Sharing Global Lessons in River Restoration, An interview with Professor Gary Brierley

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Gary Brierley is a geographer who specialises in the use of science to guide river management applications (especially rehabilitation and conservation activities). There has been extensive uptake of a research tool that he co-developed (the River Styles framework www.riverstyles.com). His work supports initiatives that promote river repair, using coherent scientific principles to establish a catchment-framed integrating landscape platform. He is particularly concerned with inter-disciplinary science and management, and the use of place-based research to inform policy, planning and on-the-ground applications. His research outputs include several books and edited volumes (especially Geomorphology and River Management (Brierley and Fryirs, 2005), River Futures (Brierley and Fryirs, editors, 2008) and Geomorphic Analysis of River Systems. An Approach to Reading the Landscape (Fryirs and Brierley, 2013)), over 100 internationally refereed journal articles, over 20 refereed conference proceedings, over 20 sections in books, various review articles/comments, and over 55 commissioned and/or consultancy reports. He has taught professional short courses in fluvial geomorphology and applications of the River Styles framework in various parts of the world.

1. Professor Brierley, please introduce yourself and explain your affiliation with rivers.

My passion for rivers has extended through my life. I have lived, studied, and researched on the banks of rivers in England, Tunisia, the West Bank, Canada, Australia, Fiji, Papua New Guinea, and New Zealand. From this emerged a commitment to respect, strive to understand and protect river diversity, and the quest to develop management applications that are appropriate to the system under investigation – working with its inherent variability.

A fabulous set of postgraduate students at Macquarie University in Sydney fashioned deep understanding of geomorphic river responses to human disturbance in southeast Australia. Work with river managers prompted the development and uptake of the River Styles framework, building upon the mantra ‘know your catchment’. These various ideas came together in a 2005 book co-authored with Kirstie Fryirs.

These interests have continued and expanded since I moved to the University of Auckland in New Zealand in 2005. Subsequent opportunities to support uptake of the River Styles framework have included field investigations and professional short courses in China, India, Malaysia, Brazil, Austria, Sweden and the United States.

2. What do you see as the key challenges to conserving and restoring rivers (in Europe and/or worldwide)?

Although there’s always room for improvement in river science, to me the issue of greatest concern in fashioning healthier river futures is to improve the use that is made of available understandings. In many instances I feel that we know what we want (or ought) to be doing, but all too often legislative, societal or institutional impediments ‘get in the way’.

Significant choices must be made in determining what we want rivers to be like, and how we want them to behave. Restoration practice is complex and contextual (situated). It entails negotiations among divergent aspirations, values and goals.

To me, societal engagement is the key to healthier river futures. This is really a question of mindsets, perspectives and values: how important are healthy rivers alongside other socio-cultural values (especially economic and political concerns). I see parallels with litter campaigns of past decades – unless those who live along rivers care about their rivers, we will never support authentic conservation and restoration activities. Moves towards ‘river communities’ promote owned (participatory) practices, for which incentives and appropriate institutional frameworks are required. These are far from easy tasks!

Sadly, I feel that in much of the world the ‘development and growth’ ethos is moving us backwards in environmental terms. Hard won conservation battles from the past are increasingly being recontested, especially in places where mining and logging activities are booming. For example, some contend that there is a ‘War on Science’ in Canada, where the Fisheries Act has been ‘gutted’.

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Similar experiences and pressures are underway in Australia, where Catchment Management Authorities were recently disbanded in New South Wales.

3. Which key actions would you prioritize to address these challenges?

If we're going to meet our potential in restoration practices, we have to set realistic yet visionary goals that clearly express what is achievable, what we seek to achieve, and why. Carefully crafted catchment action plans and prioritization frameworks are hard to find. To me, a conservation ethos should lie at the heart of such plans – looking after what's left before we start arguing about how to restore it at some stage in the future. Benefit-cost analyses tied to appraisals of ecosystem services and associated values are required to accompany such determinations.

I'd like to see more targeted interventions that demonstrate what can be achieved through process-based, catchment scale initiatives. Broader thinking on the range of potential management interventions is required, supporting passive restoration activities with a non-construction focus whenever possible. I particularly applaud moves towards space for the river, freedom space, or living river concepts.

Working with success is a critical step in restoration practice. Just as importantly, successes must be reported and communicated effectively. Sadly, I fear that an all too pervasive negativism surrounds appraisals of the effectiveness of restoration activities, with undue emphasis upon what doesn't or hasn't worked, to the relative exclusion of successful ventures where there is perhaps less to talk about and criticize (research thrives on a culture of criticism, which isn't overly helpful in this instance).

Finally, from quite a different perspective, I do not feel that restoration activities and practices will become appropriately embedded as a part of the social psyche unless we create appropriate governance and institutional frameworks to promote and support such activities. Of particular note with this regard is how are we going to develop attractive career structures to entice and capture the hearts and minds of talented people who want to work in this field?

4. What lessons can European river managers and restoration practitioners learn from experiences in other regions of the world? And what can other regions learn from Europe?

Restoration literatures are especially prominent in New World countries of North America and Australasia, where circumstances differ markedly from conditions in Europe. Hence, while big picture restoration planning features prominently in the former context, concerns for cultural and domesticated landscapes and ecosystems abound in the latter. Perhaps the most significant difference in framing management and restoration activities in Europe relative to some other parts of the world lies in endeavours to promote more effective community and practitioner engagement. While bottom-up Landcare and Rivercare initiatives fostered these developments in Australia, top-down institutionally framed initiatives have been instigated in Europe.

To me, the Water Framework Directive (WFD) is the most striking example of coherent future thinking in the river management arena. Much of the world can learn from its intent, design and implementation. Nothing is perfect, but unless a substantive legislative framing underpins activities, fragmented activities and practices are likely to ensue.

I also feel that moves towards more environmentally conscious lifestyles in Europe are truly commendable, whether in terms of the food we eat, the ways we travel around cities, or other lifestyle values and choices. In river restoration terms, such societal transitions are evident in increasing acceptance of an accommodation with nature in flood management and restoration programmes. Hopefully, these reframed perspectives as part of a tide of change towards restoration – the mainstreaming of restoration practices, wherein the shifting baseline of societal expectations supports (and expects) sustained improvements in river condition.

4. What needs to be done to improve the acceptance and uptake of cross-disciplinary approaches and guidance to restoring rivers such as the River Styles Framework and

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tools developed by REFORM?

Coherent catchment-framed applications provide critical guidance for effective restoration practice. Just as importantly, emerging technologies present remarkable capacity to develop place-based understandings to inform management. A suite of toolkits based on catchment-framed, process-based understandings is now in-hand, offering considerable prospect for uptake of more effective practices.

Fragmented science can only cause fragmented management. To me, it is the responsibility of researchers to develop integrative scientific guidance and promote its effective use. Consultation with stakeholders and end users is vital, clearly communicating coherent guidance using consistent terminology.

When practiced effectively, river rehabilitation is a form of adaptive management that promotes commitment to learning through experimentation. Whenever possible, activities should incorporate future variability into river restoration projects, shifting emphasis towards more flexible, open-ended and dynamic goals. Process-based analyses of evolutionary trajectory assess likely river futures, recognizing that uncertain outcomes, multiple future states and the emergence of novel ecosystems may occur. Effective stakeholder engagement as well as flexible and enabling institutions are elements required to underpin these endeavours.

5. The REFORM project is now halfway completed. What do you consider to be the most important potential outcome of the REFORM project, and how can this best contribute to river management?

I'm really impressed with the work of diagnostic indicators of restoration effectiveness, and emerging toolkits that prospectively present coherent conceptual frameworks to underpin Catchment Action Plans. To me, such proactive statements are a key component of future-proofing activities. Negotiations with end users are required to scope the uptake of these toolkits. Prospectively, ecosystem services and benefit-cost analyses will provide significant support for these endeavours. It may be helpful to prepare a set of principles on the use of open-ended principles to guide management applications. Negotiating a 'middle course' between scientific complexity and managerial simplicity is very difficult. Stakeholder (end-user) involvement provides critical guidance in the development and uptake of effective restoration practices.

Gary Brierley was interviewed on 6 December 2013 by Brandon Goeller (Transatlantic Fellow, Ecologic Institute) and Gerardo Anzaldua (Fellow, Ecologic Institute).

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