

APPENDIX B

FIRST SCENARIO SET

TREND ONE: AGING WORLD POPULATION

- More people in service industries for senior support
- Multiple careers/multiple hobbies
- Adjustment to changing physical stamina
- Retirement age extended or disappears
- Change in demand for health services
- Different insurance programs, restructuring of insurance industry worldwide
- People have children later in life
- Change in family life as more generations alive at one time
- Increase in funds for research on aging
- Increased emphasis on wellness, maintaining body earlier in life
- Worry today of crimes against elderly, corresponding crimes against youth in 50 years due to population age inequality
- Increased tolerance of currently illegal recreational drugs
- Changing patterns in entertainment, mass media
- Emphasis on lifelong learning
- Backlash on preserving life at any cost
- More psychological services to help deal with life transitions
- More stress on World Bank & IMF to provide aid to elderly populations in the Third World
- Kevorkian resolved (euthanasia legalized?)
- AARP out lobbies everybody else in the USA
- Experience & experience-nots
- New family structures, role development; multiple generation families
- Eugenics is forefront issue; want stronger, healthier children to support us in extended age
- Increased value placed on honoring elders' wisdom and experience -- matched by youth backlash "new revolution"
- Question of life issues RE: living longer
- Conflicts arise over home care/nursing homes/social support for long-term care
- Development of facilities/entire neighborhoods that offer easy transition between independent care and intensive care
- Less warehousing, more integration of elders into population
- Increased public transport
- Increased taxes to support all of this (but increased input to the economy as careers last longer)
- Increased ease of use, availability of replacement body parts
- Schism between old North, young South
- More elder enclaves/high security
- Marketing strategies appeal to cute elders
- Wealthy elders, wealthy others get advanced treatments: "age" & "age-nots"
- As elders use technology to hang on to life, increased possibility of hybridization and increased homogenization of humanity

TREND TWO: GROWING USE OF GENETICALLY MODIFIED CROPS

- Increased productivity, wealth of selected farmers
- Better crops in arid areas

- A few multinationals have increased control over global agricultural system
- Unintended physical and health impacts from eating genetically modified crops
- Organic backlash
- Mass starvation – seed terminators go awry
- War between genetically modified farming crop countries and organic agricultural countries
- Black market trade of modified crops, especially nutraceuticals
- Value drift on taboo foods if mass starvation occurs
- Crops susceptible to diseases wiped out due to monoculturing
- More home gardens
- Überweed: weeds unintended cross pollination with super plants
- Bumper stickers as title: “THE POOP LOOP”
- Recycling of waste trend
- “Fine dining” (superfoods) vs. Luby’s grazing
- Shape and texture of food changes: Dentistry transformed
- Obesity solved at upstream (food) source
- National seed banks become national treasures
- Fun foods with no negative health consequences
- Need for new world foods clearinghouse to resolve these conflicts
- Better ways to recycle foods, decreased food waste
- Land, water resource conflicts between organic and genetically modified food growers
- More genetically modified foods that actively promote health
- International genetic standards board to maintain definitions of species
- Blurred definitions of foods and food groups
- Genetical hacking of seeds and plants; agricultural terrorism
- Extinction of native flora landscape because of escaped crop plants surviving and thriving in the wild (This can affect the wildlife and/or human population, locally)
- Economic trade patterns alter with country decisions on genetically modified food growth
- Extended growing season in formerly inhospitable places (e.g., in northern Canada)
- Expanded use of hydroponics and aeroponics
- Massive unintended impact on human health as side-effects of genetically modified foods ripple through human system (e.g., immunity, hormones, ability to tolerate temporary changes, etc.)
- Fewer pesticides, less irrigation, less pollution, cleaner environment and better health
- Plants engineered to clean up environment (e.g., water hyacinths)
- Increase in ethical issues in changing Mother Nature (where to draw the line?)
- Organic steel with artificial intelligence (plants produce plastics as well)
- Consumers customize crops: genetics is a household tool to raise individually tailored victory gardens
- New aesthetics and tools in landscape architecture

TREND THREE: END OF OIL RESERVES IN SIGHT

- Oil companies are finally out of denial, heavily invested in developing alternative energy sources – zero point energy, solar, etc.
- Hoarding of oil
- Use restrictions
- Price of oil, end products shoots up
- Artificial oil produced
- Home energy units
- Global shifts in economic power, as resource use, availability shifts
- Mass migration to more temperate climates
- Environmental ethics overruled in last-ditch search for oil resources
- Military takeover of oil rich lands

- Countries whose infrastructure still relies on oil will experience recession (especially those using cast-off technologies)
- Change in how we work – more energy efficient work habits: at home, via web, at night
- Decreased transport of people and resources
- Decentralized warehousing
- Increased use of coal (re-creation of London smogs)
- End of vacations, transport industries
- New industry: recycling cars and planes
- Increase in Zeppelin, dirigible, airship use
- Increased crime, conflict with increasing migration to temperate climates
- Change in consumer habits – death of the 7-11, resurgence of neighborhood shops
- World gets smaller again – UPS delivers only once a week
- Tourism industry collapses and restructures
- Living closer together
- Breakthrough in fuel cell technology, zero point energy – but also occasional deployment disasters
- “Highway Dividend”: Tax money freed from repair of superhighway systems
- More bicycles
- Cash resources refocused on energy R&D, nanotech use (energy efficiency)
- New civil conservation corps during oil-based depression
- Foods no longer spoil, so no need for refrigeration
- Change in food preparation appliances
- What to do about the enormous quantity of useless cars, trains and airplanes?
- What to do about the vacant roadways?
- Need for more personal form of communication because of inability to travel (e.g., hologram)
- Formation of specialized communities based on specific needs and/or interests (i.e., medical communities developed around hospitals for patients and families)
- Family farm is gone

FIRST SCENARIO SET CROSS IMPACTS

- Cash conflict between R&D for oil alternatives and care for the elderly
- Increasing lifespan from genetically modified foods amplifies Trend One
- Shift in funerary technology ⇒ old people + technology = oil
- Genetic engineering of plants to produce plastics means farmers are new petrochemical producers
- Nanotech allows change in people to make us stronger (exoskeleton) ⇒ we can use plastic for cars (don’t need steel)
- Family enclaves/communities where people are “at-home” with each other around the clock
- Better global food distribution allows a larger percentage of developing world’s population to reach old age
- Increase in environmental ethics; what does it mean to have mental well being in a healthy environment?
- Increase in green movements worldwide
- Increase in technofixes globally
- Increase in globalization of age cohorts via global communication networks
- Groups create legitimized power base for themselves
- Lifespan begins falling in places maximally polluted, too reliant on genetically modified foods (effect of “genetic pollution”)
- Genetic hacking made illegal
- Death sentence of genetic foods that stop system
- No need for aging support services – live well and then you drop
- More wisdom cultures; lifelong learning within communities by mentoring
- Profound distrust between generations and resulting “understanding gap”

SECOND SCENARIO SET

TREND ONE: ETHNIC CHALLENGES TO GLOBAL/INTERNATIONAL SECURITY: ETHNIC GROUPS WITHIN STATES INCREASINGLY DEMAND SELF-RULE, AUTONOMY AND SECESSION

- Religions become a form of global government, transcend all nations
- New religion based on humanism or human worth
- Fragmentation of global community/unity
- Death of the state
- Revised history as new partnerships develop, e.g., U.S. no longer “demonizes” (Castro, Saddam Hussein, Japan) because imperative is to join divergent groups into new partnerships (e.g., U.S. now needs Iraq in new way)
- More extremes in society’s values because of less diversity
- One world language for commerce—education
- Big shifts in the way we define: personality, culture, religion, and psychology. More inclusive of Eastern thought and tribal thought.
- African countries consolidate along ethnic/tribal lines – reversal of European colonial boundaries
- Ethnic respect emerges through easily exchanged information through the Internet
- Growth and re-invention of national art, song, traditions
- Increase in the production of arms
- Greater need for international organizations (UN, etc.)
- Exclusivity of religion (power structure vs. harmony)
- Discovery of “lost” knowledge, languages and history as small countries communicate with the world
- Instead of countries forming alliances powerful ethnic groups are forming alliances
- Lack of understanding of other cultures
- Conflict on who will rule
- Own homelands imply creation of more countries?
- Increasing arms trade to ethnic groups
- Growing fragmentation of multicultural nation-states, decentralization of political power everywhere
- National government weakens – global government strengthens. Local responsibility increases

TREND TWO: MINIATURIZATION OF TECHNOLOGY (E.G., MICRO ELECTROMECHANICAL SYSTEMS [MEMS], OR NANOTECHNOLOGY)

- More efficient health care
- MEMS may make human beings obsolete, and thus their frailties and fears
- World competitive building contests using nanotech
- Increase in distance learning/education
- Desktop computers are 8-track of 2050
- Microscopic/atomic art
- Terrorism changes from single cataclysmic events to timed, “everywhere” multistage impact
- Dust-sized spy robots
- More development of robotic systems (e.g., artificial intelligence)
- Warfare changes to timed kills that are untraceable due to nanotech
- Post-human & artificial intelligence (values for good?)
- By 2050, robotic intelligence reaches the human level then exceeds human intelligence
- Implanted computers – knowledge and memory always available, constant communication
- Personal need for space decreases: smaller items – easier storage – items more portable
- Neuroscience makes huge leaps: New neuropaths created as nanotech develops, changing our thinking about thinking and learning
- Nanotech devices cause infection (live viruses)
- Combining many forms of nanotech to form smart colonies (tiny)

- Hands-on schooling: build, destroy, recreate and modify
- Movies, art, slide shows, books, poetry CD's can be run while doing other things: sex and driving by retinal display
- "Smart drugs" reduce aggressiveness in humans, reduce 'YY' chromosome, testosterone, other chemicals in humans
- Lose individuality (i.e., program)
- Perfect memory: people can store all their books, movies, music, personal recordings, videos, documents, photos, etc. on one (implant) device.
- Imagined perfect memory
- Customization of technology to handle all (many) forms of pollution

TREND THREE: HAVE/HAVE NOT GAP WIDENS, BOTH BETWEEN DEVELOPED AND DEVELOPING COUNTRIES, AND WITHIN COUNTRIES

- Emergence of global leader
- Increasing labor disputes
- Possible increase in bombing related to said disputes even in advanced western nations
- Growing crime and terrorism
- Impact technology of information age (WWW) may make Have and Have/Not passe
- Global political and military alliances of have nots
- Societies separate physically (more gated communities and ghettos)
- Redistribution of wealth
- Haves become more philanthropic like Bill Gates' donation of money to children's health
- Emergence of global ethics/social justice
- Rights of 'haves' (enlightened self-actualize) vs. 'have nots' (not full person)
- Have nots become so dependent on haves, they become "controlled" and have no independence
- Have nots are now at negative growth (increase in debt)
- The haves have a lot more
- Resurgence of Marxist revolution
- Trade wars and protectionism
- "Have nots" are blamed for their own fate
- Gap widens, but economic level of have nots rises. Universal education, freedom from human information ???
- Kids bridge "have" gap, world gains
- Suicide rate increases
- Class admiration invites trend to royalty rebirth
- National borders give way to class categorization
- Slums common in developed countries

SECOND SCENARIO SET CROSS IMPACTS (T1 X T2)

- Genetically altered plants created to alter racial differences, causing a less polarized "world race"
- Nanoterrorism in civil wars
- Ethnic-central robotic exploration of space
- Visual language plays major international communications role
- MEMS and genetically enhanced people face loss of "soul" fears. Seek redemption in "good works" in less developed world peoples
- Body changed to customize ethnicity
- Direct democracy in world state
- Implanted ID improves movement across borders, restricts undesirables
- "Global Brain" accessible to all through genetically modified/MEM.
- Tech at birth enhances the understanding of all people for each other
- Pantheism

SECOND SCENARIO SET CROSS IMPACTS (T2 X T3)

“Beggars and Choosers” scenario: if humans can photosynthesize, what is a have not?

- WWII leads to dissolution of matter
- Technology homogenizes ethnic groups by increased positive health attributes and decreased negative health attributes resulting in reversing trend of gap between haves and have nots as a result of different physical/cognitive functioning.
- Nanomech enhanced/built “people” android become rulers – use genetically modified plants to enslave “biologicals”
- Have nots are the drone workers making MEMS for haves’ use
- Better global communications leads to dampening of ethnic tensions
- Redefinition of “slums”, luxury in our terms
- All hazardous work is done by machines, as is most physical work
- Technology proliferates, improving lives of have-nots.
- “Have not” becomes relative term.

SECOND SCENARIO SET CROSS IMPACTS (T3 X T1)

- “Consciousness religion” brings about a new golden age of humans achieving the “human millennium”
- Haves use genetically modified plants to destroy have nots in developed countries
- Need for at least two superpowers
- Political polarity of nations
- Selection bias of ethnic groups with haves and have nots
- Increased conflict due to ethnic group migrations due to resource distributions
- Increased conflicts over countries that have critical resources (water, food)

SECOND SCENARIO SET HEADLINES

- “Micromachines used to invade poor, enslave nation of Kosovo”
- “First nanotech translated human ecumenical pantheistic conference held in Tasmania”
- “Human photosynthesis – Who’s a have not?”
- “Nanotech breakthrough collapses have/have not gap”

THIRD SCENARIO SET

TREND ONE: DEFORESTATION CONTINUES

- CO2 increases, accelerates global warming
- Polar icecaps melt; glaciers gone too
- Sea level rises, major population areas underwater
- Boundary disputes between coastal countries
- Mass migration to higher ground
- Risk to food producing area
- Decrease in biodiversity ⇒ increased desertification
- Increased price of exotic woods
- Change in materials for furniture, paper, paper byproducts (bags etc.)
- Death of No. 2 pencils and Big Red tablets
- Huge dust storms
- Increased flooding in low lying inland areas
- With polar melting – huge shift in climate change; ice age
- Rainfall patterns change
- Extreme weather changes, e.g., hurricanes
- Canada grows through longer periods
- Green Party becomes increasingly violent
- Reforestation in different areas; relief
- Loss of potential medical cures
- Have/Have not issue becomes graver for have nots in their environment
- Clear cut area becomes breadbasket
- Social unrest causes civil war
- Use nanotech to reclaim unusable cropland to be made usable
- Jurassic Park lives; revive earlier species
- Increase in protective measures
- International organizations
- Environmental organizations get more organized
- Wiping out of land/nature based cultures (e.g., gods in forest), (e.g., way of life)
- Increased protection of rainforest; preservation
- Increased nature-based theme parks – Disney buys remaining rainforest and turns a buck
- Increase in tree farms as new market
- Genetically alter trees for fast growth
- Virtual reality walk in forest of your choice
- Toilet habits shift, return of squat toilet
- Increased use bidet, and Japanese version
- Legalized hemp (commercial grade)
- Art increasingly electronic only
- Transformation in nature of trash -- in millennial terms, in nature of archaeology

TREND TWO: URBANIZATION INCREASES, ESPECIALLY IN DEVELOPING COUNTRIES

- Increased coastline population
- Challenges to infrastructure
- Increased disease due to density
- Physical stratification that mirrors economic stratification
- Increased economic synergy
- Increased pollution

- Ethnically generated socioeconomic stresses
- Loss of cultural roots
- Increased dependency on rural communities for food
- Increased crime
- Development of dueling in society
- Communal ownership
- Education levels increase
- Decentralization of education
- Accelerated depletion of natural resources
- Local enforcement of global laws
- Ethnic boroughs
- Tension between city and nation
- Increased cultural exchange
- Export of waste is big business
- Conflicts over water sources
- Automated agriculture
- Borough tourism
- Distinctive architecture
- Massive culture shock, rural to urban
- Escapism from claustrophobia
- Monofood with ethnic preparation
- Decreased international have/have-not gap
- Human powered transportation
- Decreased human potential
- Resurgence of “traditional” marital patterns

TREND 3: CHINA EMERGES AS A SUPERPOWER

- Chinese language becomes predominant
- Chinese political and social values are more important globally
- Chinese view of human rights; political conflicts, economic conflicts, division of classes
- China dictates style of interaction
- Conflicts or collaboration with other countries
- Potential for superpower conflicts or WWIII
- Growing economic clout
- Other countries become more exposed to Chinese culture, values and history
- Almost universal availability of Internet and other communication links among Chinese leading to higher levels of education and affluence
- China will have access to natural or other resources needed to sustain a higher level of economic development
- Issue of communism or dying out; how economic development occurs
- Chinese citizens living outside China receive greater respect or more animosity
- Chinese practice of directing career choices at early age based on proficiency rather than personal choices leads to social upheaval and loss of creativity
- Chinese model transferred to other countries
- China uses military might to build 21st century ‘China Great Wall’
- China major player in push into space

THIRD SCENARIO SET CROSS IMPACTS

- Floods in major coastal cities decimate urban populations worldwide
- New coral growth on submerged urban infrastructure
- Ghettoization of inland cities from coastal city refugees
- Chinese (or American) financing of Green party violence (in the other sphere of influence)

- Increase in aquaculture, floating cities
- Scramble for higher ground leads to WWII
- Art and architecture increasingly eastern-based; feng shui rules – spare, minimalist
- Virtual reality parks # 1 entertainment for cities
- Use of art, waterwalls in cities to reduce psychological stress
- Waves of pandemics; confluence of urban density, water born diseases and fewer pharmaceuticals to treat illnesses
- Better urban planning from lessons learned after rising sea levels
- China glaciates, Chinese move to Australia
- New urban myths arise from ethnic mixing
- Iconic revolution; new graphics symbol-based written language
- Ice caps melt; increase in fresh water in ocean kills many species of fish and coral

HEADLINES

- “China sues U.S., blames for CO2 increase”
- “Sotheby-Chin’s auctions last roll of toilet paper – 2.5 million yuan”
- “World population decreases 25% in wake of pandemics”
- “Sahara becomes grassland”
- “Grand Canyon becomes deepest river on planet”

FOURTH SCENARIO SET

TREND ONE: USE OF SMALL ARMS SPREADING WORLDWIDE

- Worldwide control of ammo
- NRA becomes International Rifle Association
- Proliferation of black market ammo and self-loading kits
- Gun safety added to curriculum
- Quick draw added to Olympics
- Less home invasions
- Gun accidents top auto accidents
- Better medical care for gunshot wounds
- Conflict resolution in K-12
- ‘Stress Management’ classes at workplace, etc.
- Refinement of less lethal ammo
- Increased sales in kevlar
- Change in judicial system to handle gunshot scenarios
- International database of gun registrations
- Change in fashion (to carry guns)
- Increase in non-detectable weapons
- Proliferation of non-black powder
- More penalties for illegal use
- Ten times increase of weapons industry
- Guns are no longer a political issue
- More militant factions in more countries
- Increase in military service
- “No gun” zones
- Increased terrorism, kidnapping, robbery
- Growing potential for civil disorder and insurrection by dissenting political groups
- Increase in weapon detectors (at home too); home security can call up a real time display of weapons
- Biometric tagging of weapons
- Hunters manage wildlife reserves
- Gun license at certain age
- Inspector Gadget artificial limb has gun in it
- New insurance provisions: insurance companies add specific coverage for gunshot wounds and liability, like auto insurance
- The Gun Channel
- Increased owner liability
- Rise in gun use and access leads to new “stun” gun that incapacitates only gun-carrying person
- Increased owner liability
- Espionage increases to track weapons spread
- Internet portals for gun industry
- Safer arms
- Consumers demand better firepower
- Voice recognized gun storage

TREND TWO: FALL OF AQUIFERS (FRESHWATER STORAGE)

- Water traded as a commodity per barrel
- Used in barter trade
- Countries with most geographic ownership of aquifers increase power
- Water wars, especially over source area

- Civil wars in states over water
- Aquaculture decreases for fresh water fish
- Genetically altered xenophyte trend in plants; food sources (e.g., longhorns more heat resistant, need less water)
- Aquariums a luxury
- Home wastewater recycling closed systems
- Ban on outdoor or private pools
- Increase of reservoirs
- Increased weather control technology, cloud seeding
- North-south divide hemisphere – whoever controls mouth of river controls rest of river
- Water market price
- East-west weather wars
- Increased desalinization
- New distribution of water
- Fresh water mining—glaciers
- Antarctica as a world power
- Countries dispute over who owns and has water rights in Antarctica
- Hydrogen + diatomic oxygen = new way of producing water
- Increasing use of microtechnology irrigation systems for farming
- Increase in H₂O manufacturing plants
- Las Vegas, cities that suck H₂O die
- End of water parks
- Shift to seawater
- Change in home distribution of potable water
- More use of “grey water” in home
- Redesign of plumbing systems to counter salt-related problems
- Newer cities have better, more efficient water technologies ⇒ lower costs of living
- Megacities wither or die quickly of thirst
- Canada becomes the Saudi Arabia of water
- Better watershed management: trees, environmental solutions
- Aquifers lower means less potable water; needs more treatment as organisms increase
- Increase in sinkholes
- Fewer clouds
- Huge penalties for water theft
- Funeral practices change; desiccate the dead
- Only cremation
- Moratorium on loss of bodily fluids
- Change in social taboos – change urine into potable water
- Human becomes denser; increased salts through use of genetically altered foods
- Instant water, just add X?
- Scam crimes, opportunists “make your own water in your own home”
- Water sold in off-license (liquor)
- Price of a loaf of bread grown on aquifer-watered lands rises to \$12

TREND THREE: WORLD POPULATION REACHES 10 BILLION, MAJORITY IN NON-WESTERN COUNTRIES

- More conflict between developed and developing nations
- Main election issue in U.S. is immigration (legal and illegal)
- In developed countries there are tax incentives to reduce cattle raising
- Ranchers and high tech farmers compete for use of public lands
- First female pope finally authorizes birth control

- Megaslums become more common
- Have/Have not gap grows
- Increasing virtual employment (both legal and illegal)
- Tax benefits for sterilization
- More Einstein's, Da Vinci's
- More wage pressure downward on workers in developed world including managers, service industry
- More crime in developed and developing countries
- U.S. and Canada offering protectorate status to Caribbean islands (to protect North America from drug trade)
- Bill Gates, Jr. buys huge tracts of rainforest to protect it
- Tension grows between China and Japan
- Tensions between developing and developed countries over issue of economic growth vs. environment
- Bioserves become # 1 tourist attraction
- Spread of diseases and epidemics
- New recycling industries
- Nostalgia for disposable culture of mid to late 20th century
- Aging world population
- Genetic/biological warfare
- IMF criteria for loans based on population control

FOURTH SCENARIO SET CROSS IMPACTS

- Personalized water wars
- Fish, hunting implies fish sharpshooters
- Massive migration towards well-watered areas
- Heightened border control and conflicts
- U.S. population decreases
- Kidnapping of "Einstein's" at gunpoint – forced mental labor in water tech design
- International water cartels, spot market in water develops
- Oil tanker converted to water tankers (end of oil spills)
- Egypt goes to war with Kenya over Nile
- Existing nations splinter over water rights, reform along watershed bioregions
- Cutting off/polluting water supply as military tactic
- Massive starvation in Indian subcontinent due to decreasing agricultural output
- Patented technologies used to evaluate weather systems, determine best place for cloud seeding. Managed weather
- Create highly efficient rainwater collection systems – national series of water reservoirs and canals
- Pockets of "collaborationists" struggling to overcome "might is water rights" tendency of society
- Desalinization technology so efficient that coastal cities experience a "water (gold) rush", (new have/have not gap)
- "MEMS" makes pumping water inland more efficient
- Cheap fusion technology destroys balance of energy power
- Huge shift in R&D away from cancer research into water production and conservation
- Holsters and canteens are fashion statements
- "Water tastings" of vintage water
- Ice replacements?

HEADLINES

- "Rancher lobby vies for use of high rise buildings for cattle orphanages"
- "Water pistols banned"
- "Death penalty for fraudulent water divining"
- "Breakthrough in genetically engineered salt-tolerant crops"
- "Vegetarian Party in landslide win! (shoots opponents)"

- “Breakthrough in genetic fix = new humans require 1/3 less water”
- “Gates 2.0 kidnapped: Ransom note demands entire contents of Lake Michigan”
- “International Water Fund established”