Recognizing these, Blasden then proposes that the link between features and benefits comprises four steps:
(1) provision of technological features enables their use;
(2) use of features supports, hinders or changes tasks;
(3) carrying out tasks helps fulfil or hinder certain roles; and
(4) fulfilling useful roles brings success.

Each step is then augmented by reference to the aspectual ontology of Dooyeweerd[5]. This is based on the proposal that reality, as we experience it, has a number of aspects or dimensions (e.g. physical, analytical, social and economic) that are irreducible to each other, and that each aspect has laws that pertain when an entity functions in that aspect. Each aspect defines a proper science, by which the laws of the aspect can be studied with a degree of precision, thus enabling differentiation to be made between success and failure, desirable change and undesirable change.

Implementation

Blasden's model is exciting in that it provides useful guidance at both the design and development phase of a new technology. The design phase can be focused by first analysing the tasks and roles of the existing situation and suggesting changes that would be beneficial. The development phase can be focused towards those tasks and roles that are a determinant of the success of the technology.

Elbert Hubbard, an American journalist once wrote[7]:

'The line between failure and success is so fine that we scarcely know when we pass it.'

The judicial application of Blasden's approach could decide between the successful implementation of a new technology and its failure. In the current culture of low tolerance of failure, this could also affect the career progression of the scientist involved.

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Nervous system: the next generation

'Recent developments in our understanding of structure and function in the nervous system will open new vistas in drug discovery.'

Terry Hart, The Novartis Institute for Medical Sciences

Science fiction aficionados will, no doubt, be familiar with the three laws of Arthur C. Clarke. The third law, which states that 'Any significantly advanced technology is indistinguishable from magic', is particularly relevant to the current dynamic relationship between new technology and traditional drug discovery. The recent advances that have been made in relating specific genes and protein function to disease risk factors and pathogenic processes, would have been dismissed as pipe dreams by most people 10 years ago, with the exception, perhaps, of a few visionaries. The task now is to devise ways to unravel the interwoven strands of functional genomic and proteomic information. This must happen before we can develop effective strategies to modulate the complicated network of finely tuned operator and feedback mechanisms that control homeostasis, and whose slight malfunctioning can easily result in serious, chronic disease.

These recent technological advances have already made a significant impact on the processes and organization of multidisciplinary research departments in all therapeutic areas. However, it is clear that, in the near future, many

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major advances will be made in neuroscience research. Furthermore, as the first reports of pharmacogenomic approaches to individualized treatment for hypertension emerge, it is inevitable that, once we understand the numerous subtle differences between the diseases currently grouped under the 'nervous system (NS) umbrella', we shall be screening patient populations and tailoring their needs to the most effective available treatment.

A reasonably sensitive gauge for measuring the relative status of a particular therapeutic area, is the number of related poster topics that are presented during any medicinal chemistry conference. Presentations on research related to NS disorders, both from academia and from the pharmaceutical industry, appear to have increased significantly in recent years. This trend is also reflected by the number of NS topics (which are now a constant theme) within any wide ranging *American Chemical Society* or *European Medicinal Chemistry* conference. It is not surprising, therefore, that most large drug companies now have NS research firmly embedded into their current and future drug discovery portfolios.

Although retrospective, the timely award of the Nobel Prize for Medicine to Arvid Carlsson, Paul Greengard and Eric Kandel for their pioneering discoveries in the signal transduction of nerve cells, and increased understanding of brain function, is a significant boost for NS researchers worldwide. Outstanding advances in functional proteomics, non-invasive imaging, mapping of brain function and the detection of surrogate markers will, no doubt, continue unabated. Therefore, we now have to be more vigilant and monitor continuously for any technological breakthrough that might uncover the pathways that lead to cures for many of the NS diseases that, currently, are extremely difficult to treat.

The major challenge for us, as scientists, will be how well we accept and adapt to this new research environment and how quickly we implement these new technologies and discoveries into the diagnosis and treatment of NS disorders that will increasingly afflict the lives of the ageing population worldwide.

As a last thought, for those of you who might be wondering about the first two laws of Arthur C. Clarke, they are: 'When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong,' and 'The only way to discover the limits of the possible is to venture beyond them into the impossible'. The latter neatly encapsulates the challenges that lie ahead for all scientists working in NS research.

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