

Arizona National Citizens' Technology Forum Face-to-Face Meeting March 1-2, 2008

Day 1 – March 1, 2008

Inclusion Activity – Initial Top 1-2 Questions on Your Mind About This Project

- † How will the information be acceptable to all people?
- † What are the ethics and pros/cons of designer babies?
- † What is the state of current developments in nanotechnology?
- † What are the dangers of putting nano into the human body?
- † What's the social-economical side of nano?
- † What are the repercussions of nanotechnology?
- † I'm interested in the composition and processes involved in making nanotubes, etc. (I say nanotubes, because I think carbon tubes are primarily what nanotechnology is)
- † Where's everybody else?
- † Cosmetics and designer babies – what's the state of the art?
- † What kind of lobbying is being done for nanotechnology?
- † What's the state of the art in nanotechnology – generally?
- † I'm just open to what is offered

General Questions/Comments from Throughout the Day

- † Re. the survey we had to take before today:
 - The questions were too nosy, invasive
 - The categories were totally inadequate – you had to pick something that you felt didn't really represent you
 - The radio button for "Native American" ethnicity didn't even work!
- † Is the United States the leader in nanotechnology focus, or are other countries ahead of us?
- † Is it possible that any of the scenarios (in the participant materials packet) are actually happening now, outside of the United States?

- † Does the U.S. share its nanotechnology knowledge outside of the country?
- † Do U.S. patents – and even international patents – really make a difference?
- † Why is there, or should there be, so much more controversy over *enhancement* than there is for *restoration*?
- † Re. quantum dots technology – will it be expensive? Will insurance even cover it?

Discussion: What is Technology?

- † Manufactured ideas based on science for utilitarian purposes
- † It's part of being human – it's what makes us human. Using tools is part of our development as human beings
- † Tools we use to further our goals
- † Books
- † It shapes not only what we do, but also how we behave
- † Technology shapes humanity and humanity shapes technology
the chicken/egg conundrum
- † Ideas that seem impossible at one point in time, then come true, like flying
- † What's the difference between technology and progress and evolution?
- † Some say "technology" is always human-made
- † To be honest, how good a "survival" tool has "reasoning" turned out to be?
- † Technology depends on communication – there is a social component
- † It is the *application* of a concept (e.g., into matter and elements)
- † Does technology drive ideas (for further technology) or do ideas drive technology?
- † Technology is context-based

Doc-in-a-Box Questions/Comments (spontaneous discussion after this material review)

- † But do diseases always come to fruition?
 - † Don't different diseases have the same biomarker? Then how can they tell exactly which disease you have?
 - † If we keep fighting diseases – earlier, with earlier detection – might we weaken our immune systems?
 - Native Americans had strong immune systems for their habitat, but then their immune systems were compromised when Europeans arrived.
 - † Why would you want to hear you have a disease if there is no cure for it?
 - † There are some diseases we can cure with our minds, so why do we need a machine to take over for our minds?
 - † How much of this research is being done by pharmaceutical companies (that *want* you to have diseases so you can take their drugs)?
 - † What is an "appropriate" level of risk for new technologies?
 - † There are often unintended side effects – things nobody even thought of.
 - † What if some people can afford the technology and some can't? This will create (or worsen) the existence of social castes.
 - † The technology could also ameliorate some situations – we have a tendency to always look at the negative.
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Day 2 – March 2, 2008

Inclusion Activity – What are Your Thoughts About Day 1? (Like/Didn't like; anything we should do differently?)

- † Liked:
 - Diversity of opinion
 - Liked the food (yum)
 - Comfortable atmosphere
 - New information

- † No Like
 - Went off topic (a bit)

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- † Learned a lot

- † Got concerned about the potential for abuse
 - † Overall group awareness of issues was good
 - † The process will expose/give a heads-up to technology before you hear it on the news (where it's biased)
 - † Group process
 - † Food
 - † Openess & willingness to express opinions without judgment
 - † Don't like being recorded
 - † Don't like being videotaped (feelings of big brother watching)
 - † Didn't like the survey (needs to be reworded to include response options such as "pass," "maybe," and other alternatives)
 - † I talked to other people about yesterday!
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- † Likes
 - Pleasant
 - Comfortable
 - Inspirit
 - Friendly
 - Casual
 - Good food
 - The moderators
 - † Dislikes
 - PowerPoint (?)
 - The traffic on highway 202
 - † Changes – nothing
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Excitements

† Excitement Category: New Medical Treatments and Health

- Easing human suffering (poverty, disease, human labor)
- Creating new organs for donation = more lives saved
+ medical +
- The idea that we can become stronger, healthier, more intelligent human beings
- Many lives will change for the better
- The potential for cancer cures, diabetes & other frequently diagnosed diseases or health risk lifestyles like extreme obesity
- Treatments being developed for serious illnesses and disabilities
- The potential for greatly extended, healthy life span
- May help me live my own life better and longer – I'm not a teenager anymore!

† Excitement Category: Lifestyle Enhancements

- How this technology can/will make life easier / more information available
- Robots that do our chore and daily life inconveniences for us
- The conveniences and cool toys

† Excitement Category: Infomatics

- Development of computing systems
- Applications in education
- Memory enhancement
- Having quicker/easier access to new information
- Greater understanding of the natural world

† Excitement Category: Human Enhancements

- Telepathy
- Bionics
- The possibilities – total cyborg possibilities (for our foreseeable future there will not be a total cyborg, but as each [body] part becomes available, people will benefit)
- Working towards cyborg
- The concept of being super-humans
- Longer sustainability, e.g., staying underwater longer, being able to stay in space longer without your bones softening
- Hastening our evolution

† Excitement Category: Human potentiality

- The exploration of what it means to be human

† Excitement Category: Environmental

- Our planet
 - New ways of harnessing renewable energy!
 - New ways to preserve the planet!
- And beyond!
 - Space!!!

† Excitement Category: Technological Transformations

- New research techniques
- Entering a new age of technology and witnessing the results
- That the possibilities for this technology are so vast

Concerns

† Concern Category: Risks of Market Supremacy

- Big business/pharmaceuticals monopoly on health (only people with money will get services)
- Economic consequences (regional, national & international)
- Corporate or product dependence, obsession, and/or control

† Concern Category: Devaluation of information

- Receiving too much information results in information overload, where the value of information (in general) decreases

† Concern Category: Intentional Use for Harm

- Abuse or unsafe use of nanotechnology
- [Lack of] prevention of empowerment of extremists (terrorists)
- Terrorist potential
- The thought of this technology being so easily available, and not needing a huge infrastructure to use it (unlike, say, nuclear weapons), and that people will use it in a negative way
- Use of new technologies to cause harm!
- Genocide!
- Another form of *eliminating*, e.g., races, certain "looks," etc.

† Concern Category: Risk of Dehumanization

- False kind of "perfection"
- That limiting or getting rid of human suffering will rake away from the true meaning of what it is to be human
- Artificial intelligence man-machine, making people more like machines – less like human

† Concern Category: Government Exploitation

- This technology will give government more power and control over people
- How much more our government knows about this but has not told us
- Secret government infiltration [e.g., into our bodies], like [injecting nano tracking] through flu shots
- The government implanting chips in people that monitor an individual's every move around the world
- Elimination of privacy / a surveillance society
- What governments may do with this technology

† Concern Category: Safety

- Unsafe use of nanotechnology
- Failure rate and side effects
- Long-term health [effects]
- Prolonged exposure to nano being in the human body
- Many lives will change for the worse
- Disposing nano-waste

† Concern Category: "Leaping Before You Look," i.e., lack of foresight, risks of rapid change before we know the outcomes

- Scientists overwhelming themselves with new technologies that result in dire consequences
- Too prudent or too frivolous use or adoption of nanotechnology
- Unpredictability
- Too early adoption leading to unforeseen problems
- What determines criteria of wisdom of NBIC use?

- † Concern Category: That this technology needs one set of standardized international regulations (and consequences for violating them) – established minimums
 - Laws that have to do with nanotechnology
 - [Need to] create new regulations before they're needed
 - Creating "super soldiers" who are killing machines, [then being] reintroduced into society
 - Some people who may have hidden agendas could delay progress on false premises

- † Concern Category: Consequences of Genetic Manipulation
 - Designer babies and racism?
 - Discrimination (genoism or on the use of nano)
 - Potential for abuse – "creating" or "designing" people the way you want
 - Nano-tech is not what nature is (natural) – don't mess with it
 - Germline changes
 - Disposing nano-waste

- † Concern Category: Fairness - Socioeconomic
 - That it will only be easily accessible to a few or certain powerful groups
 - Social inequalities
 - Social effects of human "enhancement"

- † Concern Category: Uninformed/Unqualified regulators who don't understand converging technologies
 - How does/should society handle rogues?
 - Eager-Stupid Regulators/Regulations
 - eager smart
 - lazy smart
 - eager stupid (does the most harm)
 - lazy stupid

Questions

† Question Category: Political and Developmental Scope

- Who is already benefiting the most from this technology? (4)
- Which country/countries are advancing the fastest with this technology?
- What international nanotechnology groups exist? What are their names? (4)
- Is there a different sentiment re. nanotechnology or is it mostly off the radar?
- Is there lobbying for nanotechnology? (4)
- Who stands to benefit the most financially due to these new technologies (in the future)? (5)
- Are there any companies that stand out [in terms of their current progress]?

† Question Category: What Does It Mean to be Human? (3)

- Is there a gene for the human spirit?
- What is consciousness?
- How does genetics affect identity? (3)
- What do you tell the children that were "designed" to the parents' specifications?
- What is the focus or goal of nanotech? (2)
- What is "natural?" (2)
- Why are scientists obsessed with reenacting God through technology?
- Is it really necessary to create something to give people longer lives?
- What is wrong with aging? What are we afraid of? (4 + similar = 6)
- Why would a person want to be immortal and stay here forever?
- What is wrong with dying? – Our graduation day! (4)
- What is death?
- Have any religious denominations or sects taken a stance?

- What happens when "Mother Nature" strikes back (e.g., global warming today)? (6)
- What happens when the "machines" of technology get "smarter" than the humans operating/programming them? (4)

† Question Category: Regulations

- Is anyone keeping an eye on what's being made or researched?
- Is any international group developing a set of standards? (4)
- How is the Government involved in nanotechnology?
- What is being done to prevent misuse? (7)
- Who regulates? How?
- What is being done to equip the FDA and others with the means to deal with nanotechnology? (2)
- Who watches the watchers? FDA, EPA, others watch what goes on in private sector. Who watches DARPA, DOJ, DOD, etc? (4 + similar = 11)
- Who regulates the regulators? More checks and balances are needed at citizen level. (5)
- Are people ready for the new technology coming out?
- Who regulates the regulators?

† Question Category: Costs

- Who pays for all of this? (6)
- Will there be tax increases?
- Insurance companies should be brought in now

† Question Category: Choice and Fairness

- Who are the "haves" and the "have nots?"
- What is "fair?" How to achieve fairness? (3)

- Do we have a choice in participating with nanotechnology? (6)

† Question Category: Suspicions

- Is this a foundation for a World Controlled Government? (4)
- Is this a euphemism for something we do not know about nanotechnology?
- Are we being told everything about nanotechnology?
- What known effects are already negatively impacting the environment due to this technology? (4)
- What happens when "clandestine" nanotech black market labs emerge? How do we deal with them? (4)
- Who is behind the National Nanotechnology Initiative (NNI)?

† Miscellaneous Questions and Comments

- Can (human enhancement) processes be reversed?
- Are we changing from "bigger and better" to "smaller and faster?"
- [Will nanotechnology be vulnerable to the] effects of medical [procedures] (e.g., MRIs) and EMP (electromagnetic pulse, which kills solid state electronics)? From nuclear explosion? (3)
- What timeframe do we picture this technology becoming very mainstream?
- Carbon nanotubes in physical applications are as important as medical applications
- Should be emphasis on *cures* over *enhancement*

Our Top Priority Questions & Categories (in order of votes)

5 - 11 votes:

- 1) Who regulates the regulators; who watches the watchers? More checks & balances are needed on a citizen level. (Question category: Regulations)
- 2) What is being done to prevent misuse? (Question category: Regulations)
- 3) Who pays for all of this? (Question category: Costs)
- 4) What is wrong with aging? Why would a person want to be immortal and stay here forever? Is it really necessary to create something to give people longer lives? (Question category: What Does It Mean to be Human?)
- 5) What happens when "Mother Nature" strikes back (e.g., global warming today)? (Question category: What Does It Mean to be Human?)
- 6) Do we have a choice in participating with nanotechnology? (Question category: Choice and Fairness)
- 7) Who stands to benefit the most financially due to these new technologies (in the future)? (Question category: Political and Developmental Scope)

4 votes:

- 8) Is this a foundation for a World Controlled Government? (Question category: Suspicions)
- 9) What known effects are already negatively impacting the environment due to this technology? (Question category: Suspicions)
- 10) What happens when "clandestine" nanotech black market labs emerge? How do we deal with them? (Question category: Suspicions)
- 11) Who is already benefiting the most from this technology? (Question category: Political and Developmental Scope)
- 12) What international nanotechnology groups exist? What are their names? (Question category: Political and Developmental Scope)
- 13) Is there lobbying for nanotechnology? (Question category: Political and Developmental Scope)
- 14) Is any international group developing a set of standards? (Question category: Regulations)

15) What is wrong with dying? – Our graduation day! (Question category: What Does It Mean to be Human)

Comments:

The *category* with the largest number of individual entries was "What Does It Mean to be Human?"

The *specific questions* with the highest number of votes concerned "Regulations."

I gave names to three of our unnamed categories: I called the first "Political and Development Scope", as these questions had to do with the current scope of the technology in terms of its development in the private sector as well as on a national level.

I labeled one small category "Choice and Fairness."

Then we had a large number of remaining "Miscellaneous" questions, but a number of these concerned either "withheld information" or "deliberately misleading information," so I grouped these together and called them "Suspicious."