

Musings of a Post-Stimulus Mind...

David N. Kennedy

Published online: 12 May 2009
© Humana Press 2009

The current global economic downturn affects us all in many different ways. The American Recovery and Reinvestment Act of 2009¹ includes support designed to stimulate the economy of medical research for Fiscal Years (FYs) 2009 and 2010, in part through funds directed to the US National Institutes of Health (NIH) for this purpose. One sweeping, general-purpose, investigator-initiated funding opportunity was undertaken recently using a new grant mechanism and process, entitled “Recovery Act Limited Competition: NIH Challenge Grants in Health and Science Research (RC1)”.² Constrained in scope to specific ‘Challenge Topics’, identified by the various NIH Institutes and Centers, this program can be considered the front-line of attack on the psychological doldrums that had begun to infect the research community in light of the recent economic downturn (as well as other, hopefully temporary, drains on the US tax dollar) that has resulted in dramatic reductions in availability of research support. It can certainly be said that this program has ‘stimulated’ a lot of talk, thought, and brainstorming for new and exciting ideas in order to compete for this funding. The actual economic stimulation of the RC1 program, however, cannot be expected to be substantial, as the math clearly shows: there are ~200 awards expected to be made, out of approximately 1,000 ‘Challenge Topic’ areas, from an anticipated pool of multiple thousands of applicants.

¹ <http://www.recovery.gov/>

² <http://grants.nih.gov/grants/guide/rfa-files/RFA-OD-09-003.html>. For a more complete portfolio of stimulus-related funding opportunities at the NIH, see <http://www.nih.gov/recovery/index.htm>

D. N. Kennedy (✉)
Division of Neuroinformatics, Department of Psychiatry,
University of Massachusetts Medical School,
Worcester, MA, USA
e-mail: David.Kennedy@umassmed.edu

Depending upon the actual number of applications received (now estimated at over 15,000), one can rest assured that this will be a much harder grant to get than the typical ‘regular’ research grant, even in this economic climate. So, yes, \$200M will flow into the research economy, but at what cost in the redirection of the intellectual focus of the community over the past months? But alas, leaving the mathematical improbabilities aside like a seasoned lottery ticket purchaser, my ‘see a grant opportunity—write a grant’ mentality drew me into the fray of frenzied and frenetic fundraising festivities. In the aftermath of this process, I find myself left with only a few spare non-refractory neurons in order to piece together an insightful set of editorial comments for this issue. So I leave you, dear reader, with a few random musings that only loosely fit together.

Data sharing, in practice and policy, is a common topic in the pages of this journal (Eckersley et al. 2003; Gardner et al. 2003; Kennedy 2003, 2004, 2006; Liu and Ascoli 2007; Van Horn and Ishai 2007; Teeters et al. 2008; Van Horn and Ball 2008). The good news, in the field of neuroimaging, is that more and more data is becoming available (see Alzheimer’s Disease Neuroimaging Initiative (ADNI) (Mueller et al. 2005), Open Access Series of Imaging Studies (OASIS) (Marcus et al. 2007), and the NIH Study of Normal Brain Development (Evans 2006), for example). The bad news, for anyone who has actually tried to avail themselves of this wealth of information, is that the consumer of this data is faced with a dramatic variability in the types of ‘data sharing’ and ‘data use’ policies that they encounter. These policies range from, and I paraphrase a bit, “Here, take it” to “You can only have it if [insert your divine being here] approves, and signs in triplicate, and even then we might not let you have it...”. Is it unreasonable to expect a more uniform, and less

burdensome, set of sharing policies across the field (like seen for gene sequence data)? Is there a ‘right’ sharing policy? Are the lenient policies ‘too’ lenient or are the strict policies stricter than they need to be? This variance begs the question of just who is the sharing policy designed to serve, anyway? Many objectives can be, and variably are, explicitly or implicitly represented in these sharing policies. These objectives include: the protection of patient and their potentially identifiable information, the protection of the originating investigators scientific interest, the protection of the originating investigator’s institution (and their lawyers), the funding agencies and their interest in tracking their investment, etc. The open-source, free-love hippie in me wants to see the minimal necessary barriers to data sharing. Any site-specific addition over the ‘minimal sharing standard’ (whatever that turns out, in practice, to be) should be explicitly justified by the site, or else potential data users will assume the implicit objectives, and typically assume the worst.

While I’m at it, why do we really need so many different varieties of software licenses? The Neuroimaging Informatics Tools and Resources Clearinghouse, NITRC (Luo et al. 2009), a NIH-funded website to facilitate sharing of software, amongst other resources, lists over 42 different licenses for the 97 software resources currently listed there. Shouldn’t something like the Creative Commons family of licenses,³ in a form suitable for application to software, provide a common framework to express virtually any of these individual licenses? According to their website, Creative Commons is “... dedicated to making it easier for people to share and build upon the work of others, consistent with the rules of copyright. [They] provide free licenses and other legal tools to mark creative work with the freedom the creator wants it to carry, so others can share, remix, use commercially, or any combination thereof.”⁴ These licenses can range from ‘accommodating’ to ‘restrictive’ and appear fairly customizable. Like data sharing discussed above, while deviation from most ‘accommodating’ is certainly permitted, it is definitely of interest to the user the rationale behind the addition of restrictions, and whose needs are being met by the restrictions. As Karl Marx, the founder of communism has taught us, paraphrasing again, software and data obtained using the taxpayer’s dollar should really belong to the people.

Speaking of neuroinformatics resources, this journal continues to lead in the area of explicit declaration resource utilization through the Information Sharing Statement that accompanies most published articles (Kennedy 2004). The next phase of this movement is to add standardization to this statement, when possible. Nowadays, many resources (software, databases, websites, etc.) are (or should be)

indexed in one or more of the resource registries that exist (such as NITRC, introduced above, the Neuroscience Information Framework (NIF) (Gardner et al. 2008), or the International Neuroinformatics Coordinating Facility (INCF) Software Center⁵). When possible, resources listed in the Information Sharing Statements should be accompanied by a standardized reference. This greatly disambiguates association between articles and the associated resources through the standards, and will greatly enhance the ability to comprehensively link between resources and publications. This concept can be taken a step further with the expectation at a Universal Unique Identifier (UID) could be formulated that would provide a common identifier amongst the various resource registry systems. Such issues become both more important and more tractable as interoperations between registries become commonplace. Indeed NIF-NITRC⁶ and NITRC-INCF⁷ resource sharing has already begun, which provides a great magnification to the find-ability and usability of resources listed at any of these sites.

And on the topic of NITRC, there is a NITRC project for the journal, Neuroinformatics, which can be found at <http://www.nitrc.org/projects/nein/>. Feel free to use and interact with the journal through this mechanism.

Are we stimulated yet?

References

- Eckersley, P., Egan, G. F., et al. (2003). Neuroscience data and tool sharing: a legal and policy framework for neuroinformatics. *Neuroinformatics*, 1(2), 149–165. doi:10.1007/s12021-003-0002-1.
- Evans, A. C. (2006). The NIH MRI study of normal brain development. *NeuroImage*, 30(1), 184–202. doi:10.1016/j.neuroimage.2005.09.068.
- Gardner, D., Akil, H., et al. (2008). The neuroscience information framework: a data and knowledge environment for neuroscience. *Neuroinformatics*, 6(3), 149–160. doi:10.1007/s12021-008-9024-z.
- Gardner, D., Toga, A. W., et al. (2003). Towards effective and rewarding data sharing. *Neuroinformatics*, 1(3), 289–295. doi:10.1385/NI:1:3:289.
- Kennedy, D. (2006). Where's the beef? Missing data in the information age. *Neuroinformatics*, 4(4), 271–274. doi:10.1385/NI:4:4:271.
- Kennedy, D. N. (2003). Share and share alike. *Neuroinformatics*, 1(3), 211–213. doi:10.1385/NI:1:3:211.
- Kennedy, D. N. (2004). Barriers to the socialization of information. *Neuroinformatics*, 2(4), 367–368. doi:10.1385/NI:2:4:367.
- Liu, Y., & Ascoli, G. A. (2007). Value added by data sharing: long-term potentiation of neuroscience research. A commentary on the 2007 SfN Satellite Symposium on data sharing. *Neuroinformatics*, 5(3), 143–145. doi:10.1007/s12021-007-0009-0.
- Luo, X. Z., Kennedy, D. N., et al. (2009). Neuroimaging informatics tools and resources clearinghouse (NITRC) resource announcement. *Neuroinformatics*, 7(1), 55–56. doi:10.1007/s12021-008-9036-8.

³ <http://creativecommons.org/about/licenses/>

⁴ <http://creativecommons.org/about/>

⁵ <http://software.incf.org/>

⁶ <http://nif.nih.gov/>

⁷ http://www.nitrc.org/forum/forum.php?forum_id=882

- Marcus, D. S., Wang, T. H., et al. (2007). Open Access Series of Imaging Studies (OASIS): cross-sectional MRI data in young, middle aged, nondemented, and demented older adults. *Journal of Cognitive Neuroscience*, 19(9), 1498–1507. doi:[10.1162/jocn.2007.19.9.1498](https://doi.org/10.1162/jocn.2007.19.9.1498).
- Mueller, S. G., Weiner, M. W., et al. (2005). Ways toward an early diagnosis in Alzheimer's disease: The Alzheimer's Disease Neuroimaging Initiative (ADNI). *Alzheimer's & Dementia*, 1(1), 55–66. doi:[10.1016/j.jalz.2005.06.003](https://doi.org/10.1016/j.jalz.2005.06.003).
- Teeters, J. L., Harris, K. D., et al. (2008). Data sharing for computational neuroscience. *Neuroinformatics*, 6(1), 47–55. doi:[10.1007/s12021-008-9009-y](https://doi.org/10.1007/s12021-008-9009-y).
- Van Horn, J. D., & Ball, C. A. (2008). Domain-specific data sharing in neuroscience: what do we have to learn from each other? *Neuroinformatics*, 6(2), 117–121. doi:[10.1007/s12021-008-9019-9](https://doi.org/10.1007/s12021-008-9019-9).
- Van Horn, J. D., & Ishai, A. (2007). Mapping the human brain: new insights from fMRI data sharing. *Neuroinformatics*, 5(3), 146–153. doi:[10.1007/s12021-007-0011-6](https://doi.org/10.1007/s12021-007-0011-6).