COMMENTARY

Scientific publishing – the Indian scenario

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We have attempted to review the scientific publishing scenario in India as it obtains today. It is directed essentially towards physics journals, though some general observations may be applicable to other fields as well. It is pointed out that though there exist a number of journals in the country, they are more or less of a cover-all generalized complexion, catering to all fields of physics, mirroring an anachronism in current times where specialized journals are the order of the day. They thus present a fragmented face of Indian science, and are not entirely critical individually. If all were well with these journals, then one would have seen many prominent names of Indian science appearing as authors. We propose a unified publishing platform for Indian science (physics) which seeks to integrate the existing journals into a more viable and robust alternative that will project a strong face of Indian science just as the Physical Review system does for the American science.

A prologue

To deal with the subject of scientific publishing in the Indian scenario in its proper perspective, it would be appropriate to go back in time somewhat. It is an undeniable fact that the concept of scientific publishing as we have known and practised in India for more than a century was taken over from the British who introduced us to the system of Western education, of which science education became an integral part. Of course, that is not to forget our own great contributions to science and mathematics and a continuation of our spirit of scientific thought over a millennium. It is for this reason that Indians took to science like fish to water, though the scientific methodology may have been different.

Late 19th and early 20th centuries saw great strides made by Indian scientists in the form of the work by J. C. Bose, S. Ramanujan, C. V. Raman, P. C. Ray, S. N. Bose, M. N. Saha, Birbal Sahni, P. C. Mahalanobis and others. That was the golden period of the renaissance of Indian science. There was pride and an air of great self-confidence. While Raman did get the Nobel Prize for the effect known after his name, S. N. Bose deserved a Nobel too for the truly pioneering work represented by the statistics named after him. Likewise, the name of Saha remains enshrined in the annals of astropyhysics, without whose pioneering contribution – the ionization equation – one would not have stellar astrophysics. His name had also been proposed for a Nobel in the same year as Raman's. But Raman was preferred over Saha by the Committee. One should not, of course, forget the name of G. N. Ramchandran, who deserved a Nobel Prize for his outstanding work. This period was followed by another equally creative one in another sense, with such names as Homi Bhabha and Vikram Sarabhai, who have been responsible for launching India into the technological age in the spheres of nuclear energy and space technology.

Publication of scientific findings by the scientists has always played an important role in the communication and dissemination of information relating to these findings, so that these can be further pursued as well as scrutinized by other interested scientists, for the scrutiny of their veracity is a crucial element in the search for truth in a scientifically unbiased manner.

Most countries in Europe that had been engaged in scientific research have had their own journals in which mostly they published their work: For example, the *Proceedings of the Royal Society of London* and *Proceedings of Philosophical Transactions of the Royal Society*, in the UK, which have had a long tradition in scientific publishing. In Germany, many of the pioneering contributions by Planck, Einstein, Heisenberg and others were published in the *Annalen der Physik, Zeitschrift fur Physik*. Likewise, in France there was the *Annalen de Physique et la Radium*, *Comptes Rendus*, and a few others. In Italy most scientists published their work in *Nuovo Cimento*.

The reason why most nations have had their own journals is that not only do they provide a publishing platform for their own scientific work which is prompt and efficient, and moreover hassle free; but equally importantly, they promote the generation of a robust science culture which inspires self-confidence and independence of thought, so important for the creative pursuit of science. When we depend mostly on publishing in externally situated journals, one is somehow compromising with the centre of gravity of science from its rightful place in the midst of a nation. There are well-known examples, where countries established their own scientific publishing and concomitant scientific cultures, even though highly prestigious journals were available in Germany and the UK for getting their work published, and which led in due course to some of the most enviable robust science cultures. These examples are the US and the erstwhile USSR. The then Soviet journals: the *JETP* (*Journal of Experimental and Theoretical Physics*), *Doklady*, *Uspekhi*, and others were so highly valued in the West that they got translated into English. The reason for this is that almost all well-known Soviet scientists like Landau, Bogoliubov, Kylov and Migdal published their works in them.

Scientific publishing scenario – then – in the Indian context

Unfortunately, we in India did not have our own science journals until 1926, when the *Indian Journal of Physics* was started by C. V. Raman which, to the best of my knowledge, was the first Indian journal devoted to the publication of research in physics. Prior to that all research work from India had to be published in foreign journals like *Nature*, *Philosophical Magazine*, *Proceedings of the Royal Society*, *Philosophical Transactions of the Royal Society*, etc. all in the UK. Incidentally, to the best of my

knowledge, besides Bose (his 1924 paper on photon statistics), Saha was the only other person who published in a German journal, *Zeitschrift fur Physik*.

The point that is sought to be made here is that in the early days, Indian researchers had to depend entirely on foreign journals and must have had to face certain amount of disadvantage in getting their work published, perhaps similar to what one faces today, though the author is unaware of their precise nature. One of them obviously was the long delays in communication, which were inevitable given the slow surface mail route – the only route – existing then, to communicate one's papers. The other must have been the familiar referees' tyranny as we know today. But in pre-independence days, it could have been even worse. Notwithstanding these disadvantages, the pioneers of those times still managed to leave their mark on the scientific scene, which remains unmatched today.

The necessity of having one's own journal must have been acutely felt by the then pioneers, so that the work by Indian scientists could be published without much hassle. Thus the *Indian Journal of Physics* launched in 1926 came quite handy for Raman to have his detailed quantitative work relating to the 'effect' published in that journal on 31 March 1928, almost simultaneously with the report of this work in *Nature*. Given the fact that the Soviet scientists Landsberg and Mandelstam were also on hot pursuit of the same effect, the establishment of the priority was very crucial. It turned out that Raman was able to beat his competitors by a mere two weeks – and the *Indian Journal of Physics* played no mean role in ensuring his priority in providing the correct explanation of the effect, and eventually the Nobel Prize. There was more to it, but that is not relevant for the present discussion.

The story of the evolution of scientific publishing in India has unfortunately not been rosy. Scientific publishing requires a certain culture – of commitment, integrity, and above all, a sense of self-confidence and not a little nationalistic pride. To be sure, there have been people of outstanding commitment, integrity and self-confidence. But it is not enough to have a few people of that calibre. What is needed is to have a critical mass to sustain an activity which is essentially 'participatory' and requires a minimum level of commitment and integrity on the part of the participants. This requires a scientific culture on a wider scale – a culture which is ingrained in the psyche of the participants and gets passed on from one generation to the next. How does one otherwise sustain a scientific publishing which demands strict and uncompromising scrutiny of scientific submissions by a body of reviewers and referees, and the existence of such a body.

Scientific publishing scenario – now – in the Indian context

How have we fared on this count? Not very brightly I am constrained to say. Though we have a plethora of journals in the country today, we do not know how many of them are really critical? One of the troubling questions that presents itself is why do so many prominent Indian scientists still prefer to publish in foreign-based journals even though we now have our own journals? The question requires a forthright and critical analysis. After all, most European scientists do publish their papers in European journals and with pride, except for occasional purposeful departures. And most American scientists publish their best work in American journals, which seem to have taken over the leadership in scientific publishing. To have their work published in their own journals is satisfaction enough for them, since these journals have acquired a stature, and a brand value that guarantees them a global recognition for their work. But how did such a stature for these journals arise? Surely, not in a day. It has required a continuous and conscious effort to improve the quality of scientific publishing with a collective effort of all the stakeholders – the most important being the scientists themselves. It requires the evolution and sustenance of a science culture that ensures idealistic commitment to enhancing quality and overrides all other considerations. That entails a realization and a commitment that enhancing the quality of science publishing at home is as important, if not more, as projecting one's work through publications in foreign-based journals. Let me also emphasize that enhancing the quality of scientific publishing at home also has an overall positive effect on the scientific ambience in the country.

I would like to recall in this connection the evolution of science culture in the erstwhile Soviet Union, which had been closed to the West during the communist regime. The contacts between the Soviet scientists and the West were minimal. Yet, the Soviet scientists had evolved such a robust science culture that it became the envy of the world. They had their own high-quality journals – for example, in physics – *JETP*, *Soviet Physics-Uspekhi* devoted to review reports, etc. That these journals were translated and published in English shows how eagerly they were sought by the Western scientists for their quality contents. Though the earlier scientists like Kapitza and Landau had contact with the Western scientists, the majority of the later Soviet scientists were essentially home-grown and published their work in their own journals.

It is thus rather disappointing that we in India have not been able to evolve that high quality of scientific publishing which will encourage Indian scientists to publish their papers in Indian journals – and with pride and thereby enhance our prestige and self-respect that many of the researchers feel compromised about when dealing with foreign journals.

However, I know for a fact that scientists in India have been carrying out work of the highest quality by international standards. One can only imagine what a boost it would be to the Indian scientific publishing standards, and to the overall scientific ambience, if all these scientists could organize themselves to have their work published in suitably selected Indian journals, or regroup the existing journals according to different disciplines.

The *Indian Journal of Physics*, being the first journal in physics to have come into being, had a rather glorious past, but we now have other journals which compete with it. We have journals run by the three Academies: *Proceedings of the National Science Academy*, *Proceedings of the National Academy of Sciences of India* (*A and B*), while the Indian Academy of Sciences (IASc) publishes journals like *Proceedings of the Mathematical Sciences*, *Proceedings of Chemical Sciences*, *Proceedings of Engineering Sciences* (*Sadhana*), *Pramana–Journal of Physics*, and several others. We have, in addition, the *Indian Journal of Pure and Applied Physics* (*IJPAP*), *Indian Journal of Radio and Space Physics* run by the CSIR.

Over the years some of these journals have evolved and rationalized their themes. For example, the *Proceedings of the National Science Academy* is now devoted essentially to review articles instead of catering to original research. This is a positive development. Likewise, *Proceedings of the Indian Academy of Sciences A* (*Physical Sciences*) has essentially been replaced by *Pramana* for the physics part, while the *Proceedings of Chemical Sciences* and *Proceedings of the Mathematical Sciences* continue.

However, both the *Indian Journal of Physics* and *Proceedings of the National Academy of Sciences* seem to have retained their style – catering to original research-based papers.

In the discussion that follows I confine myself to physics journals only, since being a physicist I have a feel only about these journals. I suppose, however, that generally speaking, similar situations may exist in other disciplines as well.

Changing scientific publishing profiles and formats

Until about the middle of the last century, there was only one *Physical Review* run by the American Institute of Physics, which included all kinds of papers pertaining to physics. As more and more specializations got crystallized, other sections were introduced, designated as *A*, *B*, *C*, *D* and *E*. In addition, there has also been a *Journal of Mathematical Physics*, run by the American Physical Society. There are also the *Physical Review Letters* for rapid publication introduced in 1958, and the *Reviews of Modern Physics* for review papers. The diversification into specialized journals became a necessity because of the rapidly growing number of workers in these specialized fields.

The situation in Europe has undergone an even more remarkable change. Historically, there existed a number of highly prestigeous journals: In Germany, there were journals like *Annalen der Physik*, *Zeitschrift fur Physik* and *Zeitschrift fur Naturforschung*. In France there were the *Comptes Rendus* and *Journal de Physique et le Radium*. In Italy there was the *Nuovo Cimento*. In Britain, there were the *Philosophical Magazine*, *Proceedings of the Royal Society*, *Philosophical Transactions of the Royal Society*, *Proceeding of the Physical Society* and *Nature*. The list given here is only representative, not exhaustive, because listing of these journals per se is not the main purpose. Suffice it to mention that most of these journals had a long history and therefore longstanding tradition in scientific publishing.

The purpose of the above listing is to point out the fact that many of these journals either do not exist today or they have transformed themselves into other formats.

Most of these were all-purpose journals. But in response to the requirement of the changing scientific scenario, they too have undergone appropriate changes.

Thus while *Nature* has a strong presence and has split into various disciplines, *Proceedings of the Royal Society*, *Philosophical Transactions*, etc. while continuing to exist, do no longer enjoy the same stature as they did earlier. While *Philosophical Magazine* – one of the oldest journals – has no similarity with its original form, the *Proceedings of the Physical Society* has appeared in a strong new avatar as *Journal of Physics* with *Parts A*, *B*, *C* and *D* and is doing rather well.

But the most remarkable transformation has happened in the Continent. Many of the well-known pre-existing journals have chosen to dissolve their identities and come onto a united publication platform, as *European Physical Journal* (*EPJ*) with its various parts: *A*, *B*, *C*, *D*, *E*, *F*, *G* and *H*. The journals which merged to give rise to *EPJ* are: *Acta Physica Hugarica*, *Anales de Fisica*, *Czechoslovak Journal of Physics*, *Fizica A*, *Il Nuovo Cimento*, *Journal de Physique*, *Portugaliae Physica* and *Zeitschrift fur Physik*. Besides, 21 European Physical Societies are represented in *EPJ* through the Scientific Advisory Committee, a board that advises publishers and editors on policy matters.

Besides these journals, there also exists a 'Letter' journal with a pan-European character – the *Europhysics Letters*.

These journals, along with the *Journal of Physics* in the UK, now represent brand values in scientific publishing in Europe, which also attract other contributors from around the world. The only flipside of the *EPJ* is that it is run by a publishing company not known for reasonable prices for the journals run by it.

The state and character of the present journals in physics in India

Four of the above-mentioned Indian journals in physics, namely *Pramana*, *Indian Journal of Physics*, *IJPAP* and *Proceedings of the National Academy of Sciences of India* are available for publishing original work carried out in any of the fields of physics. There may be other journals that I have missed, which I may not be aware of. But the above four are all-purpose journals, covering all fields from high-energy physics to atomic and molecular physics to plasma physics, etc. Maybe it is because of this reason that they have only a moderate circulation. It maybe noted that the only viable journals with cover-all fields in today's scenario are the rapid publishing *Letters* journals. Therefore, there exists a strong case for converting one of these all-purpose Indian journals into a *Letters* journal. Such a journal would be much more viable.

Given the above scenario, a researcher in India today who wants to publish her/his work in an Indian journal by choice, faces the dilemma of 'choosing' the journal to which he should submit his work. She/he would be naturally concerned about the visibility of her/his work on the global scene. The dilemma, however, remains unresolved in her/his mind because there are no objective criteria available for making an informed choice – apart from the so-called impact factor (IF), which actually guarantees nothing. But even so, the IFs of these journals are not very encouraging either (*Pramana* (2011) – 0.575, *Indian Journal of Physics* (2011) – 0.381, *IJPAP* (2011) – 0.763). *IJPAP* at 0.763 is better than the other two, but still more or less in the same range. It seems that there are too many journals of the same generalized complexion chasing a few authors wishing to publish in Indian journals. The situation is rather confusing from an author's point of view.

Having said that, it must be acknowledged that there is a lot of improvement in turnaround time of a paper from the date received to the date of publication that I have found on scanning cursorily through the latest issues of the *Indian Journal of Physics* and *Pramana*. A period of 3–4 months is rather commendable. However, what appears disconcerting about some of these journals is that they may become effectively inaccessible to

readers on the internet, with Springer taking over as co-publisher of these journals, unless the readers access them through libraries which subscribe these journals with hefty subscriptions. I am of course not entirely aware of the exact situation regarding this aspect. However, *Pramana* appears to be an exception, which has an open access through the IASc portal. This is contrary to the trend globally in favour of open access affordable journals. I understand that the *IJPAP* is an open-access journal, which is welcome.

A case being advocated here is that if different journals of the same generalized complexion could be integrated (as has happened in the Continent) and redefined in terms of theme issues, it would be good for Indian publishing. It is therefore an opportune time to redefine and revolutionalize the scientific publishing scene with our own indigenous efforts, by introducing new platforms for scientific publishing which inspire the faith of the coming generations and which would provide them a sense of self-confidence and boost their identity as independent and creative individuals on the emerging Indian scientific scene.

Such a platform would also serve as a face of Indian science on the global scene. It would also help impart a leadership role to Indian science for the science in the neighbouring countries, which must be facing even greater challenges for getting their work published in the high-priced foreign journals. A vigorous Indian scientific publishing platform would also help in the evolution of science in the neighbouring less developing countries. Eventually, the new publishing platform should evolve into a brand value for Indian science and its publishing globally.

Should we replicate the model of the *European Physical Journal* in India?

To answer this question, we have to first find out whether the Indian scientists themselves consider it worthwhile to have a publishing platform which they belong to, as the American and European scientists do to their publishing platforms.

One may be confronted here with two points of view: according to one, there is really no necessity to worry about who publishes where. Scientists will publish where they feel that their work will get due publicity, whether in American journals or the European journals mentioned above. The argument would then proceed that after all science is international in character and that in this globalized world of science it does not matter which journal it is reported in. And therefore it is not necessary to change the status quo. Let the scientists decide whether they wish to publish in foreign-based journals or Indian journals.

This point of view is rather individualistic and it has implications not only for the present state, but more importantly for the future scenario for Indian science. Granted that the current global scenario involves crossing of national boundaries for collaborative research and the resulting publications which transcend national boundaries, but the state of science in a country carries a much wider meaning than simply a few international collaborative projects. It implies the evolution and development of the whole continuum of academic culture and ambience which ought to lead to nurturing of science talent within the country. Such a continuum includes the development of a countrywide teaching faculty base which is rooted in the country's ethos and culture, and which takes part in research activities, is able to publish in some credible Indian journals, and does not have to look abroad for publication and approbation. The existence of such Indian journals in which they find that their senior peers too publish would give them a measure of self-confidence and dignity which they will pass on to their students. This is what ultimately will bring out their creative talent instead of partaking in a race to publish in foreign-based journals.

Of course, as I have recounted earlier, we do have a number of Indian journals in almost all fields of scientific activity. But somehow they are not taken seriously by the international scientific community, even if these are accessible to it. And this may be one of the reasons why many Indian scientists do not find it attractive to have their work published in them. And the reason they may not have been taken seriously is that the scientific community outside does not see many prominent Indian scientists publishing in those journals. This is an unfortunate fact, and is related to the second point of view. By depending on publication in foreign-based journals, we are willy nilly, continuing to compromise with the 'centre of gravity' of Indian science which must be located well within the country. By continuing to depend largely on publishing in foreign journals, we are in some sense undermining our stature as we subject ourselves to the whims and biases of the foreign publishers. I have already pointed out in one of my write-up's the kind of games that these commercial publishers play[1]. The 'centre of gravity' of Indian science must be located well within the country for a vigorous scientific culture to flourish, which includes the existence of a robust indigeneous publication platform.

This line of discussion may be concluded by saying that it is absolutely imperative that we make our journals more effective so as to be able to restore our due place in the global scientific community and more importantly, to impart a measure of self-respect and self-confidence among our own not-so-privileged fellow scientists.

Can we reorganize our science journals to make them more effective?

The *EPJ*, as alluded to above, provides a model. If the various countries in Europe can dissolve the identities of their journals – which have had a long history – then surely we ought to be able to do it too.

We could start by constituting a National Advisory Council which should involve representatives of all the existing Indian journals to deliberate on the issue of the reorganization of the journals existing today, and to devise an entirely different format for a common publishing platform. The existing journals may later appear in different avatars. The *Proceedings* of the various Academies may, for example, acquire different roles. Some of the journals run by IASc may continue essentially as they are, but with different names consistent with the overall covering platform.

The existing journals in physics are mostly multi-purpose journals. They cater to all fields of physics. But in the current times most international journals have specialized Parts catering to different sub-fields. Perhaps different specialized Parts may not be viable in our case in the short term, because the number of

papers received for each of the specialized fields may not be sufficient to fill up an issue every month. In that case, the issues may be considered to be bimonthly. A proper classification, not necessarily the conventional ones followed by most journals today, ought to be carefully formulated.

It would be naive to believe that there would be no opposition or reservation to such a proposal as people may have possessive attachment to what they have nurtured over the years. But if national interests are to transcend such attachments, as has happened in Europe, then such a transformation ought to be possible provided no stakeholder feels compromised.

I put down below a suggestion and alternative ones may be proposed. My suggestion is confined primarily to publications in physics, as I plead ignorance about the situation in other fields. But this suggestion could well be suitably adapted to other fields as well.

One should propose a publishing platform under a common umbrella of the basic terminology, such as 'Open Indian Journal of Physics' (the adjective 'Open' only indicating that it would be open, affordable and free in its spirit) which could have various Parts such as:

Part A: Micro-scale physics (covering quantum mechanics, high-energy physics, quantum optics, quantum electrodynamics, atomic and molecular physics, nuclear physics and condensed matter physics).

Part B: Astrophysics, astroparticle physics, relativity and cosmology.

Part C*:* Macro-scale physics (covering fluid dynamics, plasma physics, soft matter and space physics, including solar physics and meteorology).

Part D: Physics of complex systems (covering nonlinear dynamics, thermodynamics and statistical mechanics and complexity).

Part E: Indian Journal of Applied Physics.

Part F: Indian Physics Reviews.

Part G: Indian Physics Letters.

Part H: Indian Journal of Physics Education.

The logic behind these broad classifications, which are essentially provisional, is that a more finer classification will not be sustainable initially, so that all microscale phenomena which are necessarily of quantum nature are grouped together in Part A. Likewise, all macroscale phenomena, which are mostly of classical nature are grouped in Part C. On the other hand, Part B would comprise mega-scale phenomena which are dealt with in astrophysics, astroparticle physics and cosmology. Part D represents new directions involving newly emerging fields of complex systems, of which nonlinear dynamics becomes an integral part, while non-equilibrium statistical mechanics provides the future field of development in terms of which the complex phenomena will need to be eventually understood.

Besides the above, there are two new important additions: The 'Letters' journal and the 'Review Journal'. Both are extremely important. There has not existed so far a 'Letters' journal on the Indian scene, which represents a rapid movement of the scientific scene and the face of exciting science that requires a rapid publication. Though some of the existing journals may claim that they do have provision for rapid publications, it is not the same thing as the whole journal being a 'rapid' one, because a regular journal appears at its own pace and an important result deserving rapid publication does not get highlighted.

A 'Review Journal' with reviews from prominent scientists in a given field would be useful and fruitful for young researchers wanting to learn about a field. In fact, a scholarly review will provide a much wider perspective to a given field in relationship to other related fields. Such reviews by prominent physicists of the country will inspire and encourage the concept of broad scholarship as against just publishing in one's own narrow field.

Finally, I have also proposed a journal for the physics education, which ought to provide a bridge between the research community and the teaching community through which there should exist exchange of ideas resulting in better teaching standards, as the teachers interact with the researchers to get updated in their knowledge, and the teachers also pose challenging problems of conceptual nature to the researchers. This journal ought to play an important role in bringing together teachers and active researchers, who unfortunately seem to stand apart from each other. The fact that needs to be recognized is that researchers do have a lot at stake in getting good students, who can be nurtured only by good teachers. It is therefore imperative to encourage the interaction between teachers and researchers.

It is also to be noted that the classifications given above are different from the standard classification that some of the well-known journals follow. For example, *Physical Review* has the classification: Part A: Atomic, molecular and optical physics and related fundamental processes; quantum mechanics, including quantum information. Part B: Condensed matter and material physics, which includes phase transitions, disordered systems, magnetism, superfluidity and superconductivity. Part C: contains essentially nuclear physics-based articles, which include hadronic physics and QCD, electroweak interaction and nuclear astrophysics, etc. Part D: reports elementary particle physics, gravitation and cosmology. Part E: Multidisciplinary in character, reporting on collective phenomena of many-body systems, such as plasma physics, soft matter–granular materials, colloids, complex fluids, liquid crystals and polymers, etc.

A similar kind of classification is seen in the *Journal of Physics* and *EPJ*, the two most prominent European journals.

The *Physical Review* classifications are more fine-scaled and more phenomena-specific. Our proposed journals cannot yet afford such a fine-scaled classification. The above-mentioned classification for the proposed 'Open Indian Journal of Physics' is thus more broad-based, defined by scales of phenomena which we can afford initially, given our perceived limited base of readership and contributors, so that there is a feeling of more interconnectedness of phenomena reported.

Constitution of the journals

Each of these journals would need to have an Editorial Board with an Editor-in Chief, which ought to have an international flavour, and should have a limited tenure of say three years – very much on the lines of *Physical Review*. All journals ought to be guided by the Advisory Committee for uniform editorial policy matters.

The day-to-day editorial aspects of a journal are to be carried out by an editorial staff-headed by an Associate Editor and Assistant Editor under whose

signatures the correspondence to the authors ought to be conducted, rather simply by assistants. Such an arrangement inspires confidence among the authors that their submissions are being seriously taken care of. We actually have a big pool of scientists who may have retired or are close to retirement, but could be enthusiastic about supporting such a venture and could well be requested to serve as full-time Associate and Assistant Editors with some appropriate remuneration for the job carried out. There is really no substitute for having full-time editorial staff for a journal to have its editorial functions carried out effectively and professionally. The presence of experienced scientists in the positions of Associate and Assistant Editors would provide much greater credibility and respectability to the editorial process, and which would in turn inspire greater confidence among the contributing authors.

There may be other organizational aspects of the journals which may be deliberated upon as the situation may demand.

Concluding comments

The Indian science stands today at a rather peculiar juncture. It will be presumptuous for me to talk about the whole of science, because I am only a physicist. So I shall talk only about physics. Maybe what I say will be strongly refuted by some. But, so be it.

We do have undoubtedly a large body of physicists who compete with the best in the world in most of the disciplines. But in terms of their interaction with other less-privileged teachers and scientists in the country, they are in what I would call a 'runaway' state – like the runaway electrons in a plasma where they acquire so much energy that they cannot give energy to the other electrons in the plasma, because of the fact that the collision cross-section decreases with increasing energy. They thus become a 'group' separate from the rest. Likewise, the best of the Indian scientists form a group which stands, by and large, apart from the rest. They compete with the best in the world, and appear more as a part of the international group, and which, to be sure, is commendable and a good thing. But when one sees them publishing mostly in foreign-based journals, bypassing the Indian ones, then it does not seem quite proper, because they seem to move even further apart from the rest with whom they should be interacting. When a young scientist sees his seniors, whom he respects, value the foreign journals more than the Indian journals, this attitude perpetuates. Furthermore, when during career advancements, the promotion committees put a higher premium on publications in foreign-based journals, what kind of message are we sending down the line. And then one begins to wonder, whom are these Indian journals meant for? Are they meant only for the people in remote colleges and small universities? Are we not depriving these young, less-privileged scientists the opportunity to see the works of the famous Indian scientists because they do not see such works in Indian journals which ought to be accessible to them. And are we not also depriving them of the opportunity of their work being seen by senior scientists and appreciated. We have unfortunately created a situation where the two groups stand apart, and will continue to do so unless we take serious note of the state of affairs.

The question one may well ask, is, if scientists in countries like USA, Europe and Russia publish their works in their own journals, why do Indian scientists resist in publishing in their own journals, which would enhance the value of these journals? We have created a vicious circle: people will not publish in them because they are not 'good enough' for them, and unless you publish in them their standard will not improve. Unless we take some measures to rectify this anomalous situation, we will remain stuck in this class divide which is certainly not healthy for the futuristic scenario for Indian science. It is therefore necessary that a rejuvanation of the Indian publishing scene be undertaken through a reorganization of the current journals so that Indian scientists could have pride in publishing in them.

When a draft of this article was shown to Gangan Prathap (former Director of NISCAIR), he sent me a copy of an article co-authored by him with the tongue-in-cheek title 'Publish in foreign journals and prosper, or in Indian journals and perish', published recently in *Current Science*[2]. The statistics presented therein is quite startling: 99% of the 'best' papers by Indian authors are published in foreign journals, with the Cochin University of Science and Technology topping the list with 100%, and Elsevier being the most preferred of the publishers, hogging the list with almost 50%.

Such statistics ought to be a cause for serious concern, because it betrays the kind of regard and confidence or lack of it that Indian scientific publishing attracts from its own members, no matter how much one tries to enhance its value through co-publishing agreements. The value of the journals will be automatically better enhanced when we begin to see 'best' papers from our own scientists being published in them, in particular from those serving on the editorial boards of these journals; otherwise one goes away with the impression that these journals are meant only for the 'other' scientists. The question implied obliquely by Prathap is: 'Can it ever happen in the near future, given the statistics that he has presented?' I think, we need to ponder over it seriously. I believe these facts again underscore the necessity of having a unified journal, as advocated in the preceding, which ought to evolve into one of the highest standards consistent with the standards of the Indian scientists, so that they do not feel shy of publishing in it.

1. Varma, R. K., *Curr. Sci*., 2014, **106**, 353–357.
2. Nishy, P. and Prathap, G., *Curr. Sci.*, 2011, **101**, 1516–1517.

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