SMALL IS THE NEXT BIG THING

THE SIZE AND SHAPE OF COMMERCE AND CULTURE

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INTRODUCTION

"From the few and the large to the many and the small."

Paul Saffo, "Farewell Information, it's a Media Age", 2005

"That these technologies will change the world is beyond a doubt. The way that they will do so is more mysterious."

Frances Cairncross, "The Death of Distance: How the Communications Revolution is Changing Our Lives", 2001

"She's the puzzle-piece behind the couch that makes the sky complete"

The Lemonheads, "Alison's Starting to Happen", 1992

If you were asked to guess who was behind one of the biggest urban transportation systems in America or the multi-billion dollar mountain bike business or the world's most powerful supercomputer, you might suppose that they were all run by rigorously structured global corporations staffed with dedicated, specialist professionals. But you'd be wrong. All three are actually run by ad hoc collections of thousands or even millions of ordinary individuals working part-time for love not money.

In fact, after solo driving, car pooling is America's second largest commuter transportation system carrying twice as many passengers as any other public service. The $58 billion dollar mountain bike industry wasn't created by a stroke of corporate marketing genius but by amateur enthusiasts in the 1970s intent on re-designing existing bikes for much tougher off-road handling.

The SETI@home project, hosted by the University of California, Berkeley, uses a downloadable screensaver to harness the unused computing power of four and a half million PCs across the net to search for extraterrestrial intelligence. In 2004, this collection of resources donated by individuals performed almost 75% more calculations per second than IBM's Blue Gene/L modestly billed at the time as "The fastest supercomputer in the world."

SETI runs for free, but the same principles apply when money is involved. Chinese games company Shanda handles 460 million registered accounts with just 1000 full-time staff because most of what it sells is made by the customers themselves. Shanda creates online game environments where virtual communities of millions fight, trade, socialise and role play in digital fantasy worlds. Their audiences don't just watch the story, they pay to *be* the story inventing characters, plot lines and props, producing much more than they consume.

There's an old Woody Allen joke from "What's New, Pussycat?" when Victor Skakapopulis played by Allen, talks about his new job as a wardrobe assistant for striptease girls. Hearing the job's only worth twenty francs a week Peter O'Toole's character says: "that's not very much"; Allen replies: "It's all I can afford." If just 1% of Shanda's 18.5 million active, monthly

customers contribute productively, there's an additional labour force of almost 200,000 Victor Skakapopulises who, in effect, pay to work for this firm.

A million monkeys banging on typewriters can't reproduce the entire works of Shakespeare – a free online encyclopaedia, however, is a different story. Wikipedia manages to be somewhere between the seventh and seventeenth most popular site on the web (depending on which reports you subscribe to), publishing seven million articles in a staggering two hundred and forty nine languages using an infrastructure of three hundred and fifty web servers in three data centres with only ten full-time employees. 100% of Wikipedia's content is produced by a network of passionate contributors. Not one of them gets paid for their work.

Step back a few years to turn of the twenty first century when a 21 year old Finnish student programmer called Linus Torvalds had already proved that the collective brainpower of an online community could be applied to large scale software development. Created in his mother's Helsinki flat in 1991, Torvalds' Linux quickly became one of the world's most successful operating systems. It let anyone who wanted to help develop and improve the software source code – traditionally a closely guarded trade secret – as well as distribute their own derivative versions for free.

This triumph of 'open source' collaboration inspired a struggling gold producer to use a similar approach for commercial ends. In March 2000, Chief Executive Rob McEwen opened up mining exploration by making Goldcorp Inc.'s private plans public and inviting the world to show him "where we're going to find the next six million ounces of gold." Over half a million dollars in prize money and a thousand "virtual prospectors" later, $3.4 billion dollars worth of gold was discovered in the top three newly identified sites increasing Goldcorp's market value from $100 million to $9 billion dollars in the process.

A few months later, back in the non-profit world, NASA's Clickworkers experiment tested whether images of Mars could be mapped effectively using a similar system of online volunteers. More than eighty five thousand amateur geologists gave a few minutes of their spare time to help find and categorise craters on the red planet. When these piecemeal observations were automatically collected and applied to the task in hand, the results were "practically indistinguishable" from the work of an expert who had been doing nothing but recognising craters on Mars for many years.

These opening instances, and countless others, are examples of the accelerating, often bewildering changes online that have become constants in the third millennium (since it didn't really take off until web browsing in the 90's, the Net was, for practical purposes, always a 21st century phenomena).

We live in a state of continuous and dramatic innovation where start-ups like YouTube can become internationally recognised brands and part of global culture almost overnight. New technologies created by students in their bedrooms quickly spawn worldwide software movements like Linux or media distribution systems like Napster and its peer-to-peer progeny, massively disrupting multi-billion dollar industries in the process.

The question is whether these events can be viewed as pieces of a bigger picture which if seen in its entirety, can help us perceive a pattern in this chaos. The problem is, we're not looking at a static snapshot in time, like a Polaroid developing gradually in front of our eyes. It's a blurred, constantly moving image of a world in dynamic transformation, where everything is wired to everything else with cross-connected consequences.

THE UNCERTAINTY PRINCIPLE

One thing is clear: this rate of change is not going to slow down. Uncertainty as a way of life is something we will all have to get used to. Extreme turbulence and unpredictability has been a characteristic of international financial markets, for instance, since the 1970s. The dot-com boom and bust in 2000 was just another example of this constant volatility. Don't think of it as a bubble economy but, as Berkeley's influential sociologist Manuel Castells puts it, like fizzy water. The most important skill for future business leaders will be the ability to deal with this perpetual insecurity and ambiguity.

That said, even chaotic things achieve temporary states of local stability. Chemical components can degrade and interact violently with each other but eventually settle down for a while, until the next disruption sets them in motion again. This is how the internet behaves. External elements, like innovations in online video or peer-to-peer telephony, are always being introduced into an open system. These set off fresh chain reactions which throw everything up in the air. In due course, the new elements learn how to work together and the intensity recedes for a time.

Our bigger picture might be a mosaic of shifting pixels and it may never fully come into focus Nevertheless, I believe it is still possible to stand back and train our eyes to spot some relatively fixed points in this ongoing cycle of transformation. We are looking for still patches where things slow down or stop moving for long enough to be identified as fundamental structural components of the overall changes taking place.

The rise of information networks, for example. We all know something must be going on in a world where more information has been produced in the last three years than the previous 40,000 combined, where the free flow of digital information is becoming as essential as oxygen, a natural condition of life. It's also plain that the changing relationship between producer and consumer is significant and that, as we've seen, powerful things can happen when you tap into the collective resources of a large number of loosely connected individuals.

Other events also stand out as symbolising fundamental change. On the 5th of October, 2005, in the laboratories of London's National Institute for Medical Research and The Scripps Research Institute in San Diego, ten years of hard scientific graft paid off. The genetic sequence of the mother of all pandemics, the 1918 Spanish flu virus, which infected as much as one third of the global population and killed around 50 million people worldwide was finally pieced back together. Days later, in the spirit of open access to such breakthroughs,

the US Dept. of Health and Human Services published the details in full on the National Institute of Health's GenBank database of publicly available DNA information.

We don't need to know how feasible it would be to home-brew this pathogenic recipe into one of mankind's worst nightmares (although there are no rare ingredients required like say, enriched uranium for an atomic bomb) to realise we're peering into the shadows of a network society which indiscriminately super-empowers individuals and small groups.

Communications media, as an industry as well as a technology, is another case in point. When almost four times as many people downloaded CNN's Hurricane Katrina video footage than watched the same coverage on TV, we can tag it as proof positive (if any more were needed) that the way people access and consume media today has unquestionably changed. But the bigger headline is when the news footage on our screens and photographs on our front pages are themselves being produced not by highly trained professional reporters but everyday citizens writing, as journalist Dan Gillmor puts it, the first drafts of history as it happens.

After the 7/7 London bombings, for instance, while the official news media were penned in by the emergency services, commuters were free to walk past the scene snapping the best pictures. Or more recently, the real story of what happened at Saddam Hussein's hanging was told when video clips captured on the mobile phones of security guards spread like wildfire online. If information is power, then for the cost of a camera-phone and an internet connection, some of it certainly seems to be flowing out of the broadcast media monopolies and into the hands of the individuals formerly known as their audience.

In the past, the creation and transmission of ideas helped coordinate sophisticated activities like irrigation or architecture which shaped the development of entire civilisations. The introduction of the printing press to Europe was the first means of mass media distribution sparking a Reformation which encouraged public education, widespread literacy and, with the first native language Bible translations, the creation of modern western culture. Current shifts in communications media may turn out to be similarly transformational.

For example, in a global market now dependent on creating and communicating information, where digital networks touch every major industry on the planet, the collaborative production of bicycle designs, radio telescope data, reference works, virtual game worlds and news reports by individuals starts to play a much more significant role in the economy as a whole.

In the 18th century, free thinkers and intellectuals exchanged ideas on the progress of science, philosophy and the arts in a network of private correspondence and public articles. In an Age of Enlightenment this became known as The Republic of Letters. Today we live in an Information Age where literate, educated individuals all over the world have the ability not just to communicate but also contribute to the creation of ideas and understanding. This fundamental change in the ownership of the means of production is creating a global Republic of Knowledge.

Structural shifts can turn up in unlikely places. Even for bastions of industrialisation like the electricity industry, based for half a century on wasteful, gigawatt-scale plants, the future is increasingly seen to be a distributed network of cleaner, cheaper, more reliable and efficient neighbourhood micro-power generators, closer to individual consumers and their needs.

In his manifesto "Small Is Profitable: The Hidden Economic Benefits of Making Electrical Resources the Right Size", one of the world's most influential energy gurus Amory Lovins argues that internet principles of decentralised electricity can be around ten times more profitable through better infrastructure planning, lower building and operating expenses, higher customer service levels, and by avoiding societal costs altogether. Others agree that centralised grids should be replaced with systems which begin at the margins by connecting local neighbourhoods and organically grow into city-wide networks.

And sometimes significant change is easy to recognise. As online maverick @Man memorably fumed, the real unit of internet currency "isn't dollars, data, or digicash. It's reputation and respect." The extent to which electronic forms of human exchange have become part of our society and economy become plain when 221 million eBay members trade over $52 billion worth of goods every year (more than the gross domestic product of 125 of the world's countries) relying more on trust and reputation, in the form of five billion individual feedback ratings, than rule of law.

Could this prove to be, as technology commentator Howard Rheingold believes, "like the stock companies and liability insurance that made capitalism possible"? Markets are as old as the crossroads but so is the need to know who to trust and how to trust them. New technologies create new kinds of social and economic agreements, like stock markets and insurance premiums, where individuals can communicate and trade in ways and with people they weren't able to before. Similarly, online reputation systems are a new mechanism for trust between individuals anywhere the world and could become a cornerstone of the modern economy.

We are heading into a Small new world where the internet lets ordinary people and their communities organise social, political and economic collective action on a scale never before seen. This world of information, the individuals it networks together and the new forms of organisation this creates will revolutionise Big commerce and culture. In other words, 'Small is the Next Big Thing'. It is this idea the rest of the book sets out to prove.

II

The story of this book is about a fundamental shift in the balance of power and centre of energy in the modern world: away from the monolithic, the hierarchical and the centralised, and towards the miniature, the networked and the distributed. But the story starts before then.

FROM SMALL TO BIG AND BACK AGAIN

At the beginning of the 19th century, trade was small, local and personal. Then came mass production for mass markets: the technologies of industrialisation that drove Small business, society and culture to become Big. By the end of the 19th century, commerce was becoming international and relentlessly standardised. Hand-stitching with needle and thread was replaced by Singer sewing machines, an early example of international capitalism where all models were produced the same way around the world. At the same time tea was being imported from India and Ceylon to the UK in uniform ply-wood chests, and preserved food from sardines to corned-beef was packed in standardised tin cans.

This one-size-fits-all approach was the most efficient way to manage sophisticated, mass-scale manufacturing and control costs for a highly price-sensitive market. To achieve this, by the 20th century companies like General Motors had evolved into vertically-integrated hierarchies handling everything from making factory parts to marketing themselves. Bigger was not just better, it was the only game in town.

So too, titanic media corporations required huge infrastructure and capital investment – movie and television studios, printing presses and so on – to mass produce and distribute culture. One-off artistic creations like films and pop songs may not have rolled off production lines quite like Model-T Fords as a single design with multiple variations, but the effect was the same: massive investment, mass distribution, mass culture consumption.

A rapidly urbanizing society clustered around the common stories and experiences churned out by these industrial arts and media industries. Hollywood has probably been the single

strongest influence in spreading generalised cultural habits and values across the entire globe. Only by reaching its audiences in national blocks could movies have made blue jeans a part of youth culture worldwide.

But all this came at the expense of consumer choice. Today new technological forces are pulling the social, political, cultural and commercial logic of Big back into a different, smaller size and shape.

Unified national cultures are splintering into niches. In the mid-seventies you could reach the majority of the UK population with three TV channels, sixty radio stations and 4,987 different magazines. Thirty years later the same audience is spread over 702 satellite, cable, digital and terrestrial TV channels, 337 analogue radio stations, 47 Digital Audio Broadcast stations and 8,037 magazines. Not even counting the internet where nearly two thirds of the nation spends over a quarter of its media time, often in self-created micro communities clustered around particular passions.

It's the same story elsewhere. In 1965 you needed three 60-second TV spots to reach 80% of American 18-49 year-olds. In 2002, it took 117 prime-time commercials to do the same job. The number of channels in the average US household has more than tripled since 1994 while three quarters of Americans are now online.

For corporations, a slow organisational drift towards decentralisation has become an irresistible gravitational pull. Commerce in the 20th century moved from the vertically structured, command and control manufacturing epitomised by Ford to the relationship-based just-in-time production of Toyota. Businesses began to use IT to hand-over manufacturing and distribution to a network of smaller partners for a fast-changing market.

This century's internet-powered decentralisation has taken this to extremes and created a marketplace where a 100-person consumer electronics firm like California's Apex Digital was able to capture a 10% share of the U.S. DVD player market, second only to Sony, and record annual sales of $1 billion in less than five years. They did so by subcontracting manufacturing entirely to a factory in Jiangsu. This eventually backfired in a high profile legal dispute, but the scale of Apex's global outsourcing would have been unthinkable for such a small team only a few years earlier.

Multinationals are now being pulled even further apart by global customer communities who exist at the disorganised edge of these partnership networks. They are demanding more of a say in what goes on or a more active role in designing, testing, making and marketing the goods and services themselves.

Witness The Apache Software Foundation. It started as a group of eight web administrators fixing bugs in an existing piece of free server software in 1995 (the name is partly a pun on "a patchy web server"). Today, 17,000 contributors exchange up to forty messages a day on twelve different e-mail lists, building a better product than they can buy. Around 70% of the world's web sites now run on free server code created and maintained by this informal

coalition of open-source volunteers. This figure is rising while the market share of Apache's commercial competitors declines.

Forward thinking firms recognise this kind of mass collaboration with individuals as an opportunity rather than a threat. IBM, for example, actively supports the Apache development community and invents new paid-for products and services based on its free software.

Or there's Dr. Alpheus Bingham's web-based research community InnoCentive which farms out innovation requests to a network of 90,000 professional scientific 'solvers' in 175 nations. Clients like DuPont, Boeing, Eli Lilly and Procter & Gamble find it a faster, cheaper, better way to invent new chemical compounds or figure out how to inject fluoride powder into toothpaste tubes. "There is a 'collective mind' out there," says Bingham, "the question for companies is, what fraction of it can you access?"

The fact is, what makes today's situation so different from yesterday's is not just that different technological forces are driving progress, but that these technologies (mobile phones, computers, internet connections, Web browsers) are now in the hands of the public at large. Capabilities which were only available to the Big have moved in reach of the Small, and change is being shaped by the behaviour of individuals and communities instead of just states and corporations. The music industry, for instance, simply cannot maintain the existing copyright system, upon which its business is based, in the face of free music on file-sharing networks which makes up 90% of the download market.

There's more processing power in the average mobile phone than NASA used to land a man on the moon in 1969. And media production facilities you could only find in multi-million dollar movie studios not that long ago now exist in the bedroom of any teenager with a connected laptop. These personal communications tools allow us to self-direct, self-organise and self-produce like never before, and we create a greater variety of smaller, more human-sized things in the process. And this activity is happening within new social spaces: online networks and virtual environments which are as individual, irregular and impulsive as the mass-produced world was impersonal, identical and predictable.

This book then is an account of how large-scale systems are powered by ever-smaller, more independent, component parts linked together by the internet. And how these institutions are being fundamentally re-modelled and re-made in the process. Only by understanding how to harness tiny, loosely connected, essential units of energy – in the form of information and computation, plus the individuals and networked groups producing it – will future giants get and stay Big.

SIZE MATTERS

Let me say what 'Small is the Next Big Thing' doesn't mean. Less is not more, small is not beautiful and, unlike woolly mammoths, the days of colossal things are not over. Far from it. The world's 500 largest companies control two thirds of the world's trade and ninety per

cent of all foreign investment. And the resulting piles of cash accumulated by the hyper-rich haven't stopped growing either: the 225 richest people on the planet now have as much wealth as the 2.7 billion poorest.

Like it or not, Big, in all shapes and sizes, continues to get bigger. The global finance and media industries are examples. As are physical trade hubs, like major docks and airports, which are continually expanding to keep pace with commercial shipments. There's also the growing concentration of urban populations: two centuries ago, three out of every hundred people on the planet lived in a city. Today it's fifty.

The argument here is about the future character and composition of Big: Small, powerful and autonomous parts, informally and intelligently wired together by information networks. The top ten sites may account for as much as forty per cent of all consumer web traffic, but if we dig deeper they are made up of millions of connected fragments. Like the 526 million self-published eBay listings, the 45 terabytes of uploaded YouTube video, 14 million community-moderated classified ads on Craigslist or seven million entries in Wikipedia. The biggest social networks, MySpace, Facebook and Bebo, are constructed from 176 million individual profile pages.

Consider also that Google's $10.5 billion in sales are earned, as writer John Battelle notes, "one nickel at a time". Advertisers are charged pennies every time a visitor clicks on the discrete text ads Google places next to their search results or syndicates on a network of tiny, independent sites all over the world. This small change adds up to big bucks on a global scale. As the saying goes, a small number times a big number is still a big number. This kind of business only makes economic sense on the internet, where the costs of co-ordinating these micro-transactions are so low it's possible to do them on a previously unimagined scale.

It's also vital to understand that we're at a particular moment in history. Minor entities are being born into a world of large, standardised capital infrastructure built up over many centuries: electricity grids, international financial and legal systems, transportation, media and telecommunications networks (including the internet itself). In the West at least, they also inherit the basic social infrastructure of an educated population able to use new communications technologies in the first place. These have now come together as a giant springboard to launch smaller, more flexible, more creative innovations.

Take the exploding software-based Voice Over internet Protocol (VOIP) telephony market. The most popular service Skype (now owned by eBay) simply couldn't exist, let alone keep 170 million customers happy, without piggy-backing on the expensive physical assets (telecommunications networks, hubs, routers and so on) owned by the very goliaths it seeks to bring down.

In a sense this springboard echoes one of the internet's core architectural principles: a relatively dumb network of pipes and plumbing that allows creativity and intelligence to blossom around its edges. A design that was based on the idea that we can never imagine

all the potential inventions and uses of technology: after all, who predicted the stratospheric rise of text messaging, blogging or the Web itself? The internet itself was engineered as a platform for future innovation.

Indeed, one of the net's founding fathers, Vint Cerf, once said of his progeny: "It is just a thing. Whether it is good or bad depends what you do with it." Which is why, of course, today we have networked organisations as polarised as Architecture for Humanity (an international design community for humanitarian crises) and Al Qaeda building equally successfully on the same foundations.

My point is simply that the overall trend is clear. Understanding how Small leads to new forms of Big will help us make sense of a new century and its ongoing transformations and points to the lasting impact they may have.

AS GOOD AS NEW

The traditional way of looking at major global shifts seems always to be in terms of 'old' and 'new'. Especially where the internet is concerned – count the column inches over the last decade on 'new' versus 'old' economies or media. As it happens, for media, despite predictions to the contrary, theatre survived the invention of print and later film, cinemas are holding their own in spite of DVDs or online downloads, radio still exists alongside TV, and so on. In fact, old versus new is a familiar figure of speech but not a very helpful frame of reference when it comes to understanding change.

Austrian economist Joseph Schumpeter's famous process of 'Creative Destruction' explained how one way of doing things is always replaced by a newer, improved way at critical points in economic development. And though conflict makes a better story, the established and the emergent usually co-exist in a period of transition rather than competition until one is gradually eliminated altogether.

Sailing boats and steam ships, for example, were both efficient and reliable in their own way, but at one point in time it became uneconomical to run sail and steam became more popular. This was partly because the development of mass iron production in this period made steamers cheaper to build and able to carry heavier freight and more passengers. Also, railways had introduced the idea of strict timetables and winds and tides made sailing ships less reliable so the steamer lines picked up government subsidies in the form of postal service contracts.

A more useful definition in the case of the internet comes from Oxford and Stanford's distinguished economist Paul David who describes a process of digital renewal where established technologies and commercial processes are being re-invigorated in the information age. While it's difficult to talk about the internet without at least mentioning that it is new, in general, the replacement of old technology by new has been going on since the invention of stones as nut-crackers. Saying the 'new' replaces the 'old' is to describe a

timeline rather than provide an explanation; it doesn't help us understand *how* things are happening and, most importantly, *why* they are happening.

On the surface of it, Big and Small might seem just as black and white. But as we'll see, the more it's tested, the better it stands up as a complementary explanation of the signs of our times to provide a more revealing perspective on the changes taking place all around us.

III

But first we need to be clear about the rules. In my book, for something to qualify as an example of Small being Big, it must do one or more of these three things:

1. It must be an unambiguous case of something small itself increasing in power, influence, authority or control. It could be a microprocessor as the engine of a much larger technology system, or the individual consumer within a mass market (sometimes power is also transferred from large to small along the way: governments which diminish in authority while their citizens become more independent, for example)..

2. Alternatively, it should illustrate how discrete, individual components can combine into something larger with far greater collective impact. These aggregations can happen spontaneously, like brushfires of breaking news in the blogosphere or a flash mobilisation of political protestors on the streets; purposefully, as is the case with open source software updates and Wikipedia entries; or inadvertently, in the way that Google's Page Rank formula calculates search rankings based on the cumulative links of internet users and lone actors are unaware of the bigger production in which they've been cast.

3. Finally, Big can think and operate in Small and therefore more open ways. For example IBM is the largest holder and licenser of patents in the US but now earns over twice as much revenue from free software-related services. Or one of the best known children's brands, Lego, which went into business with its customers giving eight competition winners a 5% royalty for products manufactured from their designs.

It's worth spending a moment applying these rules to a specific example which doesn't pass the test. It will help clarify what counts as a Small-Big change later on. Small countries, it turns out, are not the Next Big Thing they first appear to be.

WHEN BIGGER IS STILL BETTER

The last sixty years or so has seen an explosion of independent, dwarf states. There were fifty countries in the League of Nations when it was formed in Paris in 1919; its successor the

United Nations now has over 200. And not only do half the world's countries today have fewer people than the state of Massachusetts (pop: 6.4 million), but by some measures these smaller countries are also performing better.

Take the ten most populous nations in the world: only two – the United States and Japan – are rich. But of the top ten wealthiest in terms of highest GDP per head, only four, the US, Switzerland, Norway and Singapore, have more residents than the city of Detroit (pop: 951,270).

Moreover, in the Economist Intelligence Unit's "Quality of life" index, which measures a population's satisfaction with a range of factors from income, health and unemployment to political stability, gender equality and community life, only two of the world's ten most heavily populated countries make it into the happiest top twenty. Yet you could fit the combined populations of the top five nations with the highest quality of life (Ireland, Switzerland, Norway, Luxembourg and Sweden) into a relatively miserable megatropolis like Tokyo with room to spare. On the face of it this seems like strong evidence for Rule #1: a proliferation of smaller things packing a bigger punch.

On the other hand, while globalisation now makes it possible for miniature countries to be economically, technologically and culturally viable (and some, like Iceland, with the most advanced biotech industry in the world, can even become very prosperous), globalisation essentially stops with politics, so it's still only the big states that have any real weight in world affairs. As for Rule #2's greater collective impact, politically and administratively, the European Union is hardly a great advertisement for the success of many small states banding together to form a larger whole.

Sure smaller countries tend to have higher and faster growing GDP per head, but then it's always easier to calculate better returns and higher growth when starting from a miniscule base. A business that doubles in size seems more impressive than another which grows by 5% only if you ignore the fact that one is the corner store and the other is Wal-Mart. Similarly, a country's total output can only ever be as great as the number of people producing it; where GDP is concerned, size still matters. On balance, while there's plainly a movement towards smaller states, we'd have to conclude that the established pecking order of large countries won't be upset anytime soon.

INFORMATION, INDIVIDUALS, ORGANISATION

To show where the established order really is being challenged, overturned and ultimately replaced, this book is divided into three inter-related parts: Information, Individuals and Organisation. It will show how Small is the Next Big Thing because of developments in each of these three realms.

The book begins with digital Information, the primary unit of Small that underpins all aspects of modern life. Gordon Moore accurately predicted that computer processors would double

in power every 12 – 18 months while George Gilder asserted that bandwidth speed rises at least three times as fast (both examples of Rule #1 where the smallest things have ever larger consequences). Thanks to these and other so called technology power laws, the industrial era of Big is being superseded by a virtual age of Small, where ideas and knowledge matter more than matter.

This opening section sets the scene by explaining how Small is making the economy bigger, progress more powerful and portable and the specialisation of goods and knowledge more important. It shows how the internet is re-invigorating belief in shared resources and common ownership of ideas and so blurring the distinction between producers and consumers, as well as private and public intellectual property (Rule #3).

Part II, Individuals, puts the smallest, atom-based units of our economy and society on lab slides: people. It will show how information networks have helped us grow more powerful as individuals (Rule #1), which gives us the independence to make an impact as collectivities (Rule #2).

This section begins with the rise of individual consumer power along with post-war disposable incomes, then looks at how the internet turbocharged this process and gave ordinary people a much louder voice in the public sphere. This is followed by a look at what makes us all tick: the personal passions and non-commercial motivations that make the world go round. And how the internet has rendered this world of informal interaction visible and turned social production into a growing part of our knowledge economy.

The third section, Organisation, looks at how individuals are not just doing different things, but organising to do them differently. How they are using information networks to cooperate in drastically decentralised ways, what kinds of mass-scale problem-solving is now possible, and how this more open, public participation will affect the way we trade, communicate and socialise (Rules #2 and #3).

FAMOUS FOR FIFTEEN PEOPLE

It's a small new world where billionaires make their fortunes from invisible bits of data like market equities or software code when they once built empires with iron, steel and cement.

Where operating Big means using offices, policies, processes and salaries to concentrate professionals on achieving pre-set commercial objectives: bringing people to problems. While behaving Small brings problems to people by breaking something up into fragments, and handing it all over to as many different brains as possible to help solve.

It's a place of Small 'Ad hocracies' within Big democracies: instead of existing solely as an organised assembly of citizens, virtual populations form and spontaneously co-operate as a collective force independent of governments. In fact, sometimes they do so specifically to

oppose those in power. On January 20th, 2001 President Joseph Estrada of the Philippines was deposed when a flash flood of text messaging synchronised and mobilised over a million such protestors.

It's a world where market-based systems operate on the assumption that when money talks everyone listens and making more of it is the only language people really understand. Yet micro-economic psychology recognises that warm and fuzzy social rewards often count for more than cold, hard cash. While media moguls such as Rupert Murdoch say things like: "big will not beat small anymore", rather "it will be the fast beating the slow", and that the world's largest company in 2020 "may not even exist yet".

It's a time when trust is moving away from Big, institutional authority towards the everyday and the ordinary. We're progressing from a period of monolithic, broadcast media where Warhol once thought people would be "famous for fifteen minutes," to a networked world of discrete groups with shared affinities where it's ok to be famous for fifteen people. And as these minor voices, captured in fifty million blogs and a trillion other online conversations, are amplified and made instantly accessible by search engines, what was once cult becomes popular culture and the marginal becomes mainstream.

Marketers that act Big still communicate to rather than with this emerging generation of what we might call 'non-consumers' – active participants in creating the services, arts, science and knowledge they share. Smaller-thinking firms understand that people respond to dialogue rather than monologue and relate to brands which speak and behave like individual human beings not remote, characterless corporations. By common consensus the honesty and integrity of ex-Microsoft blogger Robert Scobble managed to give even the 'evil empire' a human voice and face.

"It's no longer good enough to be a mass media brand." said Anheuser-Busch Executive VP Bob Lachky trying to get his head around the thought of shifting 50% of all the beer sold in America by reaching fifteen people instead of fifty million at a time, "We have to learn how to sell small." An industrial distribution system geared for what internet entrepreneur Joe Kraus calls dozens of markets of millions is giving way to a networked model of engaging with millions of markets of dozens. As Larry Light, former Chief Marketing Officer of McDonalds, the biggest of the Big brand marketers, summed it up: "The days of mass marketing are over."

Or, to put it all another way, Small is the Next Big Thing.

NOTES ON SOURCES

2 *Car Pooling:* In "Sharing Nicely" (2004), Yochai Benkler cites "The socioeconomics of urban travel" by John Pucher and John L. Renne (2003) which observed that carpooling carries twice as many people as any other form of commuter transport apart from solo driving (75%).

2 *Mountain bike industry:* Eric Von Hippel, in "Democratizing Innovation" (2005), cites studies by Penning (1998) and Buenstorf (2002) about young cyclists in the '70s modifying bikes to go off road and naming them "clunkers". Von Hippel also refers to a 2002 National Sporting Goods Association calculation that the U.S. mountain bike industry was worth $58 billion in 2000, 65% of total bicycle retail sales.

2 *The SETI@home project:* The comparison with IBM's Blue Gene/L was also referenced in "Sharing Nicely" by Yochai Benkler (2004).

2 *Chinese games company Shanda:* I first heard about this firm in Charles Leadbeater's 1995 TED Global talk. The number of Shanda's active paying accounts is based on reported Q2 2005 earnings and the number of employees came from their Investor FAQ: http://tinyurl.com/363s39.

3 *Wikipedia manages to be:* The number of articles and languages was taken from http://tinyurl.com/8af6z. The number of employees, web servers and data centres came from Florence Devouard, Chair of Wikimedia Foundation, quoted in http://tinyurl.com/3xqpr3 in Feb 2007.

3 *Goldcorp Inc. opened up mining:* This example came from the downloadable PDF preview of Wikinomics by Don Tapscott and Anthony D. Williams (2006) and a *Harvard Business Review* podcast interview with Tapscott, "HBR IdeaCast 31: What is Wikinomics?" (2007).

4 *The previous 40,000 combined:* A University of California study cited in *Financial Director* magazine (2002) came up with this statement. It's not clear exactly which study this was. However, "How Much Information? 2003" from the School of Information Management and Systems, University of California at Berkley, calculated that the world's annual production of information (print, film, magnetic, and optical storage media) was five exabytes – equivalent to all the words ever spoken by human beings.

4 *1918 Spanish flu virus:* Casualty estimates come from a combination of this Wikipedia article, http://tinyurl.com/2o89mj, as well as "Statistics of influenza morbidity", Frost WH, Public Health Rep (1920) and "Influenza: a survey of the last 50 years in the light of modern work on the virus of epidemic influenza", Burnet F, Clark E, MacMillan (1942), both from the Dept. of Health and Human Services' Centre for Disease Control and prevention website http://tinyurl.com/37ekdr.

5 *Enriched uranium for an atomic bomb:* Tech visionaries Ray Kurzweil and Bill Joy eloquently warned of these dangers in a *New York Times* Op-Ed column, "Recipe for Destruction" (October, 2005), http://tinyurl.com/cna5c.

5 *CNN's Hurricane Katrina video:* According to the HyperGeneMediaBlog (Aug 2005), PaidContent.org reported that CNN had 10 million unique visitors and 9 million video downloads on Sunday 28th August compared with 2.3 million primetime cable viewers on the same day (figures published on the TVNewser blog http://tinyurl.com/28rgfg).

6 *Small Is Profitable:* Lovins doesn't specifically refer to the internet but his notion of decentralised energy generation mirrors the net's distributed architecture. In fact, Clinton's former special projects director Jonathan (Jock) P. Gill calls this combined concept an 'InterGrid" in the

"Technologies of cooperation" paper by Howard Rheingold, Andrea Saveri and Kathi Vian written for the Institute for the Future (January 2005).

6 *221 million eBay members:* The number of eBayers and how much they trade was taken from eBay Inc Q4 Earnings Release (December 2006). The GDP comparison was made using Wikipedia's list of 183 world countries by gross GDP, http://tinyurl.com/y2pn7u. The figure of five billion feedback ratings came from an eBay discussion forum, http://tinyurl.com/2eu38r.

8 *In the mid-seventies you could reach:* Figures on UK TV and Radio came from Ofcom's Broadcasting Intelligence Team; magazine data from Willings Press Guide (2007). 62.5% of the UK population are online according to the European Travel Commission (February, 2007), http://tinyurl.com/yppvnb. The British Market Research Bureau's (BMRB) "Internet Monitor" (November, 2006), reports that 26% of British media time is spent on the internet. P&G Chief Marketing Officer Jim Stengel's statistics on the declining reach of TV spots in American since 1965 has been widely quoted in reports by research consultancy eMarketer or by marketing commentators on leading blogs like Corante, http://tinyurl.com/23d38n. A Gartner G2 analyst call reported the rising number of TV channels in US homes (2004) while the Pew Internet & American Life Project's memo "Internet Penetration and Impact" (April, 2006) stated that 73% of Americans are now internet users.

8 *Apex Digital:* Details came from an article in the *New York Times* Magazine by Rob Walker, "The Way We Live Now: 3-7-04: Consumed; The Apex DVD Player" (March, 2004).

8 *The Apache Software Foundation:* Information on Apache's HTTP Server Project and the size of its community were found here: http://httpd.apache.org, and here: http://tinyurl.com/yspee2. According to a November 2005 survey covering over 74 million sites by internet services company Netcraft, Apache had 70.98% of the market, Microsoft had 20.24%, Sun had 2.52%, and Zeus had 0.78% (these were the top four). Of the 'active' web servers, Apache had 69.36% share, Microsoft had 24.31%, Zeus had 0.66%, and Sun had 0.60%. They stated that overall, Apache's market share was increasing while everyone else's was on the way down.

9 *Research community InnoCentive:* Information about InnoCentive came from the company's web site, http://www.innocentive.com, and three articles: "Here's an Idea: Let Everyone Have Ideas", William C. Taylor, *New York Times* (March 2006); "The Rise of Crowdsourcing," Jeff Howe, *Wired* magazine (June, 2006); and "Crowdsourcing," Jessi Hempel, *Business Week* (September 2006).

9 *90% of the download market:* Research company NPD Group estimates that for every legally bought digital song on the likes of iTunes, nine are downloaded illicitly on file-sharing networks – "Making a Ruckus in the Music Business", Catherine Holahan, *Business Week* (January, 2007).

9 *In the average mobile phone:* This calculation about processing power came from two articles, "NASA, Information Technology and the Future of Collaboration" by David Halperin in *TechNewsWorld* (September, 2003), and "Silicon Dreams", Robert D. Hof and Otis Port, Business Week (June, 1997).

9 *World's 500 largest companies:* The information came from two source, "Tony Blair means only one thing when he talks about his value" by Peter Wilby in *The Guardian* (August 2006) and "Micromultinationals: New types of Firms for the global Competitive Landscape" by P. Dimitratos, J. Johnson and J. Slow in the *European Management Journal* (April 2003).

10 *225 richest people:* This figure was mentioned in a talk by futurist Erik Peterson, at the 2006 TED conference in Monterrey. "The World Distribution of Household Wealth," written by Anthony Shorrocks, James Davies, Susanna Sandström and Edward Wolff, for the World Institute for Development Economics Research of the United Nations University (December, 2006), also stated that the richest two percent own half the world's money.

10 *Urban populations:* Information on people living in cities was taken from an article called "Environmental Heresies" by Stewart Brand in MIT's *Technology Review* (May, 2005), http://tinyurl.com/34tan3.

10 *Millions of connected fragments:* Information came from eBay's Q4 Earnings Release (December 2006) and "Will All of Us Get Our 15 Minutes On a YouTube Video?" by Lee Gomes in the *Wall Street Journal* (Aug, 2006), Trendwatching.com's April 2007 Trend Briefing, plus the Craigslist and Wikipedia sites.

10 *Google's $10.5 billion in sales:* Figures were taken from Google's investor information, http://tinyurl.com/5ao5m – 2006 revenues totalled $10,604,917.

10 *A particular moment in history:* This point about building on a platform of existing Big infrastructure was made by technology commentator and blogger Bruno Giussani (http://www.lunchoverip.com) over a coffee in London (March, 2006).

10 *The most popular service Skype:* Subscriber figures came from analyst Hudson Barton's article "Skype Growth: Analysis and Forecast for 2007", http://tinyurl.com/ypfxkn.

13 *IBM is the largest holder:* The IBM/Linux data came from Yochai Benkler's "The Wealth of Networks" (2006).

13 *Lego went into business:* According to Trendwatching.com (May 2006), "A popular [LEGO] contest last year entitled winners to have their model mass produced and sold in Shop@Home, receiving a 5% royalty on each set sold."

14 *The state of Massachusetts:* This fact was reported in an *Economist* article (January, 1998) called "Small but perfectly formed". A 2005 estimate from the U.S. Census Bureau put the state's population at 6,398,743 people.

14 *Take the ten most populous nations in the world:* The information in this paragraph was based on "The size of countries: does it matter?" By Alberto Alesian, Harvard Institute of Economic Research (September 2002) and U.S. Census Bureau data (2000) which showed that Detroit has slightly less than one million inhabitants.

14 *Only two of the world's ten most heavily populated countries:* According to "The World in 2005", The Economist, the combined populations of the "quality of life" top ten is 25,568,432 while, the 10th edition of the Times Atlas of the World (http://tinyurl.com/y6pmnn) puts Tokyo's population at 28 million people.

15 *Bringing people to problems:* I am paraphrasing digital analyst Clay Shirky's epithet: "taking problems to individuals" from his 2005 talk at the TED Global conference.

16 *Big will not beat small:* Murdoch's quotes came from his "Speech to Worshipful Company of Stationers and Newspaper Makers" (March, 2006).

16 *Millions of markets of dozens:* This phrase was coined by net entrepreneur Joe Kraus in a blog post, http://tinyurl.com/g2jhg (March, 2005), based on his presentation "Thinking Small to Get Big – the long tail of software".

ABOUT THE AUTHOR

Andy Hobsbawm established the first international internet agency in 1994 and was a founding director of leading British new media company Online Magic which merged with Agency.com in 1997. As European Chairman of Agency.com, Andy helps guide and is a spokesperson for the firm with his unique insight into the continual evolution of the interactive medium.*

A pioneer of the UK internet industry, he still remembers the buzz of watching users from around the world interact with his earliest Web site, the world's first commercial eZine *PowerPC News*, following the release of Mosaic in 1993.

Andy was recognised by industry professionals as one of most influential 100 individuals who have most contributed to the development and growth of e-commerce and the internet in the UK over the last decade and also received a Special Lifetime Achievement Award in 2005. In *Campaign Magazine* he has been voted New Media Innovator of the Year and named by industry peers as one of the most admired digital pioneers. He also featured as one of the Top 50 Internet Professionals in the U.K. for *Internet Business Magazine.*

Andy has spoken at numerous industry conferences, including Global Marketing Forum, Jupiter ClickZ Advertising Conference, Forrester Consumer Marketing Forum and the opening keynote at ad:tech, London 2006, and has also helped to judge many awards such as New York's One Show Interactive, London's Revolution Awards and the Webbys.

He has been a weekly columnist about the new economy for the *Financial Times*, a member of GartnerG2's first advisory board on online advertising and published a widely acclaimed report on the global impact of communications technologies: "10 Years On: The State of the Internet a Decade After Mosaic" (www.agency.com/10yearson). He is currently writing the rest of this book, "Small is the Next Big Thing: the size and shape of commerce and culture," which will be published by Atlantic Books Ltd in spring 2008.

Andy was born and raised in London, and educated in London and Montreal. He lives in Highgate with his wife, two children and Gibson 330 ES, and has yet to receive any royalties from obscure pop songs released by a minor independent record label in Europe.

*That said, if anyone reading anything in this book introduction feels the overwhelming urge to litigate, these are all his personal views and aren't necessarily shared by the company - although he'd hope that they were."