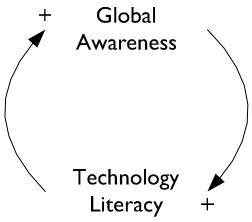
James Drogan
203-829-3172 • jmsdrgn@mindspring.com • jmsdrgn.squarespace.com

The Intersection of Global Awareness and Technology Literacy

Introduction

I have from time to time become involved in the assessment of undergraduate and graduate courses of instruction. Recently I was asked to assess two graduate courses for the students' grasp of issues related to global awareness and technology literacy. While these were at the same institution and at the graduate level, they were two independent efforts.

However, I am left wondering about the relationship between these two issues.



Is the loop implied in the relationship as depicted to the left reinforcing or balancing?[1]

If it is a reinforcing loop, does it suggest a growing capability and capacity for understanding both issues? If so, what becomes of this growing capability and capacity? That is, does it result in other change? If so, what kind and what is the likely impact(s)?

What, if anything, limits this growing capacity and capability?

This seems to me to be an interesting relationship to examine on two counts.

First, globalization has been, is, and will be with us. I've little doubt of that. Its impact on the nature of life as we understand it oscillates, but in general, my sense is that by just about any measure, this impact is, in an absolute sense, increasing. That is, my hypothesis is there is no, in an economic sense, reversion to the mean.

By globalization I mean[2]

- The free, fast, reliable worldwide exchange of items of value
  - Goods and services
  - Money
  - Information, ideas, and news
  - Culture

There a number of measures that can depict the rise and fall of globalization. For instance, global trade flows, immigration and emigration, students studying abroad, cross-licensing of intellectual property between countries, trade agreements, and foreign direct investment comes most immediately to mind.

Second, technology, in all its forms, is increasingly ubiquitous. By technology I mean[3]

- The tools, materials, techniques, and systems that help people meet and fulfill their needs
  - Computers
  - Backhoes
  - Nanomachines
  - Programming
  - Pencils
  - etc.

There are likewise a number of measurements that comes to mind for indicating the rise of technology. For example, telephones (in all their forms) per capita, manufacturing

[1] These two phrases are borrowed from system dynamics.

[2] Drogan, James. "A Small View of a Possible World". 2004. March 15, 2007. http://jmsdrgn.squarespace.com/storage/A%20Small%20View%20of%20a%20Possible%20World.pdf.

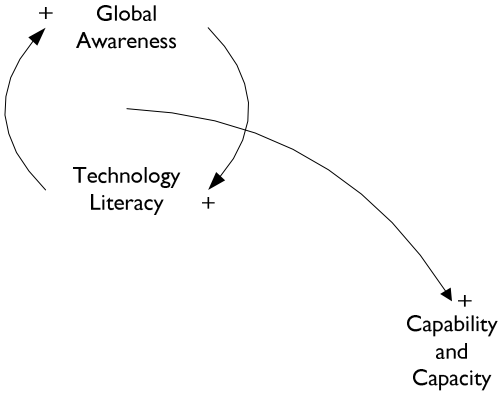
[3] Ibid.

output, bandwidth, patents issued, and students who graduate with degrees in the "hard sciences" occur to me.

I would also venture a hypothesis that the continuing rise of globalization is due, in large part, to the spread of inexpensive, highly functional technology in the hands of increasingly educated, curious, creative people.

A provisional conclusion, therefore, is that the loop suggested above is indeed a reinforcing loop. It is on this basis I will proceed.

Growing Capability and Capacity



Spinning out of this reinforcing loop is a growing capability and capacity to make sense of the world.

Being an optimistic person I translate this improved sense-making into a positive outcome. This may sound, on December 31, 2008, quite presumptuous of me.[4]

However, by positive I mean that the overall quality of life, for example, is generally improving.

Here is a chart depicting the contentment life on a regional basis.[5]

Rising Contentment
(Regional Medians)

*High quality of life**	2002 %	2007 %	*change*
U.S.	65	65	*0*
West Europe	53	53	*0*
East Europe	23	34	*+11*
Latin America	44	59	*+15*
Asia	29	34	*+5*
Africa	18	21	*+3*
Satisfied with family income			
U.S.	74	76	*+2*
West Europe	69	65	*-4*
East Europe	28	39	*+11*
Latin America	46	62	*+16*
Asia	51	47	*-4*
Africa	35	41	*+6*
Satisfied with state of nation			
U.S.	41	25	*-16*
West Europe	32	26	*-6*
East Europe	10	20	*+10*
Latin America	7	34	*+27*
Asia	14	39	*+25*
Africa	28	29	*+1*

Regional medians shown based on nations with 2002 trends.

* Percent rating their lives seven or higher on a scale from 0-10.

Now correlation is not cause, but the Pew information at the left is encouraging.

This suggests, of course, another interesting avenue of investigation; the state of the world and the manner in which it has changed over time. The Pew Research Center, The World Bank, The United Nations, and The Economist are organizations that come to mind that report on this subject from time to time.

I have previously stated, mostly in private writing, that there is a "stack" of essential capabilities required to enable a "good" world.

International Relationships
Security
Economy
Health
Education

My thinking on this is represented by the structure to the immediate left.

My sense is, that on a global basis, progress is being made at the lower two levels while the world seems to be in retrograde motion on the top three.

The outcome of this growing capability and capacity is not all favorable.

Technology is amoral and its users have different concepts of morality. Technology has not yet risen to the point where, as Ray Kurzweil has put it, "Machines claim to be conscious. These claims are largely accepted."[6]

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[4] The top headlines of this day concern renewed violence in the Gaza Strip and surrounding territory of Israel, the continuing global economic crisis, the tense relationships between nation-states throughout the world, and an increase in bank robberies.

[5] Pew Research Center, Global Attitudes Project, "A Rising Tide Lifts Mood in the Developing World," http://pewresearch.org/pubs/549/global-opinion-trends-2007 [December 31, 2008].

[6] Kurzweil, Ray. The Age of Spiritual Machines: When Computers Exceed Human Intelligence. Penguin Books, 2000.

Indeed, authorities have recognized that there that an outcome from this growing capability and capacity is a call for change in the status quo.

> *"Now, pressured by Russia, China, India and Saudi Arabia, the U.S. company that assigns Internet addresses is working on ways for countries to use characters from their home languages. The familiar .org, .com and country codes in Web addresses will be replaced with their equivalents in Chinese, Hindi and many other languages. While that should help locals navigate the Web, it would also put many sites behind curtains to users from abroad. That would spell the end of the days when anyone with a keyboard that produces Latin letters can see sites in any land -- essentially taking the "world wide" out of the World Wide Web."*[7]

And those offended by the actions of authorities have used the capability and capacity to inveigh against the authorities

> ***'Electronic civil disobedience**, also known as **ECD** or **cyber civil disobedience**, can refer to any type of civil disobedience in which the participants use information technology to carry out their actions. Electronic civil disobedience often involves the computers and/or the Internet and may also be known as hacktivism. The term "electronic civil disobedience" was coined by a book by that same name, the Critical Art Ensemble's (1996) Electronic Civil Disobedience.[1][2] Electronic civil disobedience seeks to continuing the practices of non violent, yet disruptive protest originally pioneered by Henry David Thoreau who in 1848 published "Civil Disobedience. "[1]*
>
> *A common forms of ECD are coordinated DDoS against a specific target, also known as a virtual sit-in. Such virtual sit-ins may be announced on the internet by groups such as The Electronic Disturbance Theatre and the borderlands Hacklab.[3]*
>
> *Computerized activism exists at the intersections of politico-social movements and computer-mediated communication.[4] Stefan Wray writes about ECD:*
>
> *"As hackers become politicized and as activists become computerized, we are going to see an increase in the number of cyber-activists who engage in what will become more widely known as Electronic Civil Disobedience. The same principals of traditional civil disobedience, like trespass and blockage, will still be applied, but more and more these acts will take place in electronic or digital form. The primary site for Electronic Civil Disobedience will be in cyberspace.[1]'*[8]

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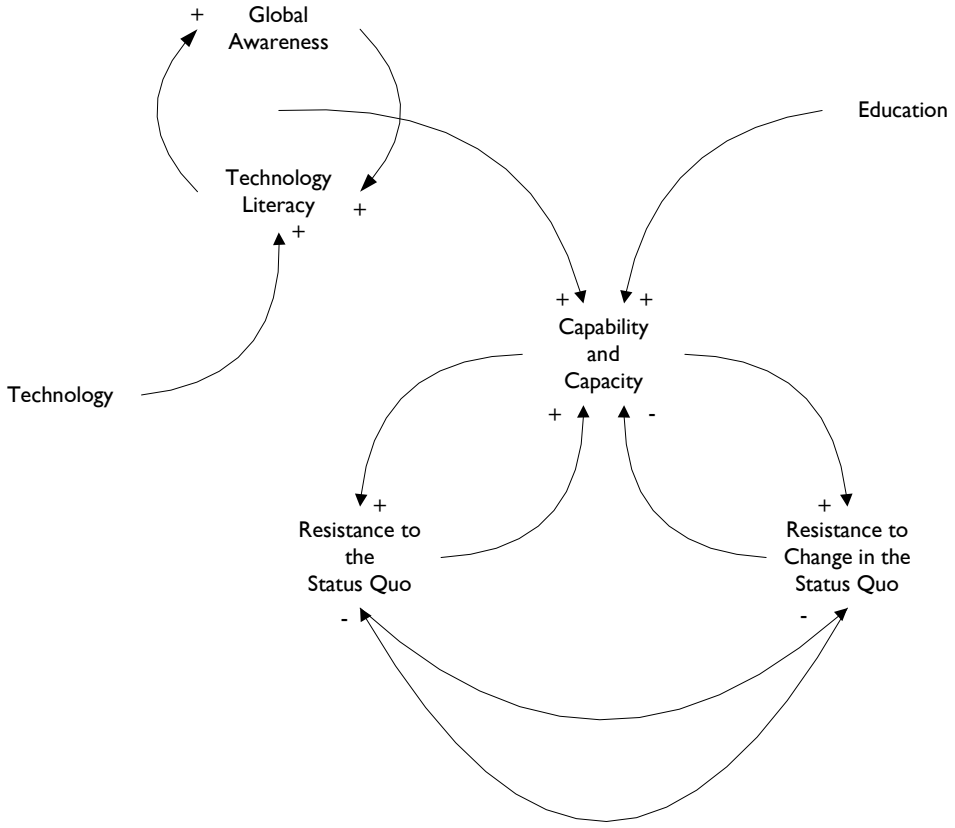
[7] Bob Davis, "The Rise of Nationalism Frays Global Ties," The Wall Street Journal, April 28, 2008; Page A1, http://online.wsj.com/article_print/SB120934738145948747.html

[8] Wikipedia, "Electronic civil disobedience," http://en.wikipedia.org/wiki/Electronic_civil_disobedience [January 6, 2009]

Limits to Growth of Capacity and Capability

Back to language of loops.[9]



The "+" at the head at the arrow indicates that as the variable at the tail (the independent variable) moves one way or the other, than the variable at the head (the dependent variable) of the arrow, all other things being constant, will move the same way.

The "-" means that movement will be in the opposite direction.[10]

Limits to growth are raised and lowered by the rate at which the two resistances adopt to the changes in the growth and the manner in which they subsequently affect one another and capacity and capability.

The availability of technology and the educational levels of the population also affect the variables in this diagram.

Closing Comments

Whether or not the reinforcing loop comprising global awareness and technology literacy is, in fact, reinforcing, or has an impact on global development is the function of a number of variables, their rates of change, and their relationships. This brief note is simply to raise the issue and examine it briefly in a manner that may prompt further investigation.

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[9] This sketch should be considered provisional.

[10] The "+" and "-" indicates loop polarity. See John Sterman, Business dynamics : systems thinking and modeling for a complex world (Boston: Irwin/McGraw-Hill, 2000) 0-072-31135-5

All people do not react to the same stimuli in the same way. The human condition[11] is a powerful force that is not reflected in this sketch and needs further consideration. I also see that this is affected by the cultural differences that le in the world.[12]

James Drogan
January 6, 2009

[11] "The human condition encompasses all of the experience of being human. As mortal entities, there are a series of biologically determined events that are common to most human lives, and some that are inevitable for all. The ongoing way in which humans react to or cope with these events is the human condition. However, understanding the precise nature and scope of what is meant by the human condition is itself a philosophical problem." Answers.com, http://www.answers.com/human+condition?gwp=11&ver=2.4.0.651&method=3 [January 6, 2009]

[12] See Mansour Javidan and Robert J. House, "Cultural Acumen for the Global Manager: Lessons from Project GLOBE," Organizational Dynamics. 29 4 (2001) for additional thinking on this matter.

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Javidan, Mansour, and Robert J. House. "Cultural Acumen for the Global Manager: Lessons from Project GLOBE." Organizational Dynamics 29.4 (2001): 289-305

Sterman, John. Business dynamics : systems thinking and modeling for a complex world. Boston: Irwin/McGraw-Hill, 2000, 0-072-31135-5