



# The Science Integration Institute Newsletter

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## ***Mission Statement***

The mission of the Science Integration Institute is to conduct and support research and educational activities which use the process of science, and the insights gained about the universe by modern science, as tools to aid individuals in constructing realistic and meaningful views of their role in the universe.

## ***Welcome!***

Welcome to the second issue of the SII Newsletter. In this issue, you'll read about several of the activities that have taken place over the last six months to refine our goals and to increase our public outreach. We have held strategic planning discussions and stimulating dialogues on the e-mail discussion list clarifying what science integration is and what needs our organization addresses. The results of these discussions are reflected in the "Science Integration Central" web page which is now under construction (described in "At the Institute") and in our new brochure. To increase our interaction with the public, we have started a public lecture series, given a talk at a local conference of the American Association of Physics Teachers, and added interactive features to our web site, including a self-assessment and reflection activity, a survey about the the kind of universe we would like to live in, and science-related holiday cards available for downloading.

Many more activities are planned for the next six months. To help implement these new programs, we recently hired Jacob Wilson as our new program assistant.

A statement from Jacob describing his interests in science integration is included in "Meet the Associates."

As always, we thank you for your encouragement and support and welcome your input!

## ***Meet the Associates***

### **Jacob Wilson Program Assistant**

My science education background has been for the most part experiential, independent and community based, in nature and ecology studies. I've studied and explored the natural world around me for the sole stated purpose of finding out what role I play in the bigger picture, by learning from direct experience. I believe this is the most natural, easiest, most effective, and most fun way to learn: by observing, asking questions, and seeking the answers. Hey, what do you know? That sounds a lot like science, the same process applied to direct, unmanipulated experience. I believe "real world" experience, founded in constant analytical questioning of your environment, is essential. Science needs to be taught and used like this more. I want to end the distinction between what you learn about science and what you experience in life. I think they need to compromise with each other so that science will become broader, deeper, and more open while life will be lived in a state of deeper awareness and questioning. Nature moves like a river, always instantly responsive and adaptable to the changes in the shape of its watershed. Scientific

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thinking is essential for us to be responsive and adaptable, for us to remain on course and out of conflict with reality. I believe happiness and meaning in life will come from that state of being. To not live in the reality of nature described by science is to live as an alien, in your own fictional interpretation of reality. And we all know what it's like to be lonely.

### *SII Lecture Series*

We're starting a public lecture series on science integration topics, beginning with "Was There a Big Bang?" (an overview of modern cosmology), on March 31 at 7 pm in room 287 Cramer Hall at Portland State University. An Adobe Acrobat version of the flyer describing the first lecture is on the home page of our web site, [www.scienceintegration.org](http://www.scienceintegration.org). Lecture notes from the talk will be posted on the web site after March 31st for those who are unable to attend the lecture.

Future topics we have planned include: "Is There Meaning in Technology?," "Using Science to Assess Everyday Risks," and "Should We Worry About Asteroid Impacts?" Let us know if you have a topic you'd like to see on the schedule, or if you'd like to give a lecture.

### *In the News*

#### **Transferring the Information Content of Our Brains**

In considering what our knowledge of the universe tells us about our place in it, certainly an understanding of consciousness, and how the processes of the universe were able to produce consciousness, plays a central role. Discussions about the nature of consciousness have been going on for a long time. But the dramatic advances in computational power that we are in the midst of will soon confront us with these questions in a much more pressing and concrete way.

For example, we all have a sense that our identities are somehow more than just the sum total of all the information stored in our brains (our memories and experiences). But it's hard to articulate exactly what we mean by that. And as long as it is impractical to actually separate the "data content" of someone's brain from that unique, physical person, it's not clear how we

would figure out what we mean by it.

Now it seems likely that within the next 20 years, the number of connections in a computer will be able to match the number in a human brain. This means that it might be possible to actually transfer the complete information content of a person's brain and "map" it onto a computer. Of course, we recognize that this wouldn't actually "be" that person. It would be something like what goes on when we transfer the information content of an image. For example, a 50 by 50 pixel image on a (black and white) computer screen is made up of  $50 \times 50 = 2,500$  dots, each of which can either be dark or lit up. So we could store the information needed to reproduce the picture as a string of 2500 digits, using a "0" to mean that spot should be dark, and "1" to mean that spot is bright. Obviously the string of 0s and 1s is not exactly the same thing as the picture. But there is a very real sense in which that string of numbers contains all the information that is in the actual picture (as evidenced by the fact that pictures can be sent as a string of 0s and 1s through the internet or from a satellite or whatever). To say that a computer will have as many connections as the human brain is analogous to saying we have a computer that can store the 2500 digits necessary to encode the information content of the picture.

Whether or not we ever actually do such a mapping of a person's brain onto a computer, thinking of it as a model is helpful in focusing our ideas about consciousness and identity.

A more in-depth look at the intriguing possibilities in this area is available in "Live Forever: Uploading the Human Brain" By Raymond Kurzweil  
<http://www.psychologytoday.com/features3.html>

### *At the Institute*

#### **SII Web Site**

If you haven't visited our web site recently, you're missing out! Recent additions to the site include a set of self-assessment questions, a survey about what kind of universe we'd like to live in, "Science Integration Central", and a link to science-related holiday cards:

The self-assessment questions are a way for you to develop a dialog with yourself (and with us, if you wish) about the questions that matter most to you. It will help you become more aware of your connections to the rest of the universe, and of which insights from science might be most valuable in helping to answer your questions. If you write your answers in an e-mail message and send it to us, we'll reply with individualized suggestions for topics and concepts you might want to investigate, which might help you pursue your questions.

Science has acquired a reputation for dehumanizing the world, and for leaving us stranded and alienated in a universe for which our existence is irrelevant. In short, it seems to describe a universe which for many people is not really the one in which they would like to live. The SII staff has designed a survey to articulate more clearly and more deeply what it is that we want in the universe, particularly focusing on those properties we may think science denies. This will put us in a better position to consider what kind of worldview might offer the essential features we feel are important, while remaining within the constraints imposed by insights provided by science, and taking advantage of the guidance science can provide. The survey can be accessed from the SII home page. Please fill it out to help us with this important project.

The new "Science Integration Central" page contains a sketch of what will eventually become the core focus of SII's efforts: A resource center and clearinghouse of accurate and reliable scientific information, woven together within a context which organizes, arranges, and interprets the information to serve the needs of people looking to science as part of their search for meaning. This section of our web site will contain a set of resources developed by SII staff and associates to help provide guidance and information for your efforts to incorporate the insights and process of science into your worldview-building process. It is (and will always be!) a work in progress. In the first stage of its development, we'll outline a structure of the kinds of information we think will be helpful and important in this process. We'll continue filling in the outline and adding links to tutorials and other resources, to provide more complete tools, as our resources permit. If you have

suggestions for other topics that should be included, or would like to help develop some of the materials in the outline, please contact us.

The SII staff is developing greeting cards to help spread awareness of the wonderful universe we live in. The cards can be downloaded for free at [www.scienceintegration.org/cards.htm](http://www.scienceintegration.org/cards.htm). Suggestions for ideas for cards and help with the artwork are welcome!

We're building up the site week by week. Please visit us regularly at <http://www.scienceintegration.org>, and let us know what you think.

### **Presentation at the American Association of Physics Teachers Oregon Meeting**

Todd Duncan and Claudine Kavanagh recently gave a talk on behalf of SII at a conference sponsored by the Oregon section of the American Association of Physics Teachers. Their talk was entitled "Teaching Physics from an Attitude Change Perspective." They described an approach to teaching science that focused less on raw information transfer and more on helping students build connections between scientific concepts and their own experiences and beliefs. Slides from the talk can be downloaded in Adobe Acrobat format at [www.scienceintegration.org/AAPT.PDF](http://www.scienceintegration.org/AAPT.PDF).

### **Publicity Statement and Brochure**

We've developed a publicity statement for SII that describes its mission, target audience, activities, etc. The statement can be accessed by from our home page, under "Regular Features." Please e-mail it to your friends and colleagues to help spread the news about SII! We have also developed a brochure describing SII's mission and activities. If you'd like copies of the brochure to distribute, please contact Todd Duncan ([duncan@scienceintegration.org](mailto:duncan@scienceintegration.org)).

### **E-mail Discussion List**

Interested in discussing issues related to science integration? Join the e-mail discussion list! Topics in recent discussions include science literacy, approaches to teaching science, the place of science in our culture, the key insights uncovered in different areas of science, and

recent science-related news stories. Those on the discussion list also receive e-mail with the quote-of-the-week and SII announcements. For information on how to join the e-mail discussion list, how to post messages to it, and how to read past postings, please visit [www.scienceintegration.org/list.htm](http://www.scienceintegration.org/list.htm).

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