

The COPUS Clarion

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The Coalition on the Public Understanding of Science (COPUS) is a grassroots effort linking universities, scientific societies, science centers and museums, advocacy groups, media, educators, government agencies, businesses, and industry in a peer network having as its goal a greater public understanding of the nature of science and its value to society.

MAKING SCIENCE ACCESSIBLE FOR EVERYONE!

GUEST ARTICLE WRITTEN BY PAUL SHIN, ALCHEMY@CSUN.EDU

BECOMING A SCIENTIST

We are all innately scientists! The very air we take in for our first breaths of life provide information about our environment; the scent of mother is immediately acquired and we lock onto it like a homing beacon. We absorb information like it was manna from Heaven, a sustenance that we thrive on to survive. We learn from it, recognize patterns from it and make predictions from it so we can do well and be more comfortable. So, we are all scientists from the day we are born.

WHAT IS SCIENCE?

Science comes from the Latin “scientia” for knowledge.¹ There are several fields of science: the natural, formal, social and applied sciences² and many branches thereof.

WHAT KIND OF SCIENTIST ARE YOU?

We all have a tendency to gravitate toward a particular science or a few. “Nature versus nurture” determines how we go about determining whether we are theorists or application driven or a hybrid of these. The practice of being a scientist can have many façades. I’ve heard said that, “Scientists make good cooks.”³ Someone can be so good at doing something that they have it, “down to a science.”⁴ We learn from early on that the scientific method is how we gain further knowledge of a subject. We develop an interest in learning about something and form an idea of how to take advantage of it. Then, we test and test and test. From the conclusions we derive, we can determine the next appropriate action. Whether done by a writer, a painter, a musician or a scientist, we all do the same actions to improve what we do. Professionally and domestically, we use the scientific method pervasively and even unintentionally; we humans do this instinctively.

MISCONCEPTIONS

On occasion, though, we can develop holes in our understanding of the world around us. There is simply too much information, too much knowledge for us to grasp, to understand or to know. Sir Francis Bacon coined the phrase, “Knowledge is power,” which I disagree with strongly on several points, but the most important is that knowledge is just information - left

unto itself, it’s useless. It’s the use of knowledge where the true “power” lies! Martha Stewart was not incarcerated for knowing about the imminent ImClone stock failure, but for using this information for her own benefit. It is said that, “Nature abhors a vacuum.”⁵ Where or when we lack an explanation that makes sense for the many things we can’t possibly understand, we look to the “experts” to give us a clue, but who can we really trust?

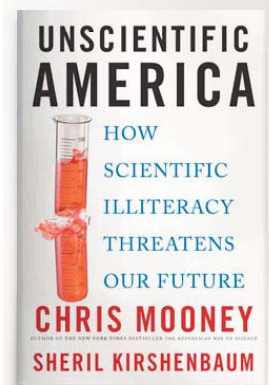
THE DOUBLE-EDGED SWORD OF TECHNOLOGY

We depend on so much technology these days - technology we didn’t have just a few short years ago. Can we do without the cell phone, GPS, Wikipedia or even Facebook - to name a few indispensable things that are now ubiquitous in our daily lives? But, do we know how everyone of these things works? How much do we complain when something goes wrong because we lack the practical knowledge of how they work? When it comes to our health, remedies abound with pseudoscientific products!⁶ These exist because of that thirst for understanding, that knowledge we gathered as infants to survive, which now goes unfulfilled because we simply cannot know everything we need to know to keep up with the pace of technology. So, we turn to the “experts”- those with trusted titles such as “doctor” and the like of the intellectual elite!

SCIENTIFIC (IL)LITERACY

The song “She blinded me with science”⁷ symbolizes the popularity of the concept of compensating for a lack of substance with an overabundance of “technobabble.”⁸ This exemplifies something I learned in college, “If you can’t dazzle them with your brilliance, then baffle them with your bull!”⁹ The movie, “What the Bleep Do We Know”¹⁰ is a good example of this phenomenon where the word “quantum” is bandied about with relation to touchy-feely concepts by a lot of scientist-people accompanied by strong visual effects to wow the viewer into believing something I have yet to figure out exactly. Such scientific jargon “hand-waving” is commonly used to sell products that have no real value - or at least not with respect to what is being claimed that the product can do.¹¹ Well, what can be done to solve this social and cultural problem?

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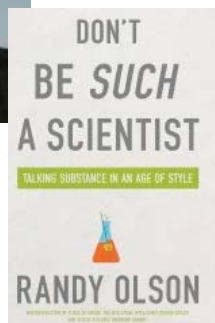


Chris Mooney and Sheril Kirshenbaum suggest that “making science our common culture” can help to ameliorate this problem. By making the public own up to its responsibility of being literate in science, the great chasm that separates science and society can be spanned and connected. The public image of science and

scientists is stereotypical and harmful to all. Some scientists have tried to bridge this gap by taking advantage of new social networking tools like blogging. While successful to a point, more needs to be done on both sides of this equilibrium equation to restore this nation’s status as a world leader in science and technology!

DON’T BE SUCH A SCIENTIST!¹³

Randy Olson, a biologist turned Hollywood insider, opines that we scientists are indeed part of the problem!

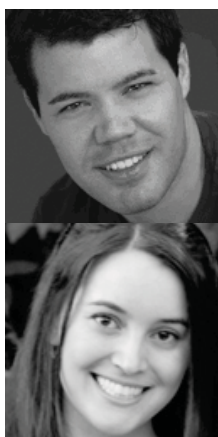


Yes, we are in that our very actions sometimes distances ourselves from the rest of society. While “geekiness” is becoming more acceptable,¹⁴ we scientists can be more socially acceptable. That is, we can present science in a more socially “digestible” form. Notable scientists like Carl Sagan and Jacques Cousteau made science appealing, but not condescending. Science educators like Bill Nye¹⁵ and James Burke¹⁶ reached out to children and adults, respectively. One of the several ways scientists can reach out to society, according to Olson, is to go for “Sex Appeal.”¹⁷ Read what Olson means in his book.

Science Cheerleader



Darlene Cavalier, aka “Science Cheerleader”¹⁸ is providing both substance and style via her blog. She is just one person who has recognized the role citizens can play in becoming science literate. To improve science literacy and policy in this country, Darlene combines “sex appeal” (being a former professional cheerleader helps), educational credibility,¹⁹ and her deep-seeded passion to reach both the



common citizen and the highest levels of government. From her “citizen science” activities that she promotes to her lobbying to reopen the Congressional OTA (Office of Technological Assessment), she has been unstoppable in her efforts!

PUBLIC SCIENCE

There are many efforts now to make science more publicly accessible. Along with Cavalier’s grass roots effort, are events like Science Cafés,²⁰ where brief presentations by scientists to the public are followed by “question and answer” discussions to increase and even catalyze the interaction between scientists with the public. We scientists need to make an effort to conduct more outreach and become active in making science more appealing to students of all ages! We citizens need to take ownership of our science and technology so we can make important decisions more wisely and know whom we can trust concerning topics we can’t always know about. The combined contributions from both sides of this issue can only lead to the scientific literacy that once made us the most technologically advanced country on this planet. So, I ask you this, “Got science?”

Paul Shin - Chemical Instrumentation Manager, Department of Chemistry and Biochemistry at California State University - contributed this article. The views and opinions expressed in this article are those of the author.

¹ www.etymonline.com/index.php?term=science

² Wikipedia accessed on 10/26/09.

³ Are scientists generally good cooks? network.nature.com/people/UCC92C808/blog/2009/02/13/are-scientists-generally-good-cooks accessed on 10/26/09.

⁴ idioms.thefreedictionary.com/science accessed on 10/26/09.

⁵ www.usingenglish.com/reference/idioms/nature+abhors+a+vacuum.html accessed on 10/26/09.

⁶ For example, see Dr. Stephen Lower’s web site on “H2O dot con: Water related pseudoscience fantasy and quackery” at www.chem1.com/CQ/.

⁷ Thomas Dolby (1982): en.wikipedia.org/wiki/She_Blinded_Me_with_Science accessed on 10/26/09.

⁸ Incomprehensible technical jargon: www.askoxford.com/concise_oed/technobabble?view=uk accessed on 10/26/09. One of my favorite examples is of “subatomic bacterium” from Star Trek (www.treknation.com/reviews/tng/a_matter_of_honor.html).

⁹ W. C. Fields (www.brainyquote.com/quotes/quotes/w/wcfields108794.html) accessed on 10/26/09.

¹⁰ www.whatthebleep.com.

¹¹ A “cure” is never mentioned as this is prohibited by law, though this apparently doesn’t stop them from just about doing so!

¹² Money, Chris and Kirshenbaum, Sheril. *Unscientific America: How scientific illiteracy threatens our future*. New York, Basic Books, 2009.

¹³ See Randy Olson’s web site www.dontbesuchascientist.com or read his book of the same title.

¹⁴ See The Big Bang Theory at the-big-bang-theory.com.

¹⁵ Of “Bill Nye the Science Guy” TV show fame: <http://www.billnye.com>.

¹⁶ Science historian featured on the TV series Connections: [en.wikipedia.org/wiki/Connections_\(TV_series\)](http://en.wikipedia.org/wiki/Connections_(TV_series)).

¹⁷ See Figure 1-1, page 19 in *Don’t be Such a Scientist*. Olson, Randy. “Don’t be such a scientist: talking about substance in an age of style”. Washington: Island Press, 2009. Thanks Governor!

¹⁸ See her blog at <http://www.sciencecheerleader.com>.

¹⁹ Darlene has earned a Master’s Degree in Science Policy from University of Pennsylvania.

²⁰ <http://www.sciencecafes.org>

Questions? Comments? Ideas? Contact admin@copusproject.org.

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