INTRODUCTION: THE ART OF THE PATENT

NEWS FROM THE FRONT

In 1997 America produced $414 billion worth of books, films, music, TV programmes and other copyright products. Copyright became America's number one export, outselling clothes, chemicals, cars, computers and planes. *Fortune* magazine calculated that basketball player Michael Jordan's personal economic value, mostly gained through copyrights and merchandising, exceeded the Kingdom of Jordan's gross national product.

In 1998 theatres in the West End and Broadway spent over three times as much on intellectual property as on the bricks-and-mortar kind. In the West End, theatre owners spent £26 million a year on copyright royalties and only £8 million a year on their buildings. Britain's music industry employed more people and made more money than did its car, steel or textile industries.

In 1999, Telecom, the world's biggest communications fair, held in Geneva every four years, attracted so many people that the Swiss Tourist board was obliged to open the city's nuclear shelters for emergency accommodation. The charge was Sw Fr 25 per night including taxes and service (the service, I was told, was minimal). Over 190,000 people wanted to see the latest developments in media, communications and the Internet.

Also in 1999, the US Patent and Trademark Office issued a record number of 169,000 patents. As well as patenting the usual mechanical inventions and gadgets, it gave patents for business methods (which raised some eyebrows). It gave Dell Computers a patent not for the computers it sold but for the *way* it sold them. It gave Amazon.com a

patent for the way people ordered its books and CDs. The Amazon patent contains this phrase: 'Modifications within the spirit of the invention will be apparent to those skilled in the art.' The appeal to a person 'skilled in the art' is a standard tactic in patenting worldwide, and allows a patent to cover more than its current, actual application. I call this the 'art of the patent'.

During the same year, the British Patent Office awarded a patent for the technique of cloning Dolly, a sheep. The patent covers the 'possible use of the technology in cloning human cells'. In Norfolk, a housewife was reprimanded and given a legal notice when she propagated a plant bought at her local garden centre and tried to sell the cuttings. She and her parents have been propagating plants for generations, but new rules made her gardening habits a civil offence.

What is going on?

A NEW ECONOMY

These diverse activities have one thing in common. They are the results of individuals exercising their imagination and exploiting (or preventing others from exploiting) its economic value.

This book is about the relationship between creativity and economics. Creativity is not new and neither is economics, but what is new is the nature and extent of the relationship between them, and how they combine to create extraordinary value and wealth.

There has been a rapid spread of patents, copyright and trademarks. Intellectual property used to be an arcane and boring subject, something for specialists only, but within the past few years it has become a powerful influence on the way everyone has ideas and owns them, as well as on global economic output. Accountants Arthur Andersen say 'electronics, software, health-care, consumer goods, telecommunications, media and entertainment are substantially dependent upon intellectual property'; I would add biology, agriculture and education. When I look at some countries' patenting policies, I am inclined to add everything else.

When he was arguing the case for America's first federal copyright law, President George Washington said it would increase the stock of

knowledge, and 'knowledge in every country is the surest basis of public happiness'. Nowadays, a US president would be more likely to say it is the surest basis of business competition.

People with ideas – people who *own* ideas – have become more powerful than people who work machines and, in many cases, more powerful than the people who *own* machines. Yet the relationship between creativity and economics remains almost invisible. I decided to see if I could bring together all these elements – creativity, intellectual property, management, capital, wealth – into a single comprehensive framework. This book is the result.

First, some definitions. *Creativity* is the ability to generate something new. It means the production by one or more people of ideas and inventions that are personal, original and meaningful. It is a talent, an aptitude. It occurs whenever a person says, does or makes something that is new, either in the sense of 'something from nothing' or in the sense of giving a new character to something. Creativity occurs whether or not this process leads anywhere; it is present both in the thought and in the action. It is present when we dream of paradise; when we design our garden; and when we start planting. We are being creative when we write something, whether it is published or not; or invent something, whether it is used or not. I use the word *creator* to describe any person who creates or invents something new.

We are all creative in our own way; in how we perceive and present ourselves to the world; in how we make sense of the world. Our sparks of creativity inform our personality. A few people go further and make their creative imaginings the core of their working life; not only in terms of their personality but commercially, in how they make a living and a profit.

An *economy* is conventionally defined as a system for the production, exchange and consumption of goods and services. Economics generally deals with the problem of how individuals and societies satisfy their wants, which are infinite, with resources which are finite; it is thus primarily about the allocation of scarce resources. Although I use both terms in these senses, I show that ideas are not limited in the same way as tangible goods, and the nature of their economy is different.

Creativity is not necessarily an economic activity but may become so when it produces an idea with economic implications or a tradeable product. This transition from the abstract to the practical, from the idea to the product, is hard to define. There is no overarching definition of the moment of change that covers all eventualities. The laws on intellectual property provide one set of criteria and the marketplace provides another. In general, the change occurs whenever an idea is identified, named and made practicable and may, as a result, be owned and traded.

The result is a *creative product* which I define as an economic good or service that results from creativity and has economic value. This book starts with creativity (Chapter 1) and then moves to creative products (Chapters 2 and 3). A creative product may be a good or a service. Traditionally a good has meant something with a physical mass (like a book) and a service has meant something that has no mass (like a broadcast), but lawmakers have not been very successful at fixing these definitions in precise terms and usually resort to the comment, 'If I drop it on my foot and it hurts, then it's a good'. The distinction becomes uncomfortably blurred when a product's economic value is largely dependent upon such intangible concepts as ideas and computer software, and has intangible property rights such as patents, trademarks and designs. The growth of e-commerce adds yet more confusion. For example, a creative product (say, a piece of music) may change category from good to service and back to good again. Throughout, however, the important characteristics of a creative product are twofold: it results from a creative activity and has recognizable economic value.

The output of creative products has tended to happen most publicly and obviously in the arts, which has caused the arts to be seen as the core creative activity and for creativity and the arts to be treated as synonyms (or, at least, creativity and good art). But artists have no monopoly on creativity, nor are they the only workers in the creative economy. The difference between creativity in the arts and elsewhere is not that artists are more creative, or more successfully creative, but that because they deal in a specific range of ideas and aesthetics, they create specific kinds of works and work according to identifiable business models with their own patterns of supply, demand, values and pricing.

Creativity flourishes equally in the sciences, especially in research and development (R & D). There is little difference between the creativity of the scientist and of the artist. Colin Ronan, author of *The Cambridge History of the World's Science*, says 'To engage in science requires a vivid creative imagination, tempered by firm discipline based on a hard core of observational experience.' Biologist Edward O. Wilson, one of the most distinguished scientists of the twentieth century, and the inventor of 'consilience', which he describes as the 'interlocking of causal explanations across different intellectual disciplines', says creativity is 'the ability of the brain to generate novel scenarios and settle on the most effective'. Both arts and sciences are attempting to imagine (to visualize) and describe (to represent) the nature and meaning of reality. Both use the same thinking and creating processes. The difference comes in why they choose to do so, how they present their imagining to the world, and how they protect its economic value. Put simply, the creativity is the same; the creative products are different.

Creativity is present at all levels of business from the management of a company to the development, branding and shape of each product. Few businesses today are the same as they were ten or even five years ago; fewer still will be the same in the next five years. Increasing competition, volatile technology and the arrival of the Internet require all companies to be imaginative in the way they do business and vigilant in protecting their products by means of intellectual property rights.

Creativity is possible in every organization where novelty and invention are possible. It flourishes most when and where they are rewarded.

Many creative products, although not all, qualify as *intellectual property*. Intellectual property has the same defining characteristic as physical property: it belongs to someone. But unlike physical property, which we can see and touch, intellectual property is intangible. It is an artificial construct which did not exist until governments invented it. Governments and the courts still define what it is, and prescribe an owner's *rights*. Intellectual property is therefore not the same as any idea or bit of knowledge that we may happen to have; it is solely what a law says we know or have.

There are several forms of intellectual property, of which the four

most common are copyright, patents, trademarks and designs. Some legal systems also protect trade secrets and confidential information; others, personal secrets and privacy. *Copyright* law covers an individual's creative expression when fixed in specific works. Originally, it was limited to writings in the literary sense but more categories have been added (for example, films and sound recordings), and each category extended to include more activities (for example, the category of literary works now includes computer programs because they are, after all, a skilful and imaginative piece of writing). Copyright accrues automatically to any qualifying work and does not need to be registered. It normally lasts for the author's lifetime plus seventy years.

The second major area, *patent* law, originated in the need to protect inventions of new industrial products and processes. It gives the inventor a monopoly in the making of the new product, typically for twenty years. Patents and copyright are fundamentally different. Whereas copyright accrues automatically, a patent has to pass stringent tests before being approved. It must be novel, non-obvious and useful. None of these tests apply to copyright. Once registered, a patent gives stronger protection than does copyright.

A *trademark* does not require any artistic or creative expression (as does copyright) or any expert skill (as does a patent) but is merely a mark or symbol that represents an organization or trade. I generally restrict the word to cover trademarks that are registered, which means they have to be actively traded and to pass tests of type and uniqueness. A *design* is a shape or symbol that, like a trademark, has the character of being distinctive and unusual. In legal terms, it is something of a hybrid. It often qualifies for copyright; it may also qualify for a special design right (as in Britain); and it is usually registered like a trademark.

These systems can overlap. An artist's working sketch for a trademark qualifies as an artistic work and merits copyright protection quite separately from the trademark itself being registered as a trademark or a design. Computer programs which automatically qualify for copyright may in some countries also be awarded a patent.

The *copyright industries* consist of all industries that create copyright or related works as their primary product: advertising, computer software, design, photography, film, video, performing arts, music (publishing, recording and performing), publishing, radio and TV,

and video games. Art and architecture also qualify as copyright works, but in most cases their rights are marginal to their economic value. Art is mostly valued and sold as a physical object, and new buildings are sold as physical structures, according to the rules of physical property. I follow normal practice by not including them as copyright industries (though I do include them, centrally, as creative industries). The International Intellectual Property Alliance (IIPA) makes a distinction between the 'core' copyright industries listed above, and what it calls the 'total' copyright industries, which also include the manufacturing of products which depend upon copyright goods (for example, computers and TV receivers). I do not include these related industries as copyright industries. The *patent industries* consist of all industries that produce or deal in patents. The dominant ones are pharmaceuticals, electronics, information technology, industrial design, materials, chemicals, engineering, space and vehicles. The dominant activity is scientific research and development which is carried out by commercial companies, technical laboratories and universities. The *trademark* and *design* industries are even more widespread, and their sheer size and diversity make them less distinctive. It is possible to identify the creativity involved in the creation of a trademark, but it is less easy to calculate its economic value or to identify the economic gains attributable to the trademark in the total product mix.

Together, these four industries constitute the *creative industries* and the *creative economy*. This definition is contentious. While all the definitions so far concur with international practice, there is no consensus on this one. Most countries would agree that creativity and its industries embrace the creative imagination in all its forms. But a few, including Britain and Australia, restrict the term 'creative industries' to the arts and cultural industries and exclude science and the patent industries. This is a regrettable extension of the historical tendency to keep the arts and sciences too far apart. Britain confirmed this narrow view when in 1997 the Labour Government set up a Creative Industries Task Force which, although originally including all intellectual property industries, then decided to exclude science. The Task Force was a bold initiative but had the unfortunate side effect of implying science was not creative. The same government's National Endowment for Science, Technology and the Arts (NESTA) takes a wider and more

humanistic view in assuming 'creativity' is present in science, technology and engineering and, indeed, in all 'new and innovative products and services'. In general, though, Britain still uses the word 'creative' to mean something 'artistic' and 'cultural'.

The *intangible industries* is another description of the creative industries in the wider sense. I use this description seldom, because although these industries do deal in intangible values, they also produce a substantial proportion of manufactured products which are highly tangible. The people who print books and build theatre sets are as much a part of the creative economy as those who write and perform on stage.

The *creative economy* consists of the transactions in these creative products. Each transaction may have two complementary values: the value of the intangible, intellectual property and the value of the physical carrier or platform (if any). In some industries, such as digital software, the intellectual property value is higher. In others, such as art, the unit cost of the physical object is higher.

We are creative animals, *homo creator*, but our creativity does not always lead to a creative product. The *creative equation* deals only in creative products, not creativity, and differentiates between a creative product and a transaction. It states that the creative economy (CE) is equivalent to the value of creative products (CP) multiplied by the number of transactions (T); that is, CE = CP x T. Creativity itself cannot be quantified. We can say someone is more creative, even very creative, but we cannot say he is two-and-a-half times as creative. The number of creative products can be quantified, but the multiplicity of products and the confidentiality of many deals may inhibit us from making a completely accurate count.

UP THE LADDER OF DESIRES

There are powerful reasons why the creative economy will be the dominant economic form in the twenty-first century. The first and most compelling is the way we evolve as physical and social beings. The great American psychologist Abraham Maslow suggested our needs ascend up a hierarchy from the physical to the emotional and

spiritual (a path described by scientist Jacob Bronowski as 'the ascent of man'). Our first needs are air, water and food; then, when these are satisfied and if the environment is hostile, for shelter and safety. Next come our social needs for belonging, our 'ego' needs for love and attention, and finally our need for personal growth and intellectual exploration. As each need is satisfied, so people become more conscious and desirous of the next one up. As they satisfy their physical needs, so some seek emotional pleasure and a few seek intellectual satisfaction. Andrew Curry of the Henley Centre in London says consumer needs in OECD (i.e., industrialized) countries have changed noticeably in recent decades from functional and practical matters to having a sense of well-being and personal fulfilment. In 1998 over 50 per cent of consumer expenditure went on 'lifestyle' and 'fun'. Paul Saffo of the Institute of the Future, California, says there is a hierarchy of consumer desires with entertainment at the top. We should not be surprised if people, whose material needs are largely satisfied and who have a high level of disposal income, remix their ambitions and put a premium on matters of the mind.

We should also not be surprised if a market evolves to meet these needs. Several different processes are under way. On the supply side, automation in the manufacturing industries and, to a smaller extent, in the service industries has cut the demand for manual labour, so young people are looking elsewhere for work. Many turn to the creative industries, which may offer an attractive lifestyle and above-average economic rewards. New industries have arisen around the new communication technologies, each with its urgent needs for skills and ideas. The cultural industries are becoming more commercial and more competitive (not always to their liking). Market economies are skilful at meeting consumer needs, especially in the field of entertainment, where consumer needs are so passionate and evanescent. Suppliers have become adept at charging for pleasure.

On the demand side, economic output continues to grow, leading to a growth in spending power; an increase in leisure budgets; and an increasing focus on leisure activities. The British, Americans and Japanese spend more on entertaining themselves than on clothing or health-care (and most clothes are chosen as much for pleasure as for utility). The British and Americans spend respectively about 17 per

cent and 20 per cent of total consumer expenditure on pleasure, more than on housing or food.

As a result, the creative economy is growing faster and faster. Its annual growth in the OECD countries through the 1990s was twice that of the service industries overall and four times that of manufacturing overall. Between 1987 and 1997 the American copyright industries increased their output at the rate of 5.8 per cent a year compared to 2.8 per cent a year for other industries, and increased the number of jobs at 4.0 per cent a year compared to 1.6 per cent in the ordinary economy. The number of American patents for inventions almost doubled from 89,000 in 1977 to 169,000 in 1999. The number of European patents rose more slowly but the trend was still upward.

These products can now be distributed worldwide to ever larger audiences. The most marked growth is not actually in the creation of new products (although their number is growing remarkably) but in their exploitation, distribution and trade. The creative economy has been midwived by the technologies of information and communications. The new digital technologies have created new opportunities for content; a universe of cyberspace, of synthetic 3-D imaging and discourse, hungry for text, images and stories. The low costs of digital technology allow people to make, distribute and exchange their own material alongside, and increasingly penetrating throughout, the larger corporate markets.

Content creators have always dealt with middlemen. Now a new kind of operator has emerged who not only becomes involved in the production and distribution of each product (its volume, its price) but also creates new kinds of content and new kinds of audiences. On the Internet, these gatekeepers are redefining the concept of 'channel' and 'audience'.

These evident, desirable skills of individual creativity are being copied and borrowed by people and companies throughout society. Perhaps the greatest impact of the creative economy is not only within the traditional creative industries but in the way their skills and business models are being used to create value in other areas of life. The use of the imagination, the management of intellectual capital, the best way to incentivize and reward creative people, the short timescales, the response to success and failure; these skills, which have

only recently got on the agenda of mainstream business, are the stock in trade of the creative person.

Two trends are interwoven. Creative people and organizations are becoming more businesslike; and business is becoming more dependent upon creativity. Both produce more copyrights and register more patents, and often push for privatization of what was public.

This crossover between the creative industries and the conventional economy may explain the conundrum of the above-average growth of the American economy (part of what Peter Schwartz, President of the Global Business Network, calls the 'long boom'). Many expert observers in the late 1990s were perplexed by its apparent contrary nature. Economic theory suggests that a combination of higher demand and higher growth drives up the prices of raw materials and of labour; hence inflation. But the rapid growth in America between 1996 and 2000 did not cause inflation. As output continued to grow above the long-term trend, new jobs continued to be created and inflation remained low.

One possible reason is that the growth in current output depends less on old-style raw materials that are subject to diminishing returns and whose price, if demand increases, also goes up; and increasingly on intangible resources that are, if not infinite, at least indefinitely large. According to this view, the rise in stock-market values, which increased at an even faster rate than underlying output, was caused by individuals' intuitive perception of this change, in advance of theories being developed to explain it.

LEARNING AND DOING

This book is about such basic matters as what we want and what we are good at. Someone who is or has the potential to be creative (and the latter category includes everyone) faces a basic choice which is measured at one end by creativity and at the other by repetition. It is not a division between being artistic and being businesslike, which merely rewrites the kind of duality which scientist and writer C. P. Snow expressed as dividing the 'two cultures' of science and literature. It is between life and death, between thinking and not-thinking,

learning and not-learning, which is applicable to art, science, literature, business – everything.

The next seven chapters describe and analyse this new economy. Chapter 1 explores the nature of creativity. Chapter 2 starts the discussion on creative products with a look at intellectual property; at the 'property contract' between creators and governments which decides what is public and what is private. After these general chapters, Chapter 3 switches tack and gives a statistical analysis of the fifteen core creative industries: from art to video games via the R & D lab. The next two chapters delve further into business and management; and Chapter 6 into digital technologies. Finally, Chapter 7 brings us back full circle, and lays out the arguments for everyone to treat creativity as his or her chief capital asset. Each chapter starts with an interview with someone I met in the course of writing the book who exemplifies the creative spirit. There is no summary chapter beyond this Introduction which you (may) have just read and a few short paragraphs at the end.

1

THE FIRST TALENT

LAW 1: CREATE OR DIE

'That which is creative must create itself.'
John Keats

'If I had to define life in a word, it would be: Life is creation.'
Claude Bernard, nineteenth-century physiologist

THE GRAPHIC ARTIST

Harry Kroto asks to borrow my pen so he can draw something on a paper napkin. As a Nobel laureate in chemistry, he might be about to draw the shape of the C_{60} molecule he and others discovered. The Nobel Foundation, not noted for extravagant praise, described it as 'uniquely beautiful and satisfying'. As his other passion is graphic design, he might be about to draw another logo. It's another logo.

I point out that most of his logos are based on word-play and letter-play rather than abstract shapes. Kroto returns to the napkin to map out the periodic table, in which each chemical element has a letter, and circles three letters, then four; goes back to the logo for his new initiative, the Vega Science Trust; and then draws his new logo for a friend's company called Breakthrough.

C_{60} is a carbon molecule with the unusually large number of sixty atoms; it is much larger than any previously known carbon molecule. Kroto named it buckminsterfullerene, after the designer and inventor Buckminster Fuller, who used a similar structure in his geodesic domes. The essence of C_{60}, apart from its great size, is the symmetrical