The reviewer finds my recognition that there are potentially hundreds of thousands of relationships that scholars might study to be an argument against a universal classification. But it is in fact an argument in favor of the sort of universal classification I advocate: Rather than try to signify individually this massive number of possible combinations (and especially to do this over and over in different domains), we instead rely on identification of the much smaller set of things and relationships that generate this huge number of combinations (Szostak 2011, 2012a). And if users can then search by any combination, the recall issues Fox mentions will be greatly alleviated (my approach allows structured postcoordinated searching).

And the beauty is that these things and relationships lend themselves to a far greater degree of cross-group understanding than the combinations they generate. Groups, that is, disagree far more about how/if one thing affects another than about the nature of the things and relationships themselves (the key argument of Szostak 2003).

Whether these more basic concepts lend themselves to 'enough' shared understanding is an empirical question. We should not assume that we know the answer because of prior beliefs regarding ambiguity. The Basic Concepts Classification is now developed far enough for people to judge for themselves (Szostak 2012b). (see also the Integrative Levels Classification at www.iskoi.org/ilc.) I am the first to confess that with some elements of that classification I encountered an apparently irreducible degree of ambiguity greater than I would like (political ideology leaps to mind), but I would submit that the vast majority of the terms used are very non-ambiguous and all are non-ambiguous enough for the purposes of classification.

Does the BCC manage to eschew bias toward any group? That is certainly the aim. If some bias can be spotted I am confident that it can be repaired. But of course this is also a matter of judgment. Fox implies that the decisions made in developing the classification may have been biased, but – though noting that I describe those decisions in detail – provides no example of a decision that I made while developing the classification that reflected any particular bias. I am, I confess, guilty of making decisions.

A final point: I am also not sure why we bother classifying anything if we do not think that human understanding can advance, but that is a discussion for another day.

But I would close by sincerely thanking Fox for reading my work, commenting upon it at length, and recognizing the importance of the goals I have been pursuing. There is a great deal to like in her review. If her review (and this response) stimulate greater interest in my research I am in her debt.

Rick Szostak

Department of Economics, University of Alberta, Tory Building 9-18, Edmonton, Alberta, T6G 2H4, Canada, <rick.szostak@ualberta.ca>

References

Szostak, Rick. 2003. *A schema for unifying human science: interdisciplinary perspectives on culture*. Selinsgrove PA: Susquehanna University Press.

Szostak, Rick. 2010. Universal and domain-specific classifications from an interdisciplinary perspective. In Gnoli, Claudio and Mazzochi, Fulvio eds., *Paradigms and conceptual systems in knowledge organization: Proceedings of the Eleventh International ISKO Conference 23-26 February 2010, Rome, Italy.* Würzburg: Ergon Verlag, pp. 71-77.

Szostak, Rick. 2011. Complex concepts into basic concepts. *Journal of the American Society for Information Science & Technology* 62: 2247-65.

Szostak, Rick. 2012a. Classifying relationships *Knowledge organization* 39: 165-78.

Szostak, Rick. 2012b. *Basic Concepts Classification*. http://www.economics.ualberta.ca/en/FacultyandStaff/~/media/economics/FacultyAndStaff/Szostak/Szostak-Basic-Concept-Classification2.pdf.

A Knowledge Classification Model Based on the Relationship Between Science and Human Needs

The basic needs of human beings are in natural aspect. Health, sex desire, foods and a house to live etc. belong to this level. As social animals humankind should have middle level needs—the social needs. These needs include money and love (to love and be loved). Money is the foundation for one to keep relationships in society. And the objects of love are relatives, friends and lovers. Curiosity promotes human beings to learn and think. It is the highest need of humans—the thinking level. By thinking about how to deal with the 3-level needs, people create science. People need each other and individuals' needs sum up the needs of all people.

As a free human, he/she needs sports knowledge to keep health, appropriate sex knowledge in order to

give birth to a healthy baby, and some cooking knowledge to get some delicious foods. He also need some common sense to ensure the safety of living and traffic. All these knowledge are applications of natural sciences to individuals. Similar to needs of individuals, applications of natural sciences are medicine, agriculture and technology to whole human beings. What are the basic sciences of these applications? They are biology and physics. Of course, the basic of biology is physics and physics should include chemistry, earth science and astronomy. According to human needs, biology is the basis of all knowledge on sports, sex and foods (to individuals), medicine and agriculture (to all human beings). And the footstone of common senses of living and technology (such as material science, energy and information technology etc.) is physics.

Same as natural sciences, social sciences should also be divided into basic sciences and applications. Basic social sciences are economics and sociology. And economics is the base of sociology. Accordingly, individuals need investment knowledge to make money. And they also want knowledge about family and public relationships. And finance, commerce and politics (law etc. should be included) are applications of social science to all people.

The thinking science is about how people think. When a free human owns all he/she needs in the natural and social levels, he/she may want to rethink, rethink about all about the world and all about 3-level needs of human beings. Individuals need all knowledge of the world to satisfy their curiosity, so library science becomes important. To all people, education should be used to spread these knowledge. The basic of thinking science is itself: thinking science. Natural sciences and social sciences are essential to thinking science. And natural sciences are necessary to study social sciences.

In order to study science, people invent some tools to deal with all scientific problems. Languages are tools for describing and communicating these problems. And maths, philosophy and history etc. are thinking tools: maths help people think quantificationally and philosophy , history and arts (literature, music etc. included) from a qualitative view.

Guohua Xiao

Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, Shanghai 200032, China, <guohua.xiao@gmail.com>