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Part I
Making links: processes, dynamics and systems [broadening the scope of geological interests, present and future to encompass the environmental sciences], C N Page, Preface, XXIII: 2-3, 2014.

MAKING LINKS - PROCESSES, DYNAMICS AND SYSTEMS
- a retirement editorial written for the RGSC's 200th anniversary

With this issue, I officially retire as Honorary Editor of the *Transactions of the Royal Geological Society of Cornwall*. From 1996, I spent a rewarding decade or more in editing not only this journal, which is the oldest continuously-published geological journal in the World, but also in producing the Society's quarterly newsletter '*Geolog*'. During the latter part of first decade of the present century, those who claimed to represent the Society cut-off all funding for such publications, without providing a viable alternative, and then disappeared off the scene. However, the 'old' contingent including the Editor survived in exile and has now rallied to re-establish the presence and the long, respectable geological record of this Society. To do so, a new Editor takes office herewith and with my support will work for a reasonable forward continuity.

Ups and downs have always been a part of Cornwall's geological history, as well as of its mining industry. Origins of the *Royal Geological Society of Cornwall* are indeed old, although geology, though the mining history of the county of Cornwall, is even longer, and been through good and bad times. Metals, especially tin and copper, have, of course, been mined and traded from Cornwall since pre-history, certainly for at least 2,000 years, some say for nearer 4,000, plus kaolin more recently. Hence, the history of geological thought in Cornwall has a particularly respectable pedigree. It is of interest to see how this inheritance has helped to grow further sciences on the back of greater specialisation and cross-fertilisation.

Early interest in geology clearly centred on the extractive industry. Exploration and adventure played a large role (indeed, both came naturally to a county with such a long coastline and maritime history). Prospecting more respectably replaced piracy, and became a valid science, through interest in knowing where the metalliferous lodes were, and how best to find them. This phase is what I call the 'what and where' phase of burgeoning geological interest.

Extraction itself spawned wider interests and developments around it, from methods of extraction, recovery and concentration of mined products, to necessities of how mines were kept dry and illuminated enough to work, to how the end-products were themselves transported. Trades anew developed. So did the Cornish pasty! Inevitably, innovations made by individuals 'scientists' came to the fore with practical engineering achievements, from those of Sir Humphry Davy, to those of Richard Trevithick. Key personnel – there are many others - have always played major roles in Cornwall, including those of mine-owning families, some of whom also contributed substantially to the railways. Our long mining history is dealt with excellently in many publications elsewhere.

Briefly I want to concentrate on where we are *going*, present and future. Great advances have been made in such fields as mining engineering, mining surveying and mining safety. Around mineral presence itself, there has also grown multiple, more academic, aspects of geological science, which in many ways have taken over as the primary 'modern expertise'. These aspects have important implications for how issues relating to mineral integrate with those of the wider environment. I call these the 'when, where, how and why' of the geology of the landscape around us. We might also add the 'who' in terms of attracting geological expertise, and exporting that knowledge. Indeed, at Camborne School of Mines today, one only has to look around at modern postgraduate students, to see that it is laboratories, GPS systems and computers that have largely replaced picks, shovels and

wheelbarrows, and that the range of countries with which our students are linked is now nearly global. Currently there is a continuing, strong, geology-related science-base, not just OF Cornwall, but more especially FROM Cornwall.

The RGSC has always attempted to reflect a breadth of interest, and the current number (Volume 23, No 1) takes this forward. My own interests in geology as an evolutionary geo-biologist, have been in attempting to understand *processes, dynamics and systems*. I want to know how each of these in the geological arena influences similar functions in the environmental arena, and through this route, influences equivalent functions in the biological arena and processes of change which characterises evolution. They are all linked, and to a significant degree, stimulated by one another.

These ideas are not new – Darwin understood the importance of making such linkages – especially stimulated by the influence of Sir Charles Lyell. Darwin and Captain Fitzroy made first landfall after return on the 'Beagle' in Falmouth, and stayed the night in Cornwall – Darwin at Burncoose, Fitzroy at Penjerrick, where each left a memento from their voyage, so there is a close local connection. Lyell's concept, that the processes of today provide a valid basis for interpreting the processes of the past ("the present is the key to the past"), still has a strong, multi-faceted validity. But today we can add that some past processes have been of even greater magnitude than those we see at present. Some processes have clearly happened on earth previously that are not known to occur today. This is what I propose as a 'supra-uniformitarianism' – we must be prepared to conceive that events of present type have probably always existed and influenced the earth, but that *in addition*, and especially in magnitude, many events at times have been wholly different in degree from those experienced today, having no living equivalent at the moment at which *we* happen to exist.

A particularly vivid example with local connection, was illustrated by Professor Colin Bristow and his talk at the recent 200th Anniversary Dinner for the RGSC, relating to the sheer *depth* of weathering that had driven the kaolinisation processes under climates of the Eocene Thermal Maximum – totally different from anything occurring on earth today. We only have to look at astronomical developments and especially planetary knowledge, to gain a realisation of how many other processes there may be or may have been, which until recently were beyond our imagination. This includes those of Earth Systems Dynamics. The influence of these on environmental and biological processes are challenging to interpret, but nevertheless a great modern stimulus to concerted geological-environmental interaction with respect to evolution, and thus to geo-biological thinking.

I welcome a broadening of our terms of interest and the light that a greater breadth of exploration in the environmental sciences may shed. In moving forward with *Transactions*, I am certain it would be with the approval of Lyell and Darwin and Davy too.

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