

Education and peace go together; plus the best 2015 papers of the journal *Temperature*

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Scientists are for education

As I am writing this editorial, the United States is preparing for the presidential election. I have no appetite to talk about this particular election, but I would like to share some of my thoughts about the civil position of scientists, as citizens of their countries. How do scientists vote? Scientists are strange critters who typically spend their entire lives studying. First, they study formally for years and years—to obtain their degrees. Then they study informally for the rest of their lives—just because. In general, studying for a lifetime is not the easiest path one can select; it takes courage and conviction. One would expect that people who have chosen this path would vote for education-friendly candidates, parties, and propositions.

One of my friends, Miklós Székely, professor emeritus at the University of Pécs Medical School in Hungary, told me about his dream to see each generation of Hungarian children receiving a better education than the previous, to see Hungary becoming a better country with each generation. Miklós is a son of a teacher and a father of two teachers. (He is also a co-winner of one of the *Temperature's* awards; see below.) Many scientists in other countries think in a similar way. They want to see a society that instead of (or at least in addition to) celebrating rock stars, football stars, and five-star generals, celebrates teachers—those who help children to discover stars, real stars.

So how does one determine which party, program, or candidate is more education-friendly? To obtain a comprehensive answer to this question one would need to carefully consider a great number of factors. I will talk about only one of these factors, which I believe is often overlooked. It is the military agenda of the party or candidate. What? What does the military agenda have to do with education?

The face of militarism

Let's use our imagination for a second and envision some war-hungry, militaristic country. History has provided plenty of examples. The rulers of this imaginary country, let's call them the ruling elite, are intimately connected with the military-industrial complex and propel their country's military expansion. They do as much saber-rattling as they can, run massive military exercises, and display grandiose military parades to intimidate "the enemies." They maintain as many military bases as they can. They form aggressive military blocks with other countries. They repeatedly initiate military conflicts – from "limited operations" to full-blown wars – sometimes with their immediate neighbors and sometimes on the opposite side of the planet. Having a large military supported by a large budget and being constantly engaged in wars allows the ruling elite to direct the flow of tax money to the military-industrial complex, while, at the same time, also conquering new markets for companies within this complex.

Even in a country run by a dictator, a war needs at least some popular support and cannon fodder. One way to build such support is by creating a doctrine of superiority of this nation or its religion over the rest of the world. So the imaginary country we are talking about would almost certainly have such a superiority doctrine and actively use it to justify wars with other nations, e.g., for the purpose of bringing its superior religious beliefs or system of government to other nations. Through mass media, the ruling elite would operate a propaganda machine to broadcast this doctrine, convincing the common people to support various acts of war.

Education makes people compare and question. With education, people start thinking independently. Anatol Rapaport, a Russian-born American mathematician and psychologist and a former president of the Science for

Peace organization, has developed the idea that knowledge is the opposite of indoctrination and, as such, leads to social responsibility.¹ It is simply more difficult to persuade educated citizens to believe in any superiority doctrine. It is more difficult to convince them that going to war with another country is moral, necessary, or in their best interest. Educated people are less likely to buy such baloney! Would the ruling elite of our imaginary country try to excel in educating its citizens?

The answer to this question is: no! The ruling elite will do everything it can to keep education limited, extremely expensive, and difficult to obtain. The rulers want education to be reserved for the elite only. This is not simply an issue of competing allocation of funds (whatever is spent on education cannot be spent on the military agenda); it is rather a matter of principle. The underprivileged and misled majority must remain only minimally educated—just enough to be able to serve as cheap labor and frontline troops, but not enough to question the ruling elite or to understand how it operates. The money will be spent on building the Coliseum, bringing gladiators to entertain the crowds, erecting monuments to the rulers, and on many other things, but not education, at least not education of the poor. There will be a lot of stars—in the arenas, parades, and fireworks. I am afraid that overexposing children to such bright stars might blind them from seeing the real stars in the night sky.

Education and peace

Now, coming back to reality, I hope you did not recognize your own country in some of the features described above. As citizens of our countries, we may want our nations to be as different as possible from the hypothetical militaristic power just pictured. And this means striving not only for better, broader, and more accessible education, but also for avoiding the militaristic expansion agenda. I hope that most scientists would not support any superiority doctrine. And while all countries need some money for defense, I would think scientists may prefer that their countries did not have gigantic military budgets that dwarf whatever is spent on education. If a military budget is for defense, it should be proportional to the country's population or the territory to defend. We may want our countries to have no military bases abroad, in the lands far, far away from our own. We certainly do not want our countries to initiate wars. Less wars, more peace, more education!

Education and peace go hand in hand. Not surprisingly, quite a few scientists are pacifists. To give just one example, Jorge Hirsch, an Argentinian-born American professor of physics at the University of California, San Diego, who is widely known for proposing his bibliometric *h*-index, is also known for his work on preventing a nuclear war with Iran. In April of 2006, he wrote a letter to President George W. Bush, co-signed by 12 other physicists, warning of the dangers of using tactical nuclear weapons against Iran.²

Journal *Temperature*: 2015 winning papers

While a war often has no winners, the journal *Temperature* has a lot of winners! I am happy to introduce the winners of the 2015 *Temperature* awards. The comprehensive review “Human skin wetness perception: Psychophysical and neurophysiological bases” by Davide Filingeri and George Havenith³ received the 2015 *Temperature* Editor-in-Chief Award for the Best Article with a cash prize. Some politicians who work on behalf of the military-industrial complex are so trigger-happy that they make us sweat. But now, thanks to Davide and George, we know what mechanisms enable us to feel that we are sweating. The second place in this competition (honorable mention) was awarded to another comprehensive review, “Species-specific temperature sensitivity of TRPA1” by Willem Laursen, Evan Anderson, Lydia Hoffstaetter, Sviatoslav Bagriantsev, and Elena Gracheva.⁴ The authors discuss the totally different roles that the TRPA1 channel plays in thermosensation and pain across the animal kingdom. Yes, what is painful to “worker” and “soldier” ants, may cause a pleasant warm feeling in the belly of a military-industrial behemoth.

Well, let's leave the dangerous political metaphors and move to a country that has had very limited military forces during the last 70 y. The 2015 Professor Teruo Nakayama (1927–1989) Memorial Award for the Best Research Paper by a Japanese Scientist with a cash prize was shared by two scientists: Rika Hosotani (Shiga University, Otsu, Shiga, Japan) and Kentaro Matsuzaki (Shimane University, Izumo, Shimane, Japan). The two winning papers are: “Prostaglandin transporter in the rat brain: Its localization and induction by lipopolysaccharide” by Rika Hosotani, Wataru Inoue, Takako Takemiya, Kanato Yamagata, Shigeo Kobayashi, and Kiyoshi Matsumura⁵ and “ β -amyloid infusion into lateral

ventricle alters behavioral thermoregulation and attenuates acquired heat tolerance in rats” by Kentaro Matsuzaki, Masanori Katakura, Naotoshi Sugimoto, Toshiko Hara, Michio Hashimoto, and Osamu Shido.⁶

And I am especially pleased to announce the 2015 Editor-in-Chief Award for the Best Teaching Slide. *Temperature* used this format to promote transfer of knowledge from the laboratory to the classroom. Unfortunately, this format is no longer used by the journal for technical reasons. The 2015 award for the best teaching slide with a cash prize was shared by two papers: “The pathophysiology of heat exposure” by Miklós Székely, Luís Carletto, and Andras Garami⁷ and “Thermogenesis in ectothermic vertebrates” by Denis Andrade, Rodrigo Gavira, and Glenn Tattersall.⁸

Starting with the inaugural issue,⁹ the journal *Temperature* occasionally publishes so-called puzzles – science-related questions that are sometimes intriguing and often have an unexpected answer. The puzzles are hidden in my editorials, and the readers are invited to send their answers to the journal; these answers are published as letters to the editor. The 2015 *Temperature* Award for the Best Puzzle with a cash prize was shared by Hsin-Ni Ho and Arpad Szallasi. The curious reader can find their puzzles in refs. 10 and 11, respectively. Both puzzles were further discussed on the pages of the journal, but it is Arpad’s puzzle that really drew a lot of attention. It received seven letters to the editor and two replies (all published in issue 1, 2016).

A new puzzle

The new puzzle does not deal with a specific technical obscurity or a complicated paradoxical phenomenon. It is about an important issue that is close to heart for many of us. How can a temperature scientist, or a scientist in general, contribute to peace in this world? He or she probably is not in a position to negotiate a cease fire in a confrontation area or prevent a new cold war. Nor can he or she reduce the world’s nuclear arsenal, stop the arms race, or remove other countries’ military bases from his or her own country. What can he or she do? What can we do?

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