

Coming from an arts background, the prospect of interviewing the Director of ANU's Research School of Chemistry about how he creates knowledge was daunting. I formulated questions about Professor Martin Banwell's research, motivation and how he keeps up with the latest in his field—hoping that he wouldn't use too much scientific terminology.

The passion, energy and enthusiasm that a teacher exhibited, had convinced Banwell to become a chemist. Professor Banwell had originally majored in engineering. His exceptional teacher inspired a thirst for knowledge creation in Professor Banwell. I agree with Banwell, that motivated and inspirational teachers are imperative in every discipline. Their enthusiasm inspires students.

Unlike in many other fields, Banwell explains that competition in chemistry is friendly, unless there is commercial interest. Chemists will happily tell each other about their previous unsuccessful research and blind allies. It is a community in which "You help people, even if they're after the same result" according to Banwell. The implication of this chemistry community is that knowledge is a shared experience.

Banwell keeps up with the latest information in chemistry through electronic journals and databases; however, he has made some of his most significant findings after a conversation. When a student asks him a question after a lecture, it can result in a new dimension of knowledge. "If you are receptive to unexpected observations, you can exploit them in useful ways", he advises. Banwell notes the importance of conversing with colleagues both formally and informally as a means of research. Knowledge, therefore, is not essentially something that can be taught in the classroom.

Imperative in Banwell's field of study is the collaboration with scientists from other sectors, such as biology. Even within the science industry, Banwell says, each biologist has a different perspective to a chemist and this creates knowledge. By working alongside biologists, Banwell is exposed to new compounds, which he otherwise may not have noticed. It is both healthy and fascinating to collaborate, Professor Banwell believes, and he attributes much of his success to collaboration.

Banwell feels he has contributed significantly to chemistry through his synthesis of compounds found in sponges on The Great Barrier Reef. These compounds can potentially treat certain forms of lung cancer. To obtain a few milligrams of this compound, using only the sponge as a source, it would be necessary to extract tonnes of the raw material. By developing methods of synthesising the compounds in the laboratory, Banwell is able to create compounds that would otherwise have a deleterious effect on the natural environment if extracted from sponges.

Creativity is imperative in chemistry, according to Professor Banwell. Although outsiders may see the field as constrained by nature, there is a great scope for creativity. The most exciting and creative thing about chemistry, Banwell believes, is the possibility to discover and synthesise new and important things that have never been available or observed before.

In contrast, my studies in drama are based on practitioners such as Stanislavsky and Grotowski and most things 'experimental' or 'creative' have already been done. It becomes more difficult to be creative.

Although there is room for invention in chemistry, it is not possible to make everything. “There is not enough carbon in the known universe to make every conceivable compound”, Professor Banwell explains.

Creativity, knowledge, and research, I have learnt, are much more complex than they appear. Research does not have to be conducted in a formal setting. Professor Martin Banwell creates knowledge through others, just as his first-year chemistry teacher did. Banwell researches and shares his knowledge; lecturing, mentoring and writing numerous papers. His colleagues, collaborators and students create knowledge for him through discussion and inquiry. In turn, he will receive questions about his work, so that knowledge never stops being created.