Science: An All Encompassing Field

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Editorial Commentary

1 Introduction

What unites science, as Sir David Cox mentioned, is not the subject matter we all work in, but the methodology and the thought process that help solve the problems that arise [1]. Put differently, it is the replicability of its methods, the validity of its findings and reliability of its instruments and techniques.

The diversity in science now emphasizes that not a single subject matter will work alone in isolation - especially if you are working in applied sciences, but has to learn from others. Even so, contemporary applied sciences have extended this collaboration to the social sciences [2]. For instance, in implementation science they have learnt to involve social sciences to inform human behaviour if scaling-up of interventions is to be a success.

This brings us to the issue at hand. The introduction of the Journal of Science and Technology under the umbrella of the Faculty of Science, is for the sole purpose of communication of *all sciences* and thereby foster the philosophy of collaborative research. As Sutherland noted in his treatise- "Not Disseminating Your Results" is a twentieth sin that scientists often commit [3]. As the saying goes, the three important things in real estate are location, location, and location. In academia, three important things are communication, communication, and communication. From Latin origin of *communis*, communication means to share. This literally mean to announce, to broadcast, to impart, to assert, and even to rant! We can only formulate policy if we communicate and rant. We must therefore strive to communicate and we believe that a home grown journal is the best forum to communicate with our stakeholders.

This is an era of team science, and we believe an interdisciplinary science journal is ideal. This inaugural issue has attracted contributions from various fields of science including Computer Science, Biological Sciences, Statistics, Mathematics, Chemistry, Geology and Physics.

2 How to Begin

Science should contribute to society for it to remain relevant. This is exactly what this inaugural issue has tried to achieve. A total of 10 articles have been assembled from different areas of research. Archibong gives a short article which attempts to resolve an outstand-

ing problem on the ground electronic state of the AlS_2 molecule. Previous work suggested a cyclic isomer as the lowest energy structure. However, the present calculations show that the AlS_2 may exist in two isomeric forms that have nearly the same energy. The linear isomer, however, is found in the present calculations to be more slightly stable than the cyclic isomer. Another short communication is by Shyam Singh who proposes a very simple new technique for the determination of impurity in liquids based on the refractive index. This technique requires two similar gratings, two similar low power lasers emitting same wavelength and a position detector. The change in refractive index of liquid determines the impurity in a liquid.

Oyedele and co-authors are reporting on the concentrations of naturally occurring radionuclides ^{40}K, ^{232}Th and ^{238}U in soil samples taken from the Neudamm campus of the University of Namibia. The results obtained indicate that the campus has a normal background radiation. Two contributions from pure mathematics are *Loop space homology of some homogeneous spaces* and *On smoothness and the totally strong properties for nearness frames* by J.-B. Gatsinzi and M.M. Mugochi, respectively. Gatsinzi provides a new method to compute the loop space homology of homogeneous spaces. The loop space homology applies to many areas of Mathematics and Physics including Morse Theory, Brane Topology, String Theory and Quantum Field Theories. Mugochi's paper is part of a study of certain types of structured lattices called nearness frames. It is a contribution to the point-free approach towards the classical study of nearness spaces initiated by H. Herrlich in 1974. The properties of smoothness and total strongness are investigated.

Working in the world of small mammals, Mfune and others present findings on host specificity, prevalence and intensity of infestation of fleas on small mammals studied at selected sites in the city of Windhoek, Namibia. This is an area of considerable research interest, particularly as small mammals host diverse communities of ectoparasites including fleas. The effects of parasitic infections (endoparasites) and infestations (ectoparasites) on their respective hosts has public health implications considering that this is coming at an age of zoonotic diseases transmission which can be enhanced with changing climatic conditions the world is experiencing. Kazembe and Neema applied Bayesian statistical models to analyse the delay in seeking health care in Namibian society. They hypothesized that the timing is a function of myriad variables including socio-economic, behavioural, demographic and contextual factors, of which some are observable while others are unobservable. They introduced random effects to capture unobserved factors-particularly permitting regional differences to be modelled. Another application is from communication and computer science, in the paper by Jameson Mbale. He presents the Educational Emulation of Soft Handoff Teaching Model (EESH-TM), its design and development to model the mechanism of soft handoff. The EESH-TM is comprised of: two Base Stations, two Cells, a Mobile Station, and two interacting signals. This teaching model clearly demonstrate, step-by-step, various scenarios with a mobile unit moving between two Base Stations clearly illustrating how Soft Handoff works. Hence, the utilization of this teaching tool presented inexperienced students with an opportunity to observe and understand how signal hand off works in a wireless network. The success of the model was demonstrated by higher examination scores and greater student interest in the topic. Julies and Khalongo investigated the re-

lationship between dissolved oxygen and the diversity of zooplankton at depth throughout the water column, onshore and offshore on the Namibian coast. The study find that dissolved oxygen does not affect diversity of zooplankton directly and suggest that dissolved oxygen concentration has an indirect effect through the interaction between several biological and environmental factors that affect zooplankton assemblage composition. The last contribution by Mapani et al. describes the nature of the Coal in Hwange and in general similar coals in Southern Africa such as Zambia, Malawi and Mozambique. However what was not done before is to ascertain the source and cause of heavy metals in these coals- and their paper find out that the depositional environment contributed significantly to the presence of these metals-which in turn show us the nature of the earth's convective and crustal disturbances associated with plate tectonics.

3 ISTJN philosophy

This journal adopts the philosophy of two journals we have grown to admire: Proceedings of the National Academy of Sciences [4] and Public Library of Sciences ONE [5], which aim to promote scholarly publishing regardless of impact. ISTJN is not yet an impact journal, but its mission is a research communication forum to stimulate and engage public debate in Namibia and beyond through its internet presence. All contributions will be peer-reviewed, a fundamental principal and pillar of scholarly publishing [6]. The five simple rules to publishing we have adopted are [7]:

1. The study presents the results of primary scientific research.
2. Results reported have not been published elsewhere.
3. Experiments, statistics and other analyses are described in sufficient detail.
4. Conclusions are presented in coherent fashion, supported by the data.
5. Research meets all ethical standard and integrity.

It is our hope, as an editorial board, that ISTJN will strive to be the communication forum for our scientists.

References

[1] Davison AC, Dodge Y, Wermuth N (2005). Celebrating Statistics. Papers in honour of Sir David Cox in honour of his 80th birthday. New York: Oxford University Press.

[2] Vicens Q, Bourne P (2007). Ten simple rules for a sucessful collaboration. PLOS Computational Biology. doi/10.1371/journal/.pcbi.0030044.

[3] Sunderland W (2006). Ecological census techniques. New York: Cambridge University Press.

[4] PNAS: http://www.pnas.org.

[5] PLoS ONE: http://www.plosone.org.

[6] Bourne P, Barbour V (2011). Ten simple rules for building and maintaining a scientific reputation. PLOS Computational Biology. doi/10.1371/journal/.pcbi.1002108.

[7] Damison P. PLoS ONE Publication Criteria [http://www.plosone.org].