III. Nature, Nurture, and Human Diversity (pages 107-113)

### **B. Evolutionary Psychology: Understanding Human Nature**

- Evolutionary psychologists focus mostly on what makes us so much alike as humans.

### a. Natural Selection.

- If a fox can't flee, it will attack. How did humans domesticate dogs from equally wild wolf forebears? Experiment: 30 male foxes, 100 female foxes. Selected and mated tamest 5% of males and 20% of females. 30 generations more, 40 years later, and 45,000 foxes later, a new breed of foxes created, that are tame and domesticated. Certain traits are selected by conferring over reproductive advantage. -natural selection explains human tendencies? Nature has selected advantageous variations from among the mutations (random errors in genetic replication) and the new gene combinations produced at each human conception. Genes selected during history provide us with a great capacity to learn and therefore adapt to life in varied environments. Genes and experience together wire the brain.

-big picture: lives are remarkably alike. Although human differences grab our attention, our deep similarities also demand explanation.
-behavioral and biological similarities arise from shared human genome. No more than 5% of genetic differences among humans arise from population group differences. 95% of genetic variation exists (2) his populations.

- Why are we all so much alike? Part e answered questing Ditter than others that involved foods, mating alies, we foes.

-genes of individual, not so disposed terces to be lost from human gene pool over generations, behavioral tendencies and thinking and learning capacities that prepared our stone age incestors to survive, reproduce, and send their genes into the future. Because of prehistoric genetic legacy, we are predisposed to behave in ways that promoted our ancestors' surviving and reproducing.

-Evolutionary psychologists explore questions like these: why do infants start to fear strangers about the time they become mobile. Why are biological dads less likely than unrelated boyfriends to abuse and murder the children with whom they share a home? Why do so many more people have phobias about spiders and snakes than about more dangerous threats, like guns and electricity?

-how and why according to evolutionary psychology do women's and men's sexuality differ?

### b. An Evolutionary Explanation of Human Sexuality

1) Gender differences in sexuality

- men and women adapted in similar ways. We eat same foods, fear same heights, avoid same predators, and perceive, learn, and remember similarly. That is where we faced differing adaptive challenges, most obvious in reproductive behaviors, that we differ, say, evolutionary psychologists.

-gender: the biologically and socially influenced characteristics by which people define male and female.

mother. Parents can shape our differences: abused become abusive, neglected become neglectful, loved but firmly handled become self-confident and socially competent. But in personality measures, shared environmental influences typically account for less than 10 percent of children's differences. Two children in the same family are as different from one another as are pairs of children selected randomly from the population. Parents should be given less credit for kids who turn out great and blamed less for kids who don't. Parental nurture is like nutrition. It helps to have someone we belong so, someone who cares about us.

### **B. Peer Influence**

Children are subject to group influences. The conformity behavior of children seeking to fit in with various groups is a significant influence on day-to-day behavior. (pre k kid hates food, puts on table when group of kids like it.) -Knowing that lives are formed by influences beyond parental control. If they are beyond sculpting, we can just relax and accept and love them for who they are. Powerful parental influence may occur indirectly (group of parents influence peer group. Parents'-group-to-children's-group effects. Parental influence occurs when parents help select their children's neighborhood and peers. Parents are more important when it comes to education, discipline, responsibility, ordeoliness, charitableness, and ways of interacting with authority figures. III. Nature, Nurture, and Human Diversity (pages 119-125)

### **D. Cultural Influences**

-the mark of our species is the ability to learn and adapt. <u>Culture</u> is the behaviors, ideas, attitudes, values, and traditions shared by a group of people and transmitted from one generation to the next. Culture is a better way of being social.

-Primates exhibit the rudiments of culture with local customs of tool use, grooming, and courtship. Some invent customs like potato washing and passing them to peers and offspring. Thanks to language, we enjoy the preservation of innovation. Culture enables an efficient division of labor.

-Shared capacity for culture enables striking differences. Nature manifests diversity. If we lived in homogeneous ethnic groups in separate regions of the world, cultural diversity would be less relevant.

### A. Variation Across Culture

- Adaptability seen in cultural variations among beliefs and values through customs. Example: Visiting Europe= smaller cars, left-handed fork use, nude beaches. Visiting Iraq= realized how liberal their home cultures were.

- Japanese in North America: street shoes in the house, picnic lunch and files and ants. Norms- the rules for accepted and expected behavior Personal space- portable buffer zone we like to maintain around our bodies. Controles can collide with differing norms such as personal space and can lead to awkward situations. Cultures vary in expressiveness, in the collife as well.

## B. Variation **Gypenne**

-most wide in cultures charge with remarkable speed. With greater economic independence, today's voluen are more likely to marry for love and less likely to endure abusive relationships out of economic need. Between 1960 – 1993, teen suicide rate tripled, divorce rate doubled, juvenile violent crime rate quadrupled, and a quintupled prison population, and an escalating incidence of depression. Americans spend more hours at work, fewer hours sleeping, and fewer hours with friends and family. Cultures change, vary, and shape our lives.

### C. Culture and the Self

Cultures vary in the event to which they give priority to the nurturing and expression of one's personal identity or of one's group identity. Individualismgiving priority to one's own goals over group goals and defining one's identity in terms of personal attributes rather than group identifications. Collectivism- giving priority to the goals of one's group (often one's extended family or work group) and defining one's identity accordingly. 85% say it's possible to pretty much be who you want to be. Individualism varies from person to person within any culture. If set adrift in a foreign land as a collectivist, you might experience a much greater loss of identity than as an individualist. Cut off from family, groups, and loyal friends, you would lose the connections that have defined who you are. Collectivists may act shy in new groups and are more easily embarrassed than their individualist counterparts. They have deeper and more stable attachments to their familiar

### III. Nature, Nurture, and Human Diversity (pages 134-136)

### **Reflections on Nature and Nurture**

- Trivial truths and great truths of paradoxes of modern science. Opposite of trivial truths = plainly false, and the opposite of a Great truth = true as well. Our ancestral history helped form us as a species. Variation, natural selection, heredity = unique gene combo that helped form us as individuals. Genes predispose both shared humanity and individual differences. Genes form us = great truth.

- also true that experiences form us. In womb, families, peer social relationships, we learn ways of thinking and acting. If genes and hormones predispose males to be more physically aggressive, society magnifies gender difference through norms that encourage macho for men and caring for women. Roles remake their players. Presidents in time become more presidential, servants more servile. Gender roles simply shape us.

- Gender roles are converging and both women/men have become fully capable of effectively carrying out organizational roles at all levels. Gender differences in traditional masculinity/femininity diminish over time. Roles change and we change with them.

Are we nothing but the product of nature and nurture? No, we are also anopen system. Some people elect celibacy and defy genetic bent to reproduce. Some people defy peer pressures. Personal beliefs are stronger than the product of nature and nurture at times, and beliefs are affected by colluce. But when crowd goes one way, they remember who they are and point ther way. Baufaith IS attributing responsibility for one's fare to bad genes or back in luences. Today's decisions affect tomorrow's environment. We are architects and our hopes/goals/expectations informed can future. That is what erables cultures to change so quickly.
Some readers feel troubled by naturalism and evolutionism as contemporary

- Some readers feel troupled by naturalism and evolutionism as contemporary science and worry that science of behavior will destroy sense of beauty of human creature. Reassurance: discoveries can add to the mystery and beauty. Galileo and the sun being the center caused a leap in astronomy that created more questions. It's congenial with spirituality.

- Rather than fearing scientific discovery, we can welcome it to awaken our sense of awe. 4 billion years gave rise to a 6 billion unit strand of DNA and incomprehensible intricacy to the human brain. Although we appear to have been created from dust, over eons of time, the end result is a priceless creature with potential beyond our imagination.

IV. Developing Through the Life Span (pages 170-174)

### c. Social Development

- Erik Erikson: each stage has its own psychological task, a crisis that needs resolution. Young = trust issues, then autonomy, then initiative, then competence at school-age. The adolescent search for identity also occurs.

### c1. Forming and Identity

- Western culture adolescents try out different personalities to form a self definition that unifies the various selves into a consistent and comfortable identity: one's sense of self; according to Erikson, the adolescent's task is to solidify a sense of self by testing and integrating various roles. Some forge identity earlier than others by adopting parent's values and expectation in collectivist cultures. Others adopt an opposition to parental views, and some conform to jocks, preps, geeks, and Goths. 80% of teens would choose their life as it is right now. Late teen years provide new opportunities for trying out different roles. Intimacy: in Erikson theory, the ability to form close, loving relationships; a primary developmental task in late adolescence and early adulthood. As Aristotle long ago recognized, we humans are "the locial

animal." <u>c2. Parent and Peer Influence</u> -Preschooler who can't be close en ugh to mother but what's to will not be close to mother in adulthood. Address can be start of arguments over little things and as time goes on, here are fewer arguments out more intense. Differences can also considered to extrant output and stross. But the discrete entry? als point the disagreements aren't destructive. Positive relations with parents = positive peer relations, healthiness, intimate friendships, and good grades. Tense parent relationships = misbehavior. Adolescence = diminishing parental influence. Heredity does heavy lifting in forming individual differences in character/personality. Excluded teens suffer in silence for the most part but some act out in violence. Rejected adolescents are vulnerable to loneliness, low self-esteem, and depression.

### d. Emerging Adulthood

-Young adulthood brings looser parental ties. Late 20s, most feel comfortably independent. Adolescence in west is in teens, but in earlier times and todays developing countries, it was earlier. After sexual maturity, society bestowed adult responsibilities on young person, who worked, married, and had kids. Today in western society, there is a gain in body fat, and loosened ties to parents. Later independence and earlier sexual maturity have widened the gab between biological maturity and social independence.

- 18 to mid 20s is an increasingly not yet settled phase of life, some call emerging adulthood. No longer adolescents, have adult responsibilities, usually around college, and emerges gradually.

### VIII. Learning (Pages 321-325)

### b. Extending Pavlov's Understanding

- Pavlov and Watson underestimated the importance of cognitive process and how biological constraints effect the learning capacity. They were behaviorists.

### b5. Cognitive Processes

- the predictability of a second event occurs when two significant events occur close together. The more predictable the association, the stronger the conditioned response. The animal learns an expectancy of the US. The principle that classical conditioning isn't a stupid process by which the organism willy-nilly forms associations between any two stimuli that happen to occur, helps explain why classical conditioning reatements that ignore cognition often have limited success. Example: alcoholism therapy: nauseating drug in drink makes association, but the alcoholics know it's the drug that makes them sick, not the alcohol.

### b6. Biological Predispositions

- Scientists have assumed that all animals share common evolutionary historyand resulting commonalities in makeup and functioning. Any natural response would be conditioned to any neutral stimulus, according to Gregory kindle in 1956, but 25 years later, he admitted he was wrong. An animal's expectly for conditioning is constrained by its biology. Animals and hun a lease m biologically prepared to learn some things rather than others. Natural verection favors haits that aid survival. Nature prepares the memours of each species to harm those things curcial to their survival. Resear the suggests possible humane ways for controlling predators and agreed the levels of analysis when seeking to understand phenomena such as learning. Learning enables animals to adapt to their environment. Adaptation sheds light on exceptions.

### c. Pavlov's Legacy

- Pavlov's ideas about conditioning taught us that classical conditioning is a basic form of learning. Why do we care? Because classical conditioning is one way that virtually all organisms learn to adapt to their environment. Pavlov taught us about objective learning as well.

### b7. Applications of classical conditioning

- Pavlov's principles of classical conditioning apply to human health and well-being (crack cocaine users, alcoholics, immune system response to a taste associated with immune boosting drugs). Human emotions and behavior, though biologically influenced, are mainly a bundle of conditioned responses.

The main purpose is to increase a certain behavior. <u>Positive reinforcement –</u> <u>Increasing behaviors by presenting positive stimuli, such as food. A positive</u> <u>reinforcer is any stimulus that when presented after a response, strengthens the</u> <u>response. Negative reinforcement – Increasing behaviors by stopping or reducing</u> <u>negative stimuli, such as shock. A negative reinforcer is any stimulus that, when</u> <u>removed after a response, strengthens the response. This is not the same as</u> <u>punishment.</u> Taking an aspirin may relieve a headache, which is a negative reinforcement. Attention, approval, and money are positive reinforcers for people.

### 1. Primary and Conditioned Reinforcers

- Here are two more types of reinforcers. <u>Primary reinforcer – An innately</u> <u>reinforcing stimulus, such as one that satisfies a biological need.</u> This is different than <u>conditioned reinforcers – a stimulus that gains its reinforcing power through</u> <u>its association with a primary reinforcer; also known as secondary reinforcer.</u> Our lives are filled with secondary reinforcers – money, good grades, each being linked with more basic rewards. Secondary enforcers greatly enhance our ability to influence one another.

### 2. Immediate and Delayed Reinforcers



- Two more types of reinforcers have to do with the time and manuer a stimuli appears and the amount of reward that follows a given action. To function effectively we must learn to postpone in me in the rewards for greater long-term rewards. A big step toward mature V- and toward gaining the most satisfying life – is learning to delay gratification, to control one's impulses in order to achieve more valued rewards. A but immediate consequences are sometimes more alluring the ubig soft delayed concernent to chike staying up to watch TV, but being tired and sleep deprived tomorrow.

### c3. Reinforcement Schedules

- Most of these examples have been of continuous reinforcement - reinforcing the desired response every time it occurs. But real life doesn't provide continuous reinforcement as often as it does partial (intermittent) reinforcement – reinforcing a response only part of the time; results in slower acquisition of a response but much greater resistance to extinction than does continuous reinforcement. Imagine a pigeon that has learned to peck a key to obtain food. When the experimenter gradually phases out the delivery of food until it occurs only rarely and unpredictably, pigeons may peck 150,000 times without reward. Hope springs eternal. Example: New vork city's computer-controlled traffic lights made most of the city's 3250 pedestrian traffic-signal buttons at intersections obsolete. Yet occasionally, usually coincidentally, pedestrians are reinforced with a walk light soon after pressing the button. So the mostly futile button pressing continues. Fixed-ratio schedules - in operant conditioning, a reinforcement schedule that reinforces a response only after a specified number of responses. This is like getting paid every 30 days. Variable-ratio schedule – in operant conditioning, a reinforcement schedule that reinforces a response after an unpredictable number of responses. This is like a slot machine. Fixed-interval schedules – in operant

### <u>c4. Punishment</u>

- Punishment is the opposite to that of reinforcement. Reinforcement increases a behavior. Punishment - an event that decreases the behavior that it follows. Examples: a rat touching a forbidden object is shocked. A child loses a treat after running into the street. A dog has learned to come running at the sound of the electric can opener will stop coming if its master starts running the machine to attract the dog an banish it to the basement. There are bad effects of punishment though. Larzelere notes that spanking children can increase their aggression, depression, and low self-esteem. There are two types of punishment, positive punishment which administers an aversive stimulus like a spanking or a parking ticket, and negative punishment which withdraws a desirable stimulus like a timeout from privileges or a revoked drivers license. Physical punishment has drawbacks. Punished behavior isn't forgotten but suppressed which may negatively reinforce the parents; punishing behavior. (child acts like parents). But even if the punishment happens, it is avoidable by a child learning to discriminate where they will and won't get caught so they continue with that behavior. Physical punit brent may increase aggressiveness by demonstrating that aggression is a very to coe with problems. It creates fear and even though punishment suppresses unwanted behavior, it often doesn't guide one toward more de grade behavior. Punishment tells you what not to do; reinforcers telixed where do. What punishment often teaches, said Skinner, is how to a roto it. Most psychologies now favor an emphasis on reinforcement: Notice boo coing something right and affirm them for it.

## b. Extending Skinner's Understanding

- Skinner granted the existence of private thought processes and biological underpinnings of behavior, but was criticized for discounting the importance of these processes and predispositions.

### c5. Cognition and Operant Conditioning

- We have seen several hints that cognitive processes might be at work in operant learning. Animals on a fixed-interval reinforcement schedule will respond more and more frequently as the time approaches when a response will produce a reinforcer. The animals behave as if they expected that repeating the response would soon produce the reward.

### 1. Latent Learning

- Evidence of cognitive processes has also come from studying rats in mazes. They develop a <u>cognitive map – a mental representation of the layout of one's</u> <u>environment. For example, after exploring a maze, rats act as if they have learned a cognitive map of it.</u> During their explorations, the rats seemingly experience <u>latent learning – learning that occurs but is not apparent until there is an incentive to demonstrate it.</u> There is more to learning than associating a response with a consequence. There is also cognition.

### IX. Memory (Pages 382-390)

### VI. Memory Construction

- We often construct our memories as we encode them, and may alter memories as we withdraw them from our memory bank. By filtering information and filling in missing pieces, your schema for something directed your memory construction.

### A. Misinformation and Imagination Effects

- Elizabeth Loftus has shown how eyewitnesses similarly reconstruct their memories when questioned. In many follow-up experiments around the world, people have witnessed an event, received or not received misleading information about it, and then taken a memory test. The repeated result is a <u>misinformation</u> <u>effect – incorporating misleading information into ones memory of an event.</u> So unwitting is the misinformation effect that people later find it nearly impossible to discriminate between their memories of real and suggested events. Even imagining nonexistent actions and events can create false memories. Imagined events later seem more familiar and real. Thus the more vividly people can imagine things, the more likely they are to inflate their imaginations into memories. People who believe they've been abducted by aliens for medical exams on spaceships term to be powerful imaginations and, in memory tests, to be more state to be to false memories. Same with people who have reconstructed for more nories of childhood abduction.

-Richard Wiseman did an experiment in which 25 currents people were told to concentrate on a moving ralle (that wasn't actually meving. A magician acted like it was levitating). If her questioned two we the after, 34 percent of the participants retailed coving actually seen the toble levitate. Nobody is immune to memory construction. Piaget constructed many false memories.

### B. Source Amnesia

- Piaget remembered but attributed his memory to the wrong sources. When we encode memories, we distribute different aspects of them to different parts of the brain. Among the frailest parts of a memory is its source, so we may recognize someone but have no idea where we saw them before. <u>Source amnesia – attributing to the wrong source an event we have experienced, heard about, read about, or imagined. (Also called *source misattribution.*) Source amnesia, along with the misinformation effect is at heart of many false memories.</u>

### C. Discerning True and False Memories

- Because memory is reconstruction as well as reproduction, we can't be sure whether a memory is real by how real it feels, so we must discern what is true and what is false. We cannot judge a memory's reality by its persistence. Memories we derive from experience have more detail than memories we derive from imagination. Memories of imagined experiences are more restricted to the gist of the supposed event. False memories created by suggested misinformation and misattributed sources may feel as real as true memories and may be very persistent. We more easily remember the gist than the words themselves. The more confident

### C3. Framing Decisions

- A further test of rationality is whether the same issue, presented in two different but logically equivalent ways, will elicit the same answer. The information is the same and the effect is now. Framing – the way an issue is posed; how an issue is framed can significantly affect decisions and judgments. Consider how the framing effect influences economic and business decisions. Merchants mark up regular prices and then have a sale to make it look like a good deal because they frame it that way. Our judgments can flip-flop so dramatically, it's startling. It suggests that our judgments and decisions may not be well reasoned, and that those who understand the power of framing can use it to influence important decisions – for example, by framing survey questions to support or reject a particular viewpoint.

### **D.** Belief Bias

- Part of psychology's thinking about thinking emphasizes that we are prone to bias as we seek confirmation of our hunches, rely on efficient but fallible heuristics, display overconfidence, and fall prey to the effects of framing. But would logic help us escape the bias inflicted by our beliefs? It helps but we still find it easier to accept conclusions that agree with our opinions. Belief bias – the tendency for one preexisting beliefs to distort logical reasoning, sometimes by making invalid e.C conclusions seem valid, or valid conclusions seem invalid.

<u>D1. The Belief Perseverance Phenomenon</u> - An additional source of irration of is benef perseveration clinging to one's initial conceptions after the basis in which they were for me chas been discredited. This fuels social conflex V ou want to rein the benef perseverance phenomenon, a sin per every exists: consider to opposite. The more we come to appreciate why out beliefs might be true, the more tightly we cling to them. Once beliefs form and get justified, it takes more compelling evidence to change them than it did to create them.

### D2. The Perils and Powers of Intuition

- We have seen how our irrational thinking can plague our efforts to solve problems, make wise decisions, form valid judgments, and reason logically. We might conclude that our heads are indeed filled with straw. All in all, these and many other findings suggest "bleak implications for human rationality." Intuition is huge. It feeds our expertise, our creativity, love, and spirituality. It's born of experience. The immediate insight describes acquired, speedy expertise that feels like instant intuition. Intuition is recognition. It is analysis "frozen into habit." Our gut intuitions are terrific at some things like reading emotions, but not at others like assessing risks. Wisdom comes with knowing the difference.

### **II.** Language

- The most tangible indication of our thinking power is language – our spoken, written, or signed words and the ways we combine them to communicate meaning. Noam Chomsky asserted that when we study human language, we are approaching word stage – beginning around age 2, the stage in speech development during which a child speaks mostly two-word statements. Language at this stage is characterized by telegraphic speech – early speech stage in which a child speaks like a telegram – "go car" – using mostly nouns and verbs and omitting auxiliary words. It follows the rules of syntax; The English speaking child typically says adjectives before nouns like big doggy rather than doggy big. There is no three-word stage.

### **B2. Explaining Language Development**

- Those who study language acquisition inevitably wonder how we do it. The controversy parallels the debate we noted in chapter 8 over the behaviorist view of the malleable organism versus the view that each organism comes biologically prepared to learn certain associations. The nature-nurture debate surfaces again and, here as elsewhere, appreciation for innate predisposition and the nature-nurture interaction has grown.

### 1. Skinner: Operant Learning

- Behaviorist Skinner believed that we can explain language development with familiar learning principles, such as association, imitation, and reinforcement. Thus, Skinner argued, babies learn to talk in many of the same ways animals learn to peck keys and press bars. What happens when there is minimal ranforcement for speaking, as is often the case with hearing children of the parents? They learn language more slowly, but they learn to sim on a formal time frame.

## 2. Chomsky: Inborn Universal Commar

- Linguist Noan Control ky thinks Skin O's Tleas were naïve. He said that surely, a Martian Gentist observing children in a single-language community would conclude that language is almost entirely inborn. But it isn't. Children do learn their environment's language. They acquire untaught words and grammar at a rate too extraordinary to be explained by learning principles alone. Moreover, many of the errors young children make result from overgeneralizing logical grammatical rules, such as adding –ed to make the past tense. He likened the behaviorist view of how language develops to filling a bottle with water, it's oversimplified. Language development will naturally occur, given adequate nurture; it just "happens to the child." There is a sort of universal grammar that underlies all human language. There are no conceivable ways to power a communication system. Chomsky maintains our capacity for developing language is natural and quick because we come equipped with a sort of switch box – a language acquisition device – already in place. As we hear language, the switches get set for the language we are to learn. The surface structure of language is learning phonemes, morphemes, and words and sentences to combine them. It is as if we are born with the hardware and an operating system for language, and our linguistic experiences write the software.

### 3. Cognitive Scientists: Statistical Learning and Critical Periods

- Human infants display a remarkable ability to learn statistical aspects of human speech. After just two minutes of exposure, infants were able to recognize three-syllable sequences that appeared repeatedly in a long list of syllables. Others have

### X. Thinking and Language (Pages 423-428)

### **IV. Animal Thinking and Language**

- Where do animals fit in the scheme of things? Do they think or even exhibit language?

### A. Do Animals Think?

- Animals display remarkable capacities for thinking. They form concepts and display insight, especially chimps who can use things as tools to get what they want. There is more to learning than conditioning, and thanks to problem solving shaped by reinforcement, chimps use tools (stick to get fruit, fish for termites with a reed, stick to puncture holes in and one for fishing. They have been recorded to use 39 customs in which tools are used. Some use tools, others don't. They are the chimp equivalent of cultural diversity. Do they have a theory of mind? Can they infer mental states in themselves and their peers? Chimps and baboons have also been observed using deception, like faking having been attacked to get food. Does this indicates that primates are capable of self-recognition and of comprehending others' perceptions? Many think so. They are very similar to that observed in 2-yeal-gld

numans.

<u>B. Do Animals Exhibit Language?</u>
- Animals communicate. They cry, bark scuth Uck, and wail. Honeybees dance to tell others where they've found for Piles a border of the Pole tell of tell of the Pole tell of tell of the Pole tell of tell others where they've found foot Rico, a border con in knows 200 items by name and can fetch any one of them But is any of this langues

### C. The case of the Apes

- The greatest challenge to humanity's claim to be the only language-using species has come from reports of apes that "talk" with people. We are closely related to chimps. Some were taught sign language. After 4 years, Washoe could use 132 signs. Later that grew to 181 signs. "Suddenly I realized I was conversing with a member of another species in my native tongue." It is no wonder that they can speak a little and sign. People told not to gesture put more effort into communicating with words alone, and are less able to remember recently learned information, such as lists of words or numbers. For both humans and apes, communication entails gestures. Washoe has said "water bird" for swan, "you me go out, please" for walking, and described Pinocchio as "elephant baby." Lana can type, and didn't know that orange was a fruit and color. She wanted an orange, and asked, "? Tim give apple which-is orange." Ape language is a little lower than human but we do share similarities.

### C1. But Can Apes Really Talk?

- Here are some arguments of skeptics: 1) apes gain their limited vocabularies with great difficulty, unlike children who do it with ease. 2) Chimps can push buttons in a sequence, but so can pigeons and no one says they are talking. 3) Apes can use meaningful symbols but their syntax is different and they can't distinguish the difference between "you tickle" and "tickle you." 3) Chimp Nim Chimsky was trained by Herbert Terrace who concluded that signing is nothing more than apes aping

care. Parents are told to separate themselves permanently from impaired children before they become too attached. But now, the pendulum swung back to normalization. They are educated in less restrictive environments and integrated into regular classrooms.

### B2. The High Extreme

- Lewis Terman studied more than 1500 Californian schoolchildren with IQ scores over 135. They were all well-adjusted, healthy, and unusually successful academically. Most attained high levels of education and were doctors, lawyers, professors, and writers, but no Nobel Prize winners. Jean Piaget was a whiz kid. Some say only 3-5% of children are gifted and that it pays to identify and "track" these special few. This is bad. It's a self-fulfilling prophecy. Those implicitly labeled ungifted can be influenced to become so. Critics and proponets of gifted education agree on this: Children have differing gifts.

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IV. Genetic and Environmental Influences on Intelligence

### XII. Motivation and Work (Pages 470-480)

- In this chapter we will explore how motives arise from the interplay between nature (the physiological push) and nurture (the cognitive and cultural pulls).

### I. Perspectives on Motivation

- <u>motivation – a need or desire that energizes and directs behavior.</u> Four perspectives psychologists used in attempt to understand motivated behaviors – instinct theory (replaced by evolutionary perspective), drive-reduction theory (emphasizing interaction between inner pushes and external pulls), arousal theory (emphasizing the urge for an optimum level of stimulation). The fourth perspective, Abraham Maslow's hierarchy of needs, describes how some motives are, if unsatisfied, more basic and compelling than others.

### A. Instincts and Evolutionary Psychology

- Rather than explaining human behaviors, the early instinct theorists were simply naming them. It was like explaining a bright child's low grades by labeling the child an underachiever. To name a behavior is not to explain it. <u>Instinct – a complex</u> behavior that is rigidly patterned throughout a species and is unlearned. Examples include birdes imprinting, salmon swimming up stream, and oun ans rooting reflex as infants. The underlying assumption that genes provide species-typical behavior remains as strong as ever.

# B. Drives and Incentives

- the original instructives - the original instructives of motivation was replaced by <u>drive-reduction theory –</u> the neal factor physiological representes an aroused tension state (a drive) that motivates an organism to catedy the need. The physiological aim of drive reduction is <u>homeostasis – a tendency to maintain a balanced or constant internal state; the</u> regulation of any aspect of body chemistry, such as blood glucose, around a particular level. Not only are we pushed by our need to reduce drives, we also are pulled by incentives – a positive or negative environmental stimulus that motivates <u>behavior</u>. When there is both a need and an incentive, we feel strongly driven. For example, the smell of baking bread is a very compelling incentive and if we are hungry, we are driven to eat it. How is it pushed by our inborn physiological needs and pulled by incentives in the environment?

### C. Optimum Arousal

- Some motivated behaviors actually increase arousal. Well-fed animals leave shelter to explore, in absence of any need-based drive. Curiosity drives monkeys to unlock latches, and drives 9-month-olds to investigate every corner of the house.

### D. A Hierarchy of Motives

- Abraham Maslow described the priorities of life as a <u>hierarchy of needs – Maslow's</u> pyramid of human needs, beginning at the base with physiological needs that must first be satisfied before higher-level safety needs and then psychological needs become active. Order: physiological needs (need to satisfy hunger and thirst), safety

### **B2.** Eating Disorders

- <u>Anorexia nervosa – an eating disorder in which a normal-weight person (usually</u> adolescent females) diets and becomes significantly (15% or more) underweight, yet, still feeling fat, continues to starve. This happens with many actresses as well. Bulimia nervosa – an eating disorder characterized by episodes of overeating, usually of high-calorie foods, followed by vomiting, laxative use, fasting, or excessive exercise. Most binge-purge people are in their late teens or early 20s. Eating disorders don't provide a telltale sign of childhood sexual abuse. The families of anorexic and bulimic mothers tend to set that example for their children. Genetics may also influence susceptibility to disorders. Those who have the greatest body dissatisfaction and most idealize thinness are more vulnerable to eating disorders as well. Western cultures place more emphasis on thin images.

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For women, this includes orgasmic disorder. Most women relate It to their emotional relationship with their partner during sex. Behaviorally oriented therapy can help men and women with these disorders.

### A2. Hormones and Sexual Behavior

- Sex hormones direct the physical development of sex characteristics, and they activate sexual behavior. Estrogen – a sex hormone, secreted in greater amounts by females than by males. In nonhuman female mammals, estrogen levels peak during ovulation, promoting sexual receptivity. Male hormone levels are more constant. Testosterone – the most important of the male sex hormones. Both males and females have it, but the additional testosterone in males stimulates the growth of the male sex organs in the fetus and the development of the male sex characteristics during puberty. Hormones more loosely affect sexual behavior. One study invited partnered women who weren't at risk for pregnancy to keep a diary of their sexual activity. On days around ovulation, intercourse was 24% more frequent. If a woman's natural testosterone level drops, her sexual interest may wane. But testosterone-replacement therapy can often restore diminished sexual appetite. Testosterone levels in men have little effect on sex drive. They can rise as a tesponse to stimulation, whether social or sexual. In the 1600s and 1700s, prepuber a boys were castrated to keep their soprano voices for the opera. They cider have sexual desires. Sex offenders take a drug called Depo-Prese and reduces testosterone levels to that of a prepubescent boy. Tertoreplus replacement therapy in men increases sex drive. B. The Psycholog Polisex

### B. The Psychology of

ed like hunger in coever, both depend on internal physiological ce by external and imagined stimuli, as well as cultural factors, and are influe expectations.

### 1. External Stimuli

- Men become aroused when they see, hear, or read erotic material. Most women report or exhibit nearly as much arousal to the same stimuli. People may find arousal pleasing or disturbing. With repeated exposure, the emotional response to any erotic stimulus often habituates (lessens). It used to be in the 20s, skirts that went to your knees were erotic. Now we have bikinis and movie kisses. Sexually explicit material can have adverse effects. It can create the false idea that women enjoy sexual abuse and tend to increase male viewers' willingness to hurt women. Erotic images also lead relationships to be undervalued because of false perceptions and expectations.

### 2. Imagined Stimuli

- The brain is our most significant sex organ. Our imagination can influence sexual arousal and desire. Injured people who have no genital sensation can feel sexual

aren't seeking to deceive us, we do much better. Our brains are amazing detectors of subtle expressions. Fidgeting reveals anxiety or boredom. Other more specific interpretations are risky. Either a cold star=re or the avoidance of eve contact may signify hostility, and a single gesture can convey very different emotions (folded arms = irritation or relaxation).

### D. Culture and Emotional Expression

- Different cultures shows differences in expression of same emotions through display rules. For example, Chinese literature people clapped hands in worry or disappointment and laughed "Ho-Ho" to express anger and stuck out their tongues to show surprise. The American "thumbs up" and "a-O.k." are insults in other countries. Facial expressions contain some nonverbal accents that provide clues to one's culture. Children's facial expressions are universal. It's actually adaptive for us to interpret faces in particular contexts because people judge an anger face in a frightening situation as afraid and a fearful face set in a painful situation as pained. Emotional expressions enhance our survival by allowing us to take in more information. There are various display rules throughout the world. Emotion is best understood not only as a biological and cognitive phenomenon, but also as also cial-

E. The Effects of Facial Expressions - As William James struggled with feelings of Genession and grief, he came to believe that we can control our error toon by going "the Octobelia" movements" of any emotion want to experience. Fake an emotion until you make it. The facial for the pothesis states that pressions amplify our emotions by active in Physicies associated with a certain emotion and our body will act as if we are experiencing that eigender notion. If manipulated into furrowing brows, people feel sadder while looking at sad photos. Saying the phonemes *e* and *ah* which activate muscles associated with smiling, puts people in a better mood than saying eww (German u with two dots over it). Holding a pen in your teeth makes you more easily amused. One way to be more empathetic is to mimic a persons facial expression to feel what they feel.

### **IV. Experienced Emotion**

- 10 basic emotions: joy, interest-excitement, surprise, sadness, anger, disgust, contempt, fear, shame, and guilt. Some thing pride and love should be included but others say that any other emotion is a combination of some of the 10. We sometimes feel confused and obscure. To cut through that, psychologists ask people to describe their emotions. Emotions are either arousal (high vs. low) or valence (pleasant, positive vs. unpleasant, negative).

### A. Fear

- Fear can be poisonous, robbing us of sleep and the ability to think clearly about other things. It can kill us literally, and can also be contagious. A fire in a theatre

didn't kill 500 people, the fear of the fire that caused a stampede and trampled and smothered others was the cause of the death of those 500. Fear is usually adaptive, an alarm system preparing our bodies to flee from danger. It helps us focus on a problem and rehearse coping strategies.

### <u>A1. Learning Fear</u>

- The variety of human fears are learned to experience through observational learning and conditioning. Example; babies learn from falling over how to be more careful than walking. Mother monkeys won't reach for food in the presence of a snake, and the younger monkey learns from that.

### A2. The Biology of Fear

-We may be biologically prepared to learn some fears more quickly than others. Why? Because fear taught our ancestors to fear spiders and snakes and falling off cliffs and through evolution, we have become afraid of those things. The amygdala is the center where fear learning takes place, receiving input from regions such as the anterior cingulate cortex and sends output to all parts of brain that produce the bodily symptoms of extreme fear like diarrhea and shortness of breath. Humans also learn fears, which later trigger amygdala fear pathways. Some fears fall output average range. Some, with phobias, have intense fears of specific objects. Others are less frightful than most of us. Fear is also genetic, prove objects that show twins' level of fearfulness or fearlessners are sincle to the other twin.

from

### B. Anger

- When we see a constituting or frustrating evolt, and we believe that event/action to be note the part of the part o we deal with it? In Inc vid all d cultures, there is encouragement to vent rage. In collectivist, this isn't seen. Venting anger presumes that through aggressive actions or fantasy we can achieve emotional release or catharsis – emotional release. In psychology, the catharsis hypothesis maintains that "releasing" aggressive energy (through action or fantasy) relieves aggressive urges. This only happens sometimes, and only If counterattack is directed against the provoker, if the retaliation seems justifiable, and if their target isn't intimidating. Expressing anger can be temporarily calming if it doesn't leave us feeling guilty or anxious. However, more often than not, anger breeds anger. When anger outbursts calm us temporarily, they can become habit forming. Anger is better handled by waiting to calm down and by dealing with anger in a way that involves neither being chronically angry over every little annovance nor passively sulking, merely rehearsing reasons for anger. Anger communicates strength and competence. It can benefit a relationship when expressed as a grievance in ways that promote reconciliation rather than retaliation. Forgiveness helps release anger and can calm the body.

### C. Happiness

- <u>Feel-good, do-good phenomenon – people's tendency to be helpful when already in</u> <u>a good mood.</u> Psychology has more often focused on negative emotions. But

### XVI. Psychological Disorders (Pages 669-677)

### IV. Schizophrenia

- 1 in 100 have schizophrenia. It strikes as young people are maturing into adulthood, men more severely affected and have earlier onset than women.

### A. Symptoms of Schizophrenia

- <u>schizophrenia</u> – a group of severe disorders characterized by disorganized and delusional thinking, disturbed perceptions, and inappropriate emotions and actions.

### 1. Disorganized Thinking

- <u>Delusions – false beliefs, often of persecution or grandeur, that may accompany</u> <u>psychotic disorders.</u> Those with paranoid tendencies are particularly prone to delusions of persecution. These disorganized thoughts result from a breakdownin selective attention. Those with schizophrenia cannot have a remarkable capacity for selective attention like those without schizophrenia. Thus, irrelevant stimuli can easily distract.

### 2. Disturbed Perceptions



- A person with schizophrenia may have hallucinations (senary operiences without sensory stimulation) that are usually audited and give orders or insult. Hallucinations have been compared to treat the sching into making consciousness.

## 3. Inappropriate Emotions and Actions

- The emotions of each ophrenia are often uterly inappropriate. Some lapse into flat affect of condictive state of an arent apathy. Motor behavior (movement) may also be nappropriate. Those who consist catatonia may remain motionless for hours and then become agitated.

### **B. Subtypes of Schizophrenia**

- Schizophrenia is a cluster of disorders. Patients with positive symptoms may experience hallucinations, talk in disorganized and deluded ways, and exhibit inappropriate laughter/tears/rage. Those with negative symptoms have toneless voices, expressionless faces, or mute and rigid bodies. Positive = presence of behaviors, negative = absence of behaviors. Some schizophrenia emerges from a long history of social inadequacy. Others with schizophrenia said it appeared suddenly as a reaction to stress. When it's a slow developing process (called chronic or process schizophrenia), recovery is doubtful. When a previously well-adjusted person develops schizophrenia rapidly (acute or reactive schizophrenia), recovery is much more likely. The outlook is better for those with positive symptoms (drug therapy helps better). anxiety-arousing situation. You are then instructed to go back into deep relaxation. This is repeated until no anxiety occurs.

-Virtual reality exposure therapy – An anxiety treatment that progressively exposes people to simulations of their greatest fears, such as airplane flying, spiders, or public speaking.

### 2. Aversive Conditioning

- In systematic desensitization, the goal is substituting a positive response for a negative response to a harmless stimulus. This is different from <u>aversive</u> conditioning – a type of counterconditioning that associates an unpleasant state (such as nausea) with an unwanted behavior (such as drinking alcohol). For example; to treat nail biting, paint fingernails with gross tasting nail polish. Aversive conditioning works sometimes in the short run. But cognition influences conditioning, so it doesn't work out often in the long run, and the ability to discriminate between the aversive conditioning situation and all other situations can limit the treatment's effectiveness.

### C2. Operant Conditioning

- Voluntary behaviors are strongly influenced by their consequences so to avior modification helps to reinforce desired behaviors and withhold reinforcement for undesired behaviors or to punish them. <u>Token economy cash operant conditioning</u> <u>procedure in which people earn a tokenol soft for exhibiting a desired</u> <u>behavior and can later exchange the lokuns for various providees or treats.</u> Critics express two concerns, the first being practical (reinforcement stops, what happens next). The second soft lice is it right for unit to control another's behavior?

# D. Cognitive Therapie P 39

- Behavior therapists treating less clearly defined psychological problems have had help from the same cognitive revolution that has changed other areas of psychology during last 5 decades. <u>Cognitive therapy – therapy that teaches people new, more</u> <u>adaptive ways of thinking and acting; based on the assumption that thoughts</u> <u>intervene between events and our emotional reactions.</u> They try in various ways to teach people new, more constructive ways of thinking.

### 1. Cognitive Therapy for Depression

- Gentle questioning aims to help people discover their irrationalities, which helps to persuade depressed people to think in a different light. Depressed people don't exhibit the self-serving bias common in non-depressed people. They are full of self-blame. To change such negative self-talk, Donald Meichenbaum has offered stress inoculation training, teaching people to restructure their thinking in stressful situations. Cognitive-behavior therapy – a popular integrated therapy that combines cognitive therapy (changing self-defeating thinking) with behavior therapy (changing behavior). It seeks to make people aware of their irrational negative thinking, to replace it with new ways of thinking, and to practice the more positive approach in everyday settings.

### XVII. Therapy (Pages 700-720)

### **II. Evaluating Psychotherapies**

- Much therapy is done through community mental health programs. Would including psychotherapy in health insurance plans lead to "endless payments for dubious benefits of marginal problems"?

### A. Is Psychotherapy Effective?

- Measuring therapy's effectiveness is hard to gauge, so it's hard to tell whether or not it is indeed effective.

### A1. Clients' Perceptions

- These are the reasons why client testimonials don't persuade psychotherapy's skeptics: 1. People often enter therapy in a crisis. 2. Clients may need to believe the therapy was worth the effort. 3. Clients generally speak kindly of their therapists.

### A2. Clinicians' Perceptions

- The problem is that clients justify entering psychotherapy by emphasizing their unhappiness, justify leaving therapy by emphasizing their well-being, and stay in touch only if satisfied. Because people enter therapy when unhappy and leave when they are less unhappy, most therapists testify to the processor regardless of the treatment.

## Thinking Critically About: "Lessing" From United to osual

- Perceptions of (Perpy's effectiveness devillnerable to inflation from the placebo eff to an Pregression toward on mean – the tendency for extremes of unusual scores to fall back (regress) to and their average. For example; students who score lower or higher on an exam than they usually do are likely to return towards their average when retested.

### <u>A3. Outcome Research</u>

- Eysenck summarized studies showing that two-thirds of those suffering nonpsychotic disorders improve markedly after undergoing psychotherapy. However, he also said that two thirds with or without psychotherapy improved noticeably, and that time was a great healer. <u>Meta-analysis – a procedure for</u> <u>statistically combining the results of many different research studies.</u> Those not undergoing therapy often improve, but those undergoing therapy are more likely to improve.

### B. The Relative Effectiveness of Different Therapies

- Even though no single type of therapy is the most effective overall, some therapies are great for specific disorders. Behavioral conditioning is great in treating phobias and compulsions.

### C. Evaluating Alternative Therapies

- Of the alternative therapies (EMDR and light exposure), only light exposure therapy has held up under scientific testing.

### C1. Eye Movement Desensitization and Reprocessing (EMDR)

- Does waving your finger in front of the eyes of somebody who wen through a traumatic event enable them to unlock and reprocess previously frozen trauma memories? 84-100% of those who've experienced a single trauma said yes. However, what is therapeutic is the combination of exposure therapy (reliving traumatic memories in a safe context) and a robust placebo effect.

### <u>C2. Light Exposure Therapy</u>

- SAD (seasonal affective disorder) is counteracted through giving people a timed daily dose of intense light. This actually has been proven to work.

### D. Commonalities Among Psychotherapies

Psychology offers these three elements; new hope, a fresh perspective, and an empathic, trusting, caring relationship.

### D1. Hope for Demoralized People

- People who seek therapy feel bad and are devoid of self-esteem. Therapy offers hope. This has been found in psychotherapy experiments in which the place to treatment was listening to inspirational tapes or taking a till. Me a analysis suggests that one reason therapies help is because they offer once

### <u>D2. A New Perspective</u>

-Therapy lets one look at ming through a different light and a fresh perspective.

## D3 and Galhetic, Trusting for a Relationship

-Therapists are empatheticated they earn clients' trust and respect. This helps the healing process and provides clients with somebody who seems like a friend, and those with friends are less likely to seek therapy.

### E. Culture and Values in Psychotherapy

Therapists differ in their values, making it important for those who seek therapy to find somebody who shares many of those values or understands them, including cultural values.

### Close-Up: A Consumer's Guide to Psychotherapists

- Here are the APA trouble signs: hopelessness, depression, self-destructive behavior, fears, mood shifts, compulsions, suicidal thoughts, and sexual difficulties. Here are some types of therapists: counselors, clinical or psychiatric social workers, clinical psychologists, and psychiatrists.

### **III. The Biomedical Therapies**

- Biomedical therapy, unlike psychotherapy, treats the brain's functioning by altering its chemistry with drugs.

### A. Drug Therapies

- The most widely used biomedical therapies are the antipsychotic, antianxiety, and antidepressant drugs. <u>Psychopharmacology – the study of the effects of drugs on mind and behavior</u>. Almost any new treatment is greeted with enthusiasm, but normal recovery among untreated persons and recovery due to the placebo effect skew this enthusiasm.

### <u>A1. Antipsychotic Drugs</u>

- Antipsychotic drugs calm psychotic patients. This includes chlorpromazine. They help schizophrenia patients with positive symptoms. <u>Tardive dyskinesia –</u> involuntary movements of the facial muscles, tongue, and limbs; a possible neurotoxic side effect of long-term use of antipsychotic drugs that target D2 dopamine receptors.

### A2. Antianxiety Drugs

- Antianxiety agents, such as Xanax or Ativan, depress CNS activity. The new standard drug treatment for anxiety disorders is actually antidepressants.

### A3. Antidepressant Drugs

- These lift people from a state of depression by ipcressing the availability of norepinephrine or serotonin. *Selective-terotonic-cuptake-inhibitors* (SSRIs) slow the synaptic vacuuming up of served in (Prozac, Zoloft, 2009 Palil). Dual-action antidepressants have more bottontial side effect on preased serotonin promotes neurogenesis (peak full birth).

0-'

## A4. Mood-Stabilizing Nedicences

- Mood-stabilizing drugs like lithium can help those with bipolar disorder.

### **B. Brain Stimulation**

### B1. Electroconvulsive Therapy

- A more controversial brain manipulation occurs through shock treatment. <u>Electroconvulsive therapy (ECT) – a biomedical therapy for severely depressed</u> <u>patients in which a brief electric current is sent through the brain of an anesthetized</u> <u>patient</u>. This helps to treat really severe depression. Side effects include memory loss, but no brain damage. It really does help. It reduced suicidal thoughts but patients are vulnerable to relapse.

### <u>B2. Alternatives to ECT</u>

- Depressed moods also seem to improve when repeated pulses surge through a magnetic coil held close to a person's skull. <u>Repetitive transcranial magnetic</u> <u>simulation (rTMS) – the application of repeated pulses of magnetic energy to the brain; used to stimulate or suppress brain activity.</u> There are no side effects. Two weeks in, half of patients showed at least a 50% improvement from their former depressive state.

the demand curve? It depends on the price elasticity of demand. If it's inelastic, then an increase in the price causes an increase in total revenue. If it is elastic, an increase in the price causes a decrease in total revenue. Here are some general rules.

When demand is inelastic (less than 1), price and total revenue move in the same direction.

When demand is elastic (greater than 1), price and total revenue move in opposite directions.

If demand is unit elastic (equal to 1), total revenue remains constant when the price changes.

f. Elasticity and Total Revenue along a Linear Demand Curve

- Although some demand curves have an elasticity that is the same along the entire curve, this is not always the case. An example of a demand curve along which elasticity changes is a straight line. The demand curve slope would be constant. However, the elasticity is not constant. There is still a ratio of percent changes in the two variables. At points with a low price and a high quantity, the demand curve is inelastic. At points with a high price and low quantity, the demand curve is elastic.

g. Other Demand Elasticities

- In addition to the price elasticity of demand, economists use other cas is to describe the behavior of buyers in the market.

The Income Elasticity of Demand.
 <u>income elasticity of demand</u> (a) ressure of how much the quantity demanded of a good responds to a change income compared as the percentage change in quantity demanded by the parcel tage change in income.

Icome elasticity of cenarie to change in quantity demanded / % change in income. Most goods are normal goods: higher income raises the quantity demanded. Because quantity demanded and income move in the same direction, normal goods have positive income elasticities. Inferior goods: higher income lowers the quantity demanded because quantity demanded and income move in opposite directions, inferior goods have negative income elasticities. Examples include bus rides. Luxuries have large income elasticities and necessities have small income elasticities.

2. The Cross-Price Elasticity of Demand

- <u>Cross-price elasticity of demand – a measure of how much the quantity demanded of one good responds to a change in the price of another good, computed as the percentage change in the quantity demanded of the first good divided by the percentage change in the price of the second good.</u>

% Change in Quantity demanded of good 1 / % change in \$ of good 2. Whether cross-price elasticity is positive or negative depends on whether they are substitutes r complements. The cross-price elasticity is positive for substitutes, and negative for complements.

II. The Elasticity of Supply

- Producers of a good offer to sell more of a good when the price rises, when their input prices fall, or when technology improves. Elasticity changes this concept from quality to quantity.

a. The Price Elasticity of Supply and Its Determinants

- The law of supply states that higher prices raise the quantity supplied. Price elasticity of supply – a measure of how much the quantity supplied of a good responds to a change in the price of that good, computed as the percentage change in quantity supplied divided by the percentage change in the price. Supply of a good is said to be elastic if the quantity supplied responds substantially to changes in the price. Supply is said to be inelastic is the quantity supplied responds only slightly to changes in the price. The price elasticity of supply depends on the flexibility of sellers to change the amount of the good they produce. The time period also affects it. In the short run, the quantity supplied is not very responsive to the price. In the long run, the quantity supplied can respond substantially to price changes.

b. Computing the Price Elasticity of Supply

- Economists compute the price elasticity of supply as the percentage change in the quantity supplied divided by the percentage change in the price. % Change in quantity supplied / % change in price O

c. The Variety of Supply Curves

tesal Because the price elasticity of supply measures the responsiveness of quantity supplied to the price, it's reflected in the appearance of the supply curve. There can be zero elasticity which is perfectly inelastic and apert cal where can be perfectly elastic, which is betrebutal, meaning that very small changes in the price lead to very large charges in the quantity supply

III. Three Applications Of Supply, Demand, and Elasticity

- Here we apply the versatile tools of supply, demand, and elasticity to answer these seemingly complex questions.

a. Can Good News for Farming Be Bad News for Farmers?

- What happens to wheat farmers and the market for wheat when university agronomists discover a new wheat hybrid that is more productive than existing varieties? The discovery of the new hybrid affects the supply curve because there is an increase in the quantity supplied of wheat through new technology. The curve shifts to the right. The demand curve stays the same. Does this discovery make farmers better off? The hybrid allows farmers to produce more, but now each bushel sells for less. Whether total revenue rises or falls depends on the elasticity of demand. The discovery of the new hybrid lowers the total revenue that farmers receive for the sale of their crops. But then why do they adopt the practice? Because of how competitive it is. The supply increases, the price falls, and the farmers are worse off, but they have to adapt to stay in business at all. A few numbers show the magnitude of this historic change, when there were tremendous advantages in productivity because of the 10 million people working on farms, which accounted for 17% of the labor force. That dropped to 2% in 2004, U.S. farms produced

This graph shows these effects. There isn't a shift in either supply or demand, although one curve must shift, but that depends on whether the tax is levied on the sellers (supply shifts) or the buyers (demand shifts). So we don't bother showing a shift. A tax on a good causes the size of the market to shrink.

### A. How a Tax Affects Market Participants

- Tools of welfare economics are used to measure gains and losses from a tax on a good by accounting how tax affects buyers, sellers, and the government. The benefit received by buyers is measured by consumer surplus – the amount buyers are willing to pay for the good minus the amount they actually pay for it. The benefit received by sellers is measured by producer surplus – the amount sellers receive minus the cost. T=size of tax, Q= quantity of good sold, TTR = total tax revenue = T x Q. TTR measures government benefit from taxes that help build roads, provide for schools, and help the needy.



This graph shows that the government's tax revenue is represented by the rectangle between the supply and demand curves. The height is the size of T and the width is the size of Q. Because area equals height times width, TxQ = TTR.

### 3. Changes in Welfare

- The tax causes consumer surplus to fall by B+C, the producer surplus falls by the area D+E. Tax revenue rises by B+D. total surplus in the market falls by C+E. C+E is a deadweight loss – the fall in total surplus that results from a market distortion, such as a tax. Why? Because people respond to incentives and a tax gives buyers an incentive to consume less and sellers an incentive to produce less, so the size of the market shrinks and markets allocate resources inefficiently.

### B. Deadweight Losses and the Gains from Trade

- Joe cleans Jane's house for \$100. The opportunity cost of Joe's time is \$80 and the value of a clean house to Jane is \$120. Joe and Jane each get a \$20 benefit from their deal. The total surplus is \$40 (they both made \$20.) Say the government levies a \$50 tax on the providers of cleaning services. Neither Jane nor Joe is better off paying the tax. The most Jane would be willing to pay is \$120 but Joe would be left with only \$70 after paying the tax which is less than his \$80 opportunity cost. In the end, Joe doesn't clean and Jane has a dirty house because it wasn't worth it. They each lost \$20 of surplus at the end so the \$40 is a deadweight loss. Taxes cause deadweight losses because they prevent buyers and sellers from realizing some of the gains from trade. The deadweight the is the surplus lost because the tax discourages these mutually advantageou mades.

### te II. The Determinants of the Deadweight Loss

- Price elasticities of supply and demand d it mine whether the deadweight loss from a tax is to large or to small. The greatenthe elasticities of supply and demand, the greater the deadweight loss of t.x.

### Cales us. The Dead regal of Pebate

- How big should the government be? The debate hinges on these concepts because the larger the deadweight loss of taxation, the larger the cost of any government program. So how big are the deadweight losses of taxation? Economists disagree. Let's look at the tax on labor. Social security tax, Medicare tax, and federal income tax are labor taxes. The marginal tax rate on labor income – the tax on the last dollar of earnings – is almost 50% for many workers if we add these labor taxes together. The deadweight loss is less straightforward to determine. Economists who argue that labor taxes don't greatly distort the market believe that labor supply is inelastic so there is a small deadweight loss. The people who argue that labor taxes are highly distorting believe that labor supply is more elastic so there is a greater deadweight loss. For example, the higher the wage, the more hours workers choose to work. Some families have second earners with discretion over whether to do unpaid work. Elderly retire. Drug trade evades taxes. In each case, the quantity of labor supplied responds to the wage, so supply of laborers is elastic.

Quantity	TR	TC	Profit	MR	MC	Change in Profit
			(TR-	$(\Delta TR/\Delta Q)$	$(\Delta TC / \Delta Q)$	
			TC)			
0 gallons	0	3	-3			
1	6	5	1	6	(3-5)/1 = 2	4
2	12	8	4	6	3	3
3	18	12	6	6	4	2
4	24	17	7	6	5	1
5	30	23	7	6	6	0
6	36	30	6	6	7	-1
7	42	38	4	6	8	-2
8	48	47	1	6	9	-3

A. A Simple Example of Profit Maximization

Smith's farm milk. Rational people think at the margin. If the Smiths think at the margin and make incremental adjustments to the level of production, they are naturally led to



For a competitive firm, the price equals the average revenue and its marginal revenue. At Q1, MR1 exceeds MC1 so raising production increases profit. At Q2, MC2 is above MR2 F. Measuring Profit in Our Graph for the Competitive Firm. - Profit = TR-TC Profit = (TR/Q - TC/Q) X QProfit = (P - ATC) X Q



III. The Supply Curve In A Competitive MarketMarket with a fixed number of firms and market in which number of firms can change will be evaluated.

A. The Short Run: Market Supply with a Fixed Number of Firm - Consider a market with a fixed 1000 firms. As long as the price is above avc, each firm's mc curve is its supply curve.

B. The Long Run: Market Supply with End/ will Heil - If firms are able to enter and exit the market, their decisions on whether or not to do so depend on the incentives large, the owners of existing firms and the entrepreneurs who could start new firms. At the end of this process of entry and exit, firms that remain in the market must be making zero economic profit. Remember profit is (P - ATC) X Q. The process of entry and exit ends only when price and average total cost are driven to equality. The level of production with the lowest average total cost is called the firm's efficient scale. Therefore, the long-run equilibrium of a competitive market with free entry and exit must have firms operating at their efficient scale.

C. Why Do Competitive Firms Stay in Business if they make Zero Profit?Profit equals total revenue minus total cost including opportunity costs of the firm (time and money included)In the zero-profit equilibrium, the firm's revenue must compensate the owners for the time and money that they expend to keep their business running.

D. A Shift in Demand in the short run and long run.

- initial: market begins in lre and ends up with the firm earning zero profit. Short run. But then an increase in demand raises the price leading to short run profits. Long run. When profits induce entry, supply increases and the price falls, restoring long run equilibrium.

E. Why the Long Run Supply Curve might slope upward.

- 4) Intro
  - a) Diploid and Haploid;
    - i) Diploid = having 2 of every type of chromosome (2n)
    - ii) Haploid = having 1 type of chromosome (1n)
      - (1) Diploid multicellular organism produces haploid gametes through meiosis. Then these gametes fuse into a single diploid zygote, in a process known as fertilization. Then mitosis makes you an adult so you can become a part of the cycle again.
- 5) Reproductive Anatomy of Female Mammals
  - a) Ovaries have special cells that are capable of meiosis to produce guides which produce oocytes (egg cells) and hormore oble estrogen and progesterone and androsten edicove (produce on meadrenal gland).
    b) The follice shill filled swelling contains only one oocyte, and is surrounded by estrogen producing cells in the ovary. When the follicle bursts to release the egg, the estrogen and remnant of the follicle turns into the corpus luteum (yellow body) and it becomes hard, and it produces progesterone instead of estrogen. But when the new follicles form, it switches back to estrogen.
  - c) Cycle; primordial follicles get started, one or more keep growing with an egg, then it gets filled with estrogen and fluid, and then eventually it bursts open (ovulation) and the egg is released with a few hormones surrounding it, and the old follicle is the corpus luteum, which produces progesterone and then completely disintegrates.

- b) Estrus Detection; must be accurate because it signals time of ovulation, which determines insemination timing.
  - i) Timing of heat in cows
  - ii) From 6-noon, 22% of cows show heat signs.
  - iii) From noon 6 pm, 10% of cows show heat signs.
  - iv) From 6 pm midnight, 25% of cows show heat signs.
  - v) From midnight to 6 am, 43% of cows show heat signs.
  - vi) Estrus detection: mounting and standing in cows who show signs of restlessness, discharge, and standing heat test, back pressure test in swine who have a red swollen vulva, immobility response reasing (horses) frequent urination, erect tail, and urba winking). Insemination should occur to the enrich after estrus has be measured.

c) Embryoit envior – take an early embryoit from the mom and planting it in early embryoit envior – take an early embryoit from the mom and planting it in another female Photon eases the reproductive rate of valuable females.

- Superovulation FSH injection leads to multiple follicles developing to be transplanted.
- ii) Embryo splitting produces two identical offspring.
  - (1) Disadvantages; dramatic loss of genetic diversity
  - (2) Advantage: genetic superiority, repeated mating with superior cows, no birth trauma.
- d) Estrous synchronation controlling or manipulating the estres cycle so all females in a herd express estrus at the same time.

Everything else that isn't used for meat is separated out through

chemical processes to make use of these byproducts.

- (5) Miniature pig biologically similarity to humans.
- iii) Animal Domestication
  - (1) Terms;
    - (a) Domestication we control the feed, the reproduction, and their range.
    - (b) Tame will permit handling
    - (c) Wild will resist handling
    - (d) Fierce will fight back
    - (e) Ferrell going back to the wild
    - esale.co.uk (f) Mutualism mestication.

its at the cost of the other. pre' ication Biological explanation (2) Origins

- (a) Dogs they are scavengers. They eat our refuse and clean up after us. This is mutualism.
- (b) Herbivores attracted by agriculture, which leads to increased contact and grazing. There is also the hunting based theory. We would stalk an animal and ambush it in the beginning. But then there was the drive and capture approach favored by canyon lands. You drive them to a trap, kill the troublesome ones first, and then breed the rest for food, which was the first artificial selection.

- *i.* Treatment: with oral antibiotics.
- ii. Diagnosis: it is important: earlier you diagnose, earlier you treat.
  - Diagnose with somatic cell count (number of white blood cells).
  - California mastitis test: great er the color change, the greater the number of white blood cells. Look for excessive number of white blood cells in milk clumping in solution.
- iii. Prevention: Clean and dry teats with a single up to vel. Pre and post milking iodine dip. She cathe vacuum before removing teacops
   Prevention: OM stills: pendulous udder. The teets will dag dorg the ground and get kicked, and they are highly

susceptible to trauma and infection.

- b. Hardware Disease: particularly a dairy disease caused by consumption of metal objects, which drop down into the reticulum and can puncture through the diaphragm into the heart sac.
  - *i.* Treatment: Feed the cows magnets.
- c. Milk Fever
  - *i.* Has nothing to do with fever or infection. It is a calcium depletion caused by over production of milk, causing an increase in demand for milk calcium, leading to a decrease n

- Exocrine mammary glands; the glandular product is delivered by a duct (as opposed to endocrine via blood).
- Alveoli are the milk-producing units of the mammary glands. They are surrounded by myo-epithelial cells, which can contract to squeeze the milk out of the alveoli and down the ducts.
- Duct system: The gland cistern is above the teat where all the alveoli empty into. Then it fills the teat cistern, where it is massaged through the teat duct/streak canal.
- 4. Suspensory ligaments get stretched out ous new pendulous udder from correction of milk.

**Preview** 1. Estrus: Estroceo and progesterone causes growth of **Page** and the ducts proliferate and the

milk-producing alveoli are formed.

iv. Milk production

iii. Developmen

- Initiation: when the ducts fill with milk. Hormones like prolactin, produced during pregnancy, drive this initiation. Growth hormones like (BST) also help stimulate the initiation of milk production.
- 2. Milk "let down"
  - a. Release of milk into the teat cistern.

 This is where pigs start at 40 pounds and stay there until they are around 200 pounds. Feed efficiency is most important in finishing. Calcium and phosphorus are supplemented, and antibiotics and anti-helminthics are both included in the feed to prevent worms and bacteria in finishing. Withdrawal time is important!

Sheep and Goats

1. Comparative Prinhubs. broadbeares. HT a. Grazing i. Definitions: Preview

- 1. Cattle like tall grasses
- 2. Sheep prefer shorter grasses
- 3. Goats prefer browse to forbs.
- b. GI
- i. Almost identical to a cow. They have dental pads on the upper

jaw and teeth on the lower, and they are ruminants.

- c. Reproduction:
  - i. Seasonally polyestrous: Short day breeders. They have a reproductive season, usually in late fall, during which they go

- b. Common to advance breeding to late august to get lambs to be sold in May where prices are highest.
- v. Sheering occurs in late spring
- 3. Goat Management
  - a. Uses
    - i. Milk
    - ii. Meat
    - iii. Hair/hide
  - b. Breeds
- eds i. Dairy goats – some dairy goats Bake Detter milk than others.
  - ii. Meat breed, good for meat and Ous, Daring.

Previe with particularly desirable hair. nohair."

v. Pygmy goats - in the USA these are used in labs. World wide,

they are used for meat and milk. Why? Because they are

relatively disease resistant.

- c. Management
  - Kid management is very similar to the sheep. They need colostrum, worry about heat source, creep feeding, castrating, dehorning, etc.
  - ii. Milking peak production is around 2 months after birth. The last portion of pregnancy and 2 months afterwards is where

### Poultry

- 1) Intro
  - a) Species chicken, turkey, duck, goose, and more
  - b) Chicken industries: broilers (meat) and layers (eggs).
  - c) World distribution: China has the most chickens (13 bil). US has 8 bil.
  - d) U.S. consumption:
    - i) The average US person consumes 235 eggs per year. On average, every American has their own dedicated laying hen.
    - ii) White meat: increased demand due to health and cost.
  - e) History
  - i) Pre 1950's egg producing industry. Old renovere the broilers.
    ii) 1950's industrial revention. ouction which lead to this point, up to 1 million birds could be placed i ocation.
    - iii) Mid-1970s lead to mergers. Less than 3 companies are in control of the majority of all the broiler chickens in the USA.
    - iv) Post 1975 decrease in number of layers and increase in the production of eggs. Same trend in milk production.
- 2) Anatomy and physiology
  - a) Flight adaptation they have feathers, wings, and air-filled bones. *Breaking a* bird bone is the equivalent of puncturing a lung in a mammal.

- b) GI tract; no teeth in beak, crop for storage, proventriculus (true glandular stomach containing HCl and pepsinogen) gizzard for grinding food, cloaca = exit for urine, feces, and reproduction.
- c) Excretion; The liver can turn amino acids into lots of different things, but always leaves out ammonia, so they build ammonias up to make crystalline uric acid. That uric acid goes out into their excrement (poo and pea together).
- d) Reproduction
  - i) Mating; chickens do not have an estrus cycle. Why? The female stores sperm and it is viable between 7-32 days. Puberty is around 20 reeks
  - ii) Breeding: Let them breed with the hene operativeek. 1 rooster per 12 hens.
- iii) Egg p Ch Non: Egg contaits foll with 2 times as much fat as it has protein. The allower (egg white) is 100% protein. It also has membranes.
  - iv) Candling helps tell the age of an egg and you can tell this through the size of the air sac. The air sac increases in size over time.
- 3) Broiler Industry
  - a) Objective: produce 4.5 pounds of bird in 7-8 weeks. <u>Feed efficiency should be</u>
     <u>2:1</u>, where every 2 pounds of feed adds 1 pound of gain.
  - b) Broiler breeds: Large breasts, rapid growth, and muscles. Health issues;
     Prone to illness, especially heart attacks because their heart cannot support the size of their bodies. Feed and Leg abnormalities are also common.

- c) Housing; 1-1.5 square feet per bird are available on ground in warehouse. All in/all out system. They let all the birds live till slaughter, take them all out to slaughter, sanitize and repair the facility, and start again.
- d) Lighting; low light increases feeding, so 12+ hours of low light keeps the birds eating.
- 4) Laying industry
  - a) Objective: looking for egg production. Feed  $\rightarrow$  eggs. Feed efficiency is 2:1, 2 pounds of feed for every pound of egg. Select for small bodies (less food needed and more space for housing) and select for stopping brooding otesale.co.uk behavior (sitting on laid eggs).
  - b) Management
    - It peaks at 29 weeks. i) Egg production begins a pub



potential through forced molting. Molting brings up egg production. The most common way to do this is through depriving food for 1-2 weeks. This triggers molting and then when they grow new feathers the egg production rises again.

- iii) Egg types
  - (1) The size increases as the hens age, so they don't want too large eggs that are more brittle.
  - (2) Medium sized eggs are best.
- iv) Feed calcium must be supplemented.

- i. Part of preventing disease is keeping records. You can keep these records to identify trends. Then you can identify if genetics are in play or a disease.
- d. New animals
  - i. Acclimation period to introduce pathogens slowly is necessary for introducing new animals to a farm.
- e. Biologicals and pharmaceuticals
  - i. Biologicals vaccines.
  - ii. Pharmaceuticals things like antibiotics that kill bacteria or

- 3. Natural Disease Defense

a. Body Surface Barriens Notes 253 Notes 253 Previev the barrier gets weekend if the skin his is a problem in farm animals who constantly

have their hooves in mud. This causes hoof rot.

- ii. Secretions enhance the surface barrier. Lysozymes digest bacterial cell walls. This is found in saliva and tears. This is why animals lick their wounds, but they also have nerve and epithelial growth factor in saliva, so it's safe to let a dog lick your open wound.
- iii. Respiratory Lining
  - 1. Mucociliary escalator lining of the bronchial tree has silia that help bring things up or down.

- iv. GI Lining enhances barrier function through mucus, HCl, and cell turnover.
- b. Non-specific Response If this is a response to a bacteria, it could be the same response as a trauma, fungus, or virus.
  - i. Inflammation (swelling, redness, heat, and pain),
    - This is the result of histamine. Mast cells have packets of histamine, which causes vessel dilation and leakiness. Plasma will get out, causing swelling. Increased blood delivery creates warmth and redness.
  - ii. Fever
- ever 1. Hypothalamus maintair **Cherna** homeostasis, so it

increases its set point when it proves signals that tell it to give the chature a fever. Fevers help in two ways; avoite blood cells and other helpful cells replicate faster

> at higher temperature. Some bacteria when coupled with iron reduction don't replicate as quickly, so your appetite goes down to prevent more iron intake than necessary.

- c. Immune Response
  - i. Unique features -
    - 1. Specificity to a particular target.
    - 2. Exhibits memory of fighting something and can respond

to that same thing faster and better if it sees it again.

the cat and unzip portions of the bag to take out a single leg. Towels can also be used. In fact, bob prefers them.

- c) Physical and biochemical restraints
  - Muzzling a dog releases endorphins in the brain, along with scruffing (holding the neck) a cat and twitching (enclosing part of the lip in a loop and pinching it a little) a horse, creates a natural sort of sedation.
- d) Chemical restraint
  - i) General anesthesia makes an animal unconscious. If they are easy to lay down, they will be easy to rise after anesthesia. If they are struggling while you put them down, you will get a struggle from them when they come to.
  - ii) Sedation used for dem flexants and other dring. Not totally unconsider. Doesn't control pair but some have analgesics in them.
     iii) Analgesia controls win
    - iv) Paralytics are the worst chemical restraints for animals. They are great for humans but very inhumane. The animals can still feel pain but cannot respond. Analgesics could be used but often are seen as extra cost so are not used to control pain.