Conceptions of Development in Education

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Introduction

Charles Darwin provided a somewhat new way to think about, and account for, gradual change. His major theory, "evolution" — which had derived from the Latin for "rolling out," as of a written scroll — took on a new precision and layer of meaning. His attempt to account for the differentiation of species and changes in the fossil record has led, by metaphoric extension, to the use of the term for processes quite unlike those that absorbed him; for example, "the team's evolution from a bunch of layabouts into a well-oiled machine." The related word, "development," went through a similar process during the same period. From its original meaning of unfolding something, it came to mean processes in which the mature final form is attained by the gradual unfolding of elements that are initially present in rudimentary or embryonic forms. The two words developed or evolved side by side, influencing each other. One can see the influences and close relationship in nineteenth-century biological theories which proposed that the human fetus went through stages of development in the womb that recapitulated the evolutionary changes the species went through. "Development" also gathered some of its more precise and changed sense from its use in biology to refer to the theory that the embryo already possesses in rudimentary form all the parts of the mature organism — the process of development is the process of growth of those rudimentary forms to maturity.

This sense of development — even though abandoned by biologists long ago — has been profoundly influential on education, and on conceptions of the young child as a learner. Childhood, seen through this sense of development, is a stage in which humans possess in embryonic or rudimentary form the intellectual capacities that gradually elaborate and expand until they achieve their mature forms in adulthood. Theories of development in education have thus been what are called "hierarchical integrative": that is, each later stage integrates the attainments of the earlier stage(s) in a higher, more sophisticated form.

The dominant ideas about development during this century have been derived from this nineteenth-century background, and have been psychological and have drawn heavily on biology.[1] They seemed, earlier in the century, to hold great promise for education, but it is not clear that the promise has been fulfilled. (See, for example, the attempts to evaluate the results of using Jean Piaget's developmental theory in schools.[2]) This dominance of particular psychological conceptions of development has tended to hide other conceptions. What I want to do here is look at some other conceptions of development and see how they may complement or conflict with what has been the dominant conception, and consider their various values to educational thinking about development of the mind. I will suggest a somewhat novel way of integrating features from some of them, while suggesting reasons for discounting what has been long assumed the best way of characterizing intellectual development.

Two Competing Conceptions of Development

The first Western conception of what I will, for now, somewhat anachronistically call development in education was Plato's. To Plato the mind is, in significant degree, an epistemological organ. Its development is measured, in significant degree, in terms of the knowledge it learns. That adolescents may begin to use abstractions, for example, is accounted for by the fact that after a certain amount of particular knowledge is taught to a particular degree of complexity, abstract concepts emerge. Certain forms of knowledge are more suited to this elaboration and Plato describes, for example, how mathematics can be used to draw the mind from the world of change to that of reality.[3] That is, his account does not suggest that the mind is the kind of psychological organ we are accustomed to thinking of it as, which reaches a stage at which it becomes "ready" to think abstractly. Rather, abstraction is a characteristic of elaborated knowledge, and learning such knowledge actively and directly develops the learner's mind. He proposes that the everyday world disclosed by our perceptions and conventional beliefs can somehow be better understood by a rational grasp of some transcendent world of abstract theoretic ideas, which are accessible only after decades of refined scholarly activity guided by a kind of spiritual commitment. It has not proven to be everyone's cup of tea.

The process of mental development, then, is the process of mastering the various forms of knowledge that will carry the mind from its initial confusion and unclarity to a recognition of the truth about reality. He lays out for us the steps of this process, from *eikasia* to *pistis* to *dianoia* to *noesis*.[4] In Plato's conception, then, the mind *is* what it learns, so the construction of a curriculum that will allow the vehicle of increasingly elaborated forms of knowledge to carry the mind onward to *noesis* is the crucial educational task.

The second major Western conception of development in education was Jean-Jacques Rousseau's. His central and continuous theme was that if you want students to understand what you teach, then you must make your methods of teaching conform with the nature of students' learning: "The internal development of our faculties and organs is the education of nature. The use we learn to make of this development is the education of men."[5] Thus, in order to educate properly, we must first understand that internal development process. The most important area of educational study, then, is the nature of students' development, learning, motivation, and so on. The more we know about these, the more efficient and humane we can make their education. The key is that underlying natural development: "Fix your eye on nature, follow the path traced by her."[6]

The mind, in this conception, goes through an autonomous process, rather like the body. The human body is programmed so that, given appropriate environmental supports, it will pass through a series of changes that will carry it from embryo to adult. It does not greatly matter whether the body eats beans or peas; it will still develop arms and legs and ears and so on. That is, in Rousseau's conception of development, the knowledge a student learns, the "aliments" (to choose a term used by that most Rousseauian of psychologists, Jean Piaget) of the mind do not profoundly affect its development. Eating lots of broccoli does not make us look more like a broccoli, and so learning mathematics rather than science or history or

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anything else will have little general influence on the mind's development. In Plato's conception of the mind's development, of course, consuming broccoli, as it were, makes it broccoli-like.

Once one conceives of the mind as having its own distinct process of development, then education tends to be seen in terms of furthering and fulfilling that process. A difficulty for such a conception of education is knowing securely just what that internal developmental process involves. Rousseau's scheme was rather general and offered only imprecise guidance. The task of the developmental psychologist ever since has been to clarify that process.

These two conceptions of development in education have been the most influential ideas that have shaped educational practice. The problem is that they are mutually incompatible.

If we are guided by Plato, then educating the mind becomes a matter of selecting the forms of knowledge, in appropriate breadth and depth, that will shape it to grasp the truth about reality. If we are guided by Rousseau, then educating the mind becomes a matter of supporting and facilitating the fullest elaboration of its spontaneous, internal, autonomous growth. It is difficult to look for a balance between these two, because they pull away from each other; the more we try to do one, the more difficult it is to do the other.

Some have suggested that we can square this particular circle by accepting Plato as providing the conception that enables us to select material for our curriculum, and Rousseau as providing the conception that allows us to discern how best to teach it. That compromise, leaving Plato's descendants with the content and aims of education and Rousseau's with the methods, appeals to many as a neat division of labor. So the educational philosophers can deal with content and aims, drawing on the knowledge generated by the educational psychologists about learning and development. It seems so obvious that facts about students' psychological development can blend with philosophers' research into the nature and structure of knowledge to yield a more easily understood math or history curriculum. It seems so obvious that such collaboration should be common that one would expect the absence of it to compel reassessment of what looks, but clearly is not, obvious. Why has, say, Paul Hirst's work, not been coordinated with, say, Piaget's to give us a forms of knowledge curriculum organized according to Piagetian principles? Or, more generally, why can traditionalists and progressivists not work out some such neat compromise?

Well, Rousseau and his modern followers are not simply making methodological or procedural recommendations that might allow us to do the Platonic academic job more efficiently. They are actually recommending a different job. Rousseau's idea is not one that yields us an easy accommodation with Plato's. These ideas conflict — most profoundly in identifying the cause and dynamic of the educational process. In the Platonic view, knowledge drives development; in the Rousseauian view, development drives knowledge — it determines what knowledge is learnable, meaningful, and relevant. In the Platonic view, education is a time-related, epistemological process; in the Rousseauian view, it is an age-related, psychological process.

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The conflict between these two ideas has been the basis of the continuing struggles between "traditionalists" and "progressivists" during this century. One sees them at odds in almost every media account of educational issues; where the Platonic forces argue for "basics" and a solid academic curriculum, the Rousseauians argue for "relevance" and space for students' exploration and discovery. A key battleground as I write this is the elementary social studies curriculum in North America. The traditionalist forces are pressuring for a revision that will reintroduce history and geography in place of the progressivists' preferred relevant focus on families, neighborhoods, communities, and interactions among communities. The progressivist forces argue that history and geography require abstract concepts and are not "developmentally appropriate" for young children and the traditionalists argue that any content can be made comprehensible if presented in a sequence of logically organized prerequisite structures. Those who favor a psychological order tend to prefer to begin with the self, families, neighborhoods, "expanding" outward on the vehicle of known — because experienced — understandings, and those who favor a logical order tend to prefer beginning with cosmogony, the birth of stars and planets, the history of life on earth, "contracting" from a general to particular features of the world that may thus be understood in a meaningful context.

One can manage compromises only by undermining the distinctive virtues of either idea — which is a fair description of the average school's approach today.

Two Alternatives Briefly Noted

I will consider just two alternative conceptions of development, because I want to take features of both of them to suggest a further kind.

One alternative that was popular in the late nineteenth century was recapitulation. In this view the human mind was preprogrammed to develop through a sequence of stages that were a recapitulation of the stages that "the race" had passed through. Herbert Spencer compactly expressed the basis for a cultural recapitulation theory of education in the claim:

> If there be an order in which the human race has mastered its various kinds of knowledge, there will arise in every child an aptitude to acquire those kinds of knowledge in the same order....Education should be a repetition of civilization in little.[7]

This might be called the "folk-recapitulation" position. To become more scientific, a recapitulation theory had to show some precise causal connection between past cultural development and present educational development. The challenge was to show exactly *what* was recapitulated and *why* there should arise in every child the aptitude Spencer claimed. If one could do that, then, in the words of another enthusiast, recapitulation "when explored and utilized to its full extent will reveal pedagogic possibilities now undreamed of."[8]

Recapitulation curricula came into conflict with the urgent social needs of the new mass schools of America and Europe to prepare the immigrants and indigenous working classes for new kinds of work in rapidly changing economies. A system that brought the child slowly through the cultural history of the race, reaching the modern world only at the end of the process, was not one that appealed to those who were paying the pipers of the new progressive curricula. Also, in *Democracy and*

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Education, we find what have become the standard reasons for rejecting recapitulation. Dewey argues that acceptance of recapitulation leads to an influence on the curriculum such that it: "tends to make the...present a more or less futile imitation of the past."[9]

Another alternative appeared in the work of Lev Vygotsky. He was born in the same year as Piaget (it is always mildly surprising to realize), 1896, and was critical of Piaget's theories of development because, in his view, they failed to recognize the degree to which the mind's development incorporated the social environment in which the child grew up. Vygotsky argued that the mind, unlike the body, takes on in significant degree the shape of what it "eats." In Vygotsky's view, the kind of sense we make of the world is in significant part due to the particular cognitive tools we learn to use as we grow up in a particular sociocultural milieu.

"Vygotsky defined development in terms of the emergence or transformation of forms of mediation."[10] That is, Vygotsky argued that intellectual development could not be adequately understood in terms of the accumulation of knowledge nor in terms of a sequence of psychological stages like Piaget's, but it requires an understanding of the role played by the cognitive tools, the forms of mediation, available in the culture into which a person is born. It is these tools which determine the kind of understanding that develops. He focused particularly on the development of oral language as a distinctive sign system, concluding that the "*system of signs restructures the whole psychological process*."[11] The contribution of Vygotsky's that I want particularly to draw on is his recognition that the mind is, in its operations from the beginning, not only an epistemological and psychological organ, but also a social organ, and it only reaches any realization of its capacities, beyond basic perception, in social contexts, and these social contexts are crucial not just in providing some "environment" within which the mind's supposed spontaneous process will unfold, but for becoming integral ingredients of whatever processes *can* unfold.

Problems and a Direction Towards Solutions

I have sketched what seem to be the main ideas about development that have influenced, and continue in varying degrees to influence, educational thinking. The problems with Plato's conception are well rehearsed. The kind of *episteme* or *noesis* that forms the aim and apex of his scheme is generally thought to be impossible to achieve; it is taken to be based on, of all things, an epistemological error.

The biology-derived psychological theories, most notable of which has been Piaget's, are being increasingly persuasively shown to "deemphasize uniquely human features of the acquisition of knowledge."[12] Their nineteenth-century biological assumption of a uniform and inevitable schedule of stages of growth from embryo to adult seems to encourage them to ignore some of the more distinctive features of young humans' development. In particular, psychological theories have not been adequate in accommodating intellectual tasks that young children do better than adults. They ignore the peculiarity of human development that equips us with forms of cognitive activity early in life that are required for learning a language and for the representation of beliefs about society and the cosmos. To manage these

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tasks, young humans rapidly develop a set of cognitive tools — such as metaphor generation and recognition, story-shaping, use of binary-structuring and mediation, generation of mental images from words — that typically go into decline later in childhood and are much less evident in adulthood. For example, hierarchical integrative theories have difficulty dealing with capacities which seem to reach a peak in childhood and decline thereafter. Such capacities are not "integrated" in some developing hierarchy; they tend rather to atrophy. Certain kinds of intellectual gains also seem to entail other intellectual losses — literacy, for example, seems to entail some greater or lesser loss of our sense of participatory immediacy in the natural world[13] — and hierarchical theories have not represented development as a business of gains and losses, only one of gains.

Piagetian and neo-Piagetian accounts of development have not proven compelling to all psychologists or educators. Indeed, even as his theory comes in for increasingly severe criticism, it still makes sense to ask just what the theory describes.[14] Perhaps more scholars than at any time during the twentieth century now concur with Jerry Fodor's reflection: "Deep down, I'm inclined to doubt that there is such a thing as cognitive development in the sense that developmental cognitive psychologists have in mind."[15] Of course, developmental cognitive psychologists do not have one mind about this issue, and it is perhaps an exaggeration to claim, as Fodor does elsewhere, that "Piaget taught that infants start out as sensori-motor reflex machines and develop into formal intelligence, but practically nobody outside Geneva believes that any more."[16]

Even so, the two major ideas about intellectual development that we have inherited seem each to have problems, and tend to undermine one another when we try to apply them both to education. That leaves us with the two more recent ideas. Let us consider the developmental idea — recapitulation — that has been generally decisively rejected. It has long been obvious that students in the process of their education recapitulate in some way the inventions and discoveries that constitute their evolution and cultural history. The young child learning to talk is recapitulating an evolutionary achievement; the child learning to write and read recapitulates techniques invented a few thousand years ago; the student learning history recapitulates a way of making sense of experience whose development in the ancient eastern Mediterranean we can trace in some detail. That educational development is connected with our evolution and cultural history is as obvious as it has proven difficult to specify just how. One problem Spencer and his fellow nineteenth and early twentieth-century enthusiasts for recapitulation had was in specifying just what was to be recapitulated. Was it the content itself? But that answer became strained and often silly; does one teach first that the sun travels around the earth and later that the earth travels around the sun, recapitulating the process of cultural understanding? Was it a psychological process from savagery to civilized rationality we were to recapitulate? We keep a wary distance from this idea when we look back on the racism it supported. That some hidden psychological process was at work becomes implausible when it cannot be identified.

What seems fair to conclude is that recapitulation has failed to sustain significant influence on education for ideological reasons on the one hand — it conflicted

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with the socializing needs of early twentieth-century industrialized societies — and because its proponents could give no plausible account of just *what* from cultural history was to be recapitulated in the process of education and *how* the mechanism worked. As Phillips and Kelly stated quarter of a century ago: "The notion of recapitulation which links [the process of development of the individual child and of evolutionary development of the human species] is an empirical hypothesis, and it must be supported in some way by evidence."[17]

A Concluding Suggestion

I think it is possible to suggest how one might make a recapitulation scheme at least plausible. The connection to be sought between evolution and history and the modern student concerns the development of a set of cognitive tools which profoundly influence how their users understand the world and make sense of experience. The answer to *what*, then, is sets of cognitive tools, or "mediators," created in cultural history and learned as a child grows into a society and its cultural life. I mean such things as an oral language — which Vygotsky has explored so intensively — and literacy, and abstract theoretic thinking, and irony. If Vygotsky is correct, these somewhat distinctive layers of complexity in our major system of signs should have detectable implications for the kind of understanding experienced by their users, whether those users lived long ago or whether they are students today.

So the answer to *what* is recapitulated and *how* the recapitulationary mechanism works is not like either of the two classic answers given. Education is not a process of acquiring privileged knowledge accumulated in our cultural history, nor is it the process of fulfilling to the limits of our potential some putative psychological process. Rather, education as recapitulation requires us to learn to use as fully as possible the cognitive tools that we have inherited from our evolutionary and cultural history. (Knowledge accumulations and psychological development will incidentally be required in this process, but will not be its focus.) In the case of oral language, this will entail elaborating and developing various tools or mediators that come along with it — such as narrative forms of causality, rhyme, rhythm, and meter, story-shaping of events, binary structuring, mental images formed from words, cognitive orientation to a society and a cosmology. These shape the kind of sense we make and can make of the world we grow into, and they are products of our evolutionary and cultural history. So we might make it a priority of our early curriculum to teach children about the cosmos, and shape our lessons into story-structures — this does not mean telling them fictions or myths, but rather implies shaping the knowledge into forms in which young children are predisposed by oral language, without literacy, to learn it. By analyzing the major cognitive tools that we have inherited, one can construct both a curriculum and methods of teaching that can support their elaboration and development.[18] Literacy, for example, will incorporate some of the tools of oral language, but also will tend to suppress some of them, and will bring with it a further set of tools that shape the kind of understanding we can form of the world.

Even without any further description of such tools, it might be recognized that the focus on major cognitive tools provides us with a plausible candidate for what

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can be recapitulated in education, and what might make a better candidate for an account of cognitive development than the knowledge and psychological processes that have preceded it. Certainly these tools were developed in our evolution and cultural history and certainly we develop them more or less adequately in our education. What has not been considered before, that I am aware of, is that their historical and contemporary development yield particular, describable, kinds of understanding, which will be in significant degree common to whomever develops them in whatever social or historical conditions.

Such a recapitulationary conception of education also frees us from expecting some precise sequence that is reflected from cultural history to modern classrooms. Whenever such tools are learned and used, particular kinds of understanding will result. So we need not look for some sequence determined by a hidden psychological mechanism or by some arbitrary historical accumulation of knowledge. The sequence is determined by tangible and describable cognitive tools such as oral language, literacy, theoretic abstractions, irony, and their subset of smaller-scale cognitive tools.

But what about the evidence that Phillips and Kelly pointed out was lacking from earlier recapitulationary schemes? The main evidence required for this scheme is to support the claim that whenever the cognitive tools are developed they will yield the particular kinds of understanding. Evidence will be provided if we can see that the development of oral language in whatever circumstances entails certain kinds of understanding. I think, in general terms, it may again be seen as plausible that this is so. The set of characteristics I indicated above as sub-tools of oral language development are prominent both in children and in oral cultures around the world. This does not mean both use these tools for the same purposes, but simply that the cognitive tools shape understanding in particular ways. I think that one can similarly show some precise cognitive effects of literacy, both among newly literate people in the ancient eastern Mediterranean and among early adolescent students today. This does not mean that the average student shares Herodotus' genius, but it does mean that the kind of understanding evident in Herodotus' *Histories* — with its heroic underlying story of freedom-loving Athens defeating the tyrannous might of the Persian Empire, its emphasis on the extremes of experience and the greatest achievements, its personalized causality, its fascination with the exotic — finds precise parallels in the newly literate student today, whose *Guinness Book of Records* enthusiasms are weirdly echoed in Herodotus' work. I think it is at least plausible that this is a kind of evidence that we could seek with some hope of success, and that it would provide appropriate support for a new kind of recapitulation scheme. The research that would deliver this support would be, on the one hand, historical and analytical, and on the other, as it looks for consequences of learning to use cognitive tools among students today, it might deploy more traditional empirical methods.

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1. John R. Morss, *The Biologizing of Childhood: Developmental Psychology and the Darwinian Myth* (Hove, East Sussex: Erlbaum, 1990).

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2. See the discussion in Charles J. Brainerd, *Piaget's Theory of Intelligence* (Englewood Cliffs, N.J.: Prentice-Hall, 1978), 293ff.

3. Francis MacDonald Cornford, trans. and ed., *The Republic of Plato* (Oxford: Oxford University Press, 1941), 521-24.

4. Ibid., vi. 509-11.

5. Jean-Jacques Rousseau, *Émile*, trans. Barbara Foxley (London: Dent, 1911), 11.

6. Ibid., 14.

7. Herbert Spencer, *Education: Intellectual, Moral and Physical* (London: G. Manwaring,1861), 76.

8. G. Stanley Hall, *Adolescence: Its Psychology and its Relations to Physiology, Anthropology, Sociology, Sex, Crime, Religion, and Education*, vol. 2 (New York: D. Appleton,1904), 222.

9. John Dewey, *Democracy and Education* (1916; reprint, New York: Free Press, 1966), 75.

10. James V. Wertsch, *Vygotsky and the Social Formation of Mind* (Cambridge: Harvard University Press, 1985), 15.

11. Lev Vygotsky, *Mind in Society: The Development of Higher Psychological Processes*, ed. Michael Cole, et al. (Cambridge: Harvard University Press), 35.

12. Morss, *The Biologizing of Childhood*, 5.

13. Merlin Donald, *Origins of the Modern Mind* (Cambridge: Harvard University Press, 1991).

14. Kieran Egan, "What does Piaget's Theory Describe?" in Kieran Egan, *Children's Minds, Middle-Class Rabbits, and Clockwork Oranges* (New York: Teachers College Press), 1999.

15. Jerry Fodor, "Fodor's Guide to Mental Representations: The Intelligent Auntie's Vademecum," *Mind* 94 (1985): 76-100.

16. Jerry Fodor, "It's the Thought that Counts," *London Review of Books*, 28 (November 1996): 22, 23.

17. D.C. Phillips and Mavis E. Kelly, "Hierarchical Theories of Development in Education and Psychology," *Harvard Educational Review* 45, no.3 (1975): 354.

18. For an extended attempt in this direction see Kieran Egan, *The Educated Mind: How Cognitive Tools Shape Our Understanding* (Chicago: University of Chicago Press, 1997).

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