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The Flow of Physics Knowledge From the Laboratory to Members of the Public

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Transfer of Physics Knowledge

- ∪ Definition of Knowledge & Knowledge Transfer
- ∪ The Source-Recipient model
- ∪ Knowledge transfer process
- ∪ Evolution of knowledge models
- ∪ Practical Tools of Knowledge from the laboratory to members of the public

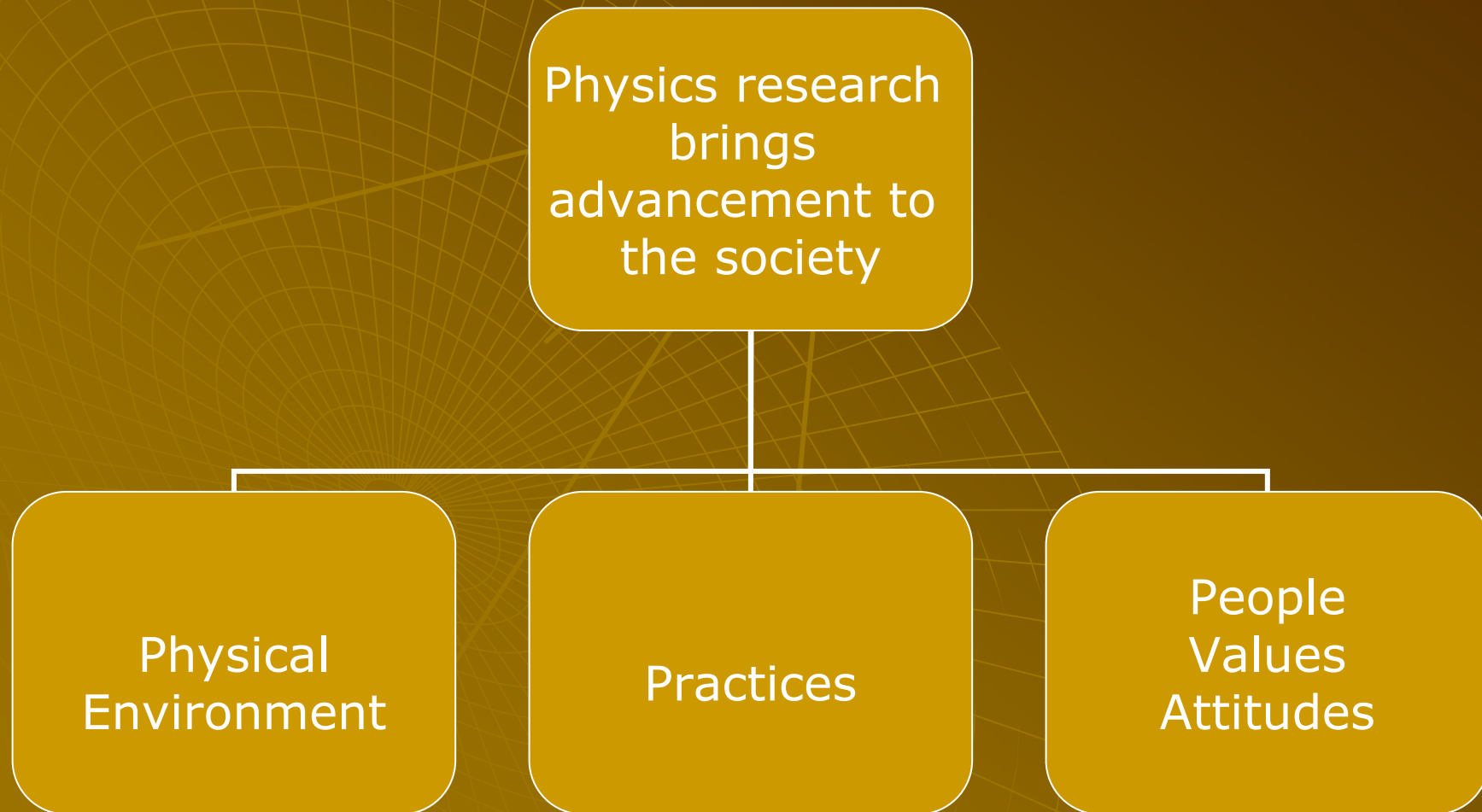
Physics Knowledge Transfer Research Objectives

- ∪ To increase understanding of the theory and practice of PHY KT;
- ∪ To develop and evaluate new PHY KT tools and strategies building on the strength of existing knowledge models;
- ∪ To integrate an understanding of PHY KT principles and practices into the training and continuing education of physics researchers.

Introduction

Many recent studies have documented the decline in scientific interest and understanding among people of all ages. Most students and the public as a whole never experience the excitement that we physicists feel about our subject.

Purpose of Physics Knowledge Generation, Adoption and Utilization



Definition: Knowledge

“Knowledge can be defined as an organized representation of reality held to be true either based on experimentation, experience, practice, science or beliefs.”

Definition: Knowledge Transfer

“Knowledge transfer is a process that includes the passing on of knowledge, information, research findings, and/or innovations, and the adopting and/or adapting and utilizing of such knowledge, research findings, and/or innovations such as policy, programmatic, technological or other kinds of innovations.”

Types of Knowledge Produced by Physicists.

- ⌚ Knowledge normally presented in scientific papers or at scientific meetings.
- ⌚ Knowledge that can be commercialized (based on the ownership of intellectual property).

Types of Knowledge Produced by Physicists Contd.

- ∪ Tacit knowledge (also called know-how) concerned with the methodology used in scientific processes or experiments.
- ∪ Pieces of scientific knowledge, or observations of a scientific nature, that by themselves are not enough to constitute a scientific paper, but could be key pieces of information for other scientists or users of science.

Traditional Linear Model of Knowledge Transfer



Knowledge Transfer Process



Physics Knowledge Transfer Process Challenges

- ∪ Maintenance of knowledge integrity
- ∪ The inability to recognize & articulate "compiled" or highly intuitive competencies - tacit knowledge idea (Nonaka & Takeuchi 1995)
- ∪ Generational differences

Physics Knowledge Transfer Process Challenges Contd.

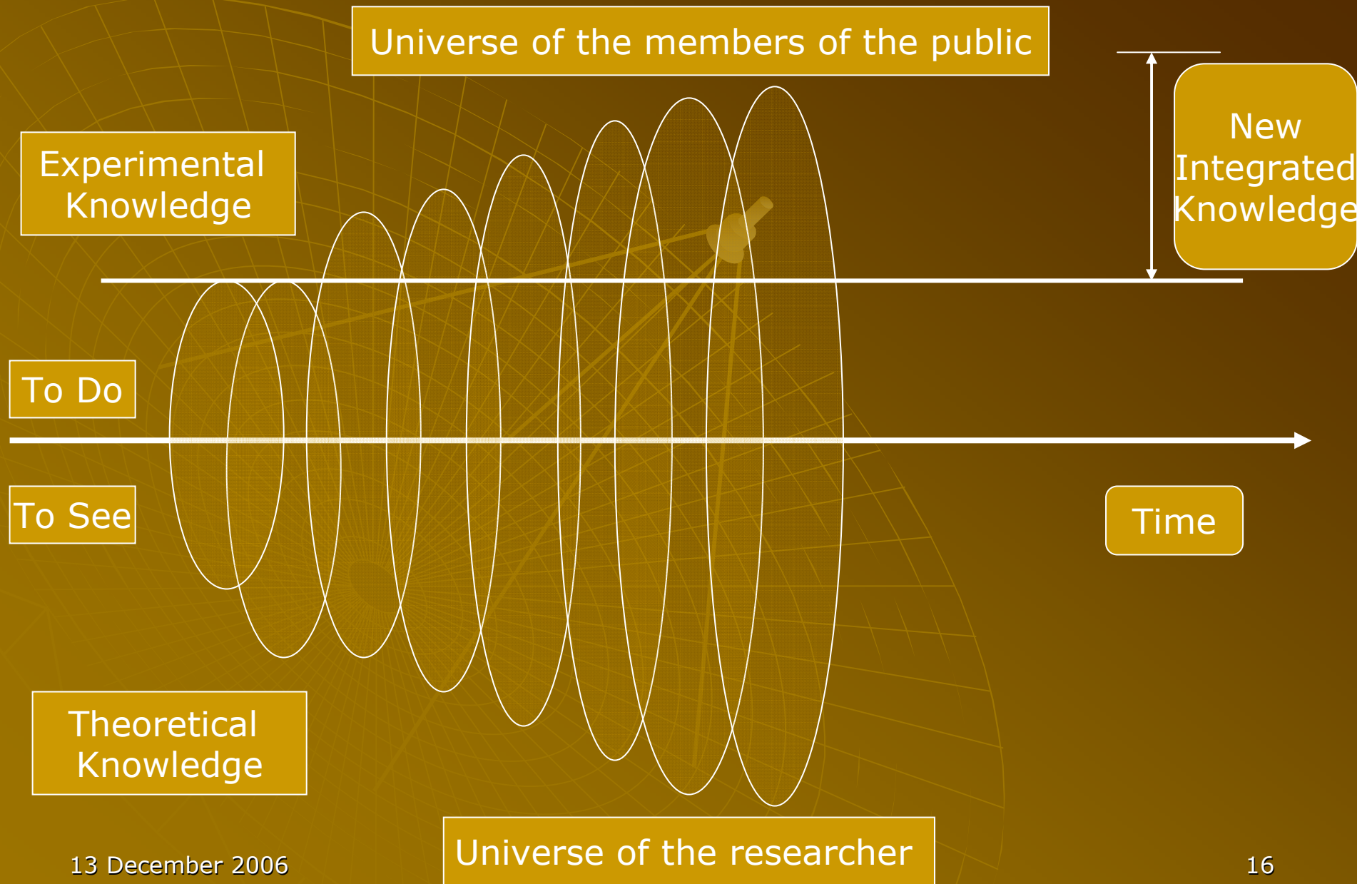
- Transfer legitimate knowledge according to the values, practices and beliefs of the members of the public

Physics Knowledge Transfer Process Challenges Contd.

- u Motivational issues
- u Language
- u Misconceptions
- u Previous exposure or experience with something.

In the matter of physics, the first lessons should contain nothing but what is experimental and interesting to see. A pretty experiment is in itself often more valuable than twenty formulae extracted from our minds. -Albert Einstein

Spiral Model



Practical Transfer Tools

- u Organizing Science Workshops
- u Participation of media in conferences
- u Science shows on radio & TV
- u Joining a speakers bureau
- u Subscription to electronic group
- u Writing a Letter to the Editor

Practical Transfer Tools Contd.

- ∪ Involving Students as Research Assistants.
- ∪ Speaking to Students, Youth and Interest Other Groups
- ∪ Notifying the University Publications Department about Research Works
- ∪ Participate in a Media Guide
- ∪ Organize a Public Lecture
- ∪ Host a Research Open House

Conclusion

- ∪ Physics knowledge transfer process is often incomplete.
- ∪ Physics Knowledge transfer efforts need to encompass a full range of strategies and take into consideration a wide variety of factors.
- ∪ Improving the knowledge transfer process ideally includes individuals who understand the process and who are able to facilitate and orchestrate the process so that the potential of the process can be as fully realized as possible.



Thank you for listening