U.S. Nanotechnology Policy

Bridging the Gaps

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Foresight Institute 1st Conference on Advanced Nanotechnology:
Research, Applications, and Policy
October 24, 2004

It's a Long Way Across
(and a Long Way Down)

Inventors

Inventions

Visionaries

Investors

Markets

Established U. S. NanoScience Community

U. S. Science Policy

- A few pointers:

  - Federal policy is **all** about who gets the money

  - R&D in America = Research, not Development (except C^3I)

  - It's politics (partly partisan, mostly not)

The Present Issue: Incommensurable Terms

We talk around each other

Past each other

Through each other

Just not with each other

Example:
Inventors – Investors

- Key question is "What problem can I solve?"

- Seen by Investors as flaky; not ready for prime time

- Key question is "How much money can I make?"

- Seen by Inventors as greedy; not willing to risk except for a sure thing

Example:
Visionaries — Physical Scientists

- Key question is "What role might technologies play ten, twenty, or more years from now?"

- Seen by physical scientists as purveyors of "hype"

- Key question is "What is concrete and reliably predictable—and won't subject me to criticism?"

- Seen by visionaries as shortsighted

Example:
NanoVisionaries – Established Science Community

"... we need (1) a focused R&D effort on molecular machine systems leading to molecular manufacturing ..."

– Chris Peterson in her talk at the Foresight Institute 1st Conference on Advanced Nanotechnology

"... mechanical nanosystems... cannot exist within the size of few nanometers and bear the complexity that would allow them to replicate mechanically... These are ... very speculative, more like science fiction."

– Interview with Mike Roco conducted by Pamela Bailey, reporter for NanoApex on 2/20/02
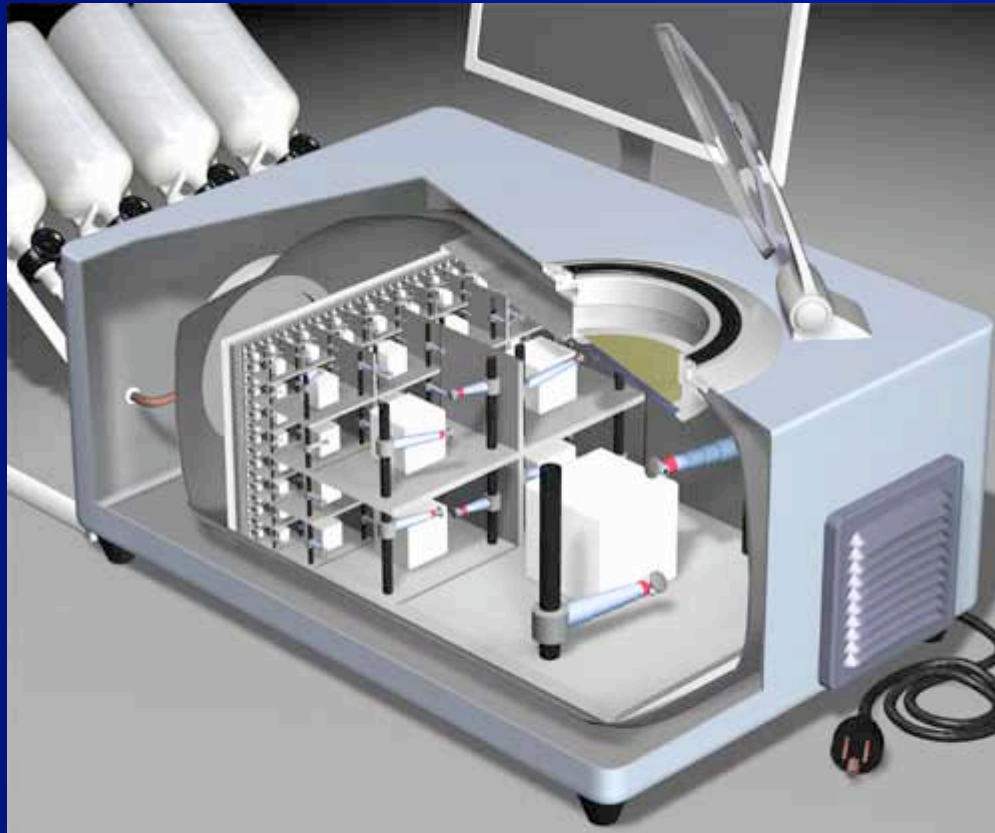
Result? No $ for:

Image by John Burch, Lizard Fire Studios, http://www.lizardfire.com

Proposed desktop-scale molecular manufacturing appliance. Tiny machines join molecules, then larger and larger parts, in a convergent assembly process that makes products such as computers with a billion processors. (Parts shown as white cubes.)

Why?

- The people with the money have been saying for a decade that assemblers were impossible

- They can't change their minds now

- As long as the discussion stays in the same frame, the answer will stay the same

We Need New Words

It might make us crazy, but we have to play the game. It's politics...

How to Frame a Solution

1. Decide on what's really important
2. Find targets that are multidisciplinary (so you need to use English to cut through the jargon)
3. Find opportunities that are realizable in a fundable timeframe (1-3 years)
4. Pick a frame/metaphors that work for you and for the target audience
5. Become a symbolic analyst instead of a power player

Molecular Assembly Techniques: How to fund a feasibility study?

- 1st decide: Is this really the goal?
- Find a frame that allows commensurable terminology
- Find terms that fit the frame
- Find a sponsor with a common worldview (e.g., desire to solve problems vs. desire to make money or solve basic research questions)

"Protecting the Environment"

How to reach the speaker

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