Early Experiences with Interdisciplinary Design Studios

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Introduction

- Architectural and fine arts education has long employed the studio paradigm to foster creativity.
- We have created an (interdisciplinary) studio that partners students in the College of Computing Sciences with peers in the School of Architecture.
- This depends on
  - a design project that stimulates mutual interest;
  - an infrastructure that supports (interdisciplinary) work, through either physical proximity of the studios or broadband communication between them.
- We focus on Ubiquitous Social Computing as both a design topic and an enabling technology.

Architects-In-Action

Place = Behavior

Hierarchy

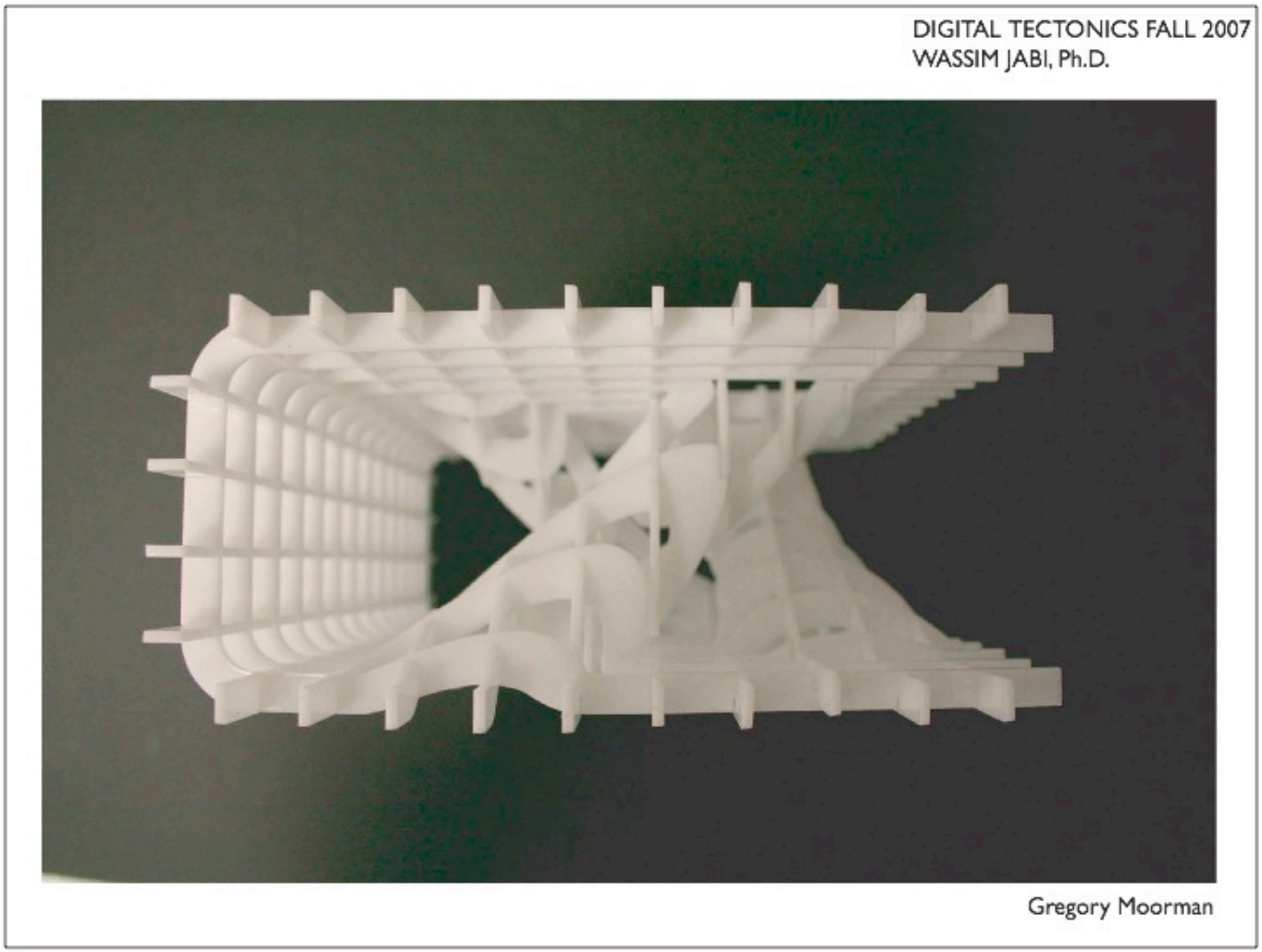
Lone Hero

Artifact

Immersion
Casual Interaction

Gaze

Creativity?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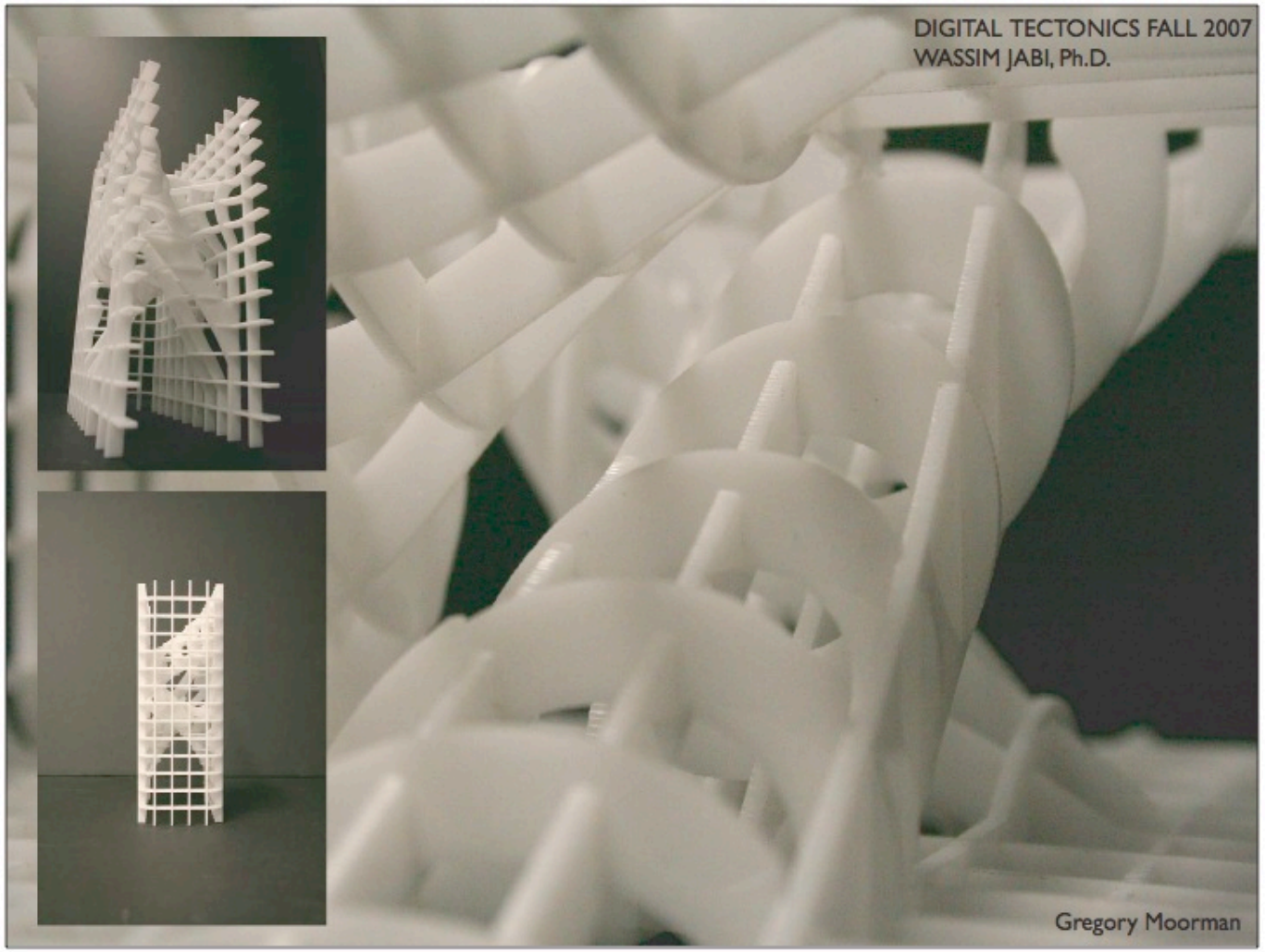
Gregory Moorman

Creativity?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Creativity?

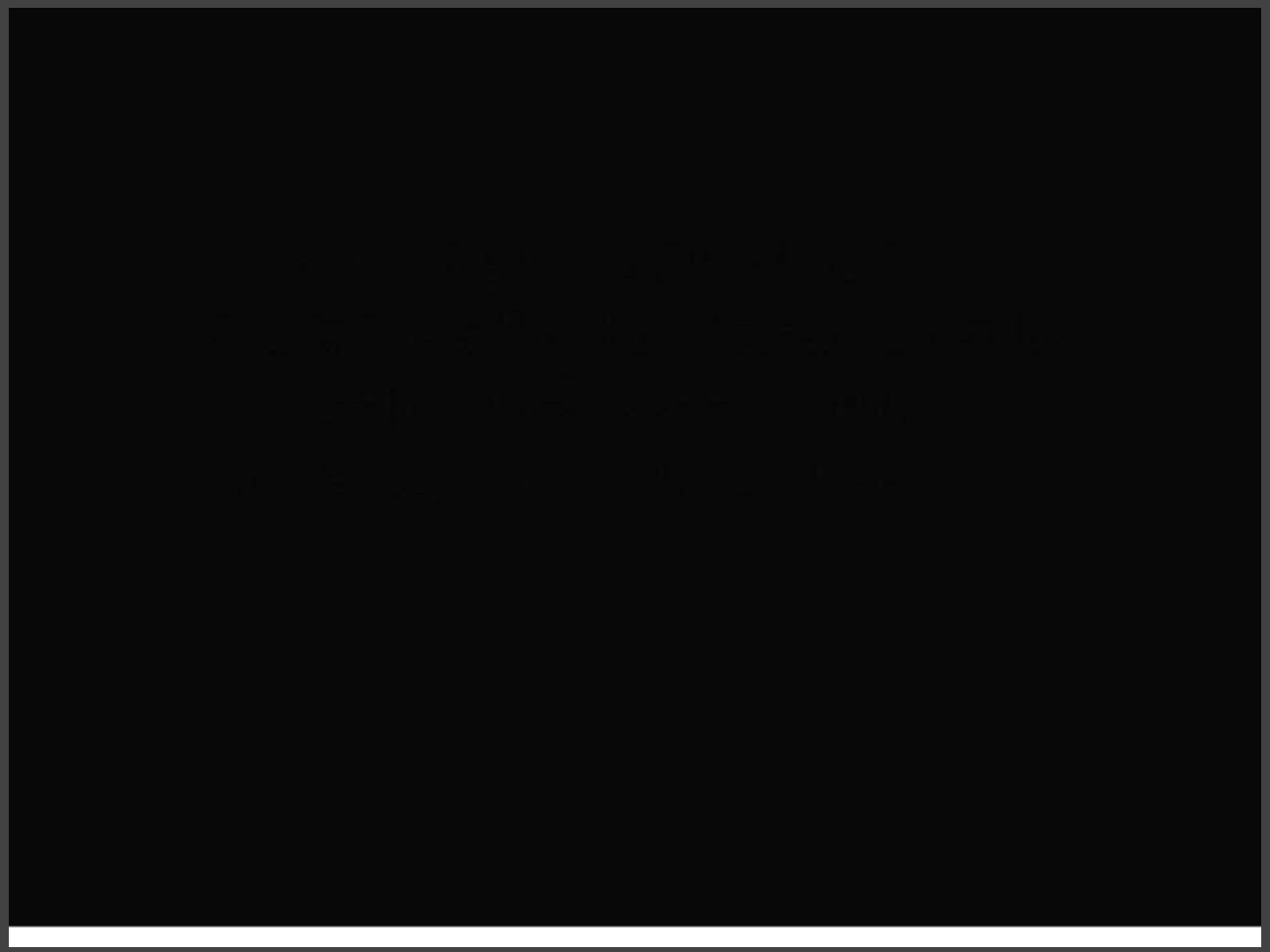
Ubiquitous Social Computing Design Studios

- We chose ubiquitous social computing (USC) as the topic of our studio because ubiquitous technologies blend the digital, physical, and social spaces into a single socio-computing learning space, which can fundamentally improve students' creativity.

(Inter-disciplinary?) Studio

- Computing science students and faculty can learn the studio culture in a very direct way through interactions with architecture students and faculty.
- Take into consideration broader issues such as the relationship of technology to physical context, ergonomics, and human behavior.
- Creativity is stimulated through semester-long interdisciplinary design projects and real-world problem solving in a more interactive environment where they can freely exchange ideas

Example Student Project



Studio Physical Settings

- We chose to have two physically separated studios, one for computing science and one for architecture.

Inter-Studio Communication

- The two studios are interconnected.
- We set up several formal design reviews throughout the semester.
- Students use both synchronous and asynchronous communication tools to maintain a continuous interaction.

Community-Studio Interaction

- Large-screen systems can be used to increase the informal community interactions through any of five basic approaches:
  - community notice boards
  - media-spaces
  - community awareness systems
  - walk-up-and-use personal interactive public surfaces
  - proactive displays

Studio Casual Interactions using Mobile Devices

- Casual interactions help designers solve problems collaboratively.
- Our SmartCampus infrastructure aims to use mobile devices, such as smart phones, to give students serendipitous community interactions with our USC infrastructure, and specifically with the public plasma posters.

Utopia vs. Reality

- Engelbart, Coons, and Sutherland set the research agenda for the next 40 years
- They dealt more with theories than with actual implementations and thus their solutions tended to be **utopian**
- They viewed design as a congruent set of problems that can be addressed with one system and one approach
- For example, Engelbart mistakenly believes that merging different solutions is an easy task and resolving conflicts can occur naturally
- Coons falsely believes that synchronicity and social-awareness are the only needed features in addressing the problems that designers face

Top: Sam dreams of soaring through the clouds. Bottom: Sam struggles for desk space.

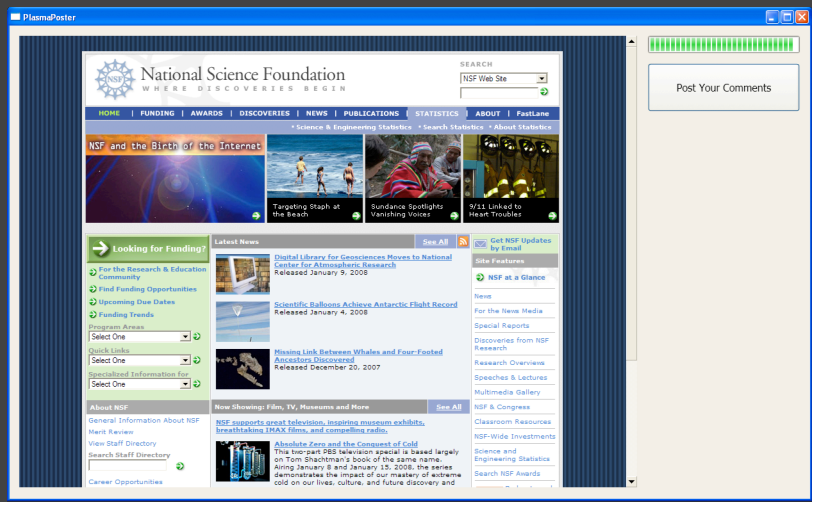
(Brazil © 1985 Embassy International Pictures NV. All rights reserved.)

Challenges

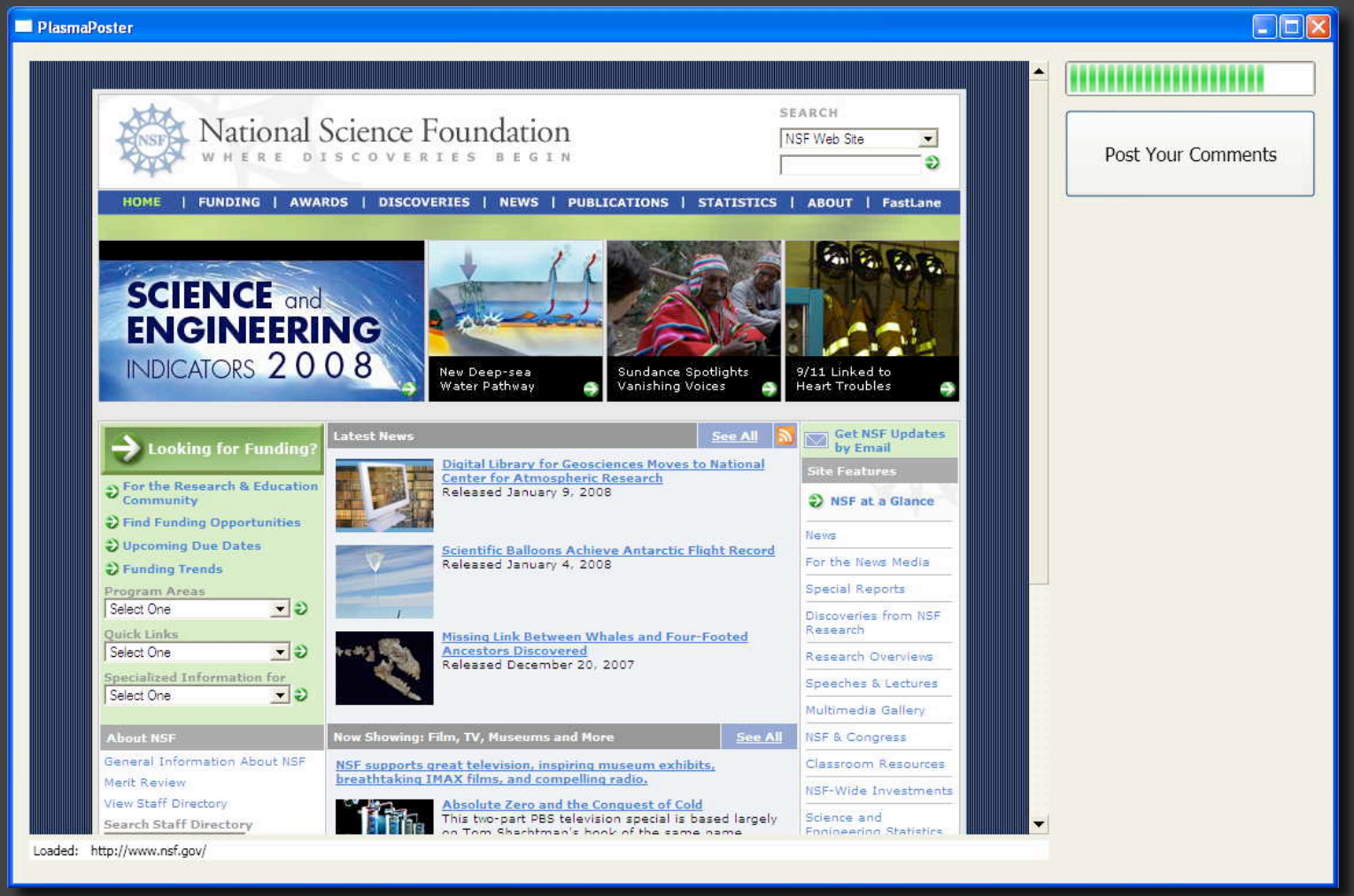
- The notion of solving problems using a design studio setting was not readily accepted or understood by those outside the field of architecture.
- The notion of a design approach to solving problems differed between architecture and computing science.
- Due to the scale and nature of the project and differing accreditation requirements, the two studios could not work on the same project semester-long.

Plasma Poster Network Implementation

- A dialog of ideas, both with peers and with a wider audience, is a critical part of the creative process.
- PlasmaPoster features:
  - freedom of expression
  - interaction
  - automation
- Implementing through HTML and PDF.



Plasma Poster Network Implementation



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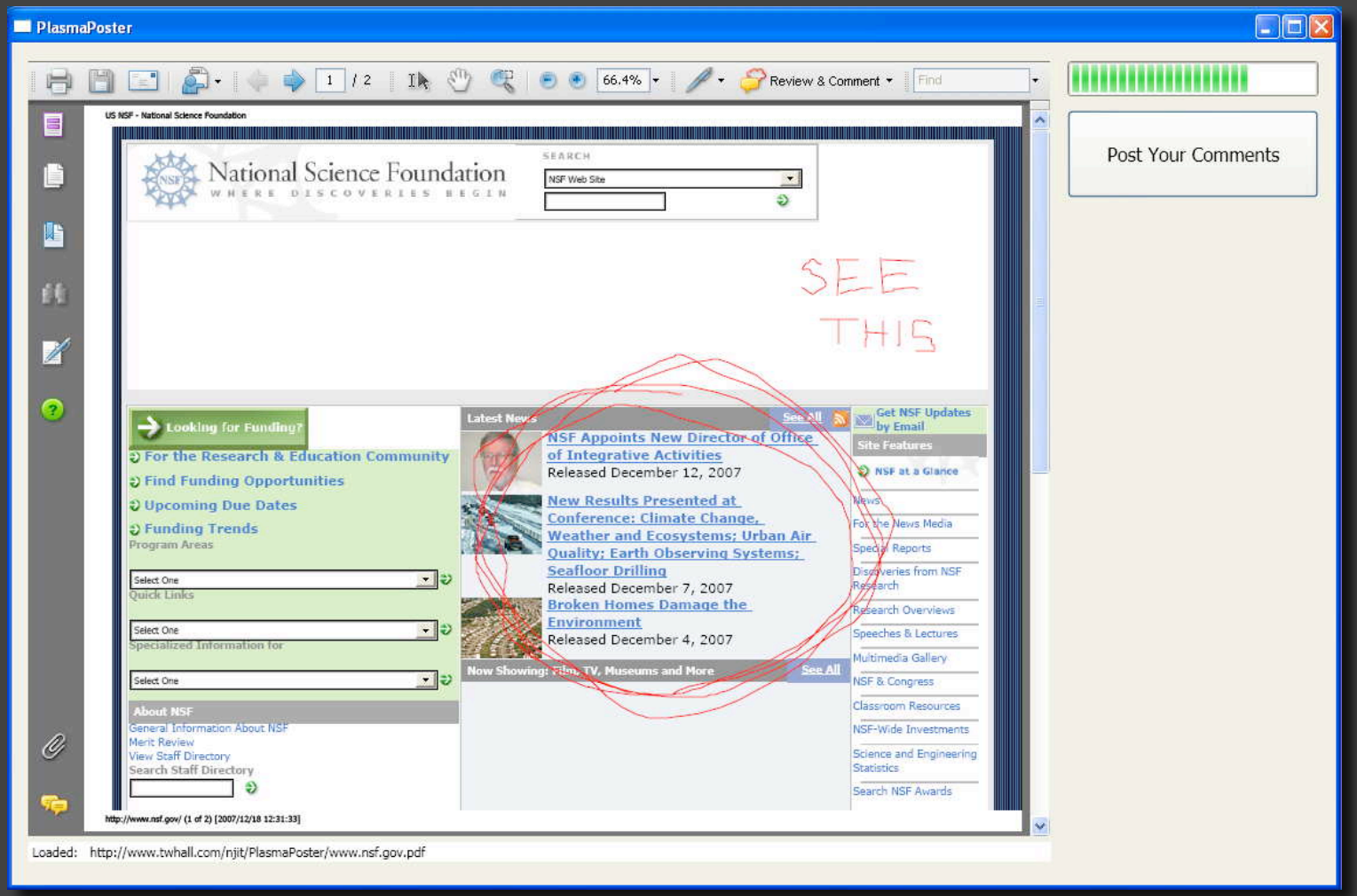

Evaluation

- Collected baseline data on the formal, informal and emergent interactions observed in the studios, both qualitative and quantitative.
- In Spring 2008, we will assess creativity and innovation in students' projects and artifacts, comparing them to artifacts submitted in Spring 2007.
- Students will be asked to rank order the artifacts in terms of innovation, effectiveness, aesthetics and novelty of the submissions.
- Compare these evaluations with those of other Subject Matter Experts (SMEs).
- Challenge students with the same assignments and projects assigned in first studio, with the expectation of improvement.

Conclusions and Future Work

- Challenges and opportunities in transferring the design studio paradigm from architecture to computing science.
- Procedures for assessing and comparing students' creative output.
- Developing supporting technology for ubiquitous social computing.
- Success depends not only on technology and instructor commitment, but also on developing shared understanding and acceptance at the institutional administrative level as well as among students.

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Thank You

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