What comes to mind when you think of the word development? The way we think about development is usually part of a larger set of ideas we have about human nature and about the way the world works. We all tend to have at least a loose philosophy about these things, even though we do not think about it very much or very explicitly. These larger ideas about human nature and of reality are sometimes called paradigms or worldviews and scientific theories of human development seem to align with them. The various paradigms each have unique sets of philosophical assumptions and favorite metaphors that influence how we look at problems, how we conceptualize and understand human growth and functioning, and what it means to develop. These models also influence how we conceptualize teaching and learning, design interventions and prevention programs, and engage in professional practice. So it is important for readers to come to grips with these paradigms, because paradigm assumptions, metaphors and models will be found lurking in the way one understands children, students and clients.

Let’s try to get a fix on the broad sweep of human development by examining the key features of four developmental paradigms: (1) genetic-maturational; (2) mechanistic-environmentalism; (3) organismic and (4) ecological-contextualism (or “developmental systems”).

Four Paradigms

The genetic-maturational perspective is quite visible as a folk theory of human development, and many specific theories take it for granted. This paradigm suggests that human potential unfolds in a maturational sequence that is under genetic control. You have probably noticed that there is a timetable for when infants are usually expected to roll-over, sit up, crawl, take a first step, speak the first words. We notice that human growth is uneven and seem to take place in spurts, from the fetal period to the growth spurt that accompanies pubertal maturation in adolescence. The unfolding of these changes takes place in accordance with a timetable that is hard-wired. Hence the term “maturation” has a technical meaning in developmental psychology. It typically refers to changes that are under genetic control.

Moreover, this paradigm assumes that there is a genetic basis for much of human behavior, and considers the best explanations those that appeal to the human genome. Certainly readers have wondered if there is a genetic basis to intelligence. How about personality? Or delinquency? Does heredity tell us everything we need to know about our chances of academic success or of being stricken with depression or schizophrenia? One might implicitly endorse this paradigm if one is convinced that a person’s developmental chances are largely determined by one’s genetic blueprint.

Sometimes the question of genetics and maturation comes up when we hear this question being asked: What is more important in human development, nature or nurture. If you are impressed by the role of genetics on maturation or in setting the boundaries of human development, you are likely to say that human development is a matter of nature taking-her-course. One implication is that there is not very much for the rest of us to do as teachers or mental health professionals in shaping the course of development of children if it’s all under genetic control. So, for example, a teacher might come to believe that students bring certain aptitudes to school with them that instruction is helpless to do anything about. Mental health professionals might doubt whether interventions, therapy or treatment are worth the trouble if genetic inheritance sets the course of development.

On the other hand, if you think children and adolescents come to be the sort of person they are because they are socialized, because they are raised, brought-up by the exertions of others, by socialization agents, including parents and teachers, then your sympathies would fall along the side of nurture. Children are nurtured into competence, into moral character, into academic achievement, into religious conviction, into the personalities they come to have because parents and teachers praise, reward and punish at the right time and with the proper enthusiasm. As a folk theory of human development, this one also hits close to home. Like the biological-genetics-maturational view, this has a ring-of-truth to it. On the
one hand, we have *nature* that drives human development; on the other hand we have *nurture* that shapes, molds and directs it.

For many decades of the 20th-century one version of the nurture view took the form of what has been called a “*mechanistic*” or “*environmentalist*” world view. The two labels are very helpful for understanding this paradigm. The word “mechanistic” conjures up the image of a machine that reacts to stimuli and inputs. We flip a switch and a light comes on; turn a key and the engine starts, and so on. The word “environmentalist” tell us where the inputs come from—the environment. As a model of development this paradigm suggests that the human person is much like a machine that responds to inputs from the environment.

A good example of this paradigm was a movement in psychology called “behaviorism.” The behaviorist was interested in discovering the general laws-of-learning, that is, the laws that applied to all organisms, not just the human ones. The laws that govern how rats learn to press a bar for food in the environment of a laboratory cage was much the same as how children learn to select behaviors in their rearing environment. All organisms learn in accordance with the same mechanisms—by noticing associations, by various kinds of positive and negative reinforcement, or perhaps by observing models. Behavior is controlled by reinforcement contingencies that are active in the environment. Hence what drives child development is not the child but rather forces in the environment that shape and manipulate the child’s behavior by systems of reward and punishment. The child is passive in her own development, but the environment is active. It’s almost as if development is something that happens *to* the child, from the outside-in.

Richard Lerner (1998) argues that putting the issue as one of nature versus nurture is naïve and flawed. It is never a matter of “either/or.” It is to completely misunderstand the matter to ask, for example, whether intelligence is more a matter of genetics (“nature”) or more a matter of environment (“nurture”). Both are involved. Biology and environment interact in complex ways; they are integrated, fused as a unit. They depend on each other. Genes require certain kinds of environments in order to be expressed. Our heredity might favor a certain disposition or quality, but the form it takes, or if it appears at all, hinges on environmental factors. One might carry a genetic tendency for depression, but whether one becomes depressed will depend upon environmental experiences. Children whose genetics favor high intelligence will require stimulating environments to make it happen. Genetic risks for certain kinds of vulnerabilities can be constrained by exposing children to interventions and by making other modifications in their environment. There is interplay of nature and nurture in development (Rutter, 2003).

The *organismic paradigm* is a third perspective on development. This paradigm came to dominate developmental psychology in North America at least from the 1960s through the early 1980s (its roots in Europe went back many more decades before this). The organismic model assumes that the individual *organism* is the focus of development (not the organism’s environment, not the organism’s heredity), and that developmental change takes place because of what the *child* does as an active agent (not what biology or the environment does *to* the child). The child actively operates upon the environment. By the child’s own initiative, by her active constructive processes, intruding up the world, as it were, the child produces her own development (Lerner, 2002). It’s almost as if development is something that is pushed from the inside-out.

The most prominent example of an organismic perspective is Jean Piaget’s theory of cognitive development. Piaget’s theory describes the child as a “naïve scientist” who actively investigates the puzzles of the world and, by so doing, pushes her rational understanding to higher levels of sophistication that can be conceptualized as *stages* of development. Piaget described four broad stages of cognitive development from infancy to adolescence. Each new stage brings with it a qualitatively better way of construing reality. With each new stage one’s thinking is more logical. One is more competent at solving problems. And the summit of one’s logical competence is reached in the final stage, called “formal operations,” that emerges during adolescence. Here the adolescent can now think like a scientist. Here the adolescent can work through problems abstractly and logically, entertain theories about the world, test them systematically, and draw valid conclusions.
But Piaget’s theory does not have much to offer those who are looking for environmental or biological influences on cognitive development, and is often criticized on those grounds (perhaps unfairly, see Lourenco & Machado). Table 1.0 will allow us to more easily compare and contrast the three paradigms.

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<tr>
<td><strong>Three Models of Development</strong></td>
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<td><strong>Genetic-Maturational</strong></td>
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<td>What drives development?</td>
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The three paradigms differ on what drives development, where the causal factors are located, what is the typical model of the child, and the sort of research questions that are typically of interest. The genetic-maturational paradigm asserts that development is driven by “nature,” that is, by one’s genetic inheritance or other “inner-biological” causes. Its research focuses naturally on the human genome, on the role of genetics, traits and biological factors on development, but otherwise has a passive view of the child (in other words: biology is active, the child is passive).

The mechanistic-environmentalist paradigm asserts that development is driven by “nurture”, that is, by causal factors in the “outer-physical” environment. It wants to know how these environmental factors shape children’s behavior and contributes to their learning, but otherwise has a passive view of the child’s role (in other words: the environment is active, the child is passive).

Finally, the organismic paradigm asserts that development is driven by the child’s own activity as she operates upon the environment. The human person, in fact, changes the environment by her own activity and is not simply held hostage to it. As a result the “inner-psychological” structures of the child’s mind develops to higher stages of competence, but otherwise has a passive view of the role of maturation-genetics and the learning environment.

Perhaps you can see where this is going. Each of the previous three paradigms is phrased in terms of “either/or”, that is, development is either of one type or the other, but not all two or three at once. But isn’t there some truth to all three paradigms? After all, we certainly have a genetic blueprint that both pushes and constrains development. Learning environments certainly do matter. And the developing child is active in the construction of her own intelligence and other “inner-psychological” achievements. Is there not a way to combining these themes so as to arrive at a more sophisticated model of development? Indeed there is, and this brings us to a fourth paradigm called “developmental contextualism” or a “developmental systems” view. As we will see, a systems view of development has profound implications for teachers, counselors and mental health professionals.

**Developmental Systems**

The developmental systems perspective is the overarching conceptual framework that drives much of the study of human development today. Richard Lerner (1991, 1998) has been a prolific advocate of this view. As Lerner puts it (1998, p. 1), the child, the person, cannot be understood solely by reference to biology, environmental contingencies, or to psychological structures. Rather, development is an integrated matrix of variables from multiple levels of development, including inner-biological, outer-physical and inner-psychological. The individual is a system. But to this must be added a broader set of contextual factors that includes family, peers, community, ethnicity and culture all of which are influenced by the historical forces that affect the generation in which we are raised. These multiple sources of influence are in dynamic reciprocal interaction. The dispositions, interests and abilities of the developing child interact with the changing contexts of learning and socialization. Person variables and
contextual variables dynamically interact in complex ways; both are mutually implicated in behavior.

Indeed, an accurate account of development requires reference not only to person variables—genetic inheritance, biological dispositions or psychological structures—but also the way these person variables interact with environmental and contextual variables, which themselves change over time. Development takes place, then, at the intersection of persons and contexts. We cannot understand how puberty influences self-image, for example, until we understand something about the context in which it is experienced (e.g., in the context of dating or making a school transition). Whether school transitions have a positive or negative effect on young teenagers will depend on whether there is a good fit between the teen’s psychological needs (“person”) and the way that schools are organized (“context”). Student motivation is not just a “person” variable; it is not just a characteristic of the adolescent but is something that interacts with teacher practices in the context of the classroom. It is the union of person and context that is the chief lesson of the developmental systems perspective, and we will revisit this theme repeatedly in the remaining chapters of this book.

The Ecology of Human Development

In 1979 Urie Bronfenbrenner published an influential book called *The Ecology of Human Development* that has had an important influence on the developmental systems perspective. The term “ecology” might sound strange in that title. When we think of ecology we usually have in mind something about the natural habitats of species, and the sort of environments in which they adapted and flourish. Species are adapted for particular ecological niches—alligators to swamps, frogs to wetlands, penguins to ice caps. So it sounds odd to see the word used in connection to human development. But in fact Bronfenbrenner argued that human development, too, can be conceptualized in terms of ecological niches and that researchers are better off investigating children in their natural developmental habitats—out in real life settings—rather than in the artificial environment of a laboratory.

According to Bronfenbrenner, an ecological niche is identified by the intersection of two or more social addresses with two or more personal attributes. A social address could include such things as where one lives, the level of education one has achieved, one’s employment or marital status or social class. Personal attributes could include one’s intelligence, gender, race, or age. Some ecological niches are associated with developmental risks, and children born to them will face certain challenges. For example, a child is at risk for low birth weight if mother is an unmarried minority teenager who lives in the inner city and has dropped out of high school. In this example an ecological niche is identified by the intersection of three social addresses (residence, marital status, education level) with two personal attributes (age, race). A child born to this niche will face a different set of life circumstances than would a child born to a niche that varies even slightly. A child whose mother has all of these characteristics except for the fact that mother is married, or lives in the suburbs, or has completed high school, will occupy a different ecological niche and show a different developmental trajectory. The identification of ecological niches has been an important focus of research. It is particularly useful in charting risk factors for certain negative developmental outcomes, and for giving researchers clues about possible ways to intervene to improve the developmental “habitats” of children.

Ecological Systems. In addition to the concept of ecological niche Bronfenbrenner has also influenced the developmental systems perspective by his writings on the ecological systems in which children develop. In his view children grow up within the overlapping influence of four ecological systems, which he calls the *microsystem*, *mesosystem*, *exosystem*, and *macrosystem*.

The microsystem is a context of development that includes all of the personal relationships that the child has during the course of development. It includes, naturally, the relationship that the child has with mother, father, siblings and relatives. It includes the child’s relationship with teachers and classmates, with neighborhood friends, with the baseball coach or piano teacher, the clergy at church, mosque and synagogue. The quality of microsystem relationships is an obvious source of influence on the child’s development.
Of course, the child forms personal relationships in various settings, at home with family, at school with teachers and classmates, in the neighborhood with friends. Hence the microsystem sprawls over numerous settings, such as home, school, and neighborhood. The mesosystem refers to the linkage among these settings. Bronfenbrenner argued that development is favored when the mesosystem linkages are strong. Some parents don’t know the names of their child’s teacher; and teachers often report that they have never met or infrequently see the parents of their students. This indicates a weak linkage between home and school mesosystem. Some parents don’t know the names of their children’s friends, or have never met them. For many children, the friends at school are different from the friends in the neighborhood. Schools and parents may be unaware of important resources in the community. Again, these weak linkages reflect a mesosystem that is not optimal for development.

Both the microsystem and the mesosystem involve the child directly. But there are contexts of development that have an indirect influence on children, and these contexts Bronfenbrenner called the exosystem of development. One of these contexts is the parent’s employer. Where a parent works has a crucial influence on child development. The parent’s employment determines how money is earned and what shifts are worked. How much money parents makes determines what neighborhood a child lives in and therefore the quality of education and the kind of peers the child is exposed. Parental income determines whether there is access to health care and nutrition; whether parents can afford a computer or piano lessons. Parents’ work schedule determines if someone will be home after school to monitor the adolescent. Another indirect influence on child development is the work of local government and the school board. The city council determines, for example, whether the library will remain open; whether buses will run or playgrounds be staffed. The school board makes decisions about extracurricular activities, the quality of teachers, whether adequate textbooks will be available, and so on. Clearly, all of us have to be active and vigilant in the exosystem of our communities if we want to advance healthy development for our children.

Finally, the macrosystem refers to broad features of our culture, like its dominant ideology or political structure. That we live in an industrialized Western society is a different macrosystem than tribal societies in Africa. We live in a society where the Judeo-Christian morality, the values of capitalism, the Protestant work-ethic and liberal democracy make sense. These deeply ingrained cultural values exert an influence on the behaviors we wish to cultivate in children. Another macrosystem influence might also include the media and the way it saturates our society culture with images and messages that might influence adolescent behavior.

Implications for Professionals

No two individuals have the same fusion of genes and context, even members of the same family, which is why siblings can seem very different from each other in their likes and dislikes, in their temperament and personality. Every child is the product of a unique combination of genetic, environmental, psychological and contextual factors, and these are in dynamic interaction across the lifecourse. As a result individuals will differ considerably in the pace development. The trajectory of development, its path and direction, will not be the same for everyone. In fact, individual differences are the norm. We should expect variability on any dimension just because each person is a unique developmental system that is constantly changing. We should also expect new possibilities for change with every new developmental transition. Every new “microsystem relationship” has the potential for altering our developmental path. So as we enter new peer groups, friendship networks or schools, as we form romantic attachments, take a job, commit to a course of study or mentor, join a team or club, we are opening up new possibilities for positive growth. It follows that no one stage of life is decisive. There is always the possibility of further change as the person interacts in dynamic ways with changing life circumstances. Indeed, there is significant (but relative) plasticity in development ---the developing person is adaptable and responsive to new experiences.

Hence the developmental systems perspective points to five conclusions of considerable importance for teachers, counselors, psychologists and community mental health workers:
(1) Children differ in the pace of development.
(2) Children differ in the trajectory of development
(3) Individual differences are the norm.
(4) There is constant change across the lifespan.
(5) There is relative plasticity in development.

The challenge for teachers is how to adapt instruction for a classroom of students for which there are individual differences in level of development, ability, preparation and interest. Children are deeply embedded within multiple ecological systems, and educators must contend with multiple sources of influence at different levels of organization.

Consequently, instructional lessons that focus only on “the child” without addressing “context” will likely fail. Educational planning that does not address the many, diverse developmental contexts represented by students –their culture, ethnicity and life circumstances-- will fall short of its objectives.

On the other hand educational planning that focuses only on “context,” only on alterations to the “learning environment,” without taking into account children’s individual differences, will also fall short of the mark. A similar challenge awaits psychologists, counselors and community mental health professionals. The challenge for professionals is how to organize classroom, schools and communities in a way that meets the many diverse developmental needs of adolescents. The challenge is how to strengthen the linkages in the mesosystem of development.

But a developmental systems perspective provides hope as well as challenges. The plasticity of development, and the expectation of change, gives us hope that children and adolescents can surmount their vulnerabilities, make adaptive changes and pursue options that contribute to their thriving. It gives us hope that adolescents will profit from our educational efforts as teachers, our therapeutic efforts as counselors and psychologists, our prevention and intervention programs as community mental health professionals. The developmental systems perspective, in its insistence of dynamic change across the lifecourse, gives no one cause to give up on kids.