

The *Edge* Annual Question — 2010
HOW IS THE INTERNET CHANGING THE WAY YOU THINK?

HARMFUL ONE-LINERS, AN OCEAN OF FACTS
AND REWIRED MINDS

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It is entirely possible that the Internet is changing our way of thinking in more ways than I am willing to admit, but there are three clear changes that are palpable:

The first is the increasing brevity of messages.

Between Twittering, chatting and sending abbreviated Blackberry e-mails, the "old" sixty-second sound byte of TV newscasts is now converted into one-liners, attempting to describe ideas, principles, events, complex situations and moral positions.

Even when the message itself is somewhat longer, the fact that we are exposed to more messages, than ever before, means that the attention "dose" allocated to each item is tiny. The result, for the general public, is a flourishing of extremist views on everything. Not only in politics, where only the ideas of the lunatic far left and the crazy far right can be stated in one sentence, but also in matters of science.

It is easy to state in one sentence nonsense such as "the theory of evolution is wrong", "global warming is a legend", "immunization causes Autism" and "God (mine, yours, or hers) has all the answers". It requires long essays to explain and discuss the "ifs" and "buts" of real science and of real life.

I, personally, find that this trend makes me a fanatic anti-extremist. I am boiling mad whenever I see or read such telegraphic (to use an ancient terminology) elaborations of ideas and facts, knowing that they are so wrong and misleading, and, at the same time, they find their ways into so many hearts and minds. Even worse, people who are still interested in a deeper analysis and a balanced view of topics, whether scientific, social, political or other, are considered leftovers from an earlier generation, and are labeled as extremists of the opposite color, by the fanatics of one corner or another.

The second change is the diminishing role of factual knowledge, in the thinking process.

The thought pattern of different people, on different subjects, requires varying mixtures of knowing facts, being able to correlate them, creating new ideas, distinguishing between important and secondary matters, knowing when to prefer pure logic and when to let common sense dominate, analyzing processes and numerous other components of a complex mental exercise.

The Internet allows us to know fewer facts, being sure that they are always literally at our fingertips, thus reducing their importance as a component of the thought process. This is similar to, but much more profound than, the reduced role of pure computation and simple arithmetic with the introduction of calculators.

But we should not forget that, often, in the scientific discovery process, the greatest challenge is to ask the right question, rather than answer a well posed question, and to correlate facts that no one thought of connecting. The existence of many available facts, somewhere in the infinite ocean of the Internet, is no help in such an endeavor. I find, personally, that my scientific thinking is changed very little by the availability of all of these facts, but my attitude towards social, economic and political issues is enriched by having many more facts at my disposal.

An important warning is necessary here: A crucial enhanced element of the thought process, demanded by the flood of available facts, must be the ability to evaluate the credibility of "facts" and of "quasi-facts". Both are abundant in the web and telling them apart is not as easy as it may sound.

The third change is in the entire process of teaching and learning.

Here it is clear that the change must be profound and multifaceted, but it is equally clear that, due to the ultraconservative nature of the educational system, it has not yet happened on a large scale.

The Internet brings to us art treasures, ability to simulate complex experiments, mechanisms of learning by trial and error, explanations and lessons from the greatest teachers on earth, special aids for children of special needs, less need to memorize facts and numbers, and numerous other incomparable marvels, not available to previous generations. Anyone involved in teaching, from kindergarten to graduate school, must be aware of the endless opportunities, as well as of the lurking dangers. These changes in learning, when they materialize, may create an entirely different pattern of knowledge, understanding and thinking in the student mind.

I am personally amazed by how little has changed in the world of education, but, whether we like it or not, the change must happen and it will happen. It may take another decade or two, but education will never be the same. An interesting follow-up issue, to this last comment, is the question whether the minds and brains of children growing up in an Internet inspired educational system, will be physically "wired" differently than those of earlier generations. I tend to speculate in the affirmative, but this may only be answered by the *Edge* question of 2040.