'reflective documentation and discourse' in his exploration and analysis of 'how [Wikipedia's] norms emerge and how they are enacted and understood'.

This book may be read as an answer to the all-important question: Just how does Wikipedia get an encyclopaedia out of the work of so many with such diverse backgrounds, interests and motivations? But Reagle's academic impulse – this book grew out of his doctoral thesis – takes him beyond the cultural norms of Wikipedians. Thus, for example, we get a lively chapter on Wikipedia's intellectual technological ancestors. Reagle draws an analogy between today's Wikipedia and Belgian entrepreneur Paul Otlet's 'Biblion', a collection of abstracts obtained by 'stripping books of their opinion'. The grand idea of compiling the world's knowledge was also the inspiration behind early, web-based initiatives such as Xanadu, Interpedia, and Project Gutenberg. The Wikipedia revolution became possible only when this inspiring vision adopted the wiki technology for its practical realization.

In another chapter, Reagle presents and discusses popular and academic critiques of Wikipedia's vision, mission and practices. He has several fascinating sections on Wikipedia's developmental history and the influence of co-founders. And finally, Reagle does not shy away from touchy topics, such as the formation in 2006 of WikiChix group 'for female wiki editors to discuss issues of gender bias in wikis, to promote wikis to potential female editors, and for general discussion of wikis in a friendly, female-only environment'. [The decidedly male skew among Wikipedia contributors was in the news recently; see *New York Times*, 4 February 2011.]

All these different strands come together in a form that enhances our understanding and appreciation of Wikipedia's achievement, its democratic way of functioning, and its intense commitment to stay open and inclusive. One cannot but marvel at Wikipedia's institutional mechanisms that endow it with an ability to find that sweet spot where its lofty, elevating vision coexists in apparent harmony with a pragmatic, problem-solving approach to managing its affairs.

Wikipedia's iconic stature as a venue for productive collaboration on a massive scale deserves serious academic engagement, exploration and explanation. Reagle's book is a worthy contribution to this endeavour. While successful open source software projects have used the web well before Wikipedia, it is the latter that has inspired collaborative initiatives in many specialized fields. In Polymath projects, for example, mathematicians come together and collaborate on-line to solve outstanding mathematical problems [Timothy Gowers and Michael Nielsen, *Nature*, doi:10.1038/461879a]. Such projects share several themes and concerns with Wikipedia: aggregating contributions from many individuals, extracting the most relevant or elegant pieces from their work, assigning credit, conflict resolution, and technical and cultural solutions to facilitate collaboration. Thus, Reagle's analysis and insights should be useful to anyone participating in, planning or organizing, collaborative communities everywhere.

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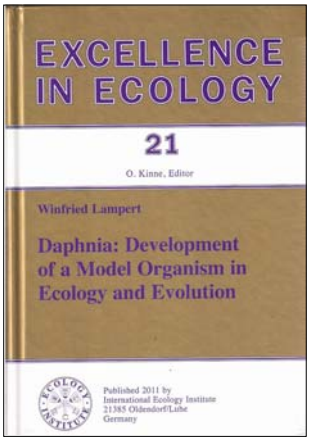

***Daphnia*: Development of a Model Organism in Ecology and Evolution.** W. Lampert. International Ecology Institute, 21385 Oedendorf/Luhe, Germany. 2011. 250 pp. Price: € 44.

The book under review is the 21st volume in the series '*Excellence in Ecology*' and the author, W. Lampert is the winner of the Ecology Institute Prize 2006 in Limnetic Ecology 'for establishing at the Max Planck Institute für Limnologie, Plön a World Center for the study of evolutionary ecology, where a stimulating mixture of ideas and research are in progress'.

The book commences with an introduction to the Ecology Institute Prize by O. Kinne and *Laudatio* by N. G. Hairston Jr. on the prize to Lampert. The book consists of eight well-organized chapters. The first two chapters describe various biological and physiological features, which make *Daphnia* a 'smart' model organism for research. Interestingly, the annual contributions on *Daphnia* have trebled from 200 publications in 1990 to 600 in 2010, as if to confirm that *Daphnia* is indeed a smart model organism.

Daphnia is known for its cyclomorphosis and diel vertical migration (DVM). More than the temperature, predator avoidance is now recognized as an important causative factor for the development of a huge crest induced by backswimmer *Notonecta* and neckteeth by midge larvae of *Chaoborus*. Efforts have been made to identify, isolate and assay the specific chemical, i.e. kairomone, acting as a signal for the presence predators of *Daphnia.* Two types of kairomones that emanate from predators are recognized: (i) from the backswimmers and fish, and (ii) from the midge larvae. The latter is a small (<500 Da), heat-stable, water-soluble organic molecule and it originates from the digestive tract of the midge larvae.

As in cyclomorphosis, the causative factor responsible for DVM is also traced to temperature, light, predator avoidance and UV radiation. Presently, there are overwhelming evidences to show that DVM is a predator-avoidance strategy and is a chemically inducible response to light. In the larger zooplankton context, the more conspicuous zooplanktons like the egg-bearing *Daphnia* are more easily detected by predators and hence these daphnids perform a more pronounced migration. The 12 m high plankton towers at Plön have also confirmed that the daphnids perform DVM in response to light only in the presence of chemical signal emanating from fish. Interestingly, the kairomone of fish is also a small (<500 Da), heat-stable (at pH 0.8–14), water-soluble molecule, but it is degraded within 24 h under non-sterile condition, suggesting its bacterial origin from the fish surface. Trimethylamine (TMA), a substance produced by bacteria that makes the fish 'smelly', is found to be part of a chemical cocktail that constitutes the fish kairomone. This book

indicates that UV radiation is a component of DVM only among the UV-sensitive daphnids inhabiting highly transparent waters.

The next chapter is on the distribution of *Daphnia*. Experiments are described in the context of ideal free distribution and deep water chlorophyll maximum, but only to suggest future experiments.

The sixth chapter on the parasites of daphnids enumerates a series of bacterial, fungal and protozoan parasites. By sequencing relevant recent information on epidemeiology, prevalence, horizontal and vertical distribution, modes of infection, spore survival, multiple infection, virulence, fitness and defences of the host, etc. the book has not left any area untouched. This chapter may prove useful to aquaculturists interested in the culture of live feed organisms, and traders and policy makers to frame laws for import and export of resting eggs/cysts (e.g. *Artemia*) of live feed organisms.

Most interesting is the chapter concerning dormancy of durable 'resting eggs' in the context of dispersal, colonization, life-history strategies and bed-hedging. The resting eggs of copepods are known to successfully hatch even after 350 years of dormancy, but the hatching success of the daphnids is limited to 50 years only. However, for reasons not yet known, <1% eggs alone hatch for every square metre area of sediments containing 2500 viable, dormant eggs of *Daphnia galeata mendotae* and 5000 eggs of *D. pulicare*. Incidentally, these values for the density (no./m^2) of resting eggs may be compared to 4000 and 122,000 eggs reported for the marine cladocerans *Podon polyphemoides* and *Penilla avirostris* respectively[1]. That the DNA can be extracted from the dormant eggs of *Daphnia* and that its 200-yr-old epihippia can be used to trace environmental and anthropogenic changes induced on climate, acidification, eutrophication, pollution, etc. open totally new avenues for fascinating research.

The last chapter on the genomic future informs the availability of complete genome of *Daphnia pulex* and sequencing of *D. magna*, which is in progress. It is heartening to know about the participation of 375 researchers from 19 countries in the *Daphnia* Genomics Consortium. With the ongoing interest in environmental genomics, the cladocerans have a lion's share of 8% in the nearly 500,000 references in the ECOTOX database. With these developments, *Daphnia* shall certainly become a smart model organism for research in ecology and evolution.

Lampert needs to be complimented for having comprehensively summarized relevant information citing 568 references from publications widely scattered in 120 journals, and 60-odd books. Yet a glaring omission is the total negligence/ignorance of publications concerning tropical daphnids. It is rather unthinkable of a book, which neglects the Japanese contribution; Miyakawa *et al*. (2010) is the only Japanese publication cited in the book. Lampert could have much benefitted, had he referred to at least one review dedicated to O. Kinne on his 70th birthday[2]. In keeping up with the excellent tradition of the series edited by Kinne, the book is a useful addition to biologists, limnologists and aquaculturists.

1. Onbe, In Proceedings of the Symposium on Warm Water Zooplankton, NIO, Goa, 1977, vol. 1, pp. 383–398.
2. Pandian, T. J., In *Reproductive Biology of Invertebrates* (eds Adiyodi, K. G. and Adiyodi, R. G.), Oxford & IBH Publishers, New Delhi, 1994, vol. VI, pp. 39–166.

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Annual Review of Cell and Developmental Biology, 2010. Randy Schekman, Larry Goldstein and Ruth Lehmann (eds). Annual Reviews, 4139 El Camino Way, P. O. Box 10139, Palo Alto, California 94303-0139, USA. Vol. 26, xii + 776 pp. Price not mentioned.

This volume is a collection of several comprehensive, critical and readable reviews on a wide variety of topics such as stem cells, membrane transport, cell migration, chromatin remodelling, novel cellular imaging techniques, systems biology, etc. The book begins with a perspective chapter by John Gerhart, who has made pioneering contributions in the areas of enzyme regulation, early amphibian development and evolutionary biology. Gerhart and his colleagues had analysed the feedback inhibition of aspartate transcarbamoylase, the first enzyme of the pyrimidine biosynthesis pathway, which served as a model of allosteric regulation. Later on he studied the axis formation in early development using *Xenopus* egg as model system. His work described cortical rotation, a 30° movement of the egg's cortex over tracks of microtubules.

One of the most exciting topics of research is stem cells which draws the attention of researchers from a wide variety of backgrounds. This excitement in stem cell research is due to the perception that these cells have the potential to generate desired tissues under appropriate conditions which could possibly be used to treat patients who have permanently damaged tissues. Three articles in this book deal with different aspects of stem cells.

The main feature of embryonic stem cells is that they possess the potential for self-renewal as well as the ability to generate all cell types (pluripotency). In contrast to embryonic stem cells, the tissue stem cells have more limited potential for self-renewal and development (multipotency). A combination of some transcription factors (Oct 4, Nanog, Sox 2, c-Myc) can induce a state resembling pluripotency in cells derived from adults. During the last 5 years, impressive progress has been made in understanding molecular mechanisms underlying pluripotency. Lessard and Crabtree provide an excellent review on 'Chromatin regulatory mechanisms involved in pluripotency'. A combination of several approaches such as genome-wide analysis, proteomics and genetics has advanced our understanding of the molecular mechanisms of pluripotency, which is a heritable and stable state. Chromatin remodelling plays an important role in this process and the role of various chromatin-remodelling complexes in pluripotency is reviewed in this article.

How do stem cells recognize and process various biochemical and biophysical signals which collectively regulate their function and cell fate? Recent work has shown the importance of solid-phase mechanical and immobilized biochemical signals in tissue development and homeostasis. Various engineered materials and cell-culture systems provide a means of studying the regulatory role of microenvironmental signals in regulating the behaviour of stem cells.