I. Social Construction of Science

A. Modern World View: Science

1. Science is autonomous

a. independent

b. own rules: questioning, observation, experimentation

c. method: empirical

2. Science is objective (not biased)

3. Science leads to knowledge about reality.

a. Scientific knowledge is universal.

b. Scientific knowledge is the model for all knowledge

c. True knowledge is scientific

4. Science is instrumental

a. scientific discoveries lead to technological development

b. science+technology =s progress

B. Science is NOT autonomous: It is institution embedded in society

1. Science is an institution integrated into and influenced by other social institutions.

2. Its research and development are shaped by powerful interests.

3. Results of r and d that benefit powerful are adopted

4. Technologies that are adopted reinforce power arrangements.

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5. Science is new religion.

a. science comes from a source above human conflict and struggle (autonomous)

b. science discovers universal truth

c. science speaks its own language

d. scientific discoveries need to be mediated by experts (priests) who understand the language

e. above criticism

C. Free market and Social construction of Science

1. Bourgeoisie funded scientific research and development

a. direct funding for research: corporate laboratories

b. funding of academies, universities

c. since mid 1700s R and D

2. Science as “force of production” within capitalism system

a. scientific discoveries that could be transformed into beneficial technologies were appropriated by bourgeoisie

b. technologies of extraction (mining), transportation (shipping and rails), production (machines), communication (radio, transatlantic cable),

c. scientific techniques (economics, statistics) could be used to calculate and predict and control

d. scientific techniques could also be used to control the new wage laborers (individuals)

i. scientific management

ii. deskilling through technologies of production

D. Nation-state and social construction of science

1. Nation state funded science research which benefited capital

a. funded research and development for the market

b. established and funded academies

c. funded research in universities

2. funded research and development on weapons for war and empire.

a. David Nobel: Forces of Production

b. military-industrial-scientific complex: aircraft industry, electronics industry, computers, nuclear industry, chemical industry, internet

c. weapons of mass destruction

3. science as ideology

a. unequal social arrangements (see Gould)

b. race, empire, forced sterilization, genocide

c. atomic bomb

d. nuclear power

e. Nobel: scientists on military funded r and d “espoused its virtues, lobbied hard for it, and rarely questioned it.”

E. Bias of Science and Method

1. Based on assumptions (prejudices) about the world that then determine what constitutes knowledge about the world.

2. Assumptions about science and nature

a. science is power over nature

b. science would allow man to dominate nature

c. nature is the material of domination (Horkeimer and Adorno)

d. unique cultural bias differs from most other cultures

e. scientific view of nature mirrors capitalist and Marxist view of nature

3.. beginning with Descartes

a. human beings qualitatively different (res cogitans)

b. natural world governed by laws of cause and effect (res extensa)

4. Enlightenment: human beings at the top of hierarchy of being

a. qualitatively different (reason, consciousness)

b. humans have inherent value

c. humans have moral standing (qualified)

5. other beings and life forms .

a. not conscious or rational

b. no inherent value

c. no moral standing

d. matter in motion

6. humans have the right to exercise control

a. other beings and nature serve humanity

i. “standing reserve”

ii. ready to be transformed

iii. so that they can be used by the “Lords of the Earth”

b. Some human beings as ‘standing reserve”

7. method gives us knowledge about the world from the point of view of the

“Lords of the Earth”

8. Progress from whose point of view?

F. Science and technology as progress: Instrumental theory of technology

1. technology is an instrument or tool

a. means (“how to”) to solve problems and meet needs

b. hammer, plow, radio, car, cell phone, plane, Fordism

standardized test, smart classroom, 3D television

c. technology is neutral with regard to ends

2. technology is universally applicable

a. solves the same problem and meets the same needs in every culture.

b. technology transfer: hammers pound nails in any culture

3. technology is progress

a. driven by imagination and creativity, no real limits

b. technologies of transportation are the story of progress: walking, ox cart, horses, Model Ts, Prius

c. communication is the story of progress: talking, signals, cables, radio, computers, satellites

d. technology is synonymous with advanced society

5. technological progress will culminate in utopian society

a. abundance, comfort, leisure, solve all social problems

b. health technologies: drugs, diagnostic techniques, surgical tools and techniques, genetic therapy

c. communications technologies: satellites, computers, cell phones,

internet

d. entertainment

e. technologies of production: mass production meeting consumer needs

f. food production technologies: GMOs, pesticides, fertilizers