

STRANDS OF DEVELOPMENTALISM --- Hall, Piaget, Vygotsky

Hunter Ellinger (hunter.ellinger.org, ellinger@io.com) 3/10/99

The distinction between assimilation and accommodation (itself a major contribution of developmental psychology) can well be applied to the way psychologists reacted to the fundamental explanations of biological and social development that emerged as coherent mental tools in the nineteenth century. The rich and deep work of Darwin, for example, usually was assimilated into their theories to just the extent that it fit their preexisting mental structures. There is poetic justice in the fact that educators have subjected each of these psychologists to the same process. During the twentieth century, however, these theories were adjusted to better accommodate the realities Darwin and others revealed, and to deal more authentically with the subtleties of the connections between mental development at its various time scales: phylogenic, cultural, individual, and immediate. Each of these development processes, although distinct in its laws, is relevant to the instructional process -- the nature of the theories held about them will inspire or constrain both the overall structure chosen for the educational system and the specific teaching tactics used.

G. STANLEY HALL

G. Stanley Hall is a good example of assimilation with minimal accommodation. Darwin's idea of development through a sequence of forms of increasing complexity was transferred intact from the species to the individual, but his insistence on the gradualness of change (a feature incompatible with stages) was dropped without notice. (The currently-debated concept of "punctuated equilibrium" in natural selection, which better matches stage theories and derives from similar principles, was a much later refinement.) Such omissions need not proceed from ignorance: Hall's belief in qualitative shifts in human behavior during maturation was well-based in instructional experience, even if it got little direct support from his recapitulation theory.

The utility for Hall of the phylogenic analogy was in its implication of an innate biological program for development, which could be disrupted but not accelerated or extended. In his book *Adolescence* (Hall, 1904, vol. 2), he makes (with respect to knowledge of nature) a classic statement of the developmentalist position: "... *revelation, although slow, is sure, because it comes by growth and does not depend upon the solutions of specific problems*". (p. 145).

The concept that the child relives the history of the species has this pedagogical advantage (despite its flaws as a literal fact): childhood is seen as analogous in complexity and capability to a state that, while less developed than "modern man", has capabilities far beyond that of other animals. The respect for children's minds implied by this is especially strong if "childlike" abilities are seen as being redirected during maturation (e.g., into adult imagination) rather than discarded. Hall's biggest contribution is his insistence that the fundamental differences in children's thinking from that of adults must be used as the basis for education, not ignored or seen as failings to be suppressed. Hall's racism and sexism, while consistent with his theory, are not necessary consequences of it, being based on separate additional assumptions about genetic racial isolation and the mental correlates of sexual dimorphism that have been found to be incorrect.

I find Hall's educational prescription generally attractive. Compared to the mental/physical sadism of Dr. Squeer's academy (Dickens' genius only embellished a too-common reality) or the futile chaos of some contemporary schools, a regimen of playschool followed by scouting/sports/-crafts/theater/folktales/naturestudy/art/history seems quite humane (and not far from the methods I used with my own children). Hall's vigorous criticism of the educational orthodoxy of his

contemporaries [of which I can mention only a small fraction here] includes a variety of points that seem not only well-taken but modern, such as concern that exclusive reliance on concrete words and apparatus by a school cripples its students in imagination, abstract thinking, and intellectual or poetic expression. The sophistication of his position has been overlooked by current reviews (cf. White in Parke et al, 1994).

Even so suspect a thesis as Hall's aversion to "precocious" reading (and, even more, composition) seems insightful rather than naive when considered in the context of his championship of the need for mastery of authentic and expressive language based on actual experience. His statement (Hall, 1904, p. 461) that "*the printed page must not be too suddenly or too early thrust between the child and life*" points out a real danger, as does his devastating criticism (p. 462) that "*in some schools teachers seem to be conducting correspondence classes with their own pupils*". Hall doesn't oppose youthful reading or writing instruction *per se*, just the practice of insisting on it too early and in excess. In a footnote on the same page he goes on to say: "*Of course the pupils must write, and write well, just as they must read, and read much; ... [However,] the young do not learn to write by writing, but by reading and hearing. To become a good writer one must read, feel, think, experience, until he has something to say that others want to hear.*"

So there is much more to Hall's educational system than just letting children "ripen" developmentally. A good example of his demanding view of educator responsibility is his analysis of the implications of teenage slang: "*Slang commonly expresses a moral judgement and falls into ethical categories. It usually concerns ideas, sentiment, and will, has a psychic content, and is never, like the language of school, a mere picture of objects of sense or a description of acts. To restate it in correct English would be a course in ethics, courtesy, taste, logical predication and opposition, honesty, self-possession, modesty, and just the ideal and non-presentation [i.e., abstract] mental content youth most needs, and that the sensuous [i.e., concrete] presentation methods of teaching have neglected. Youth has been left to meet these high needs alone, and the prevalence of these crude forms is an indictment of the delinquency of pedagogues in not teaching their pupils to develop and use their intellect properly.*" (Hall, 1904, p. 469)

Hall's prescription of adult reading aloud of the classics of history, fiction, and poetry to elementary-age students as the foundation of language study (rather than Dick-and-Jane reading or daily-essay "busy work" by the students themselves) absolves him from any suspicions of wanting to "dumb down" the elementary curriculum. It even shows some kinship to Vygotsky in its use of advanced societal cultural products to familiarize students with examples of the history, behavioral archetypes, modes of expression, and major conclusions of the society they are to enter. But for Hall this program is intended to provide an expanded sphere of experience which will later provide material for high-level thinking, not to direct immediate attention to concepts as such, even such traditional ones as grammar, which he scorns: "*... it always was more or less of a school-made artifact and an alien yoke and has become increasingly so as English has grown great and free*". (Hall, 1904, p. 459)

The program for science teaching (Hall, 1904, p. 181) is the same: "*We must have an introduction to science that touches rather lightly on nearly all the great hypotheses, frontier questions, and larger syntheses over the whole field ...*" Note that the method used is a guided tour of the high points of science, not do-it-yourself knowledge construction. Hall also encourages the telling of stories of great scientists, as well as clear descriptions of the applications of science, to engage the interests of young people and provide a context which will make later work on precise description welcome. He suggests a list of nature topics and ways to approach them educationally,

showing in each case careful insight into the typical psychological condition of students at various ages and why they will be interested.

As with his concerns about early writing, Hall's objection to early use of mathematics is rooted in how heavy-handed externally-imposed abstractions "*violate the basal law of psychic growth, ignore the deep springs of natural interest, and attempt to force a precocity against which the instincts of youth, so much wiser and truer and older than their consciousness, happily revolt*". (Hall, 1904, p. 150) In a telling insight, Hall (1904, p. 149) compares the effects of premature instruction in mathematics to the damage done to some sciences [e.g., psychology!] by blind use of mathematical methods in areas for which the structural knowledge had not yet been developed enough to make such precision meaningful.

Granting Hall's larger, concept-providing context shown above for both language and science, a description of his instructional philosophy would be incomplete without acknowledging the predominate component of non-conceptual activity he prescribes. While he would have the teacher keep an eye on later relevance, he would have most student time spent doing, seeing, hearing, interacting -- not in conscious conceptual thinking. As Hall (1904, pp. 451-452) says: "*The hand is never so near the brain.*" and "*the chief mental training from about eight to twelve is arbitrary memorization, drill, habituation, with only limited appeal to understanding*". It is unfortunate that posterity seems to have picked up only this side of his prescription, while ignoring the tell-them-the-big-picture approach that brings such activities to life and prepares them for incorporation into adult activity structures.

The basically-irrelevant factual error in Hall's "ontogeny recapitulates phylogeny" slogan should not be used to obscure the accuracy of his insights into how and why to match the instructional process to the capabilities and interests of children. This was a failure to correctly (or at least fully) *explain* ontogeny, not a failure to accurately *observe* it. That the pattern of development differs between the phylogenic and ontogenic time scales does not disprove the existence of qualitative stages in individual mental development or undermine the value of Hall's educational advice, which was derived from close observation of actual student development patterns; *Hall's mistake was as an evolutionist rather than as an educator*, although the failure of an exact evolution analogy supports a more hopeful position than he held on possible acceleration and flexibility in mental development. We would benefit more by recapturing the part we have thrown away as "too grown-up" and by figuring out how to accelerate development where possible so most people are able to cover more ground.

JEAN PIAGET

Hall was a master educator who turned to the sciences of biology and psychology to understand and explain his area of work. Jean Piaget, on the other hand, was a scientist (genetics, then psychology) who investigated mental development with only occasional direct attention to educational practices. Piaget understood Darwin better than Hall, but used him less. This reflects in part the timing of his work, which started just as the neo-Darwinian synthesis of evolution and genetics was achieved, but it also reflects his focus on the nature of mental development in modern children, uncluttered by theories about evolutionary causation and by any cultural factors except those (such as language) which are universally distributed and rooted in biological predispositions. Even language is seen as of marginal importance, primarily indicating development rather than influencing it.

Because he was a scientist rather than an educator, Piaget was not content with suggestive but imprecise analogies such as "ontogeny recapitulates phylogeny", but instead carefully

investigated and documented the actual patterns of mental development in children (e.g., Piaget & Inhelder, 1969). His experimental results supported the existence of stages of mental development similar to those perceived by Hall, although his focus was on the emergence of specific capabilities rather than on the tactical questions of designing an appropriate educational path to guide children into successful adulthood.

In fact, the most striking difference between Hall and Piaget is the lack of attention Piaget gives to the adult world, except perhaps as a source of disturbance when depended-upon supports are not supplied. This tendency is increased by Piaget's focus on mental traits related to basic physical activities and "logico-mathematical" operations rather than messier issues (history, non-intuitive science, etc.) which cannot be approached solely through direct experience. *The emphasis is on the **emergence of intelligence** rather than the **acquisition of external knowledge**.* The extent and nature of the interaction between these two processes is the central area of dispute among the three developmentalists examined here, with Piaget and Vygotsky diverging in opposite directions from Hall's position on the relative leadership roles of innate and social factors.

Piaget clearly sees maturation (and direct experience) as preceding instruction as a source of children's knowledge, although this issue is clouded a little by his emphasis (stronger late in his career) on the importance of "constructive" activity by students, in which teachers should *"create the situations and construct the initial devices which present useful problems to the child"* and *"provide counter-examples that compel reflection and reconsideration of over-hasty solutions"* (Piaget, 1969, p. 16). While still minimizing the role of adult society and existing knowledge, this final position does admit at least one adult to the process of a child's education. In fact, it is a quite reasonable description of a methodology (guided discovery) whose utility in many places no one would dispute. However, any confidence in Piaget's assertion that such discovery should be the sole mode of instruction is shaken by his reference on the following page to New Math as *"such a notable advance over traditional methods"*.

While Piaget shares Hall's disdain for directly providing abstract theory to children (although I think that Piaget would see this more as futile than as harmful), they seem to me to differ more than agree on what should actually be done in schools, with Piaget minimizing the drill and practice which Hall saw as the main activity, and with Hall providing adult-world "ready-made solutions" (though without much theory) which would undermine the discovery processes Piaget sees as vital.

L. S. VYGOTSKY

Lev S. Vygotsky not only mastered Darwin's explanation of phylogenetic development, but was kept from an unbalanced use of it by his even-greater reliance on the Marx/Engel explanation of social development. This theory basis was well matched to the needs of a psychology of human development, since it encouraged explanations based on how the interaction of society and biology drive individual development (analogous to the way the interaction of society and the physical world drive economic and cultural development). In both cases, Vygotsky held that it is the use and elaboration of complex tools (language/concepts and the means of production, respectively) in a social context that drives development in the corresponding area.

The period after the revolution and civil war also created an expansive sense of the possibilities for educational reform by directing attention to the success of recent massive changes in intellectual, material, and political conditions. The great emphasis communism has always placed on education also helped it attract the attention of some of the best minds of the new

Soviet society. Vygotsky was well suited to take advantage of the opportunities this situation presented.

After an exuberant youthful start in which he sounded rather like both what would now be called a radical constructivist ("*... parents and teachers have just as much power or right to prescribe to this new being as to tell the stars what path to follow ... the real secret of education lies in not teaching ... The student educates himself.*" [Vygotsky, 1997, p. 339]) and at the same time a behaviorist ("*... at its very foundation education ultimately always rests upon the mechanism of the conditioned reflex*", [p. xvii of author's preface]), Vygotsky quickly worked out a coherent and persuasive theory of psychological development that is clearly developmentalist ("*The development of these behaviors is characterized by complicated, qualitative transformations of one form into another ... the conception of maturation as a passive process cannot adequately explain these complex phenomena*"), but with reservations and extensions: "*The fact is that maturation per se is a secondary factor in the development of the most complex, unique forms of human behavior.*" (Vygotsky, 1978, p. 19)

The basis of Vygotsky's theory is that "*human learning presupposes a specific social nature and a process by which children grow into the intellectual life of those around them*" (Vygotsky, 1978, p. 88). Its central tenet is that "*learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers. Once these processes are internalized, they become part of the child's independent developmental achievement.*" (p. 90). Thus Vygotsky reverses Piaget's analysis, and sees instruction as causing "proximal" development rather than tagging along behind it; the child does not so much discover the world as absorb (and become transformed by) it. **Note, however, that Vygotsky's zone-of-proximal-development analysis may often lead to the same instructional practices as Piaget's assimilation-leads-to-accommodation principle, despite the substantial differences between their overall theoretical positions.**

Vygotsky's analysis raises the stakes on educational decisions, since it implies that they will really have substantial effects, and that a more detailed program is needed than just provision of "playground" situations and restraint in teaching theories. Fortunately, much of the program can be provided naturally by the society in which the school is imbedded, which is to be welcomed into the classroom rather than guarded against, with students informed of (but not immediately expected to be able to independently recreate) the history, scientific knowledge, and current issues of their culture. Note the similarities to Hall.

Vygotsky provides a comprehensive theoretical basis for the construction of an effective educational program, with some surprising conclusions. For example, children's play is seen not as rehearsal or escape but as a powerful mode of self/group-development supplementing instruction by providing a context in which action can be made to follow meaning, so that "*play provides a much wider background for changes in needs and consciousness*" than instruction, for which it provides a basis in many ways, such as rule consciousness and use of symbols (Vygotsky, 1978, p. 102).

Instruction holds a high place in Vygotsky's theory, however. He explicitly opposes the position that the "scientific" concepts delivered by instruction damage those naturally formed by uninstructed children: "*We believe the two processes -- the development of spontaneous and nonspontaneous concepts -- are related to and constantly influence each other. They are parts of a single process: the development of concept formation, which is affected by varying external and*

internal conditions but is essentially a unitary process, not a conflict of antagonistic, mutually-exclusive forms of mentation. Instruction is one of the principal sources of the schoolchild's concepts and is also a powerful force in directing their evolution; it determines the fate of his total mental development." (Vygotsky, 1986, p. 85 [my emphasis]).

The two types of concepts develop in different but converging courses: natural concepts start with familiar meanings but have no clear place in a mental structure (thus making abstraction difficult), while scientific concepts have only vague meanings to the child at first but have clearer relationships to other concepts (since that is how they are introduced). Vygotsky (1986, p. 108) offers this as an explanation of why a child often has more trouble solving formal logic problems using concepts developed informally ("Who is your brother's brother?") than those they acquired by instruction.

During development, natural concepts acquire more structural connections (via abstract intermediary concepts introduced by instruction) while scientific concepts acquire more connotative connections to concrete actions (via observations of the concept's effect in action, especially when it touches already-known concrete objects). Thus the scientific and natural concept-development processes reinforce each other rather than compete.

The other major theoretical insight that Vygotsky provided relevant to instruction (and to human psychology generally) is in the mutual interaction of language and thought. Vygotsky (1986, p. 125) expresses his thesis strongly: "*Thought is not merely expressed in words: it comes into existence through them.*" He approached the question through the study of the evolution of the meanings of words during the processes of both cultural and individual development (pp. 120-130). Here he put his full understanding of Darwin to good use -- not by superficial analogy to somatic evolution or speculative hypotheses about long-past events, but by outlining a model of just how the meaning of words could change gradually and how explosive positive feedback could result between language, action, and thought. The initial invention and elaboration of language is thus seen as a part of the tool-development process which is believed, because of its strongly adaptive value, to be the main basis on which natural selection physically differentiated humans from their progenitors.

While the historical aspect of this analysis is of great general importance (it is why humans differ so dramatically from pigeons), the immediate implications for instruction flow mainly from the way word meanings develop in individuals. Vygotsky points out that the simplicity of infant sentences is interrelated with the vagueness of the meanings associated with words at that point; since the child isn't yet capable of meaning much, one or two words at a time are plenty. As the child's ability to analyze and control the world grows, there is a corresponding growth of complexity and precision in language -- the mental toolkit of concepts becomes fuller and more differentiated. But a major spur to this growth and refinement of vocabulary is the possibilities revealed by combinations of existing words. *In fact, the process of word/concept combination itself becomes a tool, and proves to be a very powerful one.* This process continues until the set of mental tools (each closely associated with the word used to label, connect, and evoke it) is adequate to deal with the problems the person encounters in living. When provided concepts do not apply to actual encountered problems, they are forgotten (e.g., algebra for most people). On the other hand, new problems may create the need for new concepts to handle them, increasing the importance of instruction.

Bringing his theory to bear on instructional issues, Vygotsky pointed out that the difficulty of writing stems from the abstractness inherent in the loss of intonation and other oral methods of

supplementing the meanings of the words themselves, making writing "*as much harder than oral speech for the child as algebra is than arithmetic*" (Vygotsky, 1986, p. 99; he cites the ease of writing during foreign language learning as showing the problem is not writing *per se*). Not that he saw this as a reason to avoid writing; in fact, Vygotsky urged appropriately-layered instruction in abstraction, praising grammar study precisely because it creates consciousness (and thus the potential for full mastery) of what had previously been an unconscious competence, with the result that the sophistication of oral speech itself increases in response – an example of a positive feedback loop.

This example illustrates the core of Vygotsky's instructional message: promote the development of children by providing concepts and activities which are beyond their current unaided capabilities but within their reach with some assistance, and don't fear theory or abstraction, but prepare the ground for it properly. One implication is that since a lesson can be within the zone of proximal development for many children even if they are not all at the same place in their mental development, detailed personalization of instruction is generally not needed.

Reacting to these three stands of developmentalism, I find myself most impressed by Vygotsky's extension of the ideas Hall expressed in a simpler form at an earlier time. In addition to being based on a persuasive theoretical analysis, Vygotsky's prescriptions for instruction seem to be validated by the experience of successful teachers and to match the needs of modern societies to provide their members a large amount of knowledge structured in a sophisticated way. In fact, my own experience (in my youth and that of my children) is that a good abstract structure greatly increases the ease with which factual knowledge can be absorbed and retained.

There are also many places where Hall, Piaget, and Vygotsky agree with each other but differ from the orthodoxy of their time (and often of ours). These are mostly based on their common beliefs that: [a] the mental habits of the child should be used as components in a succession of restructurings, not erased and filled in with adult ones, and [b] there is substantial integration of the motor, intellectual, and emotional aspects of a child's development, indicating a need for a well-integrated curriculum. All this sounds like good advice to me.

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

Parke, R., Ornstein, P., Rieser, J., & Zahn-Waxler, C. (1994). *A Century of Developmental Psychology*. Washington: American Psychological Association.

Piaget, Jean, & Inhelder, B. (1969). *The Psychology of the Child*. New York: Basic Books

Vygotsky, L. S. (1986). *Thought and Language*. Cambridge: The MIT Press.

Vygotsky, L. S. (1978). *Mind In Society: The Development of Higher Psychological Processes*. Cambridge: Harvard University Press.