

The Galileo Project: What Worked, What Didn't

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New Energy Times

8th International Workshop on Anomalies in Hydrogen- and Deuterium-
Loaded Metals
Catania, Sicily, Italy
October 16, 2007

Historical Context

BIG QUESTIONS:

1. 17-years later, science or pseudoscience?
2. Were F&P right or wrong?
3. Were the science authorities right or wrong?

CIRCUMSTANCES:

1. Prior sequence of objections: Overcome
2. Current dominant objection: Irreproducibility
3. Scientific atmosphere: hostility, high stakes

The SPAWAR Claims

1. *Simple*
2. *Portable*
3. *Highly repeatable*
4. *Unambiguous*
5. *Permanent*

Challenge to the Claims

- | | |
|-----------------------------|---------------|
| 1. <i>Simple</i> | YES/NO |
| 2. <i>Portable</i> | YES |
| 3. <i>Highly repeatable</i> | YES |
| 4. <i>Unambiguous</i> | NO |
| 5. <i>Permanent</i> | YES |

Project Guidance

1. Harry M. Collins: “Changing Order”
2. Taleyarkhan: How not to attempt replication
3. Fleischmann and Pons 1989: How to hinder replication

A Borrowed Strategy

Software Industry: **Alpha and Beta testers**

- **F&P: Provide poor instructions to the entire world, quickly**
- **Galileo Project: Create detailed protocol, deploy strategically**

The Galileo Project Team

- 8 Teams (2 Alpha, 6 Beta)
- 3 Advisors
- 3 Countries: U.S., India, Netherlands
- 34 People total

- As of this conference, 4 replication teams will have reported to the scientific community

- Journal papers in progress
- Misinformation: “NET to announce results of TGP”
No “Science by Press Release (or Web site)”

Team Member Qualifications

- “Science students from the undergraduate level up”
- Access to the required laboratory equipment

Prerequisite should have been: “Skilled in the Art”

Volunteers & Mixed Agendas

- **Larry Forsley on the volunteers:**
"Most generous gesture in science I have been privy to"
- **Polarized response to initial apparently positive results:**
 - A) Seek better ways to confirm nuclear characteristics
 - B) Seek alternative ways to disconfirm nuclear claim
- **Disconfirmation Attempts**
 - A) Grasping for straws
 - B) Highly speculative explanations
 - C) Did not consider track geometry

Fear, Uncertainty, Doubt

- **Distracting**
- **Time-consuming**
- **Demoralizing**

FEAR: Not an over-dramatization!

One participant was "blacklisted"

- A) Reprimanded for "inappropriate research" by employer
- B) Job and career threatened by possible termination
- C) Denied access to lab equipment
- D) Prohibited from being co-author on accepted paper in peer-reviewed journal

Open Invitation: A Mistake

- **Better to choose people who want it to be a success**
- **People who are “stakeholders”**
- **Track record of demonstrated interest in positive outcome**

Facilitate Group Communication

1. **Development of the Lab Protocol**
2. **Group communication: Internet discussion list**
3. **Tele-science conferences**

Herding Cats



The Galileo Project Lab Protocol

- **Version 1: (PMB's) 2 pages of text, separate photos**
- **Version 2: (TGP team) 35 pages, integrated photos, diagrams, materials and parts list, supplemental videotape**

(Only one team initially failed to follow the lab protocol)

Internet Discussion List

GOOD FOR :

- Questions
- Instructions

BAD FOR RESULTS:

- Poorly-described
- Incomplete presentations
- Poor tracking and threading
- Poor accountability
- Poor comprehension

Telephone Science Conferences

SETUP

- Deadlines for abstracts
- Advance electronic distribution
- Structured session

BENEFITS

- Low cost
- Quick setup
- Real-time discussion
- Wider bandwidth communication
- Historical record
- Level playing field
(Only one team declined to participate)

Materials Issues

New ground - no textbooks - few experts

1. CR-39 designed for air/vacuum
2. All CR-39 not created equal
3. **TASL**: All fogged (Alphas learned first)
4. **Landauer/Fukuvi**: High to moderate clarity

Chemical Attack Issue

Critical assertions:

1. All CR-39 is equal
2. Fogged results at UCB/SRI = SPAWAR
3. Chlorine and oxygen reaction

Shift from “wet” to “dry” experiments

1. Isolated chemistry
2. Blocked 90% of apparent alphas
3. Killed most of the subsequent results
4. Results of most wet experiments still pending, not effectively analyzed.

Communication Issues

1. Delay in sharing the backside track and apparent neutron observation from SPAWAR

**2. Gold cathode stimulates proton recoil effect
Silver cathode kills proton recoil effect
Lab protocol designed to use silver cathode**

**3. Effects are created w-w/o external fields with Au, Ag, Pt
Effects are not created without external field with Ni
This was not known prior to the start of TGP**

Appreciation

- **Galileo Project Team Members**
- **New Energy Institute Sponsors**
- **Skeptics**
- **CMNS Community**
- **Martin Fleischmann and Stanley Pons**

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