

Open-access publishing at what cost?

I was surprised that Paul Guinnessy's story "Stakeholders Weigh Costs of Open-Access Publishing" (PHYSICS TODAY, August 2007, page 29) didn't mention page charges as an alternative to open-access author charges. A number of society-published journals, *Physical Review Letters* and the *Journal of Chemical Physics* among them, continue to balance reasonable page charges with reasonable subscription rates. The American Physical Society was forced to discontinue that model in the face of competition with commercially published journals that have no page charges but very high subscription rates. Even without page charges, the American Institute of Physics and APS continue to offer journals—for example, *Physical Review*—at a very reasonable subscription rate compared with commercial counterpart *Nuclear Physics*. Costs to subscribing institutions are a concern, but isn't the primary issue the cost of commercially published journals and their associated portfolio pricing deals (for example, access to all of a publisher's journals)?

I share David Stern's concern about the possible loss of quality that may accompany widespread open access. Open access is primarily driven by the needs of the medical community and its patients. Shouldn't open-access experiments be conducted and refined there first, before we attempt to impose it on all of science and technology?

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The discussion about stakeholders and open-access publishing is a great one, weighing points pro and con, but I believe that it misses the underlying

problem with having organizations formed around the intent to profit from the publishing of scientific research. We, as scientists, must decide if a refereed paper that is locked in a vault is as valuable as one that is not refereed but is accessible to everyone on the internet. It is no wonder that authors who avoided the pay-for-play trap have found their citation numbers increasing dramatically. Search engines could locate the papers and present them to people with an interest, and those people could read them without having to pay. I find it difficult to see how it would go unnoticed that freely available papers would get read more frequently than ones that have to be paid for. But then people are making money on all the papers that are behind closed doors.

Money aside, the real problem from my perspective is that I can no longer find papers at all. The end result of their being locked up by services that want money is that since I don't have a budget for purchasing papers, I don't get to read them. That work has become dead to the community. Can the scientific community afford to allow a large portion of its work to be locked away? Will science continue to develop, or will it wither under the oppressive need to generate a revenue stream?

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As a footnote to the article on open-access publishing, let me point out that among the main beneficiaries of such publishing are people like me, trained and interested in physics but not directly involved or institutionally affiliated. Such "outsiders" are openly discriminated against by the preprint arXiv at Cornell University. We are denied the option to contribute unless vigorously endorsed by a member of the academic in-group. Does physics benefit from maintaining a person's lifelong interest in the subject, and if so, what is being done by the American Physical Society and the American Institute of Physics to foster such interest in the broader community?

Recently I had wanted to consult a one-page comment that had appeared

in the *American Journal of Physics* 18 years ago. I could have gone to my local university's physics department library and copied the page for 10 cents. However, being 82 and lazy, I preferred to go online to the AIP website, where I discovered that the page I wanted was available for downloading at a price of \$19. Oddly enough, I paid this. I might have gotten a discount if I could have remembered my "membership number," whatever that is.

But I wonder how such a pricing policy squares with some of the declaratory words emanating from AIP. For instance, the fine print in the front of every PHYSICS TODAY issue states that AIP "serves physics and related fields . . . with programs, services, and publications—information that matters." Well, if the information matters at all, why not make it available to the public at a reasonable price? How does the current AIP policy promote the diffusion—among the American taxpayers who are supposed to support ever-growing federal physics investments—of knowledge of physics? Simply put, what is not-for-profit about charging \$19 for a one-page download of 18-year-old material?

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[Editor's note: We invited Fred Dylla, executive director and CEO of the American Institute of Physics, to respond to Thomas Phipps.]

Dylla replies to Phipps: It does seem inappropriate to pay \$19 for a one-page download of an 18-year-old article. But one has to dig below the surface to understand the economics of scientific journal publishing as a context for the pricing of such journal products by nonprofit publishers.

The American Institute of Physics (AIP) publishes several of the most highly cited and subscribed-to physics journals (for example, *Applied Physics Letters* and the *Journal of Applied Physics*), and also provides publishing services for many of its member societies, including the American Physical Society and the American Association of Physics Teachers, publisher of the

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American Journal of Physics.

Producing a high-quality, peer-reviewed archival journal such as *AJP* involves significant costs, including those for a reliable online platform that has made *AJP* and other member-society journals available to a much wider audience than did the former print-only subscriptions. AJP has also made major investments to digitize and make available electronically journal issues that were published in print long before the industry made the transition to digital. Those real costs are recovered, by and large, through institutional subscriptions paid by libraries and research institutions. The cost of producing one typical article is between \$1500 and \$3000. Considering the average journal subscriber base, a \$20 price for a non-subscriber to download an article is not out of line.

AJP's online platform, Scitation, already provides free access to full abstracts, index terms, and search capabilities for more than a million articles. Our journal prices are significantly lower than those for similar journals produced by commercial publishers, and we invest the modest return in outreach services such as lay-language translations of important research results, subsidized programs for students, and subsidized student and member-society subscriptions for *PHYSICS TODAY*.

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Fundamentalism and a full stomach

Kudos to Pervez Hoodbhoy for a great introspective article on the lack of scientific progress in the Islamic world (*PHYSICS TODAY*, August 2007, page 49). I largely agree with his general hypothesis that the disease in the Islamic world is from us and within us, but missing from his analysis is a macrolevel, socio-historical, scientific analysis of the lack of scientific progress in the Islamic world. Societal pursuit of science and the arts is a manifestation of "full-stomach syndrome": Only after basic survival needs are met and excess capital is accumulated can a person, a community, a society afford to indulge in such nonessential luxuries as scientific exploration. Often the excess accumulation of capital that allows indulgence in science and the arts is obtained at the expense of a terrestrial neighbor. It thus

becomes a societal manifestation of the second law of thermodynamics—order and progress in one region can only be had by inducing bare subsistence and despair in another. Such has been the case in every episode of human civilization, and the advancement of scientific progress in the West is no exception to this rule.

For the non-Western world to contribute scientifically, it must first break free of Western military, economic, and political domination and achieve true independence to begin to accumulate capital and transform its society. In East Asia, the process began 40 years ago, with China being the latest example; it is beginning to bloom, too, in Central and South America and was stirring in the Islamic world until, as Hoodbhoy says, the West acted to reverse the forces of secularism and change. That reversal puts the Islamic world's transformation 50 years behind the curve, and there is limited hope in the foreseeable future for progressive forces like Hoodbhoy himself.

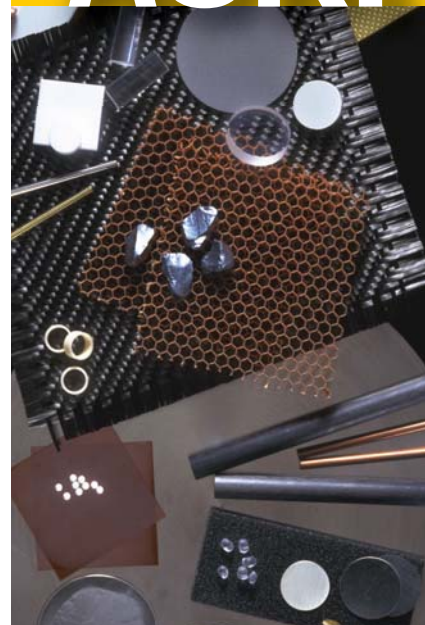
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The excellent and thought-provoking article by Pervez Hoodbhoy is disturbing for its description of the influence of rigid fundamentalist religion not only on Islamic science but on science in any society, even in the US. It is the very nature of science to intellectually question its own icons and, at times, other authorities in its host culture. Moreover, science places valid, observable facts above current explanations. Ignoring the facts of science because of the general public's state of mind (or belief) cannot portend anything but the depreciation of observable facts in the public debate.

I have long maintained that a political candidate's religion was an improper subject for debate. Hoodbhoy's observations make this less clear; certainly, a candidate's propensity to accept or reject new ideas is important to his or her performance in the office sought. Certainly, a candidate's fundamental view of knowledge will affect the allocation of funds needed to further intellectual endeavors. How can a science-based society continue to succeed if the very basis of its past successes is even subliminally rejected by the political leadership?

The current trends of ignoring the protocols of science, having nonsense pose as science, distorting the nature of science via semantic ploys, and using political organizations as science

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