Defining Basic Terms: Development

- **Development**: The sequence of changes in physical, cognitive, and social changes that human organisms undergo from the moment of conception through adulthood and old age
  - Note two characteristics of this definition:
    - 1. It is purely descriptive: It does not say how or why development occurs as it does, whether there are stages, what the process of change is.
    - 2. The word, culture, is not contained in the definition
Defining Basic Terms: Culture

- **Culture**: the socially inherited body of past human accomplishments that serves as the resources for the current life of a social group ordinarily thought of as the inhabitants of a country or region (D'Andrade, 1996)
- These accomplishments are both material (cars, computers, tables) and conceptual (laws of thermodynamics, information, religious beliefs)
- Material and conceptual are united in cultural practices, habitual ways of doing things governed by beliefs, material resources, modes of behavior.

The Garden Metaphor of Culture-Combining Form and Process

- In early uses in English, “culture,” referred to the process of helping things grow. Plants and animals, and only later, human children. “Culture =Ploughshare.”
- Culture, in this sense, like a garden.
- Maintenance of the garden and its contents depends on the ecology of the garden as much as the conditions and actions by gardeners which occur within it.
- Interpreted this way, culture is a *medium* of human development.
Developmental Niches as Cultural Context of Development

- Developmental niche -- the child’s location within the complex set of socio-cultural-ecological relations that form the proximal environment of development.

(1) the physical and social settings in which the child lives,
(2) the culturally regulated childrearing and socialization practices of the child's society
(3) the psychological characteristics of the child's parents, especially parental theories about the process of child development and their affective orientation to the tasks of child rearing
(4) these three components of the developmental niche operate in (imperfect) coordination with each other, providing the proximal structured medium through which children interact the world

Concentric Circles View of Developmental Niches
Culture in Development: Four Frameworks

Maturationalist View

- Environment . . . determines the occasion, the intensity, and the correlation of many aspects of behavior, but it does not engender the basic progressions of behavior development. These are determined by inherent, maturational mechanisms.

- Neither physical nor cultural environment contains any architectonic arrangements like the mechanisms of growth. Culture accumulates; it does not grow. The glove goes on the hand; the hand determines the glove.
Environmentalist View

- “Operant conditioning shapes behavior as a sculptor shapes a lump of clay.”
- From this perspective, culture is a set of environmental contingencies, patterns of rewards and punishments.

Interactionist View

- “The human being is immersed right from birth in a social environment which affects him just as much as his physical environment. Society, even more, in a sense, than the physical environment, changes the very structure of the individual.... Every relation between individuals (from two onwards) literally modifies them.... (Piaget)
- Equilibration: Result of active individual modifying itself to control environment (accommodation) and of environment being modified to suit individual (assimilation)
- Culture speeds up or slows down universal sequence of developmental stages
Human culture is a part of human biology

"Man's nervous system does not merely enable him to acquire culture, it positively demands that he do so if it is going to function at all. Rather than culture acting only to supplement, develop, and extend organically based capacities logically and genetically prior to it, it would seem to be ingredient to those capacities themselves. A cultureless human being would probably turn out to be not an intrinsically talented, though unfulfilled ape, but a wholly mindless and consequently unworkable monstrosity." (Geertz)
Four “time scales” of human development:

- **Phylogeny** – History of the species
- **Cultural History** - History of human groups and their interactions
- **Ontogeny** – History of individual human life
- **Microgenesis** – Moment by moment changes brought about by organism-environment interaction.

### Before the Beginning: Phylogeny

- Common ancestor of modern humans and chimpanzees about 6 million years ago. Brain size and morphology similar to modern chimpanzees.
- On the way to homo sapiens sapiens, biological change and cultural change intertwine. It is this intertwining that appears to drive apart species and result in modern humans.
- New tool → more food → bigger brain/running → more food, better shelter, longer life → larger social groups → bigger, more complex brains……
Changes in Brain Volume

![Graph showing changes in brain volume over millions of years]

Phylogeny/Cultural Changes in Hominization

4 million years: oldest known australopithecines: erect posture, shared food, division of labor, nuclear family, larger number of children, longer weaning period

2 million years: Oldest know habilines: as above, with crude stone-cutting tools, variable but larger brain size

1.5 million years: *Homo erectus*: much larger brain, more elaborate tools, migration out of Africa, seasonable base camps, fire, shelters

0.3 million years: Archaic sapient humans: major increase in brain size, anatomy of vocal tract starts to assume modern form

0.05 million years: Fully modern humans: cave art, complex tools, burial practices…..
Burial Practices

Art
Cultural Reorganization: Agriculture & Earliest Origins of Money/Memory

Inscribed (Memory/Money) Tokens
The word money, comes from Moneta, a name by which the Roman queen of the gods, Juno, was known... Moneta was a translation of the Greek Mnemosyne, the goddess of memory and mother of the Muses, each of whom presided over one of the nine arts and sciences. Moneta in turn was clearly derived from the Latin verb moneo, whose first meaning is 'to remind, put in mind of, bring to one's recollection'... (Hart, p. 256-57)
Written Speech As Tool

- Clearly operates as both psychological and technical tool.
- Status as psychological tool highly debated.
  - A) Provides tool for analysis of language which in turn changes in thought in general
  - B) Provides tool for analysis of language which changes thought in context specific ways
  - C) Resolution: generality of tools depends on generality of its use: there is no such thing as a context-free tool.
- Associated with new developmental niche: Schools
The First School?

Ontogeny
Before the Beginning:

- Although we traditionally mark the start of development with the moment of conception, cultural contributions start earlier.

- Even before conception because it places constraints on who can mate with whom, thereby biasing the potential genetic makeup of the individual as well as the environment within which the new organism will develop.
The Prenatal Period

- Many cultural influences are mediated through the biological system of the mother
  - nutrition: dietary restrictions in some groups increase chances of low birth weight, protein deficiency needed for normal brain development.
  - A large variety of chemical agents, ranging from tobacco and drugs to environmental pollutant influence later physical, cognitive, and social development
  - Stress causes chemical changes in the mother which can adversely affect the child

The Prenatal Period (continued)

- At least the “tune” of one’s native language is learned in the last several weeks of gestation: a more or less direct effect
- In so far as new technologies allow knowing sex of fetus, selective abortion may occur, a case where biology is mediated by culture (there are large cultural differences favoring males when they occur).
Bio-Social-Behavior Shifts

- From time to time, changes in different parts of the system, governed by different time schedules, come together to create new structures of the organism, and new ways of functioning.
- These moments of convergence and transformation are called bio-social-behavioral shifts- their occurrence and timing depends upon the cultural context
- “Each new level of organization is a new relevant context.” (C. Waddington, 1940)

Birth- First Bio-Soc-Behavioral Shift in Cultural Context

- The entire relation of organism to environment as well as internal functioning shift at birth.
- There are marked cultural variations in the way that birth is dealt with. Hospitalization and the presence of mails is a cultural anomaly. (!Kung San versus 1960’s US versus today)
- The earliest reactions of parents to their newborns illustrate a general feature of cultural influences in development: parental beliefs are converted in material conditions of development. In an important way, the cultural future shapes the child’s cultural organized experience in the present.
Prolepsis: Bringing the Future into the Present

- British mother: “She is never going to be a rugby player.
- British father: “I will be worried to death when she is 18”
- Zinacantecan parents give their sons three chilies to hold, a digging stick, an axe, and a [strip of] palm so that will learn to farm and weave palm. Girls are given toy loom for weaving.
- Zinacantecan proverb: "For in the newborn baby is the future of our world."
- Clear that conceptual change and material change intermingle

How Parental Beliefs Shape the Child’s Future
Early Infancy

- Establishing Coordination with the Social Group: Getting on a schedule
- The future in the present: A cross-cultural example
  - Japanese and American middle class mothers interact with their 5 month olds and an object differently
  - No differences among infants in orientation to objects and mothers, but big cultural differences in mother’s behavior that then emerge later in infant behavior
- The consequences of breast feeding versus bottle feeding: it depends a lot on cultural context: traditional farming versus factory work of mothers

Attachment: Cultural Contributions

- Between 6-9 months in many cultures there is a marked shift in physical, social, cognitive, and emotional development bespeaking a bio-social-behavioral shift
  - Onset of crawling creates physical separation from mother and increased exploratory potential vis a vis social and physical world
  - Onset of crawling accompanied by
    - new visual orientation to caretakers: social referencing
    - new orientation to strangers and unusual events
    - new orientation to caretakers: attachment behaviors
  - There is great uncertainty whether these changes are universal or culture-specific:
Problems of Cross-Cultural Methods: The Strange Situation

- The standardized Strange Situation (8 phases, 3 mins long)
  - Phase 1: After giving instructions the experimenter (who is a stranger to the child) leaves the child and mother alone in a room supplied with toys
  - Phase 2: The experimenter returns
  - Phase 3: The mother leaves the child with the stranger
  - Phase 4: The mother returns so child and the mother reunite
  - Phase 6: Mother leaves again leaving child alone
  - Phase 7: The stranger/experimenter returns
  - Phase 8: The mother returns.

- Big Question: How does the child react when different adults go and return?

Behavioral Indices of Attachment in the Strange Situation

- Type A (anxious-avoidant) children turn away or look away when their caregivers return, instead of seeking closeness and comfort.
- Type B (securely attached) children go to their caregivers, calm down quickly after their early upset, and soon resume playing.
- Type C (anxious-resistant) children are often upset while their mothers are with them just as a result of being in the strange environment. They become very upset when their caregivers leave, and they simultaneously seek closeness and resist contact when the caregivers return.
Cultural Differences in Behavior in the Strange Situation?-(2000)

- Percentage of Children Assigned to Each Attachment Rating

<table>
<thead>
<tr>
<th>Country</th>
<th>Anxious/Avoidant</th>
<th>Secure</th>
<th>Anxious/Resistant</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA (n = 105)</td>
<td>21</td>
<td>67</td>
<td>12</td>
</tr>
<tr>
<td>Germany (n = 46)</td>
<td>52</td>
<td>35</td>
<td>13</td>
</tr>
<tr>
<td>Israel (n = 82)</td>
<td>7</td>
<td>57</td>
<td>34</td>
</tr>
<tr>
<td>Japan (n = 60)</td>
<td>0</td>
<td>68</td>
<td>32</td>
</tr>
</tbody>
</table>
Culture and Language Acquisition

- All children in all cultures acquire the language of their society
- The necessary and sufficient conditions for language acquisition are not well understood
- Contrasting cases help narrow the question:
  - Genie: no normal, culturally mediated, social interaction. No language
  - David: normal culturally mediated social interaction, no language input, rudimentary features of language remain
  - Samoan and other southsea islanders: speak for children and include in normal social interaction, normal language acquisition
  - The analogy of growing a flower and language acquisition

Preschools in Three Cultures

- Japanese Preschools have high student: teacher ratio, averaging more than 25:1
- American teachers viewing such classrooms strongly disapprove.
- Japanese teachers have opposite response upon seeing American preschools with 5:1 or 6:1 ratios: "A class that size seems kind of sad and underpopulated," one remarked. Another added, "I wonder how you teach a child to become a member of a group in a class that small" (Tobin et al., 1989 (p. 38).
- The Japanese teachers are preparing the children for their future, where group harmony, “wa” is highly valued: “Wa” is the motto of large multinational corporations, like Hitachi, and the guiding principle in the playing of baseball in Japan (See Tom Selig movie)
Culture and Developmental Stages

- Cultural circumstances are central to the existence and timing of developmental stages at all ages (for example, Children in Melanesia as young as 3 observed handling knives or going to market by themselves).
- A possible cultural universal age of 5-7, the age at which time sex segregation of activities is often observed and the ways in which cultures influence development by the forms of activity to which adults assign children come to the fore.
- (e.g., differences in spatial skills associated with staying at home to help with house and little children or being sent to watch out for the cows).

Schooling as a Special Cultural Experience

- Cross- Cultural research on influence of schooling on development ambiguous - equal procedures do not mean equal experimental conditions in different cultures.
- When schooled and non-school children given same pictorial materials and asked to remember what pictures were shown, or which pictures were in which positions, is this a fair test? Don’t school kids have a lot more experience with such short term memory testing?
Typical Result of Test of Schooling Effects

Effects of a Cultural Practice
Abacus Use in Japan

- People can be taught to use an abacus in few hours.
- Masters calculate accurately and even faster without a physical abacus present.
- Abacus master short term memory infinite for numbers but 7+/−2 for words: practice specific
- Appear to use a "mental abacus," a mental image of bead configuration
Abacus continued

- For mixed problems (e.g., $957 + 709 - 143$
  $2,095 - 810$) experts manipulate 5-10 digits per sec.
- Children who are highly practiced in abacus do better in school math. Why?
  - Saves mental energy?
  - Selection of better math students?
  - Change in identity and motivation?

Abacus in the Brain

- Non-abacus users retain series of digits in verbal working memory (increased activation in the corresponding cortical areas including the Broca's area)
- Mental abacus experts hold digits in visual-spatial working memory, showing activation in bilateral superior frontal sulcus and right superior parietal lobe.
- Again, very practice-specific
Culture Becomes Biology: Schooling and the Brain

- PET study of adult women from rural Portugal where first born daughters kept home but second borns sent to school.
- Task: to repeat real words and pseudo words
- Difference only for pseudo words.
- Literate subjects show phonological processing of unfamiliar pseudowords, illiterate subjects substituted similar sounding real words for the pseudo words.
- Literates showed right parietal activity for pseudo words while non-literate subjects did not
- Note: Again, changes closely linked to practice of reading, not general.

Summary

- Culture is more than a glove going on the hand, it plays a role in all aspects of development; two way street of causation.
- The intimate connections between culture and development begin before birth and continue throughout life.
- Culture is the specific medium of human life, through which the interactions between biology and the child’s experiences with the environment are mediated.
- The overall process of development is an emergent process which requires the interweaving of several different threads: biological history, cultural history, and individual history.
- All present simultaneously; they are interwoven in the medium of culture.