Science Ph D in India: Finish early

In recent times, the Ph D degree has become only an entry-level training for an independent research career in science. Post-doctoral training of a few years is almost a necessity. In India at least, the independent science career seems to begin late, at about 35 years, an age that is too late to start in many professions. Studies indicate that better functioning and output, in general, may be associated with younger adulthood[1,2]. The earlier a researcher starts an independent career, the higher can be his/her efficiency and productivity. The duration of the doctoral work is crucial in this context.

There is a remarkable variability in the time taken for Ph D across institutions in the country, and even within individual institutions. While some obtain the degree within 3 years, many take 5–6 or more years. There are different reasons for this variability. The scientific problems form an important cause and, for many thesis topics, specifying a time limit can be difficult. There are other equally important issues that influence the duration of the doctoral work: (a) the available infrastructure and expertise, (b) funds for reagents and other support for a specific project, (c) the number of students per supervisor, etc.

Should there be an upper time limit for submission of the Ph D thesis? The central funding agencies (e.g. UGC, CSIR) that offer fellowship for doctoral work do so for a maximum of 5 years. This implies that they consider 5 years as enough time. Many experienced researchers would agree with this upper limit. We suggest that a nation-wide upper time limit of 5 years be imposed for the Ph D programme as well.

How could this be implemented? Possibly a departmental and/or institutional committee, with a few well-established researchers from outside, could ensure this. A system or an effort similar to this seems to already exist in some institutions. We think that such a system, and an efficient one when it comes to monitoring duration of a Ph D programme, should be part of every institution offering the Ph D programme. The Ph D proposals can be evaluated by such a committee both for its scientific value and for feasibility of completion of the work, say, within 4 to 5 years. The committee should also, apart from the supervisor, analyse the parameters mentioned in the second paragraph, without which there could be crowding effects that lead to inefficiency, delay and frustration. Repeated interactions between the research team and external experts, with special attention to the progress, would also help. Yearly work-presentations by students, before the committee, can be made mandatory. In all aspects, the student, supervisor and research committee should share the responsibility for completing the Ph D work within a stipulated time.

To generate independent researchers at an early age, it makes sense to start the Ph D work early. Towards this, it would immensely help if we encourage the trend of integrated M Sc/Ph D.

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AMIT BARDHAN[1]
K. KSHITISH ACHARYA[2,*]

[1]*Oklahoma Medical Research Foundation, 425 NE, 3rd Street, Oklahoma City, OK 73104, USA*
[2]*Institute of Bioinformatics and Applied Biotechnology, G-05, Tech Park Mall, ITPB, Whitefield Road, Bangalore 560 066, India*
**e-mail: kshitish@ibab.ac.in*

Modelling problems for impact factor

The correspondence by Kale and Yerneni[1] proposed a new model for the distribution of impact factors, based on a gamma distribution. They assumed that the distribution of impact factor is bounded by a finite positive number b, the maximum possible value of impact factor in a given discipline. Their model is specified by the cumulative distribution function (cdf):

$$F(x) = 1 - \exp\left(-\frac{ax}{b-x}\right), \qquad (1)$$

where b is the maximum possible impact factor, $0 < x < b$ and $a > 0$.

It appears to us that the distribution given by eq. (1) has been known at least since the late 1950s. In the context of strength modelling, Kies[2] and Phani[3] provided two generalizations of the Weibull distribution given by the cdfs

$$F(x) = 1 - \exp\{-\lambda[(x-a)/(b-x)]^{\beta}\}, \qquad (2)$$

and

$$F(x) = 1 - \exp\{-\lambda[(x-a)^{\beta_1}/(b-x)^{\beta_2}\}, \qquad (3)$$

for $0 \le a < x < b < \infty$, $\lambda > 0$, $\beta > 0$, $\beta_1 > 0$ and $\beta_2 > 0$. These distributions have been documented in several books, most recently by Murthy *et al.*[4]. It is clear that the distribution that Kale and Yerneni[1] have introduced is a simple particular case of eqs (2) and (3).

The purpose of this correspondence is not just to provide priority statements for the model used by Kale and Yerneni. We feel that the results as well as the references mentioned above can be of assistance in modelling problems of the type considered by Kale and Yerneni[1].

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SARALEES NADARAJAH*
SAMUEL KOTZ

School of Mathematics, University of Manchester, Manchester M13 9PL, UK
**e-mail: saralees.nadarajah@manchester.ac.uk*