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July 18, 2005
TEAM – C.W. Post

Technology, Science, and Human Values
Final Assessment Paper

Humankind's first technologies were the kind that expanded options: with spears and arrows larger prey could be hunted with less danger; with the fashioning of clothing from hides groups could expand their range of habitation in colder climates. Technologies continue to expand our options today. But even though developments of science and technology have given us methods of reshaping our world to be more accommodating to our survival and goals, that reshaping has impact upon ourselves and the other creatures that cohabitate our planet, impacts that we cannot often predict or choose to heed.

The seminar focused on a few key areas: that of our relationship to genetics, wildlife, and the symbiotic relationship between scientific research and technological innovation. Through the tours and the focus we had, I was able to experience and observe places that I would likely never had explored on my own, including Brookhaven National Laboratory and Cold Spring Harbor Laboratory.

Discoveries in genetics and applications to better the health of individuals through diagnosis and "gene therapy" seem to be the next great advent in Western medicine. As our guide at the Cold Spring Harbor Laboratory explained, it is fascinating that "breast cancer" may not be the same sort of cancer in each instance, and that they could be

differentiated on a genetic level. Simply being able to diagnose on the genetic level, offers patients better options for treatment and a higher survival rate.

Of all the technologies that we addressed during this seminar, the introduction of foreign genetic material into another life-form such as that life-form could continue to pass-on that genetic material in future generations is of greatest concern to me, simply because it mutates a species in ways that are grossly beyond the mutations and variations that occur naturally within a species. I am also against tight inbreeding of animals to achieve a "perfect" breed standard. The Irish Potato Famine was due to a fungus that was able to spread in a single strain of potato that was planted as a monoculture in Ireland. Given all these terrible things that can go wrong when humans are not careful with the selection, use, and manipulation of genetic material, history would inform us to be careful when trying to "improve" upon nature.

Protecting and reintroducing wild animals seems largely to me a matter of economics. To ranchers living around Yellowstone, they are concerned for their livelihoods through wolves hunting their cattle. To loggers in Washington state, the protection of an endangered owl's habitat is of lesser concern when a paycheck to support one's family is on the line. The United States was once a frontier where people were encouraged to carve out a living from the natural world under the ideology of "manifest destiny." Now the public is interested in returning the wildlife to a semblance what it was like before we thought of only the "short-term" in our collective actions to expand and tame nature for

our own economic goals. Planning for seven generations ahead is what I believe we need to do as a society to assure a sustainable lifestyle for ourselves and our planet.

There is a turn of phrase: "no single raindrop believes it is responsible for the flood." So to the individual rancher and logging company does not believe it is responsible for the demise of a species. So to did the ladies who bought fashionable hats at the turn of the century believe that their hat purchase would cause the near extinction of the snowy egrets in the marshlands of the Northeast. I use this example to highlight why we as individuals, especially as Americans, must be aware that our purchases and consumption will impact the environment and the lives of others in a ripple-effect across our planet.

As Americans, we are extremely privileged in ways 70% of the world's population is not, and one of those privileges is to have enough resources as a society to fund expensive scientific research such as the RHIC super-collider and STAR at Brookhaven National Laboratories. The complexity of such a machine mimics the complexity of our society such that through collective expertise and effort we can fashion such a creation. To me the STAR detector is the Great Pyramid of our day, reaching the limits of engineering and technology in order to form a relationship with the Unknown, be that the Afterlife or the inner-workings of an atom. That is not to say such endeavors don't come without their environmental costs and impacts, as the energy needed to run RHIC likely does not come from renewable and pollution-free sources.

In conclusion, I am in agreement with Dr. Hart who stated that technology was a double-edged blade that makes our individual and collective existence more complex through opening up options to manipulate our physical world. The decisions we must make about its use must respect those impacts and complexities, and accept that we can never place our entire environment under our absolute control. We can only hedge our bets, make decisions towards sustainability, and accept that accidents will happen. Ultimately, how we behave as individuals and communities will shape the collective course of humanity and the planet we inhabit, which includes the development and adoption of new technologies.