

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

combination of pentagons and hexagons which give the molecule outstanding strength and stability.

The story of the discovery of C_{60} illustrates the quirks of the creative spirit. It is a story in every sense of the word: a search, a number of characters, several journeys, a fortuitous discovery ('fortune favours the brave'), celebrations, periods of intervening calm, a climax, a resolution. It started when Kroto, who says he is 'interested in puzzles', in 'following my nose', had a rather far-out idea he wanted to test about molecules in space. He wasn't looking for C_{60} at all.

He suggested an experiment, but it wasn't a priority, and eighteen months passed before the team who eventually shared the Nobel Prize came together: Harry Kroto at Sussex University, and Richard Smalley and Robert Curl at Rice University, Houston. Robert Curl, an expert in spectroscopy, picked up on Kroto's original idea and talked to his colleague, Richard Smalley, who had built the original apparatus. Each worked with their fellow researchers and students. I have a vivid sense of an open community of people who stepped in to help at each stage. Kroto mentions David Walton, who 'started me off in my love affair with carbon', someone else who 'carried out a very important experiment', someone who worked down the corridor and could answer a question. When the experiment finally took place, it supported his theory about the formation of molecules in space but it also showed something else. This, he says, was a complete surprise. Serendipitously, they had discovered evidence of a new large molecule.

There followed a hectic period of about ten days in September 1985 when their speculation on the shape of the molecule turned to conviction. Kroto says C_{60} was born on Wednesday 4 September. They published their claim in *Nature* on 14 November. The responses varied from disbelief to enthusiastic acceptance.

The *Nature* article was an assertion of possibility; a brave and confident claim that the thing existed. Five further years passed before they received spectroscopic verification. Kroto says that the colour of the magenta solution produced by C_{60} in that experiment was 'one of the most beautiful colours I have ever seen'.

The first experiments in 1985 had suggested something large was present but gave no evidence of its shape. Kroto looked at what he could see in order to visualize what he couldn't see. He found himself

peering at a pattern of bathroom tiles, a cardboard model of the night sky, anything which used pentagons and hexagons. What was the right shape? They fixed on twenty hexagonal (six-angled shapes) and twelve pentagonal (five-angled shapes), with an atom at each angle, which when put side by side can be rounded and closed into a ball. The geodesic dome modelled by Buckminster Fuller has this structure, as does a European football (the black bits are the pentagons and the white bits are the hexagons).

It's obvious, when you see it. Astronomer Fred Hoyle says that when Albert Einstein stated his theory of relativity, 'He put an issue of style ahead of all the confusion of detail ... Of course, physicists never admit to style because the word brings a picture of Beau Brummell. But style it is.'

The discovery of the fullerene was a long story, beginning in the early 1980s, published in 1985, confirmed in 1990 and meriting the Nobel Prize in 1996. The Nobel citation says 'No practically useful applications have yet been produced but this is not to be expected as early as six years after the first macroscopic quantities of fullerene became available.' But the citation says 'an entirely new brand of chemistry has developed' and there are high expectations of commercial exploitation in superconductivity, astrophysics and materials.

How does one attribute the credit? This is a story full of determination and vision but also full of adventure and accident. This is true *research*, in which failure is more common than success. Kroto says the only sensible way to share the success is equally. Nobody should have more credit than anyone else. It's the only *moral* way.

Claims of intellectual property often require a more precise calculation. Although a molecule cannot be patented, the many techniques by which it is discovered can be; and the practical applications can be highly profitable. I asked Kroto whether the chances of receiving a patent encouraged or affected his work. He answered, no. He has no liking for entrepreneurs who buy up new products, putting their financial interests above the interests of society. 'Intellectual property is a can of worms.' It is practically impossible to say who should benefit commercially from research, especially the pure research that Kroto does. How does one quantify the value of ten years' worth of thinking; or the value of a bright idea at the lab bench one afternoon? How does

one calculate the work of a student who, as part of their Ph.D. research, makes a contribution as valuable as anyone's?

Kroto's interest continues to be pure science. A few years ago, he launched the non-profit Vega Science Trust to produce programmes for TV and the Internet to 'reveal the excitement of discovery and reflect science as a cultural activity'. This could be seen as riposte to those who still believe science is somehow not creative. It certainly illustrates the true nature of the creative spirit.

WHAT IS CREATIVITY?

Kroto's discovery, which was triggered by a hint of a possibility of a new molecule, led to the development of other new ideas and new products. He is interested in the former; he leaves the latter to others. There are two kinds, or stages, of creativity: Kroto's kind, which relates to our fulfilment as individuals, and is private and personal; and the kind that generates a product. The first is a universal characteristic of humanity and is found in all societies and cultures. It is found both in free societies, which encourage it, and in closed and totalitarian societies, which usually try to stifle it. When repressed for political or religious reasons, or constrained for economic ones, the result can damage individuals and weaken communities. This kind of creativity is found equally in indigenous peoples' villages, and in the West's academies and universities (like Kroto's University of Sussex), which were designed in part for this purpose. The second kind, which leads to the making of creative products, is stronger in industrial, Western societies, which put a higher value on novelty, on science and technological innovation, and on (intellectual) property rights. This kind of creativity also needs a marketplace and a smattering of legal rules. The first kind of creativity need not lead to the second, but the second requires the first.

While many people have offered descriptions of creativity, few have come close to a robust definition of its physical or chemical state. Like sleep, another basic human activity, it remains a mystery. We all sleep; we all know what it means to be 'asleep'; but there is no medical or psychological consensus about what actually constitutes sleep. The

juxtaposition is ironic. One of the problems with defining sleep is its relationship with consciousness. It is generally believed that sleep is a special case of unconsciousness. Is there a gradation from being unconscious to being asleep to being awake and to being fully conscious? And is there a similar gradation from being awake through to being creative? In other words, is creativity a special case of consciousness?

The moment of creativity is sometimes accompanied by a sense of heightened consciousness, even an explosion of consciousness. When we are being most creative, we often feel most vividly alive, and more highly focused, even to the extent of becoming less aware of everything else. Yet there is a counter view that creativity involves a loss of control of consciousness and a move to a more dreamlike state.

The psychologist C. J. Jung differentiated between these states by describing one as 'moment of high emotional tension' and the other as 'a state of contemplation in which ideas pass before the mind like dream-images'. He described creativity as a release of 'energy-tension'. He was also well aware of the need for hard work, emphasizing the role of reason in the creative process. He was scathing about his contemporaries' inclination to link creativity and neurosis: 'Disease has never yet fostered creative work; on the contrary, it is the most formidable obstacle to creation.'

Neurologist Antonio Damasio, Van Allen Professor of Neurology at the University of Iowa, has followed Jung and other psychologists including William James, in exploring this connection between creativity and consciousness. His analysis of his patients' feelings, emotions and consciousness leads him to suggest a circle of 'existence, consciousness and creativity'. He suggests that self-awareness is an important ingredient in the creative process, as is an ability to let the conscious mind generate its own patterns without becoming subservient to previous perceptions and knowledge.

There are echoes, here, of neurobiologist Charles Sherrington's description of the brain as an 'enchanted loom' which continuously weaves a construction, an image, of the external world. The aim is to match the image and reality; or at least to explore the differences. Psychologist Mihaly Csikszentmihalyi says the 'creative excitement of the artist at her easel or the scientist in the lab comes as close to the

ideal of fulfilment that we all hope to, and so rarely do, achieve'. In his book *Creativity: Flow and the Psychology of Discovery and Invention*, he describes states of 'optimal experience' as ~~where~~ 'skill matches challenge'.

Recent experimental research has shown that the two different states of consciousness, which each fosters creativity in its own way, correspond to different brain states. Heightened consciousness and increased focus is associated with brainwaves in the beta range and the more dreamlike state with those in the alpha range.

Some scientists also regard creativity as a spiritual experience. Cognitive scientist Guy Claxton, author of *Hare Brain, Tortoise Mind: How Intelligence Increases When You Think Less*, says 'the core of creativity involves the popping into consciousness of a fruitful idea from "out of the blue"'. He asks, 'Why do we need to practise ceding conscious ego control in order to let this bubbling up happen more effectively? And is this state of receptive non-egoic cognition at all similar to the spiritual experience of "being still and knowing that I am God"?'.

I suggest all kinds of creativity have three essential conditions: personality; originality; and meaning. The first condition is the presence of an individual person (the *personal*). People, not things, are creative. Creativity requires a person to see something, literally or metaphorically, and bring something into being. Sam Mendes, director of the five-times Oscar-winning film, *American Beauty*, refers to that moment in directing a play or a film 'when you discover something that only you can do, only you can say'. In artistic terms, if creativity is denuded of this personal spirit, it becomes kitsch.

It has long been a matter of debate whether a machine can have consciousness and whether it can create. For my purposes, machines cannot create; not even the fastest, most 'intelligent' computer can create. Machines can produce but they cannot create. 'Computers are useless,' said Picasso, 'they only give answers.' When they do produce something, they operate as we do when we discover something. The 'something' already exists and did not need us, the discoverer, to bring it into being. Computers have only the information that we allow them to have, directly or indirectly, which they manipulate only according to rules that we have given them. Dr Charles Jonscher, author of *Wired*

Life, says 'manipulation which is logical has the merits of precision and clarity but, by the very nature of deductive reasoning, cannot have a trace of originality... This is a very old theme: the logical versus the creative.'

The personality prerequisite does not mean the creative person always has to act on their own, or be self-sufficient. Some kinds of creativity tend to be done in private, even solitary circumstances, while others require and flourish in a group. Both situations can be equally creative. Whether one person thinks and works alone, and another in a group, has no more impact on their claim to be creative than the colour of their hair. The tendencies towards solitary working and group working spring from a mix of each person's inclination, the relevant processes and products, and the social arrangements. To discover C₆₀, Kroto sometimes needed to sit in a corner, sometimes to wander down the corridor to ask a question, and sometimes to collaborate with associates who knew how to build complicated machines. To make *American Beauty*, Mendes required many people, not least because he was a novice in film-making. Trevor Nunn, director of London's Royal National Theatre, enjoys what he calls 'collective analysis', saying that 'thirty opinions are always more valuable than one, so long as everyone knows they will be adjudicated'.

The point remains. When two or more creative people are working in a team, and could not succeed without the team, even to the extent of 'losing' their identity in the team, it is still their personal talent and individual contribution that generates the creativity and the product. It holds both ways. If someone who is part of a team is *only* part of a team, then they are giving nothing of themselves and they cannot be creative. This personal spirit of collaborative creativity is well summed up in the Talmudic saying, 'If I am not for myself, who will be for me? If I am for myself only, what am I? If not now, when?'

Second, creativity is *original*. It can mean either something completely new, which I describe as 'something from nothing', or the reworking of something that already exists, in the sense of 'giving character to something'. The modern belief that man could create something 'original' was a hallmark of the Renaissance and humanism. Writer Logan Pearsall Smith showed in *Words and Idioms* that Christianity used the Latin words *creator* and *creare* (to create) to refer

exclusively to God and his actions. Only God could create, and what ever he created was original. Man could only rearrange what God had created. A poem that talked about God was original not because of its novel expression but because of its given subject matter. And a poem that talked about a building, however novel its expression, was not original for the same reason. The humanists took a different view. In the 1630s John Donne saw man as a creator when he said 'poetry is a counterfeit creation and makes things that are not, as though they were'. He meant to praise it, but in the climate of the Church of England's thinking at that time he was taking a risk. The word 'original' in the humanistic sense did not appear in Europe until the very end of the seventeenth century. The French word '*originalité*' first appeared in 1699. Horace Walpole and Thomas Gray were the first to use the English word 'original' in this sense, in 1742.

In his *Dictionary* of 1755, Dr Samuel Johnson gave several meanings of 'to create'. The first was 'to form out of nothing'. This happens, but it is rare. More often, a creative person takes and remixes existing ideas in a new and interesting way. Many dictionaries from the 1800s onwards prefer this latter definition. The new 'character' can be limited to an adjustment, a tweak, of the old or it can be something much more radical. The former displays its link with what went before, but the latter seems (and is) completely new.

Psychologist Margaret Boden, of the University of Sussex, distinguishes between ideas that are novel 'only to the mind of the individual concerned' (which she calls P-creativity for psychological creativity) and those that, 'as far as is known, are novel to the whole of human history' (which she calls H-creativity for historical creativity). Someone is being P-creative if they produce an idea that is new to them. A child can be endlessly creative in doing and making things that to adults are familiar and obvious. Children who behave like this are discovering and asserting their personality. Boden emphasizes that the 'H' stands for 'historical', not 'historic'. The criterion is not the idea's historic importance but its absolute novelty in time and space.

I see this as the difference between 'newness' and 'uniqueness'. Newness is novelty; the quality of being first. It is not an absolute measure. It can mean first in the mind of the creator, first in a group, or first in a particular period. Uniqueness is absolute. It means that the

thing created is unlike anything else which existed previously. Of course, all things that are unique were once new; but all new things are not necessarily unique. The difference is reflected in intellectual property law. Copyright law, as I show in the next chapter, requires a work to be new but does not require it to be unique. Patent law requires it to be both new and unique. For example, if two people draw the same design at the same time, both their drawings are protected by copyright. But a person who wants to patent a new product must show that nobody has ever invented a similar one.

It is fooling, for our present purposes, to burrow too deeply into the origins of creative processes. The world is too vast and too mobile – too full of ideas – for us to be able to say definitely in all cases if one thing is truly original and another thing is not. We use our stored memories, often unconsciously, even when we are asleep. But the principles still stand and affect the question of ownership.

These two criteria (personal and original) are necessary elements of creativity. But they are not sufficient. We jib at calling something creative unless it expresses our creativity in a meaningful way, even if the meaning is personal or trivial. Naming an idea or invention gives it a bit of meaning, if only to create a relationship between name and named. But we may still feel something is lacking. So the third condition is *meaning*.

There are strong psychological arguments in favour of this. When we have been creative we commonly feel that we have accomplished something; we have made or produced something with identity and character. This emotion does not depend upon other people giving their approval or even their understanding. It would be absurd to say that someone's creativity depends on another person's understanding; that van Gogh was not being creative when he painted his canvases in the 1880s because nobody understood him, and that he only became creative retrospectively when people began to buy his paintings. On the contrary. He was astonishingly creative in terms of the creative process and the number and scope of his created products.

There is support in law. Copyright laws distinguish between an 'idea', which cannot be copyrighted, and its 'expression', which can. They require an author to use skill and effort to take an idea and create an expression or a work. Patent law goes further, and requires the

inventor to carry out an 'inventive step'. Without such a step, no patent is awarded.

As we move from the personal to the industrial, and into the realms of economic transactions, so the role of meaning shifts. Teresa Amabile, Assistant Dean of Research at Harvard Business School, says that, in business, originality isn't enough: 'To be creative, an idea must be useful and actionable.' To be useful, the meaning must be communicated to the customer.

SIX CHARACTERS IN SEARCH OF AN AUDIENCE

Creativity has several other characteristics which are not necessary or always present but which round out the picture. First it is a *basic element of life*. People may disagree about many fundamental matters – morals, social behaviour, sex, politics – but most cultures and religions acknowledge creativity's primal importance as a generative power. They feel that it enlivens and makes distinctive what would otherwise be routine and repetitive. Socrates said the unexamined life is not worth living. When Shakespeare's Lear wants to express complete futility, he says 'nothing will come of nothing'. We admire creative people because they do make 'something from nothing'; and we may fear them for the same reason. When people stop being creative, in an important sense they stop living. As Bob Dylan sings, 'He who's not busy being born, / Is busy dying.' The Egyptian lawyer and economist Kamil Idris, who became Director-General of the World Intellectual Property Organization in 1997, says: 'It is a simple formula: to live, we must create.' Without creativity, we could not imagine, discover or invent anything. We would not have fire, language or science.

Creativity is also self-sufficient. We do not need outside resources to be creative (although we do need them to manufacture creative products). The second law of thermodynamics says that within a closed system organization becomes disorganized and energy runs down. This process is described as entropy. Entropy is the natural state of things unless energy is brought in from outside the system. Henry Margenau, Emeritus Professor of Physics and Natural Philosophy at Yale University, says the 'creative act', insofar as it consists of the

organization of ideas into new states and patterns, 'frequently violates' the second law of thermodynamics that entropy always increases. I can start with one idea and generate three or even thirteen depending on how creative I am. Creativity exists and grows within its own domain. Being creative is analogous to negative entropy.

Second, creativity is a *universal talent*. Everyone is creative to a degree. Children are instinctively and openly creative. All children draw. It is only when people grow older that some say they cannot draw. All children dream, and talk about their dreams. Adults are more likely to say they cannot remember their dreams.

Scientists have not discovered a gene sequence for creativity (and it is unlikely that a single gene or sequence is responsible) but recent research by clinical psychologists tends to confirm this universality. Psychologists Allan Snyder and John Mitchell at the Centre for the Mind at the Australian National University, Canberra, who have researched infant prodigies and idiot savants, suggest that everyone has inherent creative skills, even including 'prodigy' and 'savant' skills, but very few know how to exploit them. Their experiments with electronic scans show how our brains process sense data very quickly, before we become consciously aware of it. For example, when we hear a piece of music the brain immediately searches the memory for patterns of similar music in order to categorize and compare it. In this way, the brain's cognitive processes swamp our instincts. Prodigies and savants 'fool' their brains and make no such search. Prodigies are abnormal not because they have a facility that is very rare but because they do not have a block, a filter, on a talent that is universal. The researchers conclude that the physiological make-up of creativity is common; what is rare is our ability, or natural physiological disposition, to use it.

This intrinsic universality applies to creativity but not to the making of creative products. Anyone can dream and have an idea. Fewer people can produce a creative product. That depends on technical skills, physical resources, and possibly on environmental factors. Professor Michael Howe of Exeter University suggests that creative achievements depend largely upon common behavioural and environmental factors. He agrees that everyone has a basic aptitude for creativity, but suggests few people have the necessary attributes to develop it

fully. They need a long-term commitment, a firm sense of purpose, a strong motivation to succeed, a capacity to focus efforts towards specific goals, and often a supportive home environment.

Third, creativity is *fun*. It is 'play' in the sense that the Dutch historian Johan Huizinga uses the word in his book, *Homo Ludens*. Play is light-hearted and enjoyable; when it stops being fun, people stop playing. It is voluntary yet operates within given rules which everyone obeys absolutely, even though the penalties and sanctions may themselves be 'fun'. It is trivial although the outcomes may be highly significant (other people observing creative people at work are often puzzled – 'they don't look as if they're working'). In spite of being light-hearted and inconsequential, it is completely absorbing. It is uncertain and chancy; the opposite of routine and repetition. It engenders a strong sense of team spirit and thoroughly enjoys its own insider jargon and loyalties.

Samuel Johnson said that 'It very seldom happens to a man that his business is his pleasure.' But many creative people make their business out of their pleasure. They would agree with Noël Coward that 'Work is much more fun than fun.' For many, their work is their life and they do it naturally and as if inevitably. Ideally, they have a high quality of work and a high quality of life and these two qualities intertwine and support each other.

Richard Feynman, Nobel laureate, and probably the greatest physicist of the late twentieth century, decided early on while at Cornell University that

I was only going to do things for the fun of it. Only that afternoon, as I was taking lunch, some kid threw up a plate in the cafeteria. There was a blue medallion on the plate: the Cornell sign. As the plate came down, it wobbled. It seemed to me that the blue thing went round faster than the wobble and I wondered what the relationship was between the two. I was just playing; it had no importance at all. So I played around with the equation of motion of rotating things and I found out that if the wobble is small the blue thing goes round twice as fast as the wobble. I tried to figure out why that was, just for the fun of it, and this led me to the similar problems in the spin of an electron and that led me back into quantum electro-dynamics which is the problem I had been working on. I continued to play with it in this relaxed fashion and

it was like letting a cork out of a bottle. Everything just poured out and in very short order I worked out the things for which I won the Nobel Prize.

From this story, with its echoes of Archimedes, we learn three things. One, have fun. Two, always have a problem at the back of your mind. Three, don't skip lunch.

The fourth characteristic is a sense of *competition*. Creative people can be vigorously competitive: some for themselves, some for their work, and some for both. Some creative people set themselves very high standards. Often, these are personal, and known only to themselves. The psychologist Erving Goffman spent a lifetime thinking about 'those existential moments of truth when character is gambled'. His book *Where the Action Is* describes situations in which 'people take risks sometimes wildly unjustified both to prove themselves right and, more profoundly, to prove themselves'.

If they want to make a creative product, creative people must also compete commercially in the marketplace. Here, the sole purpose is to produce something which is new and which works. James Dyson, inventor of the Dyson floor cleaner, says he had to build 5,127 prototypes before he could start to sell his first model to the public.

Fifth, creative people, as they engage their creative talents, tend to exhibit several recognizable *personality traits*. Anthony Storr, one of the most articulate analysts of the creative spirit, believes that creative people are characterized by a greater division of opposites than are other people and, equally important, that they are more aware of those opposites. Creative people do not close off possibilities. Physicist Nils Bohr said that one of his father's favourite maxims was that 'Profound truths are recognized by the fact that the opposite is also a profound truth'; and writer F. Scott Fitzgerald said in *The Crack-Up* that 'The test of a first-rate intelligence is the ability to hold two opposed ideas in the mind at the same time, and still retain the ability to function.' Creative people, says Storr, are more determined, and have the skill to explore or reconcile these opposites and tensions. They have a strong ego, tend to be more creative in their domestic arrangements and, if so minded, surround themselves with beautiful homes and gardens. Compared to the average person, they tend to be more independent; to have a greater concern with shape and form; to have a

greater preference for complexity and asymmetry; to have, in Goethe's words, a 'love of truth'; and to be more overtly bisexual.

Peter Bazalgette, Creative Director of Endemol Entertainment UK, part of Europe's largest TV production group, says creative people have six characteristics. The first is open-mindedness: 'It means allowing your mind to wander in an almost dream-like way.' The second quality is independence of mind: 'Creative people are rule-breakers, not rule-makers.' Third is not being afraid of change. Fourth is 'the blank sheet of paper test . . . Creative people are challenged by a space and want to put something in it.' Fifth is a well-developed sense of humour. Last, he says that creative people are competitive and ambitious.

Also, in spite of these generalizations, creativity is *surprising*. It is not preordained; it follows few rules; it evades most categories. This might seem obvious, but it needs to be said at a time when creativity is becoming a management nostrum. Creative people may exhibit typical characteristics, as Storrs suggests, but one of these is idiosyncrasy. They are hard to sum up. T. S. Eliot is a case in point. He wrote harsh, elegiac poetry; worked competently in Lloyds Bank; wore rouge; enjoyed bird-watching; and loved boxing. Eliot was aware of the incongruities, according to his biographer Peter Ackroyd, but had no special interest in making them consistent with his literary work. Creative people may instinctively understand scientist and Nobel prizewinner Ilya Prigogine when he says that complexity and chaos are the natural order of matter; that, given enough complexity and chaos, a new life and a new order will emerge; but only to tip into more complexity and chaos. Salvador Dali advised: 'You have to systematically create confusion, it sets creativity free.' Creativity isn't easy.

Many creative artists, even the most proficient and self-aware, do not fully understand their own talent. One evening Laurence Olivier gave a majestic performance in *Henry V* which reduced his fellow performers to wide-eyed admiration. After the final curtain, Charles Laughton and others went to Olivier's dressing room to congratulate the great man only to discover him weeping. 'But, Larry,' said Laughton, 'you were marvellous.' 'I know,' Olivier said, 'but I don't know why.'

Finally, it must be said that, while creativity is generally a positive virtue, there is no guarantee. The conditions of being personal, original

and meaningful have no intrinsic moral quality. They can be good or bad. Creativity can be used for mischievous purposes. The good is no more creative than the evil. Our conception of Satan is of a grand creator, even if he created in Hell, and humans have not stopped using their talents in ways he would admire. Many contemporary dictators such as Hitler and Stalin, and cult leaders and criminals like Jim Jones and Crippen were and are creative, and their numbers or their creativity do not lessen. Creativity flourishes in the torture room, in crime and in petty meanness. Fortunately, if we include 'meaning' as a condition we have the language to make moral judgements about creativity.

RIDERS ON THE STAGE

The catchphrase of creativity is 'Eureka!' a sudden upsurge of emotion and joy. 'Eureka' is the Greek word for 'I have it' or 'I have found it' which modern Greeks still exclaim when they discover something, whether a new theory or a lost key. The use of the word is originally attributed to Archimedes, who had been asked by King Hieron to test whether a crown was made of solid gold or included silver alloys. He had puzzled about the problem for several months until, one day, stepping into a bath and seeing the water run over, he perceived a relationship between an object put into water and the mass, or weight, of the overflow. A solid gold crown would displace more mass than a composite one. According to legend, Archimedes was so excited that he leapt naked from his bath and ran into the street.

How can we generate our eureka moments? There's a nice story of a young film-maker walking along a beach near Los Angeles one evening and seeing Steven Spielberg sitting on the sand looking at the sunset. He paused, watching and waiting. When the great man got up and left, the new arrival went and sat in exactly the same place and looked in exactly the same direction. 'I know it was silly,' he confessed afterwards, 'but I just wondered if I could imagine myself into Steve's head and pick something up.' The *Paris Review* had a long-running series in which it asked famous writers how they wrote – with a pen or a pencil, on paper with or without lines, early in the morning or late at night, at a desk or at a table – in an attempt to reveal a secret trick,

an alchemy, that would help the readers to extract their own creative capital. Of course, they couldn't, just as the young film producer could not become more creative simply by sitting where Spielberg sat.

Many companies have devised systematic tests of creative and innovative thinking in an attempt to recruit people with creative talents. The majority of systems test people's creative thinking but not their ability to follow through. One attempt to combine both facilities is an Innovation Potential Indicator devised by psychologist Fiona Patterson at Nottingham University. It centres around four criteria: the motivation to change (indicated by a low boredom threshold); challenging behaviour (assertiveness and non-conformity); adaptation (a preference for tried and tested approaches); and a consistency of work style (efficiency and orderliness). Creative people are those who score high on the first pair and low on the second pair.

My own analysis of the creative process is a five-fold mix of dreams and analysis, intuitive jumps and cold-blooded calculation spelled out in a list which I call 'RIDER'

- review
- incubation
- dreams
- excitement
- reality checks

Review is the process of taking stock of things. It is noticing what is curious; making connections; asking 'what was that?' and 'why?' It is the conscious evaluation of raw materials (which economists call 'factors of production'), including the attributes of our mind (which economists tend to ignore). It encompasses both ideas and things.

Incubation is letting our ideas sort themselves out; it can last a few hours or several months; it is a time of rest. The creative person must recognize when incubation is necessary, and have sufficient resources (money, time, whatever) to provide it. One of the delights of the Christian and Jewish creation myths is that even God became tired after creating the world and had to rest on the seventh day.

Dreams are unconscious wanderings, the explorations and tastings of myth and symbol and magic and stories. In night dreams and daydreams we can be free of human constraints. Francis Bacon called it 'drifting', allowing his mind to be open to outside influences and

unknown energies. Somerset Maugham said, 'Reverie is the ground-work of the creative imagination.' And, as J. R. R. Tolkien said, a few years later, 'Not all those who wander are lost.'

Excitement is the adrenaline that powers intuitive jumps and half-calculated sideways movements. It is close to Jung's moments of 'high emotional tension', letting the mind loose to ask 'what if . . . ?' without wondering whether the answer is sensible or crazy. The trick is *not* to look before you leap.

We need reality checks to ensure our dreams and intuitions have not taken us too far away. We need to analyse and measure where we are, checking back to the problem and investigating the answers on offer. The rigour and timing of these checks, and how harsh we should be, need careful management.

There are several points about this list. The most obvious is that some steps are the direct opposite of others. Dreaming and checking are diametrically opposed, requiring different mind-sets and thought processes. Creativity is a balance of opening and closing, tightening and letting go. Accelerating, as Trevor Nunn says, and slowing down. The skilled creative recognizes when to take each step, and for how long.

There is no magical order. Actually, there is no order at all. I have listed them in what might appear to be a rational order solely to make them more memorable. But there is no rank, no hierarchy, no better beginning or worse end. We can start anywhere. Sometimes we need to start by dreaming and other times by analysing. Whatever; the important thing is to start, and take control, knowing when to dream and when to calculate. Each person should choose his or her own process. Someone who wants a ready-made process, who waits for the whistle, who waits to be *told*, will create nothing.

FROM MIND TO MARKET

Creativity on its own has no economic value. It needs to take shape, to be embodied in a tradeable product, if it is to accrue commercial value. This, in turn, needs a marketplace with active sellers and buyers, some ground rules on laws and contracts, and some conventions about

what constitutes a reasonable deal. By requiring these conditions I do not imply that creativity outside the market is any the less creative; but only that it has not produced an economic product.

In the next two chapters I describe the legal and commercial nature of these creative products.

2

THE BOOM IN INTELLECTUAL PROPERTY

LAW 2: PATENTS AND COPYRIGHT ARE THE CURRENCY OF THE INFORMATION AGE

'Intelligence is the new form of property.'

Charles Handy, writer

ANDREW WYLIE

New York-based Andrew Wylie has been described as 'the world's most famous literary agent' as well as the most vociferous and ferocious. It is a truism in the publishing industry that literary and commercial values are in conflict. Wylie believes the opposite: that the highest literary standards and the most aggressive business behaviour are completely compatible. His attitude flatters clients and irritates his competitors. It sums up the tension that lies at the heart of intellectual property; the balance between private ownership and public access.

Wylie is scornful of the majority of publishers and booksellers, who have been sucked into the mass market at the expense, he believes, of their clients' best interests and ultimately of their own interests too. He criticizes them for treating all books as identical commodities, merely trying to sell as many copies as possible in the shortest possible time. The result is that an increasing number of bookshops display only a very small selection of titles, albeit dozens of each title, while many good books published over a year ago are out of print and unavailable. This strategy, while suitable for the most popular books, is now applied to an ever-increasing number of titles. It brings hefty short-term revenues for the few but squeezes out the majority of the other 60,000 books published annually in America and the many