryology, Dareste, at the turn of the century, and Stockard, some thirty years later, suggested that, if the susceptibility to a particular developmental modifier is limited only to the sensitive period and if the presence or absence of that modifier during the sensitive period results in permanent damage or change, the sensitive period should be designated a *critical period*.

The existence of sensitive and critical periods in biological development is well established. For example, the effects of the tranquilizer Thalidomide and the disease rubella on unborn children at specific times are now well known.

Another kind of sensitive period is reflected in growth spurts. The growth spurt associated with adolescence is apparent to all of us. What is not so well known is the clearly established relationship between the rhythm of growth in stature, skeletal maturation, and the development of the reproductive system. In normal girls, for instance, the menarche generally occurs during the period immediately following the year of maximum incremental growth in height. These periods are associated with a variety of psychological phenomena and therefore have many educational implications.

15. Michael Polanyi, *Personal Knowledge: Towards a Post-Critical Philosophy* (Chicago: Univ. of Chicago Press, 1960), pp. 393-405.

16. Maria Montessori, *The Secret of Childhood*, trans. Barbara Barclay Carter (Bombay: Longmans, 1966), pp. 35-36.

Other forms of sensitive periods can be identified within different "biological rhythms." Such rhythms underlie most of what we assume to be constant in ourselves. We are usually unaware that our body temperature, blood pressure, pulse and respiration rates, blood sugar, hemoglobin, and amino acid levels are changing in a circadian rhythm. Adrenal hormones in our blood and concentrations of essential biochemicals throughout our nervous system fluctuate periodically. Smoothness of function seems to depend upon a high degree of integration among these "circadian production lines." Inside we know we are different from one hour of the day to the next. Our strength varies, depending upon biological time of day; our capacity to perform well on tests, for instance, varies as do many other psychological capacities. We also have various monthly, seasonal, and annual cycles.

The appearance of sensitive and critical periods in psychological development, while indicated, has not yet been fully documented. It must be kept in mind that, while these periods in biological development may appear in all children at roughly the same age, in psychological development these periods appear at times generally unique to the individual. For the most part modern researchers and theorists are very cautious about ascribing criticality in the sense of "now-or-never" to any given developmental phase or period. Clearly more research must be done.

One special kind of sensitive period occurs with the consolidation of learning at any given level. As noted earlier, with central processes there is an extension of potentiality the moment a generalization has occurred. If the process of actualizing the newly created potentialities is not initiated shortly thereafter, that sensitive period is missed, the development of the next phase is delayed, and a deceleration in the rate potentialities are released occurs. As the growing organism matures, this type of sensitive period, which we call an *acquired* or *transitional* sensitive period, becomes more important from an educational point of view.

The research of Lawrence Kohlberg and others suggests that those who have failed to develop for a period of time are more likely to become locked in or fixed at the level at which they have stopped.¹⁷ Accordingly, one of the aims of the ANISA Model is to stimulate transition to the next stage of development before a child gets locked in at his present stage. The child can learn for himself how to identify these sensitive periods by developing an inner awareness of the state of his own consolidation of learning which enables him to prepare for the next stage. This means knowing when mere repetition of a generalization has become stifling and when it is time to introduce variation by re-differentiating, re-integrating, and generalizing on another level.

Thus timing and all of its manifestations in the organism's interaction with its environments is an important factor in the actualization of both biological and psychological potentialities.

Educational Implications

THE IMPLICATIONS for education that ANISA's theory of development portends are vast and varied. From the theory of development, we have derived two educational sub-theories: a theory of pedagogy and a theory of curriculum.¹⁸ These theories are

17. Lawrence Kohlberg and Elliot Turiel, "Moral Development and Moral Education," in G. Lesser, ed., *Psychology and Educational Practice* (Chicago: Scott, 1971), pp. 410-65.

18. See Streets and Jordan, "Guiding the Process of Becoming."

crucial to the ANISA Model and are not independent of the theory of development. Indeed their coherence and efficacy depend on their congruence with the theory of development. Together they constitute the basis for extensive but orderly changes in education.

Development has no terminal point; one is in the words of Whitehead, "an incompleteness in process of production."¹⁹ We therefore hold that education can have no terminal point. One can continue to develop and advance from the point of conception; and once one becomes a competent learner, the world becomes a beautiful playground and an exciting laboratory for life.

Because each human being has an unlimited number of potentialities, no one can ever be regarded as uneducable. Comprehending how the actualization of potentiality creates further potentialities alters perceptions and feelings about all children and enables one to approach teaching much differently. Furthermore it challenges the notion of "fixed intelligence" as an outmoded concept that must give away to a more dynamic and comprehensive theory of intelligence. Schools modeled on the ANISA theory of development will have teachers who can arrange environments and guide interaction with them so that children will become competent learners. And because the theory explains the ways children are similar and the ways they are unique, true individualization of instruction—the matching of particular learning experiences to a child's specific developmental level—can be accomplished. Thus the ability to equalize educational opportunity is finally at hand.

The symbolic meaning of ANISA—"The Tree of Life"—with its connotation of perpetual fruition and beauty is reflected in the theory of development. Each child is a precious sapling in the process of progressively manifesting his beauty—the fruits of his efforts at self-actualization—in association with his peers and teachers. But only those who have seen the forest and come away with a deep appreciation of the oneness of the trees, coupled with an abiding respect for the uniqueness of each tree, will be commissioned to teach in an ANISA school. For only then will they be empowered to impart that vision with a method that will ensure the creative advance of our children.

19. Whitehead, *Process and Reality*, p. 248.

