MOOD CONTAGION

Mass Psychology and Collective Behaviour Sociology in the Internet Age

Jaap van Ginneken

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Mood Contagion

How finding oneself a dissident automatically triggers the primal fear center in our brains . . .

How our heart unwittingly beats at the same pace as that of a relative we see fire walking at a considerable distance . . .

How music, dance and mirroring movements release spurts of 'dope' in our brains . . .

How we are infected by the happiness and health of friends of friends we don't even know . . .

How sports championships on television lead to spikes in sex and births, as well as accidents and murder . . .

How a largely imaginary illness led to a 200 million dollar soft drink recall . . .

How a contagious wave of recent corporate mergers and acquisitions cost 10 trillion dollars, but three quarters did not bring the intended results . . .

How economic insecurity leads to slower top hits, but more upbeat blockbusters, and Playmates with more mature faces and bodies . . .

How computer analysis of Twitter messages is able to predict Oscar winners and television ratings, sales and even the stock market . . .

Mass psychologist Jaap van Ginneken shows how we are continually affected by emotional epidemics – particularly since we are now online 24/7, through mobile devices.

Hypes and scares therefore continually trigger earthquakes and tsunamis in world public opinion. Policymakers and crisis managers increasingly have to scramble to stay on top.

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Published, sold and distributed by Eleven International Publishing
P.O. Box 85576
2508 CG The Hague
The Netherlands
Tel.: +31 70 33 070 33
Fax: +31 70 33 070 30
e-mail: sales@budh.nl
www.elevenpub.com

Sold and distributed in USA and Canada
International Specialized Book Services
920 NE 58th Avenue, Suite 300
Portland, OR 97213-3786, USA
Tel: 1-800-944-6190 (toll-free)
Fax: +1-503-280-8832
orders@isbs.com
www.isbs.com

Eleven International Publishing is an imprint of Boom uitgevers Den Haag.

The original Dutch edition *Het enthousiasmevirus – Hoe gevoelens zich explosief verspreiden nu iedereen online is* was published by Amstel/Business Contact, spring 2012.

ISBN 978-94-6236-008-2
ISBN 978-94-6094-751-3 (E-book)

Printed in The Netherlands

Foreword

Test 1: Take a walk with friends, through a busy shopping street. Then stop, stare intently upwards, as if something extremely surprising caught your eye: on the roof of one of the buildings. You may even feign a panic, and duck. Many passers-by will inevitably stop as well and follow your gaze – and even involuntarily catch your apparent fright, without really seeing anything untoward.

Test 2: Use a night-time seminar, a business meeting, a birthday party. Let people form a circle and hold hands. Ask them to be silent, then switch off the light, so that it becomes pitch black. Return to your seat, which is the last place left open. After a few seconds, suddenly squeeze your neighbours' hands very hard. Your squeeze may involuntarily travel the entire circle. Many will be left with goose bumps, and the hair on their arms will stand up – even if you do not cry.

These two tests show that the sudden emotions of others may easily contaminate us – even if we are not assembled, but dispersed. This book is meant to show that emotional contagion happens not only in face-to-face situations, but also through organizations and media, as myriad subtle threads now connect us with each other: for instance through the mobile Internet and the wandering World Wide Web.

I have emphatically tried to include some descriptions of mass psychology/collective behaviour sociology projects that I myself have been involved in over the years – next to themes from other literature and topical stories from the press.

Collective mood swings with regard to an issue in public opinion have meanwhile become increasingly common, particularly since the dawn of the 21st century. Now that electronic links have introduced the instantaneous distribution of messages and images, with new possibilities to share one's reactions within the country and throughout the world in 'real time' – at the slightest touch of a screen.

It is important to recognize this and learn how to deal with it. This book is meant to provide new insights into the threats and opportunities ahead. But first of all, this book needs to be a good read, to stir and startle. Enjoy!

Jaap van Ginneken
Nice, mid 2013

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Introduction – Emotion Viruses in the 21st Century

An economic climate is usually the result of two trends coming together: on the one hand objective market conditions, on the other hand subjective market sentiments. Unfavourable conditions may thus be further amplified by collective demoralization, rather than collective enthusiasm for the start of a new era. U.S. president Franklin Roosevelt, for one, said during the Great Depression that 'we have nothing to fear but fear itself', and launched the New Deal to confront it head on.

Similar things are true today. An economic correspondent for the Reuters news agency recently noted that 'Fear of the future – justified or not – can create a downward spiral of its own'. He said 'amplifying nervousness right now is a barrage of disaster commentaries . . . each appearing to outdo the other in dire warnings'. And he quoted the CEO of a major multinational, who warned: 'It almost looks like the world is worrying itself into another recession'. But the re-election of Obama for a second term and other events seemed to brighten the outlook.

In early 2013 some in Europe saw signs of a turning point and a glimmer of light at the end of the tunnel. Mario Draghi, the president of the European Central Bank, had earlier said he would do 'whatever it takes' to protect the Euro, which had calmed the financial markets, and lowered borrowing costs for countries in trouble. He now felt the previous negative mood contagion, the vicious circle and the downward spiral had timidly turned into a 'positive contagion', a virtuous circle and an upward spiral. British scepticism and the upcoming elections in Italy and Germany might still change the dynamic again. But one headline said, 'Data point to slow recovery in Europe'; there was good news from Japan, China and other emerging economies, and another headline talked about a 'Cautious brightening of the global mood'.

Of course there were plenty of problems left, as there is also another element that counts. Crisis managers say that one should never let a good crisis 'go to waste', meaning that a crisis – like the earlier private 'credit' crisis – should always be used to push through necessary changes that otherwise would have encountered too much resistance. Nothing substantial had been done on that occasion, however, and the problem had predictably returned two years later, this time in its new incarnation of a huge public 'debt' crisis. This time, however, a widespread protest wave had called for radical reform and entirely new beginnings.[1]

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1 **Reuters.** M. Nolan. (20 October 2011). Worrying ourselves into a crisis. *International Herald Tribune* (global edition of the *New York Times*). I use this Franco-American daily as my main journal of record, henceforth abbreviated as *IHT*. The same items often appear around the same date in *The New York Times* itself, abbreviated as *NYT*. **Turning point.** *IHT,* 14 January, 19-20, 21, 25 January 2013.

A New Type of Worldwide Epidemic

The buzz offered the strangest sight and sound. Whenever the speaker had completed a sentence, the audience in front repeated it, word for word. Quickly internalized it, then externalized it again, thus tightening the group bond. Listened and spoke, spoke and listened.

Either in a low voice, from person to person, or in a loud voice, all together. In replacement of a microphone and loudspeakers, forbidden by neighbourhood regulations. A new form of communication, harking back to its most archaic predecessors. Resembling electronic messaging through social media, but projected back onto the old canvas of everyday real-life oral exchanges.

The major local newspaper reported: 'The protesters have set up a kitchen, a legal desk, a sanitation department, a library of donated books, an area where the general assembly meets, a medical station, a media centre where people can recharge their laptops using portable generators and even a general store, called the comfort centre, stocked with donated clothing, bedding, toothpaste and deodorant – like the food, all free for the taking'. Money donated by a supportive public already amounted to no less than three hundred thousand dollars.

Until a few years earlier, the place had been known as Liberty Park. Since then, it had been renamed Zucotti Park, after the chairman of Brookfield Office Properties, which had developed the adjacent buildings in lower Manhattan. As it had officially become a 'private' area, the anti-capitalist sleep-over was not automatically forbidden by the police – as it would have been according to city regulations applying to many other 'public' squares and parks in New York.

But the meeting was even more unprecedented for its ubiquitous electronic extensions. Goings-on were broadcast live over the Internet, through OccupyWallSt.org and dozens of linked websites. WeAreThe99Percent on Tumblr and dozens of other blogs provided running commentary and discussions.

After four weeks, Twitter already carried an average of ten to fifteen thousand messages per hour (!) on the initiative, whereas the most relevant Facebook page already had one hundred forty thousand members. A survey by the largest national newsweekly *Time* found that a large majority of Americans held a favourable impression at this stage, and only less than a quarter an unfavourable one.

Some nine hundred solidarity meetings had already been set up through Meetup.com. The protests were thus spreading from Boston to Washington, from San Francisco to Los Angeles, from Detroit to Chicago, and dozens of other cities throughout the United States.

Overseas, they spread to Saint Paul's Cathedral next to 'The City' of London in Great Britain, – as well as to financial capitals such as Paris and Brussels, Frankfurt and

Amsterdam, as well as thousands (!) of other locations around the world. The leaderless movement caught not only banks and bankers completely by surprise, but also politicians, the two major parties in the United States and even the larger trade unions.[2]

Widespread Feelings of Dissatisfaction

A *New York Times*/CBS poll found that 89 per cent of Americans said they distrusted the government, 84 per cent disapproved of Congress, 74 per cent said the country was on the wrong track and two-thirds said wealth distribution should be more even.

Few had apparently realized how deeply frustrated ordinary citizens felt about the preceding course of events. The credit crisis had led to a massive bailout of shareholders and bankers, but there had not been any noticeable change in their widespread speculation and bonus culture. Whereas earlier profits had been privatized, it seemed losses had, by contrast, been nationalized and socialized – as lobbyists had succeeded in pushing governments to pick up the tab and pass it on to ordinary citizens by sharply raising taxes and/or reducing benefits.

Meanwhile, academic researchers had shown that since the 1980s deregulation by American President Reagan and British Prime Minister Thatcher, real incomes of workers had remained almost entirely frozen, whereas the income share of the top 1 per cent in the United States had more than doubled.

Corporate profits were at a post-war high, but so was unemployment – particularly among youths, including educated youths. It turned out that the four hundred richest families of the country had already amassed a wealth equalling that of more than half of all lower-income Americans put together. The Census Bureau reported that almost 50 million people, particularly from minorities, lived below the poverty line: the highest number in the more than half-century that it had been publishing figures.

The prairie fire of outrage had been lit by a single spark during the previous summer, dropped into the e-mail boxes of subscribers to the famous Canadian magazine *Adbusters* – a critic of the consumer culture. Of course, the ground had also been prepared abroad by increasingly large and virulent socio-economic protests in the Arab world and Israel, the huge demonstrations of the 'indignados' (unemployed youths in Spain), the riots in Athens, Rome and even London.

But the mere evocation of the universally despised label of 'Wall Street' (as opposed to the universally admired label of 'Silicon Valley', for instance) seemed to be the final salient detail that triggered the emotional epidemic.

Just as the label of the heroic rebellion of the 'Tea Party' during the independence struggle had earlier attracted conservatives to the opposite side of the political spectrum

2 **Occupy:** Based on the first month of almost daily reporting in the *IHT*.

in the United States. Such viruses seem to spread faster and wider, in this hyper-connected age. For better and for worse.[3]

The Emergence of a Giant Network Brain

Now let us look elsewhere for hints at what is changing throughout the world and what the new opportunities are. Most Russian oligarchs had struck gold by buying up profitable state property at fire-sale prices, through nepotism and corruption – during the chaotic years when Boris Yeltsin had dissolved the Soviet Union and tried to kick-start a market economy. But that was not the source of Yuri Milner's wealth, who became a new type of billionaire for an entirely new age.

He was the son of Jewish intellectuals, a brilliant student of theoretical physics at Moscow state university. But after the Berlin Wall fell, he saw entirely new opportunities in finance, and thus decided to change track. The first non-refugee Russian student to do an MBA at the famous Wharton School of Business in Philadelphia, Milner took up a job at the World Bank in Washington, before becoming head of investment at the private Russian Menatep Bank.

The 1990s had seen the rapid rise of the Internet throughout the developed Western world. Just before the turn of the millennium, he saw a report by an analyst at the Morgan Stanley investment bank, predicting that the next stage would be its rapid expansion throughout the major emerging markets – later grouped together as the BRIC countries (for Brazil, Russia, India and China). An S was later often added (for South Africa).

So Milner founded a company to buy up and develop Russian copies of Hotmail, Amazon, E-bay and their like. He then took his Digital Sky Technologies or DST group to the United States, and became a visionary early buyer of key stakes in dotcom blockbusters Facebook, Groupon, Spotify, Twitter, Zynga and others. Today, he is an 'angel investor' in other promising start-ups, moving aggressively into China and the rest of Asia.

He had a hundred million dollar second home built in Silicon Valley – one of the most expensive American mansions in history. He is married to a striking high-fashion model turned mobile phone artist, and has two children with her. But he remains hyperactive and is hopping on and off planes half of the year.

He has also become one of the most influential gurus on the further growth of the World Wide Web. For instance, during a presentation in Yalta – a kind of Eastern European equivalent of the similar annual meeting in Davos, where top policy makers

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3 **Poll:** *IHT,* 26 October 2011. **Inequality:** In line with my 2010 Dutch book *Mad with money,* I published a column on the disquieting income disparities in a Dutch financial quarterly just before the movement started, in the spring of 2011. It also discussed new data from a provocative book by Cambridge economist Ha-Joon Chang.

and business tycoons rub shoulders. A global editor of the Reuters news agency moderated at the event, and reported on the views he outlined.

Milner repeated that 'The Internet revolution is the fastest economic change humans have experienced, and it is accelerating' – as 2 billion people were already online, and over the next decade this number was expected to double further. Five billion devices were already connected, and over the next decade this number was expected to quadruple further. He claimed the amount of information created between the dawn of time and only a few years ago equalled . . . the amount of information created in merely two days today, and in only one hour a decade from now.

The Internet is thus becoming the ultimate *medium* par excellence. Also because of its revolutionary new capacity of mass individualization. As Google fine-tunes its results in relation to your own earlier personal searches, and Amazon recommends books related to those you ordered before. In conclusion, he predicted 'the emergence of a global brain, which consists of all the humans connected to each other and to the machine, and interacting in a very unique and profound way. Creating an intelligence that does not belong to any single human being or a computer'.

A report by the International Telecommunications Union said that Internet access through fixed lines was now exceeded by wireless connections. Whereas people used to be online only when working behind their desk computers, the 'wandering web' is now alive 24/7, through mobile devices such as tablets and smart phones. This trend has recently accelerated further.[4]

The Wandering Web and the Tablet Craze

A university professor of Medieval Literature compared it to Gutenberg's introduction of print, no less, which had also revolutionized the cultural history of the world. He was talking about the introduction of the tablet computer. Smaller than a laptop, so that it could be held with one hand and operated with the other.

Larger than a smart phone, so that it could display all existing media contents, from magazines to movies. But also a hub with immediate access to administrative instructions and work forms – the ultimate handheld workstation. My thirteen-year-old son operates the touch screen with musical scores and lyrics on the ground before him with his toes, while learning to play the guitar with his hands.

The device is so intuitive that even complete computer illiterates like myself can easily learn how to operate it, within mere minutes. With endless wonders, like that of thumb and index finger moving towards or away from each other: creating a 'zoom in' or 'zoom out' effect.

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4 **Quotes:** C. Freeland. (23 September 2011). The advent of a global intelligence. *IHT*. Also: 30 September 2011. **Profile:** P. Olson. (10 March 2011). A day in the life of Yuri Milner, Web billionaire. *Forbes*, and Wikipedia. **Internet:** Anderson (2008).

Onlookers prove invariably fascinated, and often respond with a fascinated 'Wonna see, wonna do, wonna have!' This 'more emotional than intellectual' appeal of the object also made it 'the fastest-selling gadget in the history of electronics', according to one insider. The craze sold half a million within a week and twenty-five million within only fourteen months, tipping the company's annual revenue over the hundred billion-dollar mark.

The press noted it was the umpteenth time Steve Jobs and Apple had jump-started an entirely new product category. So journalists asked whether he had done a lot of market research. 'None', he replied dryly. As 'it isn't the consumers' job . . . to know what they want'. The prototypes and refinements had initially not even been shown to 'focus' test groups, as key decisions were based on the purely instinctive 'gut feelings' of himself and his team.

They did periodically visit the nearby Apple store, though, to get an even better grasp of unrecognized consumer desires, technology trends and popular culture. 'These are seeing-around-the-corner innovations', *The New York Times* quoted one expert as saying. 'He's a cool guy, and he designs cool products', said another. 'It's a real art, not a science', a third concurred. The paper concluded that he was typically a leader, not a manager.

His true breakthrough had come with the shift from computers to consumer electronics, and the introduction of a range of extremely well-designed and entirely new products and versions: the iPod music device that developed into a versatile audio-video player; the iPhone that developed Internet access and video calling; and the iPad that developed into the ultimate handheld multimedia platform.

These 'Cool Three' broke all previous sales records and boosted computer and software sales. During this initial period, its iOS operating system was said to run on almost 45 per cent of all mobile devices in the world, of any brand. At 350 billion dollars, Apple became the most-valued company ever; repeatedly voted 'most admired' with the highest 'customer satisfaction' by consumers around the world – who tended to consider it a 'family' rather than a 'corporation'. The online app-store soon carried three hundred thousand third-party software applications. Others made billions in just developing thousands of . . . fancy accessories such as leather cases for the sleek hardware products.

The iPad ruled supreme for several years, as it initially sold 80 per cent of all tablets. New applications ranged from games for lonely cats (see YouTube) to easy navigational tools for private planes and multibillionaire super-yachts. Apple even chose to stay away from the nerdy 'must visit' Consumer Electronics Show, which featured no less than . . . eighty-five clones by competitors, most of which failed to catch on – except the almost equally sophisticated Korean Samsung products.

After Steve Jobs died from cancer, he was widely hailed as the Leonardo da Vinci of our age. Fans held vigils in front of Apple stores, holding up iPads displaying . . . lighted candles.[5]

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5 **Apple**, key details and quotes: D. Pogue (10 March 2011). With nips and tucks, iPad is transformed. *IHT*. S. Lohr. (20 January 2011). Imagining Apple without its visionary. *IHT*. Also *see:* 21 February, 26, 27-28 August 2011.

The Wisdom and the Folly of Crowds

Whenever a big news story hits today, many users will immediately receive a red alert on their mobile device connected to the wandering Web – over a war threat, political scandal, market unrest, product recall, popular uprising, star trouble. Large segments of the public will soon begin to scour the Web for some additional information: for a further 'first definition' of the event and its possible impact. And also for the first spectacular sounds and images – often available live through Web radio and Web television.

A wave of raw emotion ripples through the 'global village' on such occasions, usually settling into some kind of mood change with regard to a major issue: military, political, financial, economic, social, leisure, whatever. These contagious epidemics increasingly rule public debate, kicking managers and policymakers into overdrive every other week or month. But their communication experts are ill-equipped to understand the true dynamics of such hypes and scares, let alone to anticipate them. And the volatility continues to grow.

But this also creates the unique situation that most future citizens of the world may have the entire knowledge of mankind . . . immediately at their fingertips. For instance, through the Wikipedia online encyclopaedia with almost 4 million items in English, and available in more than fifty other languages as well – updated every day and every hour.

Google has ever larger numbers of books and articles, maps and videos online for free. Citizens can continuously choose and 'vote' in myriad different ways: from buying or downloading stuff to merely talking or tweeting about subjects online. We will return to this subject in the last chapter of this book, and to the new technique of automated 'sentiment analysis' of large swaths of exchanges on the Web.

A long string of recent bestsellers have shown that all this is contributing to the emergence of an entirely new society and an entirely new economy, with more room for minorities and more balanced possibilities for collective decision-making. Familiar titles range from *The wisdom of crowds* to *The power of swarms.* If a large number of people make a difficult appraisal independently of each other, so an old observation goes, many of them may be wrong. But their average judgment will usually provide the best approximation available. This is also the principle underlying free markets and free elections.

But the hype tells only one side of the story – because if, for some reason, large numbers of people do not make judgements independently of each other, then clichés and gross misperceptions may easily spread and come to dominate: whether over-optimistic or over-pessimistic. This is often accompanied by emotional or mood contagion, and that is what this book is about. Because there is also *The folly of crowds,* as opposed to the wisdom of crowds, a slight variation to the title of a classic on *Extraordinary popular delusions and the madness of crowds* by Charles Mackay dating back to . . . a full century and a half before the emergence of the mobile Web.

So emotional contagion can be very direct and primitive, in everyday face-to-face situations. Nothing new about that. What is new is that it is increasingly affecting the whole of

society, continually and everywhere. National and world sports championships or Olympic Games are good examples, as they show an enthusiasm virus spreading epidemically throughout each country, sometimes followed by grave disappointment. Every month or week also sees a hype about a new blockbuster movie or television format, bestseller book or pop music top hit – like the campy summer 2012 hit Gangnam style, by a South Korean artist calling himself Psy. Punctuated by the occasional mass mourning for a glamorous global star who died tragically, like Michael Jackson.

Meanwhile, the enthusiasm of the economic boom years of the 1990s and subsequent 'naughties' have turned into the demoralization of the credit and debt crises. The upward spiral seems to have reached a tipping point, where the simple printing of extra money did not suffice anymore. It thus turned into a downward spiral – through an equally self-reinforcing movement and mood contagion, for instance in the Euro zone. Would it be possible to stem or turn this tide?

Mass strikes suddenly emptied factories and mass demonstrations filled the streets, insurrectionary riots set shopping centres in glorious capitals ablaze, from Athens to London. The two main political parties in Washington are torn between liberal and conservative wings, meanwhile, and election outcomes like those in 2012 became increasingly unpredictable. Hurricanes and episodes of extreme weather (like 'Sandy' on the Atlantic coast) further feed the debate about global warming and the call for alternative energy sources. An earthquake and tsunami in Fukushima (the year before) had meanwhile led to major Western countries giving up nuclear industry altogether. Such tragic disasters are followed by charity rallies in turn, where people may prove surprisingly generous.

Strange abbreviations like H1N1 virus or EHEC bacterium do suddenly look familiar, DSK for Dominique Strauss-Kahn or NOTW for *News of the world,* labels like 'the Chilean miners', or 'the Jasmine revolution' or 'the Oslo massacre'. Emotional pandemics continually send ripples and waves all over the earth's surface. Public life has become an emotional roller-coaster, with policymakers and managers running from crisis deliberations to emergency meetings.[6]

Mood Contagion, Mind Quakes and Mental Tsunamis

In the traditional approach to public opinion, it is said that in the aforementioned cases peoples 'opinions' have suddenly changed. The whole body of opinions that are made public (as opposed to those that may remain private) is called 'public opinion'. Some people are pro, others are con, still others are neutral on any issue ('no opinion, don't know').

6 **Wisdom:** Surowiecki (2005). **Swarms:** Van Ginneken (2009), Fischer (2009). **Tipping point:** Gladwell (2000).

Those who have strong convictions or interests try to win over others, often through 'information campaigns'. In this game of 'issues management', they usually consider their own point of view 'rational' and based on hard facts, whereas they label the opposing point of view 'emotional' and based on illusions. But reason and emotion are closely intertwined on almost every single score. An effective communicator therefore uses arguments, alright, but ultimately tries to stir people's deeper motivations as well. This is most effectively done by directly tapping into their emotions.

An emotion can be defined as the experience of a unique configuration of mental and bodily states, through which the organism tends to respond to its environment. Other related terms are affect, sentiment, feeling. There is a vast literature on the subject, but no consensus among scholars yet – on the ordering, number and universality of emotions. Negative emotions tend to be more dramatic and stand out more. Some mention four basic emotions: fear and anger, sorrow and joy. But others mention eight primary emotions and eight secondary ones, with three different shades of intensity. At one point in time, Robert Plutchik proposed to visually organize those into a colourful 'emotion wheel' with adjacent and opposite feeling states.

A generation ago, Elaine Hatfield and two colleagues made a rather complete inventory of what psychological research had discovered that far about *Emotional contagion*. They found a large number of experiments had demonstrated convincingly that people do indeed infect each other with their feelings, most of the time pre- or unconsciously – that is to say, without their ever being aware of it.

We have even developed a wide range of automatic behaviours, to facilitate or inhibit these unwitting reflexes. Since those days, however, the field has spurred all kinds of new lines of inquiry: from neurological brain research to sociological network research, and everything in between. They will return throughout this book.

Individual and collective emotions are usually reactions evoked by an immediate event. They rarely last very long. Moods are somewhat more diffuse affective states, by contrast, that may linger longer. Temperament, character, personality and traits may predispose people and groups to certain reactions and states. Psychologists developed 'emotional contagion scales' on which people can rate these tendencies, in themselves and others – that is to say, longer lasting predispositions to react in a certain way.

In the classical ABC shorthand, attitudes were said to have three components: C, A and B. The first component is a Cognitive one – as it is through information that people are primarily influenced. The second component is an Affective one – as resulting emotions and moods form a key mediator linked to people's motivations. The third component is a Behavioural one – as this ultimately translates into changed probabilities that people will do one thing or another. In this view, therefore, it is of the utmost importance to understand that emotions are always the central missing link between information and behaviour.

But other more recent approaches have since evolved. Research has increasingly shown that we basically have two radically different ways of processing information: 'peripheral'

and 'central', implicit and explicit. The evolutionary older and animalistic way is the pre-conscious, impressionistic and intuitive one. In those cases, we use simplified, global and superficial types of judgement and mere 'rules of thumb' (heuristics).

The evolutionary more recent and supposedly human way of processing information is the conscious, thorough and reasoned way. In those cases, the weighing of arguments, logic and consistency prevails. But contrary to what both lay people and experts have long continued to believe, the former implicit way is often more prevalent than the latter explicit one – for instance in our consumer and even financial behaviour. Particularly with regard to large sums, as again demonstrated by the credit and debt crises.

So public opinion can periodically become highly restless. A single incident may cause a global mind-quake, or ripple around the world like a mental tsunami. From one time zone to another, as television sets are lighted for the evening news of the day. What images anchored your opinion about major issues such as the 9/11 terror attacks, the Afghanistan and Iraq military interventions, the Abu Ghraib and Guantanamo abuse scandals? They are pictures or video clips of a few seconds each.

So do you want to be an effective communicator? Then ask yourself what salient images and words may change and anchor the emotion and mood on the issue that interests you, and therefore the outcome in possible actions. The change may well be contagious and spread like an epidemic.[7]

Mass Psychology and Collective Behaviour Sociology

Of course these phenomena are not entirely new. They have long been studied within the twin adjacent sub-disciplines of mass psychology and collective behaviour sociology. Episodes of mass or collective behaviour do usually erupt when people do no longer feel satisfied by the repertory of conventional views, feelings and behaviours at hand.
People will then begin to intensify interaction with their environment, and look for less conventional alternatives. One of these is then experienced as appropriate, and adoption may spread rapidly. This dramatic shift is often accompanied by a sudden mood change.

Spontaneous coordination may arise, but there is no formal organization yet, or direct link to existing social structures. The process of emergence may last from just a few seconds to several years. Typical examples of such volatile phenomena are boycotts, crazes, cults, election landslides, fads, fans, fashion, financial meltdowns, gossip, hearsay, hypes,

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7 **Emotions:** Influential American bestsellers were Ekman (2003, 2007) and Goleman (1998, 2000). The role of emotions in the workplace is discussed in a Dutch book by Buunk (2010), and more extensively in one by Payne & Cooper (2001). **Heuristics:** Demonstrated through the 'prospect theory' and research by D. Kahneman & A. Tversky, applied to a wide range of fields such as financial psychology. **Intuition:** A recent American bestseller was Gladwell's *Blink* (2005).

manias, mobs, outrages, panics, polarization, protests, pyramid schemes, rebellions, revolutions, riots, rumours, scandals, scares, sects, social movements, stock exchange crashes, telethons and urban legends.

I have been working on various aspects of these phenomena for a large part of my career. My belated Ph.D. or doctoral dissertation, *Crowds, Psychology and Politics* (later published by Cambridge University Press), was a study on the pioneers of the field on the European continent, followed by a sequel a few years ago. It dealt with the new approaches and explanatory concepts they developed, the intellectual discussions and social events they derived from – often implicitly.

Curiously, the field erupted after the centenary of the French Revolution with its Paris Exhibition of 1889, and the founding of the new Socialist International with the beginning of massive annual Labour Day strikes and demonstrations all around – which seemed to threaten the newly stabilized bourgeois social order. I traced the descendants and archives of the pioneers to a dozen locations in Italy, France and elsewhere, to uncover further backgrounds.

The new theme, which originally emerged within the brand-new field of criminology (criminal anthropology), was at first exclusively preoccupied with popular mobs, rebellions and revolutions that periodically challenged the establishment. But gradually the focus was widened to social movements, and opinion currents, to mass and media society in a larger sense. Early explanations drew heavily on dramatic medical metaphors such as epidemics, contagion, fermentation – forceful images that I chose to revive here. Then came psychological explanations such as suggestion, hypnosis, hysteria. And finally social explanations such as imitation and interaction – which will all be discussed at one point or another.

These latter two notions were elaborated by the Frenchman Gabriel Tarde, and fit into a wider cosmology that prefigured the latest 21st century developments we will explore: mirror neurons, 'memes', networks, amplification, etc. He often used water metaphors to describe imitation processes – like ripples spreading in a pond: from insiders to outsiders, or like rivers streaming downhill: from higher to lower levels. His true pioneering role is still very much underestimated, both at home and abroad.

Tarde was a provincial judge and criminologist, and became the first to publish books on 'social psychology'. His following remained small in France, but was considerable among most contemporary founding fathers of Anglo-American social science. He also 'discovered' the key role of public opinion within a modern mass democracy. On the one hand, this was related to the emergence of million-copy dailies, with an average of one newspaper read per household, or even more. On the other hand, this was related to the discovery of xenophobia as a mobilizing theme by political parties.

Particularly through the affair around Jewish officer Dreyfus, falsely accused of spying on France for Germany on trumped-up charges. The affair divided the country and entire families for more than a decade. The anti-Dreyfus alliance of groups and newspapers was

led by the anti-semitic *La Libre Parole,* which in its heyday carried a front-page banner headline about 'The traitor Dreyfus – The Jewish plot'.

The pro-Dreyfus alliance of groups and newspapers was led by the radical *L'Aurore,* which carried a famous lead article proclaiming, 'I accuse' (the military authorities of a set-up). It was written by the successful novelist and public intellectual Émile Zola, who dared the authorities to sue him (which they did).

Figure 1 Key Front Pages of Two Influential Papers in Tarde's Day (Left) and Cartoon by Caran d'Ache on the Effects of the Affair on Public Opinion (Right). Caption: 'Let us not speak about The Affair!'. Followed by: 'But they did'

The escalating press campaign. (Top) Drumont's antisemitic daily *La Libre Parole* titled "The traitor Dreyfus – The Jewish plot" (Sept. 10, 1896). (From R. Gauthier (ed.), *"Dreyfusards."* Paris: Julliard, 1965, after p. 132.) (Bottom) Clémenceau's radical daily *L'Aurore* titled "I Accuse – Letter to the President of the Republic by Emile Zola" (Jan. 13, 1898). (From W. Keller, *Und warden zerstreut unter alle Völker.* Munich/Zürich: Knaur, 1966, after p. 272.)

Source: J. van Ginneken, *Crowds, Psychology & Politics*, pp. 213, 216. (Available through the author).

When I interviewed Tarde's son in Paris, he still remembered that latter fateful day; how they had heard a newspaper vendor cry the provocative slogan in the street; how his father had sent out the maid to buy a copy; how he had opened it to take a full look at the banner headline covering the entire front page. And had exclaimed, 'This is extraordinary!!!'

I later traced the original manuscript of Tarde's essays on 'The opinion and the crowd' to a criminology archive in Lyons, and travelled there to check. I found a number of references to the events pencilled in the margins by him – ultimately not included in the published version. But it makes clear that it was indeed the highly emotional Dreyfus affair

that made Tarde discover the unique role of public opinion within a mass democracy, and also the key role of independent intellectuals such as Zola as opinion leaders.[8]

Conclusion

Over the last century or so, mass media have become ubiquitous – from the early mass press of Tarde's day to photo magazines, records and movies, radio and television, increasingly live and spectacular. Today, the wandering Web keeps a large part of the population of developed countries on-line during most of their waking hours, or even 24/7. Big breaking news from other continents may hit us within only a few seconds.

More than ever, therefore, public opinion in the 'global village' of this hyper-connected world is characterized by mood contagion. The next chapter will show that there is no such thing as an isolated individual. Further chapters will discuss mood contagion in ever widening circles.

That is to say, in small groups and large audiences, physically assembled, in close contact. In early social movements and formal organizations, parts of which sometimes physically assemble, sometimes not. Through social networks and mass media audiences, which extend far beyond the horizon. Resulting in mood waves in product markets and public opinion: economic, social, political. The epilogue will discuss how in the near future we will be able to keep track of these sudden changes.

8 **Tarde's cosmology:** 'As early as the 1870's, Tarde had embarked on devising a wide-ranging philosophical system of his own. He had written two manuscripts, *La Différence universelle* and *Les Possibles,* and a book, *La Répétition et l'Évolution des phenomènes.* Although they remained unpublished for some time, they already contained the essential ingredients of his later thought. One may distinguish four axioms. First: the "real" emerges from the "possible" through contingency. Second: the "real" is articulated by resemblances and differences. Third: the philosopher and the scientist should study these . . . in their repetition. Fourth: the nature of the prevalent repetition is different in physics (vibration), biology (heredity), and sociology (imitation)'. Quote from: van Ginneken (1992), p. 199. **Dawkins:** compare the genes and memes, to which we will return in the chapter on networks.

1 *Isolated Individuals*, Gregariousness and Bonding

Are there isolated individual organisms, even among plants and animals? Or are they almost always engaged in social interaction, in dozens of ways, without our ever being aware of it? Are there individual human beings, who do not need others, and how healthy can they be? Or is this largely an optical illusion?

We come across as separate 'clumps of flesh', moving about independently. We and others experience continuity in our existence, and therefore ascribe a separate identity to ourselves and others. But how good are we at surviving on our very own, in a hostile environment?

Let us first take a look at one example. She had everything going for her: was young, beautiful, rich and well educated. Would she be able to remain emotionally detached from her kidnappers?

1.1 The Tycoon's Granddaughter, and Stockholm Syndrome

A recent American television documentary carefully reconstructed a crime and killing spree of three decades earlier. The original events had started with anthropology students from the Berkeley campus visiting black prisoners, sympathizing, and setting up a support group. This gradually evolved into an underground cell calling itself the SLA 'liberation army'. It was the era of Black Power and the Black Panthers, but also of sympathy with liberation movements and anti-imperialist protests overseas.

One of the first spectacular feats of the group had been the kidnapping of nineteen-year-old Patty Hearst: the granddaughter of the billionaire media tycoon (the original model for *Citizen Kane,* in the classical movie about media power by Orson Wells). The captors demanded a food distribution worth 400 million dollars to the California poor; and goods for 6 million dollars were effectively distributed.

But the victim then announced through an audiotape that she had been liberated but would not come home – as she had meanwhile chosen to switch sides; that she had voluntarily joined her jailers, adopted the *nom de guerre* of Tania (the female comrade of guerrilla leader Che Guevara in Latin America). Two weeks later, a security camera did indeed film her with a beret and a carbine in hand. During the robbery of a bank . . . founded by the family of one of her girlfriends in school.

The would-be SLA fighters were eventually caught and convicted. Patty got 35 years, later reduced to seven, but was liberated after only 22 months. She married her bodyguard,

later published her memoirs, followed by a biopic movie (and even a musical). At least three novels were written about the affair, and a dozen non-fiction books. References turned up in at least a dozen different pop songs and in many subsequent movies.

After the turn of the century, she was finally pardoned by Clinton, in one of the very last official acts of his presidency, as top expert Robert Jay Lifton had testified that she had probably been 'brainwashed'. But other social psychologists referred to an even stranger phenomenon that had meanwhile become identified as 'the Stockholm syndrome'.

This is because a somewhat earlier Swedish television documentary had in its turn reconstructed a bank robbery and hostage taking that had also taken place three decades earlier. One bank robber had earlier managed to stay out of jail, but demanded that a friend in jail be liberated and brought to help him.

The duo then kept two men and two women tied up in the vault, and even booby-trapped them – to prevent a surprise attack. But to the great surprise of outsiders, these hostages had soon begun to sympathize with their underprivileged tormentors, established close relations with them, and excused their actions. After they had finally been liberated, some even set up a defence fund for them, and remained friends thereafter.

The psychologist who had counselled the police during the kidnapping later dubbed this phenomenon 'the Stockholm syndrome'. It was later found to turn up in at least a quarter of similar situations. The new term thus came to be enshrined in the standard literature on post-traumatic stress disorder (PTSD) and terrorism victims.

It is applied to situations where: (1) the victims are more or less effectively isolated from the outside world; (2) they experience small acts of kindness within a larger situation of abuse and total dependence; (3) they seem to experience no other option than to identify with their almighty captors; (4) against outsiders that seem to threaten them both (*e.g.* the police and authorities).

Such situations range from cults and prisons to the violent and/or sexual abuse of children and women. Indeed, some radical critics have argued that this same phenomenon lies at the root of the seemingly 'loving' family life within brutal patriarchal societies. How come we will often rather identify with the bully than accept to be on our own? Because all life is geared to interconnection.

From the lowest level upward, most organisms are intertwined, organize cooperation and solidarity. Let us make a brief excursion with some 'snapshots' on gregariousness in nature, and begin by descending the ladder of evolution to the lowest levels.[1]

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1 **U.S. documentary:** *Guerrilla – The taking of Patty Hearst* (also called *Neverland – The rise and fall of the Symbionese Liberation Army*) was directed by Robert Stone. Details: <www.pbs.org/wgbh/amex/guerrilla/filmmore/fd.html>. **Swedish documentary:** *The Stockholm syndrome* was produced by Patrick Bratt in 2003. The Swedish psychologist involved was Nils Bejerot.

1.2 The Social Psychology of . . . Plants

Among the many fascinating new subjects that popped up over the last few years was one that particularly struck me. It heralds a 'Green Revolution' in the cognitive sciences, and the emergence of an entirely new sub-discipline of . . . plant psychology.

You may be forgiven for thinking that plants are really simpletons, that their behaviour limits itself to the shrinking of the sensitive plant ('touch me not'), or the grasping of a climbing plant (when its tip gets hold of something and automatically curls around it), or at most the mere closing of a leaf, to capture and digest the occasional insect. But many plants display extremely complex traits and behaviour. By the way, even a minuscule rice grain or the thoroughly ordinary potato have complex growth patterns, and . . . twice the number of genes of humans.

A researcher at Princeton University found that trees have 'way more' roots than they need, for instance, to capture nutrients from the soil. Why? To defend their life space, he says, and prevent other trees from growing too close by. Others have found that plants react differently to relatives and strangers in this regard. 'By analyzing the ratio of red light and far red light falling on their leaves, for example', one report adds, 'they can sense the presence of other chlorophyllated competitors nearby and try to grow the other way'. So there is real social interaction with plant neighbours. But even their individual behaviour is really smart.

Take a look at an accelerated rendering of pictures taken at short intervals ('time-lapse photography') of the growth of tree roots underground. It looks like white worms trying to identify the 'one best way' forward. It looks like an 'intelligent exploration' of the soil, in search of the chemicals they need most: minerals and micro-organisms, in water and air.

It turns out the plants may respond to as many as twenty different parameters in this regard. So Charles Darwin already proposed the 'root brain theory' of plants since 'the tip of the root acts like the brain of one of the lower animals, the brain being seated within the anterior end of the body receiving impressions from the sense organs and directing the several movements'.

Furthermore, there is a kind of nervous system within the organism, with biochemical and even electromagnetic signals travelling up and down, for instance. But they also communicate and collaborate with other individuals, of their own and other species. One group of researchers recently found that plants regulated a 'fair exchange' of nutrients against carbohydrates . . . with fungi. If one side cheats, the other immediately responds by withholding its part of the implicit deal.

A female researcher at Pennsylvania State University and her colleagues did a 'reaction time' experiment, for instance. They found that 'in less than twenty minutes from the moment the caterpillar had begun feeding on its leaves, the plant had plucked carbon from the air and forged defensive compounds from scratch'.

Another researcher at the Max Planck institute in Berlin did in turn investigate the alarm function of Green Leaf Volatiles (GLVs): fragrances liberated when leaves get damaged. Some plants use them for mood contagion to their own kind, others as a distress call for urgent help – even by other species. As the saliva of caterpillars causes a chemical change in the GLVs of a wild tobacco plant, attracting 'insects known as true bugs that prey on hornworm eggs and larvae'.[2]

1.3 Pinpoint Roundworm Brains and Primitive Gregariousness

OK. But what about the very lowest and simplest animals? At what level of evolution do they begin to display complex brains, processing information about their environment? At what level are they capable of experiencing some kind of emotions, leading to social behaviour and mood contagion within a group? Meet a modest experimental roundworm of only one millimetre, going by the impressive name of *Caenorhabditis elegans*.

It has the surprising capacity to put its larvae in a 'Dauer' hibernation state, making them resistant to stress and immune to aging. One specimen became . . . the only living survivor of the NASA Columbia shuttle disaster. Most are hermaphrodites, and furthermore, able to reproduce on their own. Under normal circumstances, they live in garden soil and organic waste, and may get only two to three weeks old.

They are small and simple, but their basic tubular building plan is the same as that of much larger animals and even humans. They turned into the darlings of no less than one hundred 'roundworm' labs around the world, with their own complete online database, earning six researchers no less than three Nobel Prizes – so far. Around the last turn of the century, their genome became the first to be completely mapped.

One reason for this massive interest is their pinpoint brain and their nervous system. It has only three hundred neurons with only eight thousand synapses, as opposed to humans' estimated hundred billion neurons with maybe a hundred trillion synapses. Each neuron can be shut off individually in the simple roundworm, in order to study its function and the behaviour it helps control. The organism can feel temperature, taste waterborne chemicals, smell airborne chemicals, note pheromones, and move accordingly. It can even be made dependent on nicotine just like humans. But there is more.

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2 **Plant psychology:** According to various recent articles on the science pages of the *IHT*, 24-25 December 2009; 2 September 2010; 21 February 2011; and 16 March 2011. **Images:** see the one-hour 2009 documentary on *L'esprit des plantes* by French director Jacques Mitsch, shown on the Franco-German Arte channel, 22 January 2010 (and repeated on the Ushuaïa nature channel, 19 January 2011). The 'plants' instalment in the BBC television series *Life* also uses time-lapse photography to visualize their complex interactions. **Fair trade:** T. Kiers *et al.* (12 August 2011). Reciprocal rewards. *Science, 333*(6044), 880-882. **Pioneer:** A visionary forerunner of this new field of plant 'psychology' was the polymath Jagadish Chandra Bose (1858-1937), oft considered the founder of experimental science on the Indian subcontinent.

Cornelia Bargmann, at Rockefeller University in New York, has studied the little beast for more than a quarter century. Patiently investigating the neurons one by one was to lead to a complete plan of their entire electrical circuitry. But recently she and her colleagues found there was another system at work as well. As pheromones might trigger neuropeptides to cross the gap junctions. Particularly between a two-neuron central nucleus and the neurons immediately around it. What is the significance of this finding?

It is twofold. According to a report on the science page of a major newspaper, 'The neuropeptides probably help control the brain's general status, or mood . . . The human brain, too, has neuropeptides that set mood and modify behavior'. What is the change they trigger? 'The two RMG neurons receive input from various neurons that detect the several environmental cues that make worms aggregate . . . The usual role of RMG neurons is to promote social behavior'. So the link between mood change, social behaviour, and aggregation can be traced back to the very beginning of animal evolution. But what about higher animals?[3]

1.4 Dolphins and Whales Coming to Our Aid

In higher animals, aggregation is not an entirely automatic process. It is mediated by increasingly subtle forms of interaction and reflection. Biologist Frans de Waal, of the famous Yerkes Primate Center at Emory University in Atlanta, decided to take a closer look. As a scientist, he was already on a *Time* list of the hundred most influential people on earth. His earliest work had been on rivalry and aggression, but his latest work, *The Age of Empathy* (2009), shifted the emphasis to the other end of the spectrum: cooperation and kindness.

He claimed evolutionists had long given a rather one-sided presentation of the theories of Charles Darwin, focusing on egotism and overlooking altruism. Just like economists had long given a one-sided presentation of the theories of Adam Smith (one of Darwin's sources of inspiration), focusing on competition and overlooking 'the moral sentiments' in man.

Throughout his book, De Waal quotes well-documented observations about animals helping each other. 'Whales may interpose themselves between a hunter's boat and an injured companion, or capsize the boat'. Dolphins may also help an injured companion. When one was wounded off the coast of Florida in the United States, two others rushed to the scene . . . to lift it to the surface to breathe. Scientists who saw the incident reported that the assistance seemed real and deliberate.

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3 **Roundworms:** E. Z. Macosko *et al.* (30 April 2009). A hub-and-spoke circuit drives pheromone attraction and social behaviour in *C. elegans*. *Nature, 458*, 1171-1176.

But sometimes such animals do apparently even help another species. One example was that of an old dog almost drowning in a river in Middlesbrough, England. An eyewitness said: 'A seal popped out of nowhere. He came behind it and actually pushed him. The dog would not have survived if it hadn't been for that seal'.

There are even reports of dolphins or whales protecting humans against sharks or lifting them to the surface when they risk drowning. Note that whales, dolphins and seals are not fish like sharks, but all mammals like humans: apparently endowed with considerable intelligence, communication skills and social feelings.

In his book, De Waal focuses on the 'correspondence problem': How can those animals possibly know what others feel, where and how? They first need a sense of self, as distinct from others, he says. Today, this is usually tested by placing a coloured dot on the forehead of an animal. He continues: 'Species that recognize themselves in a mirror should be marked by advanced empathy, such as perspective-taking and targeted helping' (p. 125).

Human pets have also developed advanced capacities for bonding. Tokyo in Japan has a statue for a dog that faithfully came to a local station every single day, to greet its master returning from work – and continued to do so for a full eleven years after his death. Edinburgh in Scotland does in turn have a statue for a terrier that guarded its master's grave for fourteen years after his death. When author John Grogan's wife Jenny wept sadly after a miscarriage, he wrote, their Labrador insisted on consoling her by silently pressing his head against her belly.

In 2007, an item in the authoritative *New England Journal of Medicine* made news headlines around the world with its report about the surprising capacities of Oscar the cat. It usually made the rounds in a geriatric clinic in Providence, Rhode Island. But whenever it felt a patient had reached the last stage, it stayed to curl up, purr and gently nuzzle them. The nurses would then know that it was time to urgently call family members, for a final goodbye.

Most of De Waal's book is of course about his specialty: monkeys and apes. It has reports about chimpanzees showing empathy with as wide a range of creatures as a duckling, a crippled bird, a goat, a human toddler and a human adult. It also has reports about the rapid spreading of feelings like sorrow and joy and behaviours like yawning and laughter throughout a chimp colony. So mood contagion is somehow a common phenomenon among many higher animals, not only among humans. But how do we infect each other?[4]

1.5 Serendipity and Mirror Neurons in Monkeys and Apes

There is a famous medieval fairy tale from Persia about *The Three Princes of Serendip* – the Arab name for Sri Lanka (former Ceylon). By simply looking at a camel's traces, they were able to conclude not only that the animal must have been lame but also that

4 De Waal (2009). Whales, dolphins, seals: pp. 128-129. Advanced empathy: p. 125. Statues: p. 11. Labrador and cat: pp. 92, 73. Contagion among chimps: p. 48 *et seq*.

it was blind in one eye, missing a tooth, bearing honey on one side, butter on the other side and carrying a pregnant woman. He must have been blind in one eye because the grass was eaten only on one side of the track; moreover, this was the side that was less green than the other. And so on. (If you are curious about the other enigmas, just look it up on the Internet.)

Nowadays the word 'serendipity' refers to the noting and interpreting of accidental signs, leading to important conclusions. Think of the later Sherlock Holmes. Major scientific and technological discoveries are often the result of serendipity (from the discovery of penicillin to the development of Post-it paper notes). One of the major recent breakthroughs in neuroscience was also the result of serendipity.

A team of neurophysiologists at the University of Parma in Italy were doing extremely complex experiments with macaque monkeys. They placed electrodes in the pre-motor cortex of their brains, to identify the precise function of neurons there – again one by one. They were particularly interested in how the neurons controlled basic hand and mouth movements, like picking up a piece of fruit in order to eat it. At one point a researcher reached for a banana. The monkey observed this, but to the researchers' great surprise, its neurons fired as if it had been doing it itself.

The researchers first thought of it as a mere coincidence, a flaw in the measurement or in the equipment. But they were soon able to reproduce the reaction. Such neurons have since become known as 'mirror neurons', as they have proved able to 'mirror' the actions of others. The team felt this was an interesting find, and they proposed an article to one of the two main scientific overview journals, *Nature*. The editors rejected it, because of its 'lack of general interest'. But it soon proved to be one of the greatest discoveries of recent years and became one of the hottest topics in the field.

It turns out all primates have such neurons, somewhere near the edges between the sensory and motor cortex, but also distributed elsewhere throughout their brains. Mirror neurons allow an animal to 'imagine' an action. They apparently play a key role in imitation and learning, also in humans. According to some theorists, this enhanced ability to 'read' the gestures of others contributed to the emergence of symbolic communication, and ultimately of language. According to other theorists, this is also how we read the expressions of others: by placing ourselves in their shoes, by imagining how they feel, by empathizing. In social animals, this allows for appropriate interaction.

More recent research with macaque monkeys has since reconfirmed this. Another Italian team investigated whether they were able to imitate human expressions. When a researcher stuck out his tongue, it turned out the animal was capable of responding in kind, but only soon after they were born and needed to 'fit in' quickly. For reasons ill understood, they lost the capacity as they grew up. Other primate research has found that domestic animals such as dogs have acquired the ability to 'read' human gestures and intentions, such

as pointing at a hidden object. Wild relatives (wolves, foxes) are unable to do that. So there are many mysterious ways in which primate individuals are able to interconnect.[5]

Figure 2 Tongue Protrusion by Adult Experimenter, Imitated by a Macaque/Rhesus Monkey Baby, a Few Days Old.

© L. Gross (see below) and Wikipedia/Commons item 'Mirror neurons'.

1.6 Baby Bonding and the Happiness Hormone

At what age do we humans begin to connect emotionally? From birth, or even conception. From the moment they become aware they are pregnant, women also begin to relate to their babies. During childbirth and breastfeeding, they produce massive amounts of oxytocin: the recently discovered substance involved in bonding, trust and contentment or happiness. The babies subtly pick that up.

New research has confirmed that if they are breastfed for six months or longer, for instance, they develop a somewhat better physical and mental health, more balanced personalities and better school results than children and adolescents who are not. Oxytocin is also triggered by bodily contact, by the way, by cuddling, caresses and massage later in life. Other mothers were put in an fMRI brain scanner, shown pictures of their own or other babies, happy or sad. In the former case, the reward centres in their brains did of course light up. Subsequent research also found more oxytocin in their blood. But there was a catch.

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5 **Mirror neurons:** The earliest publications were by G. di Pellegrino *et al.* (1992). Understanding motor events. *Experimental Brain Research, 91*, 176-180; and G. Rizzolatti *et al.* (1996). Premotor cortex and the recognition of motor actions. *Cognitive Brain Research, 3*, 131-141. After slow acceptance, research soon exploded. Recent overviews are G. Rizzolatti & C. Sinigaglia. (2008). *Mirrors in the brain.* Oxford: Oxford University Press; and C. Keysers (2011). *The empathic brain.* Social Brain Press (electron. edn.). **Monkey imitation:** P. F. Ferrari *et al.* (2006). Neonatal imitation in rhesus macaques. *PLoS Biology, 4*(9), 302. doi:10.1371/journal.pbio.0040302; and L. Gross. (2006). Evolution of neonatal imitation. *PLoS Biology, 4*(9), e311. doi:10.1371/journal.pbio.0040311.

A standard interview separated the mothers who had been well 'attached' to their own mothers in the past and those who were less so. It turned out the 'better attached' mothers also responded more lovingly to the *crying* babies, whereas the 'less well attached' mothers tended to respond only to the *smiling* babies. So some people become better at connecting than others from an early age, and kind of pass it on.

Now what happens in the heads of the babies themselves in such situations? It is more complicated to put them in an fMRI brain scanner, so researchers placed a sensor pad on their heads, for less invasive 'near infrared spectroscopy'. They then showed the babies a computer-animated adult face, first making eye contact with them, raising the eyebrows and smiling, then glancing sideways at an object, for instance a picture book, and finally repeating these same two movements.

Even at the very young age of five months, a specialized region in their left prefrontal cortex for 'joint attention' would light up. Other researchers found that evolution had equipped humans with much larger 'whites' in their eyes than other primates. Why? Because it makes it easier to follow someone's gaze in this way, to guess an intention, and react to it.

So are babies also born to share, collaborate, empathize? In further experiments, they were presented with a kind of puppet show on a computer screen. A little red round character is trying to scale a steep green hill. A little yellow triangle character helps out, but a little blue quadrangle character hinders. When presented with a choice, the babies preferred the 'sympathetic' character to the 'antipathetic' one. Then the red round climber character was shown to make a choice itself. If it chose the sympathetic character, the babies would not blink. But if it chose the antipathetic character, their eyes remained fixed for a *full second longer* – indicating they were really surprised. At six months of age they were not yet, but at ten months of age they were.

So we are all programmed to empathize and collaborate with others from a very, very early age on.[6]

1.7 Adult 'Rapport', Unconscious Imitation and Connection

Paul Ekman became one of the most famous American psychologists for his work on facial expressions. He started out by systematically investigating all the muscles behind

6 **Breastfeeding:** W. H. Oddy *et al.* (2010). The long-term effects of breast feeding. *The Journal of Pediatrics, 156*(4), 568-574. **Smiling babies:** L. Streathearn *et al.* (July 2008). What's in a smile? *Pediatrics, 122*(1), 40-51. Also see: L. Shathearn *et al.* Adult attachment predicts material brain and oxytocin response to infant cues. *Neuropsychopharmacology,* December 2009. **Joint attention:** T. Grossmann & M. H. Johnson. (27 January 2010). Selective prefrontal cortex responses to joint attention in early infancy. *Biology Letters, 6*(4), 540-543. **White of the eyes:** M. Tomasello. (15 January 2007). Looking to each other. *IHT.* **Puppets:** J. K. Hamlin, K. Wynn, & P. Bloom. (2007). Social evaluation by preverbal infants. *Nature, 450*, 557-559. Also see: <www.yale.edu/infant-lab/socialevaluation>.

our faces: what contractions or combination of contractions they could produce, and how these expressions would then be interpreted by others. He travelled around the world to check which emotional expressions seemed near-universal, and which ones seemed culture-bound.

He also investigated the 'feigning' of emotions and moods. He found that when people lie under stress, a 'micro expression' often fleetingly crosses their faces, revealing their true feelings. But it may last only milliseconds, and experts often need to play back slowed-down video recordings in order to identify them, for instance in the case of a key witness during the famous trial of American football star O. J. Simpson. Ekman also identified eighteen different types of smiles, and surmised there might be as many as fifty in total. In 'fake' smiles people lift the corners of their mouths, for instance, whereas in 'true' smiles they also lift the corners of their eyes.

A scientific journal recently carried a thorough overview file on the simple smile, consisting of the latest findings of a group led by a researcher based in France, and comments by colleagues from all over the rest of the world. They found that smiles were sometimes so ambiguous and complex that an 'objective' analysis of a combination of external signs did not suffice. We often need an additional 'subjective' analysis through 'embodied simulation' in ourselves in order to fathom their full possible meaning. The researchers attempted to prove this through a simple 'pencil test'. If students were told to keep a pencil between their lips, they could not put on any kind of smile themselves, and therefore

Figure 3 American President George Bush Jr. with Egyptian Dictator Hosni Mubarak. Leaders Trying to Establish 'Rapport' Unwittingly Mirror Each Other's Gestures

Source: Pease, p. 253.

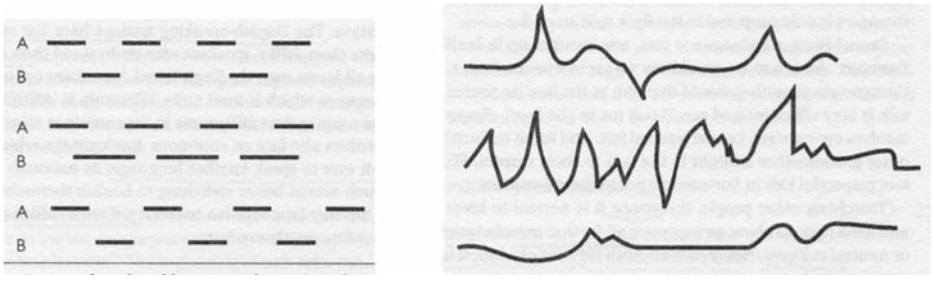
found it much more difficult to interpret the precise smiles of others. Whereas if their lips were free to simulate them, they could much more easily do this.

We unconsciously mimic the smiles and other facial expressions of others to put ourselves in the same emotional state, and thus lay the basis for the establishment of 'rapport' or psychological connectedness. This happens between mothers and babies, between therapists and clients, leaders and followers. But also between lovers, friends, colleagues on the same level. Body language research has shown that we do also unwittingly tend to copy the exact attitudes of people we try to connect with. The much-debated technique of 'Neuro Linguistic Programming', or NLP, advocates the training of such skills to become more effective communicators.

Other research has shown that when we engage in social interaction with others, this is facilitated by our gradually sliding into similar and common micro-rhythms. That is to say, we unwittingly synchronize the spikes in our gestures and movements; they begin to mesh like the cogs on a wheel. This is even more true for paralinguistics: the rhythm of our speech, the emphases and pauses, the interruptions and turn-taking, the loudness and pitch of our voices, etc.

This may even extend to our breathing patterns and other involuntary reactions so that we are 'in sync' and can both tune in to the same common melody. At least if we belong to the same (sub)culture; otherwise communication may become much less smooth. Our emotions and moods travel through these connections and may easily infect others. Later in his book, we will see how this works in small groups and larger audiences, and even in networks and publics where people are not even in direct contact.[7]

Figure 4 Anglosaxon, Latin and Oriental Styles of Verbal Communication: Turn-Taking and Tone of Voice



Source: © According to F. Trompenaars and C. Hampden-Turner (2005), p. 75.

7 **Emotional expressions:** Ekman (2007). **Smiles:** P. Niedenthal *et al.* (2 December 2010). The simulation of smiles (SIMS) model. *Behavioral and Brain Sciences, 33*(6), 464-480. **Emotional contagion:** Hatfield, Cacioppo, & Rhapson (1994). **Body language:** Pease & Pease (2004). **NLP:** Ready & Burton (2004).

1.8 Conclusion

This first ordinary chapter was a necessary preliminary step. The story of the tycoon's granddaughter and the Stockholm syndrome illustrated that it is an illusion that individuals can easily live in isolation. They very much need others, and are connected to them by a range of invisible ties. We always seek collaboration with others. The next section showed that even lower life forms such as plants know social behaviour and interaction. Groundworms are among the smallest and most primitive animals. Yet even their tiny brains turn out to be geared to moods, contagion and aggregation.

Dolphins and whales, cats and dogs, are somehow able to sense distress in other animals, even in altogether different species such as humans, and to come to their help. Recent research in monkeys and apes has shown that such capacities are linked to specialized 'mirror' neurons in the brain. They enable the imagining of the situations and reactions of other creatures. Human babies learn to bond with mothers and others from the day they are born, or even before. Adults learn to establish 'rapport' with others through facial expressions, the unwitting adoption of similar gestures and bodily postures.

So a broad psychological repertory is geared to fathoming the moods of others and, if necessary, to copying them. Let us now look at how this works out in groups of people who are in close physical contact.

2 *Small Groups*, Conformity and Team Spirit

So let us now enter the first circle. The individual is often surrounded by small groups: strangers, but also family and neighbours, friends and acquaintances, colleagues and compatriots. How independent are we, really, of those others? How easily can we be made to simply 'go along'? How does this work when there is an 'in-group' and an 'out-group', an 'us' and a 'them'?

Are we and our group better than others? Or has our mind simply evolved to create this illusion – for instance, through arbitrary social categorization, the arbitrary 'attribution' of causes and consequences, of motives and intentions, to the actions of ourselves and others. How difficult is it to become and remain a dissident within one's own group? How can we bend these rules to promote innovations and excellence?

2.1 Obedience in *The Xtreme Zone*

The producer of the television show later said he got the idea for the project after stumbling across an episode of the very successful television game show *The Weakest Link*, broadcast worldwide. He was struck by the willingness of adult contestants to accept humiliation by the female presenter, and their eagerness to backstab fellow participants. So he recruited eighty candidates for a 'pilot' programme for a supposed new format called *The Xtreme Zone*. When they arrived, they were welcomed and made to sign a contract explaining that they were to participate in a classical questions-and-answers game and that all responsibilities rested entirely with the producer.

They were later led into the studio and into the lights, welcomed by the usual loud cheers, and by a glamorous female presenter. She further explained what their role was. They were to give another participant little electric shocks when they gave a wrong answer. It was shown that the victim was strapped to an electric chair inside a box. But after the door closed, they could no longer see him very well, only hear him.

The game would start, and the level of shocks would gradually rise from twenty to four hundred sixty volts, noted as 'potentially lethal'. As the level rose, the victim could be heard squirming and then screaming. The candidates hesitated frequently, but were egged on by an enthusiastic audience and rousing music (from the ultra-violent movie *The Clockwork Orange*). At the end of the scale, the victim would fall silent, slouched in his chair, as if dead. It was only later explained that he was an actor, faking it.

In reality, it was all for a documentary called *The Game of Death,* followed by a debate *How Far Will Television Go?* The two were aired in prime time on the major public channel France 2, and clearly meant as a stab at the rising tide of ever weirder reality shows at their main competitor TF1. 'For the past ten years', the producer explained in a voice-over, 'most commercial channels have used humiliation, violence and cruelty to create increasingly extreme programs . . . [Future] television can – without possible opposition – organize the death of a person as entertainment, and eight out of ten people will submit to that'.

Because it turned out that in his 'game show' no less than 81 per cent of the candidates had gone along to the very end. Few participants in 2010 France were immediately aware that this was a new variation on a classical experiment that social psychologist Stanley Milgram had carried out in the United States in the early 1960s.

At the time, 'only' 62 per cent of the participants had gone along to the very end. One would think that the willingness of such participants to go along with such schemes would have faded as society had opened up, later and elsewhere. But later replications of the experiment in the United States, Germany, Italy and Spain had already shown that the percentages had gone up further rather than fallen.

At the time, Milgram's experiment had been linked to philosopher Hannah Ahrendt's observations about 'the banality of evil' and to the Israeli trial of Nazi war criminal Adolf Eichmann, who had organized the train transportation of Jews from all over Europe to the death camps – quietly from behind his desk.

It was again invoked later, when it turned out that ordinary American soldiers had committed and covered up a string of major war crimes in Vietnam, such as the killing of hundreds of unarmed civilians in the village of My Lai. Incidentally, similar mass massacres had been committed by the French in Algeria, the Dutch in Indonesia, and others elsewhere.[1]

2.2 Reality Television and *The Human Zoo*

The social psychology of groups within physical proximity of each other, within seeing and hearing range, makes one important distinction. On the one hand there are 'small' groups, consisting of such small numbers that we can easily distinguish each individual member, and react individually to others' discrete individual reactions. We may accept or dismiss each of those, depending on our past experiences with them, our appraisal of their personalities and quirks. On the other hand there are 'large' groups, consisting of

1 **The Xtreme zone:** I saw the programme on its first airing in France, on 17 March 2010. It immediately caused an international media hype. *See* the French radio and TV guide *Télérama* of the preceding week; *Time* and the BBC electronic newsletters of the following days, for instance. **Original experiment:** *See* Milgram's later book *Obedience to authority* (1974). **Replications:** A. Cohen. (30 December 2008). Just following orders. *IHT*.

numbers so high that we cannot easily distinguish each individual member, and thus react collectively to others' diffuse collective reactions. Certain other parameters may also play a role in such situations, such as relative anonymity or sensory overload.

But in the first case it is easier to make critical evaluations before joining in, whereas in the latter case, amplification and 'circular reaction' may take over. The functioning of small groups and teams is the prime object of study within the sub-discipline of 'group dynamics'. A pioneer like Kurt Lewin looked at the influence of authoritarian, democratic and 'laissez faire' leadership; a contemporary like Manfred Kets de Vries looked at the influence of manic or depressive, schizoid or paranoid traits in the leaders' character.

The functioning of large groups and crowds is the prime subject of study of the sub-discipline of mass psychology, by contrast, which recurs throughout this entire book. Other related sub-disciplines that we will discuss are organizational psychology and media psychology.

With advances in digital and camera technology in recent decades, it has become much easier to observe and record the everyday life of small groups within a more or less 'natural' habitat. We have seen that *The Xtreme Zone* was a reaction to the sudden explosion of 'reality TV', as around the turn of the century, youngsters had begun to desert television for the Internet.

Producers therefore invented new lively formats aimed specifically at them: more interactive shows. The two earliest successful examples were the Dutch *Big Brother* format and the British/Scandinavian *Castaway/Expedition Robinson* format (*Survivor* in the U.S.). They were often designed to stir drama, enthusiasm and loathing among the audience. I had the privilege of closely following them from the very start, both as a newspaper columnist and as a social scientist.

The famous American social psychologist Philip Zimbardo and his British colleague Mark McDermott felt they could do even better. They developed a three-part reality show for London Weekend Television called *The Human Zoo.* It was also shown on Discovery Channel, and some revealing scenes were later even posted on You Tube. It contained original film footage of some classical psychological experiments such as Milgram's, as well as a modern re-staging of at least a dozen others – mostly from the aforementioned subfield of 'group dynamics'. I gratefully used some of that material to illustrate my courses in Amsterdam and Nice, as did other lecturers elsewhere.

The psychologists had recruited twelve young adult volunteers to spend a week together at a remote lodge in the British Lake district. They were observed by cameras, both overtly and covertly. The participants met and got along fairly well. But then they were split into two groups: an A team was handed red outfits, and a B team handed blue outfits. Even this assignment to a 'first' or 'second' group caused animosity.

It got worse as soon as they were made to compete. They spontaneously began to sit apart during meals, frictions emerged between the tables, after which they were trying to 'get back' at each other – during tasks such as cooking or washing up. At one point, a female hairdresser confessed revelling in her superior status and in the humiliation of the others.

In the television programmes, the scenes were alternated with candid camera items filmed with passers-by in public spaces: demonstrating conformity, as well as the role of first impressions, authority, obedience, etc. An insecure young woman being asked quiz questions would simply repeat the silly answers unanimously given by stooges – who had gotten their turn just before her. Others would refrain from evacuating a room during a written 'test' if the stooges did not budge either – even if ever thicker smoke came from under the door and a fire alarm could distinctly be heard.

The experiment at the remote lodge in the British Lake District was also a variation on a classical study, done at a summer camp in the 'Robbers Cave' state park in Oklahoma, almost half a century earlier. 'Normal, white boys' from 'intact middle class families' had been made to form teams in similar ways. They, too, soon came to identify closely with their own side, and to develop hostility to the other side. They slowly re-integrated, however, when confronted with new challenges that could only be met by their *united* forces (such as towing their 'broken' camp truck).

Not surprisingly, the entire set-up had been thought up by someone from a 'strange' country and culture who had had ample occasion to contemplate the key role of prejudice and discrimination in human affairs, namely Muzafer Sherif, of Turkish origin, and his American wife.[2]

2.3 Deviance Breeds Anxiety; Innovators Need Confidence

Do you feel you can easily stick to your own judgment, independent of the people around you? Think again, and consider the outcome of the following experiment. It was presented to participants as a test of visual ability.

Groups of five subjects at a time were invited into the laboratory. They were young adults, unknown to each other. They filled out the preliminary paperwork in the waiting room and had a few exchanges before they were led into an adjacent room. There they were fitted into an fMRI brain scanner, with a computer screen facing them. The screen showed two three-dimensional objects at a time, which had already been used in earlier perception experiments. They had to decide whether they were basically the same shape and just rotated somehow or essentially different. It is not an extremely simple task, but most people can easily do it, most of the time.

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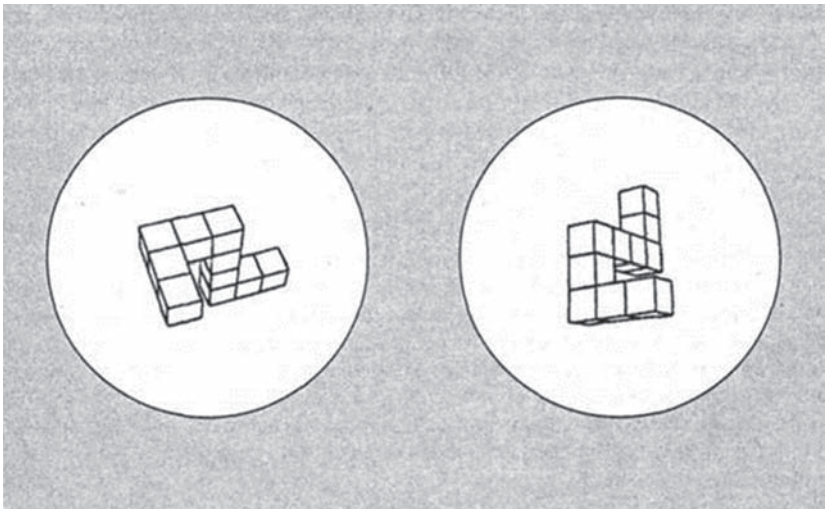
2 **Reality TV:** I wrote a twice-weekly column about BB and its spin-offs for the Dutch daily *Algemeen Dagblad,* and contributed a chapter on the 'moral panic' surrounding it to the first scientific book about the new phenomenon: I. Meijer & M. Reesink (Eds.). (2000). *Reality soap! – Big brother*. Amsterdam: Boom Publishers. I also included elaborate sections about BB and ER in my own later books (about 'hidden persuaders' and 'screening difference'). **Zimbardo:** *The Human Zoo* was broadcast in Dutch on the Flemish channel Canvas (VRT2), on 15 August 2006, and also repeated on the theme channel Holland Doc.

Figure 5 3D Figures, Used in Perception Experiments



Source: Shepard and Metzler.

Before giving their call, on each occasion, they saw pictures of the other participants appear on the right-hand side of their screens, with their judgements added in one word: 'same' or 'different'. Somehow, the other four always came first, the subject in question always happened to be the last in line. The reason was that the other four were again hired actors, paid to give the wrong answer – unanimously. The big question was what the one real subject in each round would do. Would s/he conform, or not?

On their own, the subjects gave the right call 86 per cent of the time – so almost nine in ten times. First presented with the wrong calls of the rest of the group, however, the subjects gave the right call only 59 per cent of the time – just slightly better than one in two times, or mere chance and guesswork.

This experiment, too, was a variation on an earlier classical one, but with some spectacular new twists. The original one, by Jewish social psychologist Solomon Asch, had placed slightly more people in a room, had them match the length of a line piece on the left with one of three others on the right of a simple cardboard. Here, too, the one unwitting subject per round had a tendency of following the earlier wrong judgement of all others – who were also stooges for the researcher. The interpretation of the outcome was that the observed conformity was the result of some kind of psychological pressure and fear of rejection by the rest of the group.

But later variations had already sown doubt on this conclusion, because if one had people perform these tasks on their own behind computers, the trend remained essentially

the same. Although they had not met and would not meet the other 'participants', and only saw their judgment represented on the screen.

So the big question addressed in the very latest more recent variation was: what was really going on inside people's heads? The new experiment incorporating fMRI brain scans was carried out by a team of neuroscientists, led by Gregory Berns of Emory University. They wanted to know whether subjects actually came to *see* things like the rest of the group or whether they just decided to *say* so in the end, in order to escape rejection. The neuro-team knew that these would imply different processes and activate entirely different parts of the brain. The results were surprising. The subjects appeared to actually *see* things like the rest of their social environment, and did not merely feign so. But there was more.

Berns and colleagues zoomed in on the brain scan results of the small minority of subjects that had stuck to their own initial correct appraisal and had not capitulated to the incorrect one proposed by the others. What had happened inside the heads of those fiercely independent people? Were there any emotional effects or mood changes? The researchers noted considerable unease, and . . . increased activity in the tiny amygdala or 'almond-shaped' centre.

This is linked to the hypothalamus and the other parts of the 'arousal' system for 'freeze, fight or flight'. It can make blood pressure and heart rate go up as well as cause breathing and sweating. So group conformity and cultural or ideological conformity are not only psychological, but somehow even physiological reflexes. They are rooted deeply in our gregarious nature, which apparently emerged as a useful adaptation after a long evolution of a million years.

The findings were published in the scientific journal *Biological Psychiatry,* but immediately attracted the attention of the science pages of the newspapers as they seemed to have profound implications for the functioning of individuals in groups, the promotion of conformity or non-conformity in organizations. Berns decided to further focus on this flip side of the coin: the consequences for creativity and invention, innovation and even entrepreneurship.

So he tried to explain why the brain of such luminaries as Henry Ford and Walt Disney, Ray Kroc and Warren Buffett, Richard Branson and Steve Jobs apparently worked differently from those of the rest of us. Through imagination, courage and contagiousness. The book *Iconoclast* was published by the prestigious Harvard University Press and soon voted one of the ten best business books of the year.[3]

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3 **Original experiment:** Republished as: S. E. Asch. (1956). Studies of independence and conformity – A minority of one against a unanimous majority. *Psychological Monographs, General and Applied, 70*(9), 1-70. Also in: S. E. Asch. (1952). *Social psychology.* New York, NY: Prentice Hall, among others. **New variation:** G. Berns *et al.* (2005). Neurobiological correlates of social conformity and independence during mental rotation. *Biological Psychiatry,* 58, 245-253.

2.4 Team Spirit Makes Us Excel: In Leisure and Work

Let us also look at the positive flip side of the negative processes of group conformity described above. We all have a need to belong, and we do our best to fit in. If we are part of a team, we try to help and boost its spirit, particularly if it has a common goal, for instance to out-compete similar other teams. Trust and confidence play a key role in building cooperation and performance. It may begin on a very basic physical level, but spreads to a higher psychological level. This is a consistent finding of research in both sports and work psychology.

One famous example is that of mountaineers getting into trouble during the climbing of the dangerous K2, the highest peak in the world after Mount Everest. One of the earliest teams survived under difficult circumstances in the freezing cold by staying together. But a recent team lost eleven people, after splitting up. Psychologists from Berkeley in California were struck by the fact that some top team sports players also seemed particularly good at . . . bonding.

'Within six hundred milliseconds of shooting a free throw, he reached out and touched four guys', they observed about one star. So they scrutinized at least one game by each of the thirty teams in the American National Basketball Association NBA, during the first two months of the 2008-2009 season. They coded each high-five, bump, hug and arm around the shoulder as an indicator of warmth, trust and team spirit.

The frequency of momentary touch proved a good predictor of both individual and group performance later in the season – even after ruling out all possible alternative explanations. We have already seen in the previous chapter that touch promotes the release of the bonding hormone, oxytocin and, by contrast, inhibits the release of the stress hormone, cortisol. Pupils were nearly twice more likely to volunteer in class after a teacher touched their arm, for instance, and patients thought their doctors' visits had been twice as long.

But is there a direct link from such 'bonding gestures' to mood contagion and the spreading of the enthusiasm virus? To further investigate that, a researcher from Sheffield in England decided to take a closer look at a longer-lasting typically British game: cricket. He recruited players from two teams to rate their moods on a pocket device: three times a day during four consecutive days.

Subsequent analysis showed significant associations between players' individual moods and the team average; the linkage was greater when they were effectively engaged in collective activity. This proved independent of their favourable standing or hassles during the match. The more committed players were to the team, the more susceptible they proved to this form of emotional contagion.

The next question is whether this team spirit actually enhances individual performance. German researchers from Münster took a closer look at the functioning of the relay swimming teams in the 'Water Bubble' pool next to the famous 'Bird's Nest Stadium', during

the Olympics in Beijing, China. The swimmers on the first legs of the relay effort turned out to have made times similar to those they scored in individual events. No surprise.

But it was the swimmers on the later and last legs that made better times than they used to. They apparently felt an obligation to the rest of the team, which was somehow stronger than if they swam just for themselves. The researchers in question came from the university department of organizational and business psychology. In this and other studies, they emphasized that such results might well be transferred to the everyday workplace, to improve team performance.

One interesting illustration is the 'human resource management' approach of Prêt-à-Manger (culinary French for Ready to Eat): an English sandwich shop with (at the time) 225 outlets in Great Britain, 34 in the United States and 11 in Hong Kong. New recruits have a try-out of one day, after which their colleagues vote whether they liked them because they had been sympathetic and cooperated well. The 10 per cent they let go get their pay for the day, no hard feelings. Of course this produces closer-knit teams.

But it also has 'mystery shoppers' sample the service, at least once a week. If they rate it 'outstanding' (in 86 per cent of the cases), the entire team gets a bonus of one pound per hour for the entire week, which amounts to a substantial sum. When employees pass training milestones or get promotion, they are further given fifty British pounds in vouchers. Not for themselves, but to pass on to their 'most helpful' colleagues. So this team building also creates peer pressure.

In recent years, there has thus been a growing awareness among experts that the one-sided Western emphasis on individual competitiveness within companies may have a forgotten downside, whereas the Eastern and Asian emphasis on collective cooperation may have a neglected upside. This had already been illustrated by the earlier successes of the Japanese 'quality circles' and 'Kaizen' continuous improvement efforts in automobile factories. Various studies have since also reconfirmed that teams possess more knowledge together than their best-informed individual members, and are also better at problem-solving than their smartest individual members.[4]

2.5 Conclusion

This chapter has limited itself to the influence of the immediate circle around us: that of the small group, made up of either strangers or close acquaintances. Reality television, and critical variations on it, have demonstrated that it is easy to trigger obedience

4 **K2:** De Waal (2009), p. 163. **Basketball:** M. Kraus *et al.* (October 2010). Tactile communication, cooperation and performance. *Emotion, 10*(5), 745-749. **Cricket:** P. Totterdell. (December 2000). Catching moods and hitting runs. *Journal of Applied Psychology, 85*(6), 848-859. **Swimming:** J. Hüffmeier & G. Hertel. (2011). When the whole is more than the sum of its parts. *Journal of Experimental Social Psychology, 47*, 455-459. **Company teams:** Goleman (2006), Ch. 9; S. Clifford. (8 August 2011). Prêt-à-manger's fresh take. *IHT*.

to authority in ordinary people, or to trigger conformity. Deviance and innovation, by contrast, do often breed insecurity and anxiety.

The key question for organizations is how to balance the two: how to reduce the negative effects, and how to promote the positive effects, of mood contagion. Hence the scientific interest in the results of team-building efforts, both in sports and at work. As there still seems to be too much emphasis on approaching employees as isolated and interchangeable individuals, as mere pawns, too little emphasis on giving them a sense of group identification, belonging and collective achievement: where the whole become much more than the sum of the parts. Because in many experiments, this seems to contribute to better results.

The next question is how all this works out in larger groups, such as crowds or performance audiences? How does the enthusiasm virus spread there?

3 *Performance Audiences*, Synchronicity and Enthusiasm

Whenever you sit in a sports arena or concert hall, those around you may be involuntarily triggering your behaviour: either conventional or unconventional. Whether they smile or laugh, applaud or wave, cough or yawn, we tend to join in, before we know what we are doing. A self-reinforcing feedback loop or 'circular reaction' may even temporarily push the crowd's behaviour towards extremes.

What is it, in our evolution and in our brains, that makes us do this? What neurotransmitters and hormones push us, why and how? We tend to take these common reactions for granted and usually overlook the myriad psychological processes involved. But the dynamics and complexity of such crowd behaviour are really astonishing.

3.1 Fire-Walking and 'Extrasensory Perception'

It is one of those tiny European villages that take their more than thousand-year history entirely for granted: San Pedro Manrique, in the Northern Spanish province of Soria (Castile and León). It has only six hundred inhabitants, but the central square has a huge Virgin Mary cathedral, for which building began as early as the twelfth century.

A bit further down is an old amphitheatre, which was recently renovated to accommodate no less than the fivefold number of three thousand spectators – also with an eye to an early start of the tourist season. That begins with the summer solstice, which coincides with St. John's Day in many Catholic countries on the northern shores of the Mediterranean. Because of the heat, the villagers and visitors stay up late that day. At midnight it is finally completely dark. They throng together, to watch an ancient and strange ritual.

Fire walking was first reported in Iron Age India. It travelled west to the Middle East thereafter. Shiite Muslims do it to mourn the death of their founding 'saint' Hussain, the grandson of the prophet Muhammad. Arabs may have brought the ritual to Spain, although it is also prominent in Orthodox Christianity, and many other religions and cultures around the world. It is spectacular as barefoot believers walk on a bed of red-hot charcoal, which stretches for three meters or more.

It looks as if it requires great courage, is highly painful and dangerous. But physical, biological and medical investigations have found in recent years that there is little risk in reality if one just remains calm, determined and keeps walking. Anthony Robbins and other famous management gurus therefore introduced it as a dramatic test of focus and will, in motivational seminars and team building exercises for companies. The enterprising and daring mood tends to affect and inspire onlookers, to spread the contagion.

To investigate this, outsiders recently descended upon the festival in San Pedro and strapped strange gear on a dozen prospective firewalkers, as well as on spectators in the audience – both related and unrelated – watching the feat from a distance. These contraptions were heart rate monitors. It was a team led by a Ph.D. student in bio-engineering at the Centre for 'Functionally Integrative Neuroscience' at Aarhus University in far-away Denmark. Why?

Because they felt this was a unique opportunity to investigate whether there might be any synchronizing of arousal, and related involuntary body responses, in such situations. It turned out this was indeed the case.

That is to say, the heart rates of related spectators closely followed those of 'their' fire walker (immediately before, during and after the feat), whereas those of unrelated spectators did not. It was not the result of any 'extrasensory perception' or paranormal influence, but of empathy and 'affective mirroring', they said – even at a distance. So synchronization may play a strange and mysterious role in all groups and performance audiences.[1]

3.2 Sentimental Tears for the Foreign Legion

The only political group or party I ever adhered to was a small and now extinct 'pacifist' party. This was in my student days, at the time of the protests against the Vietnam war. But to this very day I still feel that even supposedly 'legitimate' interventions often have 'ulterior' motives as well. They can easily become counter-productive, particularly in entirely different cultures, and degenerate, often bringing mere Pyrrhic victories in the end. Even if a military intervention can and must sometimes be justified.

In later life, however, I also came to befriend people with entirely different views and experiences. Wim Vaal spent decades overseas as a soldier of the Foreign Legion, the French overseas intervention tool par excellence, before becoming a secret agent for them. Retired, he dictated his memoirs. He revealed he had personally witnessed systematic torture during the Algerian war, by the later far-right leader Jean-Marie Le Pen and others.

But he surprised me most by saying on one occasion that he would still get goosebumps, and tears might even well up in his eyes, every time he heard the Legion's drill and common anthem during their reunions near Marseille. It seemed to trigger a profound sense that he had been part of something very much bigger than himself, held together by seemingly unconditional solidarity.

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1 **Firewalking:** I. Konvalinka *et al.* (2011). Synchronized arousal between performers and spectators in a firewalking ritual. *PNAS*. Retrieved from <www.pnas.org/cgi/doi/10.1073/pnas.1016955108>. They announced that they were already planning a similar follow-up study on firewalking on the Indian Ocean island of Mauritius. They referred back to earlier sport spectator studies by R. J. Maughan *et al.* Heart rate and salivary cortisol responses in armchair football supporters. *Med Sport*. Vol. 12, pp. 20-24, published in 2008 and by J. Leeka *et al.* Sporting evenst affect spectators' cardiovascular mortality – it is not just a game. *Am. J. Med.* Vol. 123, pp. 972-977, published in 2010.

Historian William McNeill, renowned author of *The Rise of the West,* also wrote a history of the military drill. He confessed he had rather liked it in his own infantry days. 'Marching aimlessly about on the drill field, swaggering in conformity with prescribed military postures, conscious only of keeping in step so as to make the next move correctly and in time somehow felt good', he said.

'Words are inadequate to describe the emotion aroused by the prolonged movement in unison that drilling involved. A sense of pervasive well-being is what I recall; more specifically, a strange sense of personal enlargement; a sort of swelling-out, becoming bigger than life, thanks to participation in a collective ritual'. It provoked a Zen-like state of 'flow', so to speak, the merging into a larger whole in action – boosting both confidence and combativeness.

Oxford anthropologist Robin Dunbar has in turn observed that early man used to live in tribes of no more than one hundred fifty people on average – the size of a military company. Their major rituals and ceremonies celebrated and reconfirmed their deep bonds. Our brain and behavioural repertory therefore seem to remain optimized for such scales of interaction, even if we now live in cities, work in organizations, adhere to networks many times that 'ideal' size. There are preconscious and instinctual ways as well, though, by which we relate to large groups of others who are close by.

Our individual bodies function through biorhythms. Of some, such as breathing and heart rate, we may be half aware, of dozens of others not. The most forceful way to form a collective body is by closely synchronizing these, for instance by yelling in unison or by marching close together.

Synchronization of voices and movements are the most primitive, but also the most forceful means of forging a compact group. Collective behaviour sociology and mass psychology speak of 'convergence' and 'de-individuation', making distinctions and boundaries between us partially dissolve somehow. We all carry a deep longing for this 'oceanic feeling' of belonging and the mood contagion that goes with it.

Synchronization of movement did of course always characterize the 'chain gang' of prisoners of war, and the slave rowers on war ships. But McNeill has even suggested that no ancient civilization . . . could ever have emerged without it. The Egyptian pyramids could not have been built without the rhythmic sounds punctuating the heavy lifting by large coordinated *groups* of people.

Neither could the large Mesopotamian or Chinese irrigation systems have been built, or the Great Wall. Collective sowing and planting, too, are often done by rows of people making the same gestures simultaneously. The same holds for leisurely activity or religious ceremony. Drums, the rhythmic clapping of hands, the rhythmic stomping of feet, make the air and soil vibrate.

In recent years, brain research has brought to light that this collective synchronization triggers a huge pay-off inside our heads, through the release of all kinds of 'dope'. It often

creates a kind of trance, a 'high' or secondary state, by triggering the secretion of pleasurable neurotransmitters and hormones, by boosting the immune system, and reducing stress.

As it has turned out, emotion is also stirred by the primitive cerebellum or 'little brain'. According to a study by Levitin, to which we will return hereafter, 'it weighs only ten per cent of the rest of the brain', but it contains a large part of the total number of neurons. The organ is specifically concerned with . . . rhythm and timing, the succession and coordination of movement.[2]

3.3 Musical Manipulation of Our Neurons

What many of us felt like doing at one point Daniel Levitin has done. He dropped out of college to go play the guitar in a rock band. He later turned sound engineer and prized producer of gold records – working with artists ranging from Mel Tormé to Stevie Wonder, after which he finally turned back to school to take up the 'neuropsychology' of his trade. For instance, at the Center for Computer Research in Music and Acoustics at Stanford, abbreviated as CCRMA, sometimes simply pronounced as 'karma'. Today, he runs a similar lab at McGill University in Montreal, Canada. In recent years, he has published two successive bestsellers on the very latest research in the field: *This Is Your Brain on Music,* followed by *The World in Six Songs.*

Levitin claims music has always been an extremely profound influence on us, probably even before language: dating back to early evolution (phylogenesis), and also dating back to our time in the womb (ontogenesis). Music has come to consist of seven building blocks, processed bottom-up from the older parts of our brains: loudness, pitch, contour, duration, tempo, timbre, spatial location and reverberation.

But these are then 'bound together' into higher-level *Gestalts* or configurations, such as meter, harmony and melody – affecting our music perception top-down again. Every piece is a TRIP, he says, in a variation to an older formula: for Tension, Reaction, Imagination and Prediction. According to the latest research, it is precisely when excellent performers challenge expectations by stretching the rules that unique rendering and 'groove' emerge.

A key element of music is always synchronization between performer and listener, and within audiences themselves. It is particularly from our early adolescence onwards, Levitin continues, that musical preferences are shaped – often in line with the generational experience. In my case the famed 1960s and 1970s, with Beatles and Stones, and what not.

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2 **Foreign legion:** W. Vaal with P. Dicker. (2000). *Soldaat in de woestijn – Sergeant Baraka.* Schoorl, The Netherlands: Uitgeverij Conserve. **Military drill:** W. McNeill. (1995). *Keeping together in time* (p. 2). Cambridge, MA: Harvard University Press. Quoted in Levitin (2010), pp. 51-55, 301. **Cerebellum:** Levitin (2008), p. 174.

Furthermore, during the first few months of first falling in love, a rush of exquisite neurotransmitters and hormones are released. Those euphoric feelings usually become closely intertwined with privileged memories of the 'background music' of our days, and generational sentiment.

We have already seen in Chapter 2 that making love, getting pregnant, giving birth and breastfeeding release massive amounts of a newly discovered chemical substance, oxytocin, with the miracle formula $C_{43}H_{66}N_{12}O_{12}S_2$. It is related to happiness, bonding and trust. It turns out a baby can recognize and tends to prefer music (and even languages) it has already heard in the womb. Rocking the newborn, and later singing a lullaby together, is once again about synchronization. As it turns out to soothe *both* the baby and the mother: it stabilizes respiration, lowers the pulse rate and relaxes the muscles.

Consolation, and comforting music, do in turn trigger prolactin, a tranquilizing hormone. Even singing lessons turn out to change the entire blood chemistry. The beneficial 'Mozart effect' on achievements, however (supposedly resulting from a regular exposure of even ten minutes a day to the work of the Salzburg child prodigy), was prematurely touted and remains to be proven.

Why are music and dance rooted so deep inside our brain? Because they directly contributed to a better chance of reproduction and survival. On the one hand, individual sounds and displays may have favoured seduction and sexual selection – just like the peacock's tail. On the other hand, a sensibility to communal music must have favoured cooperation and a tight group bond.

In defence: when hunters and gatherers sat around a campfire at night, sang or played to stay awake and keep predators away. But also in attack: when armies coordinated their movements through chants and instruments, to intimidate opponents. Think of the much-touted battle of Jericho. Sudden harsh sounds trigger a strong startle reflex in humans, by the way. Maybe because they also reach us when it is pitch dark or vision is otherwise hampered.

Different musical genres trigger different types of mood contagion and different cocktails of neurotransmitters and hormones. Certain types of communal religious chanting (Gregorian, Psalms) may even help to stimulate the newly discovered 'God centre' in the brain, and deriving feelings of spiritual transcendence.

Our favourite music promotes well-being, reduces stress and boosts the immune system. It is increasingly used to diminish pain, at the dentist and during surgery, and to favour healing. Sharing music with large enthusiastic audiences of like-minded others typically engenders strong feelings of sympathy, furthermore, of caring and affection.

With electronic rendering and amplification, music and synchrony may have come to play a larger role than ever before. Music players such as the iPod are increasingly our favourite tools for individual 'mood management' throughout the day. And concerts are increasingly our most intensive abstract collective experiences throughout the year.

The rock star struts the stage in the stadium, makes the audience wave hands in synchrony, and thus helps release litres of neurotransmitters and hormones into the collective bloodstream of the audience.

3.4 Contagion at the Bronchial Philharmonic

My parents met in a professional music academy. Soon after the war, however, my father had to give up his early ambition of becoming a composer and director. He became a sound engineer for Decca instead, and ultimately a senior record producer for Philips Phonogram, working with the Concertgebouw orchestra, with many famous international directors and soloists. So I grew up drenched in classical music.

As an adolescent, therefore, I took a friend to a concert, but made the musical mistake of my life – by starting a round of applause on my very own, after the first part of a multi-part symphony. I will never forget the killing stares of my fellow audience in our middle-class suburban town. I had disturbed the peace and quiet and concentration in a very serious middle-class ritual. But many other people do, in other ways, particularly during the winter season.

Richard Irwin was a professor of pulmonary disease and allergies at the Medical School of the University of Massachusetts. He is also a world expert on coughing. *The New York Times* urgently interviewed him, after a 'Bronchial Philharmonic' among the audience had repeatedly taken over from the designated orchestra – during winter concerts at the Lincoln Centre.

He patiently explained that children contracted six to eight colds a year, and adults half that number. Each bout lasted two to three weeks. During the first few days, he said, as many as 90 per cent of the patients coughed. So the chance of having at least one irresistible cougher running amok in New York's premier concert hall at times was considerable.

Again: the anxious mood is contagious. Of feeling that you have to restrain your urge, but ultimately do not succeed. The nature of the music being played turned out to make a difference, too. While Sibelius' introverted Fourth symphony was frequently interrupted by heavy coughing, the reporter noted, his more direct Seventh was not.

Some soloists are driven to desperation by such disturbances. Pianist Arthur Rubinstein is said to have joked: 'Normally, if people have the coughs, they go see a doctor. But in my case, they all seem to come to my concerts'. At one point, the Concertgebouw and other major concert halls around the world even took to distributing free cough drops to quash these epidemics.

Similar things may happen to a speaker in front of a hall. For some reason, someone in the audience begins to scratch his or her head, or even worse, yawns. Such unnoticed micro-behaviours are also extremely contagious, among all primates.

If we look someone in the face, and see him or her yawn, we will feel an irresistible urge to yawn as well. But even if we look at the back of their heads, if we cannot see but only hear it, ever so faintly – this may still happen. Worse: if you even think of yawning, or even read about yawning – like here – you will subtly feel the inclination.

Specialists do not agree on why we yawn at all. Explanations range from attempts to 'cool the brain' to 'reconfirm social ties'. But it cannot be escaped, to the great sorrow of many a university lecturer confronting massive halls of half-awake students, early in the morning or late at night.

The problem of concert disturbance came back to haunt me later in life. In Southern France, I had met the unconventional multibillionaire beer tycoon Freddy Heineken. In the Netherlands, his company had become the local partner for the annual continental tour of 'The Night of the Proms', derived from the familiar London BBC 'Last Night of the Proms' format: alternating pop, classic and folklore.

Figure 6 BBC 'Last Night of the Proms Concert', 2005. The Ground Floor Has Standing Participants, Other Visitors Sit

Source: Wikipedia Commons.

But since their very beginning in the nineteenth century, such 'Promenade' concerts had always wrestled with a difficult question throughout Europe. During a quiet piece, serious soloists often felt hindered by the rowdy audiences, particularly in this case, as the brand had initially insisted on serving beer to them. The organizers commissioned a report from me as

a mass psychologist to address the question, but I could not really change the parameters. The partners fell out, and both continued their own separate ways with annual concerts.[3]

3.5 Claques, Applause and the Law of the Root

Theatres, concert halls, sports arenas, their design, lighting and acoustics have evolved in line with several social and psychological imperatives: one, to accommodate as many people as possible, to attain larger budgets for more expensive top performances; two, to position them in such a way that they can still see and hear relatively well so that they can focus their attention. Third, to align them shoulder by shoulder in compact blocks facing the same way, to have their reactions run parallel, favour the unwitting emergence of identification, empathy and mood contagion. Fourth: to still leave wide enough escape routes for orderly evacuation, to prevent crushing in a panic.

As theatres had become better and more popular, toward the end of the nineteenth century, impresarios also learned how to foster further enthusiasm. They would give free tickets to the immediate family or clique of the star performer, or hire a claque of art students to take the lead with 'spontaneous' outbursts of applause and cheers, time and again. Those in the front rows would take the visual lead, those in the back seats the auditory lead.

At one point, a mathematician calculated how large a decided minority one needed in order to sway an undecided majority, in most cases. His finding was that the former would need a critical mass equal to the square *root* of the latter. So a hall with one thousand people could be swayed by only thirty-two truly dedicated fans.

Enthusiasm is contagious; smiles and laughter are too. Think back to the time you went to hear a stand-up comedian with a thick regional or minority accent – so that at first you missed the point of many of the jokes. But you still laughed along with the people around you who *did* immediately understand the joke, didn't you?

Time and again, you were automatically triggered by the loud bursts of laughter behind you. They are infectious. When broadcasters build a set to record a program, therefore, they will often take great care to include rows of chairs for a 'live' studio audience. The sight and sound of that studio audience will help trigger your reactions at home, even as you sit alone in the quiet living room.

Half a dozen recent studies – both in the laboratory and in 'the field' – have found that such social laughter again releases endorphins or feel-good chemicals in our brains, and thus raises the pain threshold. Like grooming in animals, it also reinforces group bonds.

Coughing and yawning, scratching and laughing are largely involuntary behaviours, which can thus easily be triggered by large groups around us. But we often go to

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3 **Lincoln Centre:** B. Holland. (12 December 1997). Notes from the bronchial philharmonic. *IHT*. **Heineken – Proms conflict:** Dutch daily *NRC Handelsblad,* 31 August 1999, 4 April 2001, and others.

performances to participate actively, and thus to undergo a unique collective experience. We decide rationally to let off steam emotionally.

On such occasions, we frequently cede to 'conventionalized unconventional' mass behaviour. Rhythm, synchronization and timing play a key role. As when we dance along in a mega-disco, do *The Wave* in a soccer stadium, or emphatically march in step during a demonstration or procession. In carnivals, by contrast, our expressions and actions are less coordinated – it becomes a loose 'free for all'.

So if you want to make an assembly or a meeting enthusiastic, there are a number of things you can do. First of all, recruit selectively: make clear it is a privilege to attend. Seat the audience close together, facing the same way, ascertain that they can optimally see and hear what is going on.

Warm them up with some exercises in synchronicity, such as yelling or singing. See to it that there are some real fans in the front, others in the back and the rest spread evenly throughout the hall or the stadium. Their number should equal or exceed the square root of the total number present. This is what political candidates have learnt to do at their election rallies, and faith healers at their religious services.[4]

3.6 Conclusion

The research on firewalkers and their relatives demonstrated that people may synchronize their involuntary reactions with those of performers, and maybe also to a lesser extent with other onlookers. This weaves coherence into the fabric of audiences. The military drill has always used synchronized movement and sound to build tight cohesion in fighting groups. The exploitation of those same principles is as old as mankind itself, and even helped in building most ancient civilizations.

Today, music has become a major tool for 'mood management' of both individuals and collectives. Contagious disturbances like coughing in concerts and conferences, however, may disrupt synchronization and 'flow'. Meanwhile, theatre makers and speakers have long learned to exploit rhythm and timing for optimal impact. But their audiences are engaged in direct interaction, and can easily be manipulated. One question remains, however. What if interaction is only intermittent and at a greater distance? Can mood contagion still take place? We will see that it can.

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4 **Theatre design** advanced in stages, with advances in hall architecture, stage machinery, electric lighting and sound amplification. Richard Wagner, for one, therefore insisted on building his own optimized opera theatre in Bayreuth. **'Square root':** The calculation was made by the British psychiatrist and mathematician Lionel Penrose, who later made concrete proposals about using it to improve representation in assemblies like the U.N. **Endorphins:** R. Dunbar *et al.* (14 September 2011). Social laughter is correlated with an elevated pain threshold. *Proceedings of the Royal Society of Britain (Biological Sciences), 279*(1731), 1161-1167. doi:10.1098/rspb.2011.1373.

4 *Social Movements*, Unease and New Initiatives

So far, we have contemplated forms and examples of mood contagion only on a limited scale in space and time. But can it extend beyond those immediate horizons? Can it affect people at entirely different locations, and at entirely different points in time? Can spontaneous forms of coordination emerge, to try and halt social changes? Or, on the contrary, promote them?

What role do leaders and active minorities play on such occasions? Considering early social movements do not yet have large budgets or organizations to back them up, can they still trigger world historic changes without that? We will see that they can, and maybe increasingly so.

4.1 Preparing for the End of the World

Fundamentalist Christians had long felt outrage over the advance of secularism and 'decadence'. It had taken the 89-year old a lifetime to decipher the hidden hints in the Bible, and to calculate from there. But he had been a civil engineer, so that was not the problem. He had identified 21 May 4990 BC as the key date in *Genesis,* the Biblical creation story. It said, 'Seven days from now I will send rain on the earth'. But elsewhere it said, 'With the Lord a day is like a thousand years'. So the new Great Flood was to be expected on 21 May 2011.

Also because atonement = 5, completeness = 10, and heaven = 17. The day of Jesus' death on the cross plus $(5 \times 10 \times 17)^2 = 722{,}500$ days, also happened to be . . . 21 May 2011. So this reconfirmed it! At 6 p.m. local time, God would choose a mere 3 per cent of the global population or only 200 million people to be saved. After which he would make the entire universe come to an end.

Harold Camping had meanwhile become a popular minister, a radio host and the influential president of the Family Radio Christian network, with no less than two hundred affiliated stations. He sent a caravan of five vehicles with posters announcing the end of the world along the entire West Coast of the U.S. Thousands of billboards repeating the message in many languages were erected on all continents.

Millions of pamphlets were distributed, and a multimillion dollar ad campaign was launched. A man from Newark, Delaware, and many others quit their jobs. A retired transportation agency worker from New York reportedly spent his savings of 140,000 dollars in support of the campaign. Five thousand Christian Hmong tribesmen in Vietnam assembled to await the event together, but were dispersed by the police.

Figure 7 Christian Radio 2011 'End of the World' Campaign.

Source: Pictures from Wikipedia.

Sceptics abounded as well, though. A crowd gathered in front of his headquarters in Oakland, near San Francisco, for an 'end of the world' party. About 830,000 people registered on Facebook for a 'post-rapture looting event'. The search term 'Harold Camping' and three related ones ended up in the top ten on Google Trends. On the fateful date, a volcano erupted in Iceland, an earthquake struck in New Zealand, but apart from that, nothing happened.

Evolutionary biologist Richard Dawkins, author of a recent atheist bestseller about *The God Delusion,* had predicted that Camping 'will inevitably explain, on 22 May, that there must have been an error in the calculation, the rapture is postponed'. He was wrong. That explanation came only on 23 May, and the new date was 21 October. But, once again, nothing happened. Some further checking had even revealed that Camping had already predicted other apocalypse dates and years in earlier books.

Esoteric New Age believers, by contrast, were convinced that the winter solstice of 21-12-12 was the fateful date as it was the end of a 5,125-year cycle in the cosmic calendar of the mysterious Central American Mayan Indian culture. There was supposed to be a catastrophic alignment of the sun and the planets leading to a cracking of the earth, and also a peak in the cycle of solar activity.

That belief had also been spread by the successful blockbuster movie *2012.* People were reported preparing bunkers in Switzerland or trying to book hotel rooms near the mythical villages of Bugarach and Rennes-le-Château in Southern France. In the end, however, there proved to be more journalists there than believers. But how do such messianic movements react when their prophecies fail?[1]

1 **2011:** J. McKinley. (23 May 2011). World's end came and went. *IHT*; 2011 end times prediction. *Wikipedia*. **2012:** M. de la Baume. (30 January 2011). For end of the world, a French peak holds allure. *NYT*; *IHT,* 1 February 2011.

4.2 Failed Prophecies and 'Cognitive Dissonance'

A similar small news item on a back page of the *Chicago Tribune* had drawn the attention of social scientists more than half a century earlier. It quoted a Mrs. Dorothy Martin as announcing a return of the Great Flood and the end of the world for the next winter solstice.

She was a Christian, but also a former member of Ron Hubbard's scientology church. She claimed she received messages in automatic writing from aliens on other planets in outer space, particularly from Sananda, the current alien incarnation of . . . the historical Jesus Christ. He was to send flying saucers to rescue the true believers.

Social psychologist Leon Festinger and colleagues, at the nearby University of Minnesota in Minneapolis/St. Paul, decided this offered a unique possibility to investigate the inner workings of sects. They recruited two staff members and two student volunteers to infiltrate the budding movement, which grew to have some two dozen members from a month before the announced end of the world until a few days after it.

One group had formed around the aforementioned lady, identified with the fake name of Mrs. Marion Keech in 'Lake City'. And another group had formed around a medical man, described with the fake name of Dr. Armstrong in 'Collegeville'. Members turned out to give up partners, jobs and savings, to be ready in time.

Half of the infiltrators were men; half were women who even lived in the two leaders' households for some time to 'help'. They made notes, or dictated their experiences into tape recorders at a nearby hotel. The transcriptions filled a thousand typewritten pages, with a hundred more for other material. On the fateful day, the followers gathered to wait for a knock on the door by a space envoy at midnight. When the clock showed 12.05, they began to frown, but fortunately discovered another clock that still showed 11.55. Yet nothing happened.

As dawn approached, they sat in silence and surmised there must have been an unforeseen delay. At one point 'Mrs. Keech' began to cry. But then, they received a new message. 'From the mouth of death have ye been delivered . . . [Because] not since the beginning of time upon this Earth has there been such a force of Good and light as now floods this room'. So their preparedness had saved the world!

The resulting classic study *When Prophecy Fails* also introduced a new notion, which was further elaborated in another book a year later. It said that people strove for mental consistency. If 'cognitive dissonance' occurred between beliefs, feelings and acts, this would create a tension that they would seek to reduce by radically changing one of the elements.

In this case, the group had always been rather secretive. But now they suddenly exploded in proselytizing: they actively approached the local and national media with 'the good news' and tried to win new converts. The exact opposite of what one would have expected.[2]

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2 **Original study:** L. Festinger *et al.* (1956). *When prophecy fails.* New York, NY: Harper Torch. (Reprint Mansfield Centre, Connecticut: Martino Publishing, 2011, p. 169). Plus the lemma with that name in *Wikipedia.* Also see the recent overview by Cornelia Fine. (2006). *A mind of our own – How your brain distorts and deceives.* New York, NY: Norton.

4.3 How Amsterdam Provos Triggered the Sixties

Emergent collective behaviour can manifest itself on two different levels. On the one hand in 'visible' masses such as crowd meetings and performance audiences, where people can see and hear, often even smell and feel each other. On the other hand in 'invisible' masses such as media audiences and opinion currents, where people may be physically separated but do yet somehow become psychologically involved in one and the same collective process.

A third in-between level is that of early social movements, which arise over some kind of unease: because change is going too fast (see above), or not fast enough (see below). Parts of the social movement do of course get together here and there, now and then, to deliberate. But even if they hardly meet, they still form a larger whole, with which they sympathize or identify. They result from relatively spontaneous coordination, which is not yet fully institutionalized as they may not have formal membership or rules at first, a programme or a headquarters. Those do only come with formal organization, often at a much later stage.

According to one study of social movements, they result from some kind of mobilization and create an emergent 'process of interaction that could not be predicted from antecedent conditions, properties of leadership, commitment and group structure'. It is a qualitative transformation guided by a number of factors 'such as the intensity of the [subjectively felt] deprivation, the presence of agitators and ideologies, the reaction of the authorities, the alternate responses available, and so on'. Participation 'entails the construction of a new identity in which the decision to commit oneself is negotiated through a series of encounters and interactions'.

One particularly interesting early social movement involving my own generation was the generational baby-boomer revolt triggered by self-styled 'provos' in mid-1960s Amsterdam. They meant to provoke the city authorities to reveal their true 'narrow-minded' nature by enthusiastically proposing all kinds of simple utopian plans, which would be dismissed out of hand.

A guy would paint a bicycle white, for instance, and offer it for free use. Anyone in the public could take it for a ride, leave it somewhere else, where the next person could pick it up, and so forth. Variations of the plan have in recent years been adopted in major cities around the world such as Paris as an alternative to the all-car culture. Even if they also tried it with small electric cars.

At the time, however, the bicycle was immediately impounded by the police, who claimed it was 'forbidden to leave such a vehicle unlocked and unattended'. A girl would then distribute free dried raisins to the public as an alternative to cigarettes, which was in turn forbidden as a 'disturbance of the public order'.

In this case, there were basically just a dozen 'apostles' taking various initiatives, complementary to each other. As they considered themselves (liberal) anarchists, there was no

Figure 8 The Launching of a 'White Bicycle' for Free Public Use Throughout Amsterdam in the Mid-1960s

Source: Picture from the site of the Dutch virtual 'Mobiliteitsmuseum'.

social hierarchy and only a very loose structure. But this active minority linked up with others, mobilized much larger groups, won the sympathy of large parts of the population and stirred a contagious mood.

These included students and other youngsters, an urban bohemia of artists and intellectuals, with even the odd reformist politician or civil servant here and there. The movement also stimulated the further rise of a range of other movements: feminism, the anti-war movement, critical consumerism, environmentalism, healthy living, solidarity with developing countries and liberation movements, etc.[3]

4.4 Flash Mobs and a Recurring Saturday Night Fever

I had the privilege of doing my internship at a tiny institute for 'mass psychology, propaganda and public opinion' within the social and political science faculty at the time. I made a complete inventory of the hundreds of obscure provo flyers and publications circulating during

3 **Social movements:** see the discussion of the work of John Wilson, Orrin Klapp, and others in Ch. 6 of my 2003 book on collective behaviour. **Provo:** an English-language introduction is Richard Kempton's 2007 monograph.

those days on computer punch cards, handled by massive sorting machines at the university statistics centre – as this was well before the rise of anything resembling a personal computer. I also helped build a large collection by getting people to hand over their shoeboxes with old materials, sometimes even by helping negotiate their acquisition for money. This work was later taken over and completed by the university library, which now holds a complete archive on this unique social movement, spurring many a subsequent M.A. or Ph.D. thesis.

One small square right in the centre of the city is the 'Spui', which forms a kind of triangle. At one point, a small statuette was erected in a corner, which became the lightning rod for the 'flash mobs' of those days. Its appropriate name is *Het Lieverdje:* literally and tongue-in-cheek 'the lovely little guy'. It shows a young boy as they used to hang out in city streets: often a nuisance, but sometimes with a heart of gold.

The final version of the bronze statuette was offered to the mayor by a cigarette manufacturer, as a PR gesture. But the baby boom generation called it a symbol of capitulation to the consumer society. An artist calling himself the 'anti-smoking magician' regularly mocked it, with fake ceremonies of idol worship. He and his friends would dance around it in circles, throw their hands in the air, and cough contagiously: 'Ughe, ughe . . . Image, image'.

The street theatre 'happenings' soon became a rallying point for the aforementioned 'provo' movement. These forerunners of the later 'flash mobs' always took place on Saturday evenings towards midnight, when many people passed by on their way from cinemas and theatres to cafes and dancings – so mobile phones were not needed for the mobilization.

They began in late May 1965 and ended in late May 1967. Growing crowds gathered to witness the spectacle or participate in it, slowing the traffic of trams and cars. Police then intervened to 'clear the road'. Of course, this only made things worse, attracted more onlookers, led to pushing and shoving, which degenerated into scuffles and fights. Sometimes specialized riot police would even be called in, leading to a full-fledged confrontation.

I had often witnessed these events. So the idea came up to do my own mandatory M.A. scientific research project on this recurring 'Saturday night fever'. I began with a 'content analysis' of regular reports in the major local newspaper, which reached a third of all households. I first calculated the amount of publicity devoted to it on Mondays, and to related matters during the rest of the week and then tried to distil the further information contained in them.

The entire period covered $2 \times 52 = 104$ weeks. For almost half of those Saturdays, 'happenings' and/or subsequent riots were indeed reported in the newspaper. It was a rare series of very similar events rather than the usual unique and incomparable ones. Season and weather did of course turn out to play a major role. But I found that the intensity of the events and the publicity relating to the previous Saturday and the intervening week were also major factors in the mobilization and mood of potential participants.

One conclusion was that interventions by police and the courts often led to a further escalation rather than a calming down of the unrest, which soon spread to other cities and provincial towns. The authorities would have to consider tolerating certain minor transgressions by the public rather than making things worse.[4]

4.5 How a Street Vendor Triggered a Global Revolution

Sometimes such incidents are of relatively little consequence, but sometimes they acquire world-historic proportions. The young Mohamed Bouazizi had high hopes. He worked and studied hard and even reached the final class of his 'lycée', or secondary school. But at that point in time, his father died, so he was forced to drop out in order to support his family.

His small town of Sidi Bouzid was the heart of a poor agricultural region in the centre of the central North African country of Tunisia. He linked up with the local branch of a new group, the collective for unemployed students. But like so many others, he did not find proper work and was reduced to an ambulant street vendor of fruit and vegetables. As he did not have an official licence, he was continually pestered by employees of the municipality and the police – implicitly for bribes.

On 17 December 2010, a young female official once again confiscated his wares. There was a shouting match: she reportedly spat and hit him. He tried in vain to lodge a complaint, and felt extremely humiliated. Frustrated, he walked to the nearest gas station, procured a container filled with gasoline. He continued to the seat of the governor, doused himself, lit a match, and set himself on fire, in desperate protest. He was severely wounded and transported to the hospital.

That same evening, hundreds of youngsters like him staged a sit-in, but were chased by a police force equipped with heavy clubs and tear gas. Some protesters took photos and made videos of the clash with mobile phones, and uploaded them onto social networks at home and abroad. Anger and the push for change thus spread online.

People had felt until then that they were only a small dissatisfied minority (a phenomenon called 'pluralistic ignorance' in mass psychology), but through the Internet campaign they suddenly felt they constituted an overwhelming majority instead. The mood and the movement, the outrage and the action thus spread like wildfire: to neighbouring towns, major coastal cities, and the capital: all full of similarly educated but unemployed youngsters.

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4 **Archive:** J. van Ginneken. *Over de samenstelling van het gezamelijke 'Provo' archief*. Unpublished internship report ('stage verslag'). Amsterdam University, Seminarium voor Massapsychologie 1970, appr. 100 pages **Research project:** J. van Ginneken. (December 1970). *Relletjes*. Unpublished MA thesis about these riots and 'happenings', Amsterdam University/Psychology Department, 200 pages.

The unrest was soon picked up by a freelance journalist working for Al Jazeera: the satellite and cable network sponsored by the ultra-rich emir of Qatar in the faraway Gulf. It had steadily expanded its audience throughout the Arab world, through professional and independent reporting on foreign affairs in contrast to most of its regional competitors (though not on local Gulf affairs). From now on, the global media labelled the Tunisian movement the 'Jasmine' revolution, after the fragrant local flower.

The old president and the old prime minister in Tunis soon realized that this time might become different. They promised extra food subsidies, but the crowds replied: 'It is not bread we ask for, but dignity'. The ultimate outrage came when the president had himself photographed as if he really cared – next to the bed with the scorched victim, who was entirely bandaged from head to toe like a mummy and unable to move or speak.

The president had been in power for twenty-four years, and had come to behave like a true Sultan. He had married a much younger woman, and her family had thereafter been permitted to take over entire swaths of the economy. They had assembled billions, flaunted their luxury villas and cars, while ordinary people continued to starve.

Western allies had long continued to pretend that Tunisia had a responsible government. But the online whistleblower website Wikileaks had now released an internal memo by the U.S. ambassador, labelling the presidential family a kind of mafia, no less.

Figure 9 Corrupt leader Ben Ali Pays Hospital Visit to the Youngster Who Had Set Himself on Fire in Protest

Source: Tunisian presidency/AFP, *L'Express*, 12 January 2011, p. 5.

On 4 January 2011, Mohamed Bouazizi died in the hospital. Demonstrations and confrontations escalated further, with reports carried by the new electronic media. Only

ten days later, the president and his family felt forced to flee to Saudi Arabia in haste, reportedly taking a large number of boxes with gold bars with them (as their overseas bank accounts were about to be frozen).

The self-immolation of Mohammed Bouazizi had triggered a revolution in Tunisia. Similarly gruesome initiatives (from Vietnam to Czechoslovakia) had also stirred widespread social movements. But it is important to add that sometimes they go unnoticed or fail to have a dramatic effect. It is a very precise concurrence of circumstances (pent-up tensions, media exposure, etc.) that makes them impactful.

4.6 Egypt and the Handbook for Non-Violent Protest

Whereas Tunisia was only a small country, Egypt was the largest in the region. It had just gone through the motions of an umpteenth rigged election. Here too Wikileaks had confirmed that Western embassies were well aware of the widespread corruption. Educated but unemployed youngsters thus felt stirred to follow the example of Mohammed Bouazizi and the collective of unemployed students in nearby Tunisia.

A well-to-do artist/intellectual opened his large apartment to activists, next to central Tahrir or Liberation Square. Middle class students with overseas contacts took the lead in calling for hundreds, thousands and then a hundred thousand to come there and demonstrate.

While the government controlled the traditional media, these activists were Internet-savvy users of the entire panoply of new Anglophone web tools: Twitter, Facebook, Flickr, Youtube, etc. They were even joined by a local Google executive, who was first arrested, and then released again. But they also received support from the Muslim Brotherhood, the only opposition party that had been tolerated on and off. Throughout North Africa and the Middle East, such Islamic groups had built a strong social base and were involved in poverty relief and social work, education and health. They did also have experience with more traditional forms of political mobilization.

The outside world breathlessly followed the escalating confrontation, almost 24/7, which took close to a thousand lives throughout the country. After weeks of postponements, President Mubarak stepped down. But meanwhile the revolutionary spark had set the rest of North Africa and the Middle East alight: Libya, Syria, Yemen, Bahrain and elsewhere.

The West favoured the movements in the former countries, but not in the latter one – since it had considerable strategic interests there. Neighbour Saudi Arabia intervened brazenly and militarily, and suddenly decided to disburse 130 billion (!) dollars at home for some reforms to accommodate women and the poor.

Was there a method in this madness? Yes and no. Many of the well-educated and politically aware activists who joined in had familiarized themselves with a range of precise techniques to topple dictators through mass protests and civil disobedience.

It had been formulated by American political scientist Gene Sharp, ultimately spelled out in a handy little booklet, translated into thirty-four different languages – including Arabic. He and his associates had also given regular seminars for activists in overseas capitals, often sponsored by institutes affiliated with the Democratic and Republican parties, the U.S. 'Freedom House' and State Department, as well as . . . Google, Facebook and MTV, for instance.

In a previous book, I have spelled out how they had helped the Otpor student movement in Serbia topple Milosovic much earlier. One advice was to use proper symbols, to name the movement after a distinct colour and/or local flower.

So they successively helped trigger the 'Rose' revolution in Georgia, the Orange revolution in Ukraine, the Pink or Tulip revolution in Kyrgysztan, and had also helped similar movements in Belarus and other former Soviet Republics. This time, it turned out followers of Sharpe had trained key representatives of the reform movements in Egypt and many of the other Arab countries in revolt.

A key group of secular activists came well prepared. But they could not prevent the flourishing of both moderate and radical groups invoking the common religion of Islam and its various interpretations. Overpopulation and underdevelopment, an unbalanced economy also made it an illusion to expect a sudden economic boom. They remained stuck in dependence and unequal exchange with more advanced countries.

4.7 A Chinese Outrage, Spreading Through Twitter

China is booming, most of all the East Coast, the river deltas, the metropolises there, with a highly educated and increasingly assertive middle class. They often work in skyscraper offices and live in high-rise apartment buildings, connected by large boulevards and subway networks. The key cities have brand-new airports and railway stations.

The rapid construction of eighteen thousand kilometres of high-speed rail lines is the most extensive public works project ever undertaken in the world. But the 'can do' attitude often leads to the cutting of corners and the flaunting of procedures. For instance, over the expropriation of inhabitants who have to clear the grounds and the demolition of old buildings.

In other but related matters, there is regular outrage over massive bamboo scaffolding catching fire, schools collapsing after earthquakes, tainted dairy products poisoning children and officials taking bribes. At one point, the railway minister had been jailed for expediency and corruption.

Then one Saturday, there was a first major accident on a newly opened elevated railway stretch. One train stopped, another slammed into it, throwing several cars off-track to the ground far below, killing forty people and injuring nearly two hundred more. The authorities were quick to blame a thunderbolt that was said to have blocked signals and security systems.

Rather than retrieving the wrecks for a thorough technical investigation, however, they immediately began burying it into the ground, to clear the way for a rapid resumption of the service. Only much later were there admissions of 'design flaws', inadequate training and mismanagement.

But people began to doubt. Two days after the incident, a news segment on the official television network pointedly asked: 'If nobody can be safe, do we still want this speed? Can we drink a glass of milk that is safe? Can we stay in an apartment that will not collapse? . . . China, please slow down. If you're too fast, you may leave the souls of your people behind'. A national television producer was soon fired, and an anchor felt forced to tweet: 'My lips are sealed'.

But throughout the following week, articles in newly independent newspapers turned increasingly critical. Fearing that coverage might build further over the next weekend, the Propaganda Department of the Communist Party decided to clamp down. On Friday evening, it sent strict orders to the daily newspapers, first at nine, then at ten, then again at midnight.

For the first time, however, the orders were immediately leaked to the outside world. It turned out they prescribed: No front page items, no commentary. Only toned-down official Xinhua news agency reports. Nothing about supposed causes. Emphasis on the rescue and the 'miracle' finding of a toddler, almost a full day after the crash.

Press people vented their frustration on the Internet. 'Tonight, hundreds of papers are replacing their pages; thousands of reporters are having their stories retracted; tens of thousands of ghosts cannot rest in peace; hundreds of millions of truths are being covered up', one editor wrote. 'This country is being humiliated by numerous evil hands'. Another added provocatively: 'I'd rather leave the page blank with one word – speechless'.

Business newspapers had become particularly serious and bold. Two now had to tear up eight pages each. But a third claimed it had not received the orders in time to stop the presses. One of its commentaries carried the headline: 'We are all passengers on this runaway train'. Meanwhile, a large part of the public turned to the Internet, which had almost half a billion users in China at that point: mostly the better off, educated, urbanites and youngsters.

It reported that the authorities had soon proposed relatively large sums of up to fifty thousand euros to the families of the victims, but that lawyers had been forbidden to take their cases to the courts. Some reacted indignantly: 'We are the families of first class passengers. We don't want compensation, but honest answers'.

Most surprising, however, was the explosion of 'weibos' or microblogs. The country already had two major services equivalent to Twitter, with a total of no less than 340 million subscribers. The news of the crash had first been broken by a micro-blogger living next to the site. In the course of the week, there was a veritable tsunami of 26 million (!) tweets on the subject, many highly critical. People infected each other.

The censorship departments simply could not delete them all as they flooded the gatekeepers. Even though a government-run newspaper had inadvertently revealed a year earlier that authorities in one minor province alone were recruiting no less than six-hundred fifty people (mostly students) to push the official 'politically correct' line on the web. To no avail, one professor of communication science concluded. 'The ghost is out of the bottle'.[5]

4.8 Conclusion

Social movements show that an emotion virus can easily travel beyond the mere 'here and now'. Some people feel disaffected by rapid social change. Conservative Christians face an ongoing secularization, for instance, and may place their hopes in an impending return of the Messiah and the end of time. Other people, by contrast, may feel disaffected by slow social evolution. The post-war baby-boomers felt ill at ease in the world of their parents, and started a generational revolt in the 1960s.

In recent years, the self-immolation of a simple street-vendor triggered the 'Jasmine' revolution in Tunisia, which spread to neighbouring Lybia, Egypt, the entire Middle East and Asia. In the end, it even spread to Europe and America, with the 'Occupy Wall Street' movement we discussed earlier. So such epidemics can on occasion become extremely infectious. But what about formal organizations: are they vulnerable to collective mood changes as well?

5 **China:** The accident took place on 23 July 2011. News reports about questions and protests slowly swelled throughout the following week. For instance on Friday, 29 July and Monday, 1 August in the daily *IHT,* and on Thursday, 4 August in the IPS/Other-net online newsletter.

5 *Formal Organizations*, Hi-Tech and Employee Morale

Early social movements are fleeting and volatile, mature organizations are solid and stable. Or are they? This may once again be an optical illusion. Visible formal organization and communication may in reality only represent the most visible tip of the iceberg. Invisible informal organization and communication may hide underneath.

That is why the 'human resource management' of personnel does so often go wrong, particularly under increasing pressure. They may hold surveys about employee satisfaction alright, but may not be able to really fathom the roots of their motivation and emotions. In this chapter, we will look at both ends of the scale. Management overconfidence, hubris and a 'can do' attitude on the one hand; and 'demoralization' on the work floor on the other. How do management styles at the top affect culture and climate among employees at the bottom? What happens when the latter are pushed too hard?

5.1 NASA and Hubris, 'Can Do' and Groupthink

NASA is the US National Aeronautics and Space Administration. Its current budget is almost 18 billion dollars per year. This is a lot of money, and there are regular calls to scale it down. Although the launches are already very expensive, therefore, NASA has always reserved a considerable percentage for . . . public relations.

Designers from Paris and Hollywood were hired to help think through the tiniest of details, from the colours of space suits to the lighting of launch sites, to convey an idealized media image of unlimited faith in technical prowess. This makes it even more surprising that – after thirty years and the final completion of the International Space Station – fatal flaws in shuttle design and safety monitoring turned out to have led to a rather high rate of fatal accidents at 1.5%, and the ultimate discontinuation of the shuttle program.

The space shuttle Columbia had burned and disintegrated upon its re-entry into the atmosphere in 2003, killing all seven crew members. The external tanks had been isolated by foam. But during the launch a suitcase-size chunk had fallen off. It had damaged the tiles on its left wing, specially produced to withstand a re-entry heat of more than 1,500 degrees Celsius. The original specifications said that this should never be allowed to happen. But the pressure to go ahead had overruled the necessary caution.

Although the Columbia incident had been noticed during the launch, risk managers had prematurely concluded that it was too late to do anything about it. After the disaster, further launches were suspended for two years, and Russian shuttles had to take over the

supply of the International Space Station. An investigation commission concluded that there had been a grave dysfunction of the NASA organization. And that the lessons of an earlier somewhat similar disaster had soon been forgotten.

Because seventeen years earlier, the Challenger had disintegrated soon after its launch, also killing the seven crew members on board. This time, a rubber ring had failed because of the cold, after which fuel could leak through the opening and catch fire. Here again, engineers at both the contractor and NASA had warned of this danger. But the investigation commission had initially even tried to cover up the design flaw, until the brilliant physicist Richard Feynman acted as an iconoclast during a televised hearing.

He asked for a glass of water and some ice cubes. Then put a similar piece of rubber into it, to show how it lost flexibility and could easily break. Here too the ultimate conclusion may be that there had been grave flaws in both the shuttle design and the safety monitoring. They were partly attributed to the decision-making culture in the relevant departments and a social psychological phenomenon called 'group think' that overruled warnings and dissent.

Figure 10 NASA Challenger Shuttle Explosion (1986)

Source: Wikipedia.

'Group think' often occurs within expert teams with a similar background, under high pressure, and with an overconfident 'can do' attitude. Technical reasoning comes to prevail. Judgments soon begin to run parallel, and there is a hidden tendency towards uniformity. Objections and alternative viewpoints are quickly overruled.

There is also an implicit feeling of intellectual and moral superiority with regard to the outside world and lay people. But it turns out that even the 'best and brightest' may easily get carried away in crisis situations: both in government bodies and in commercial corporations. So one should take measures to guard against such tendencies, for instance by appointing a 'devil's advocate' whose role it is to insist on asking essential questions.

The notion was developed in a series of studies by Irving Janis and published in his book *Victims of groupthink*. He looked at a series of foreign and defence policy disasters: Pearl Harbour, Vietnam and the Cuban 'Bay of Pigs' fiasco (where an exile army had landed to overthrow Castro, covertly trained and heavily armed by the US, but was quickly defeated). Janis found that in the latter case, the president's security advisers had overestimated local popular support for 'el lider maximo' and underestimated his immediate counter-strikes. They had thus been sucked into a logic that could easily have led to an uncontrollable escalation.

In the Cuban missile crisis a year and a half later, however, groupthink was reportedly prevented and a terse victory gained. However, the official history book version is a lie, as Khrushchev did indeed agree to withdraw Russian missiles from Cuba, but only against Kennedy's concession to withdraw slightly older equivalent missiles from Turkey – and also a solemn promise not to try and invade Cuba again. Both concessions were kept top secret in view of the mid-term elections a few weeks later.

The general notion of 'group think' has become widely accepted since, and is nowadays widely used. It has again been invoked with regard to the decision-making on the military interventions in Afghanistan and Iraq.[1]

5.2 CEO Hubris, Minimax Strategies and Merger Mania

The credit and debt crises in America and Europe showed that a succession of mergers and acquisitions (M&A) had created giant financial institutions, which had become too big to (let) fail. As a result, governments and taxpayers felt forced to bail them out. But how about other sectors? Everyone had always supposed that enthusiastic waves of takeovers would inevitably bring economies of scale. But was this really the case, or was it an illusion? A wide range of meta-analyses had meanwhile converged on some surprising conclusions.

There have been five waves of M&A during the twentieth century, three after the war – also related to such factors as European integration, Atlantic collaboration and globalization. Dozens of academics had investigated some twenty-five thousand individual mergers and acquisitions. They variously estimated that between 65 and 85 per cent had …

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1 **Challenger accident,** forgotten lessons: *See* Vol. 1, Ch. 6, in the August 2003 report of the Columbia Accident Investigation Board. <http://caib.nasa.gov/news/report/pdf/vol1/chapters/chapter6.pdf>. **Janis:** For criticism of the earlier concept and research *see, for instance,* the 1990 dissertation of Paul 't Hart. (1994). *Groupthink in government – A study of small groups and policy failure*. Baltimore, MD: Johns Hopkins University Press (paperback with new introduction). **Kennedy:** My next book deals with the hubris of Kennedy and some twenty of the best-known leaders of the G6 powers over the last half century. The Dutch edition is titled (the equivalent of) *Temptations at the top – The psychology of power* (Amsterdam: Amstel/Business Contact, September 2013). An English language edition (possibly with a slightly different title) will follow.

failed to produce the expected results. The wave before the last turn of the century required an estimated 12,000 billion dollars in total investment. Three quarters of this sum concerned American and European companies, and an estimated three quarters of these . . . failed to bring the expected results.

Academics looked at all kinds of criteria. Had the M&A boosted shareholder value? They had often initially increased the value of the takeover target, but at the same time diminished the value of the bidder. In the long run, however, their combined value did not grow significantly, on average. Had they boosted turnover or profits of the combined companies? Not really.

Had they boosted productivity and innovation – for instance as measured by the relative number of patents claimed? Not really. Instead, some claimed they had even diverted up to 1 per cent of income from necessary investments in research and development. Only small and medium-sized enterprises did sometimes show positive results, but for larger companies the results were mostly neutral or negative – in all domains of activity.

So what does drive these waves of mergers and acquisitions? Not economic but psychological factors, it seems, ranging from overconfidence to fear. Most large companies are run by a managerial class at the top that does not necessarily have the same interests as those who own it – the shareholders. Their ego and hubris (overconfidence), and their 'can do' attitude, do apparently play a key role.

As enlarged companies bring the top people enlarged benchmark salaries, bonuses and options, as well as a higher status and social reputation. As I mentioned in my previous Dutch book *Mad with Money,* such overconfident moves do often follow the election of the CEO as 'manager of the year' or other media praise. This is known as the 'cover curse'. But there is another side to the coin as well.

Hans Schenk of Utrecht University and a colleague did some of the aforementioned research and have proposed a *minimax* explanation: the managers want to minimize the (chance of) maximum losses. In line with the famous 'prospect theory' formulated by psychologist Daniel Kahneman and a colleague, they point out that 'hope for gains' turns out to be a much less potent motivator than 'fear of loss' and regret.

If some company initiates a major takeover, therefore, this often triggers a 'bandwagon effect', as other companies in the same sector suddenly begin to fear being left behind. If they do not grow in size, the managers feel, they may lose strategic advantage or even become a target themselves. So pre-emptive measures have to be taken. Fear thus becomes a contagious mood; it starts a cascade and a wave of imitation.

But one major problem is the following. Often the cultures of the merging companies and departments, from high to low, do not match. Messy reorganizations are often followed by further messy reorganizations. They are often engineered by the wrong people with the wrong skills: financial and technical, but not social and psychological.

It is quick and dirty rather than slow and subtle, and here again 70 per cent… fail to produce the desired results. The reorganization of ICT systems is often even more disastrous, particularly among government organizations.

All this has a high price. Many key people are fired or quit, human assets and experience are destroyed, the morale of those left behind is sapped. So the hubris of the top managers ultimately leads to a demoralization of the grass-roots employees, often becoming manifest only many years later.[2]

5.3 A Wildcat Strike at an Airline Company

Management approaches have traditionally been focused on the supposed maximization of 'rational efficiency' through objective procedures and have tended to overlook the key importance of 'collective subjectivity'.

This tends to be the case particularly in hi-tech organizations driven by an elite of 'can do' engineers, who implicitly see the company as a kind of machine, rather than a human ensemble – where semi-conscious motivations and feelings play a decisive role. They tend to focus on top-down communication, and fail to notice when grass-roots feedback does not really function properly.

In recent decades, however, organization theory has begun to look further into such factors. Among these are the specific mentalities required for certain trades, such as those dealing with life and death in various ways: ambulance personnel, clergy, doctors, firefighters, midwives, nurses, policemen, soldiers, undertakers and many others. They require different personalities and 'emotion management' styles. Some people will feel attracted, others repulsed by the tasks at hand.

Two further related examples are those of pilots and steward(esse)s. The airline business has gone through accelerated changes. National authorities long favoured national airlines. They could charge upgraded prices and pay substantial wages – also to keep professionals from moving to even better-paying countries elsewhere. After deregulation was announced, however, there was downward pressure on both tickets and payrolls; personnel were suddenly required to work harder and more efficiently. But this risked sapping employee morale and building hidden resentment.

Let us look more closely at one particular example. The CEO of a reputable national airline company was interviewed by a major national newsweekly. He said that they had

2 **M&A:** H. Schenk. (2006). Mergers and concentration policy. In P. Bianchi & S. Labory (Eds.). *International handbook of industrial policy* (Ch. 8, pp. 153-179). Cheltenham: E. Elgar. H. Schenk. (1996). Bandwagon mergers. *Empirica, 23*, 255-278. **Re-organizations:** J. Boonstra. (2000). *Lopen over water* [Walking on water]. Inaugural lecture as professor for 'The management of change within organizations'. Amsterdam: Vossiuspers, p. 1.

to save costs all round now and that highly paid pilots might have to contribute by accepting a wage cut. To his surprise and consternation this one-sentence quote from the article . . . triggered an immediate wildcat strike.

As a mass psychologist, I offered to do a limited qualitative research project on the problem, that is to say, on evolving feelings about work and the company among pilots – and also among steward(esse)s who reported sick quite often. The company had already held a regular survey, but it had gradually grown in length and focused mostly on practical problems and solutions. The last version had included the imperative one 'open' question at the end, but because time and money had run out, the answers had never been exploited properly (although I later felt they were rather revealing).

So I made elaborate half-structured, face-to-face and in-depth interviews of an hour or more, with a few dozen pilots and a few dozen steward(esse)s, recruited from various ranks and categories to be more or less representative. The conversations were taped, entirely typed out, regrouped according to themes, analyzed for their emotional content and implicit messages. There was a range of interesting results, some of which later entered the public domain.

There proved to be a huge contrast in mentality and psychology between cockpit and 'cabin' personnel, of course. The cockpit did mostly have men, with a technical orientation and also a 'can do' attitude, who claimed to be utterly rational. Most of them had been recruited through one of two routes: a civil aviation school or the air force, so many had been comrades since their early manhood.

The company also had a standard way of integrating them: first co-pilot on a small plane, then pilot on a small plane, co-pilot on a large plane, and finally pilot on a large plane. It was like threads and a shuttle weaving a very tight piece of fabric, and an exceptionally strong 'esprit de corps'.

Frustrations over tightening procedures and lack of facilities through ongoing savings had first been downplayed, but then suddenly erupted. I remember one detail that particularly struck me. One pilot reported a succession of logistical nightmares. But when at Christmas his boss had personally thanked him, with a very nice bottle of wine, he had burst into tears. So they were not robots, after all, but had felt the higher-ups had sometimes been insensitive to their travails.

In the 'cabin' behind the cockpit, by contrast, women were in the majority. For a long time, they had been selected for age and looks, but also for extraversion and friendliness. According to a classical American study, the cabin was like a theatre. In the pantry they could express their true feelings to colleagues, but in a low voice and behind closed curtains. Once these were opened, however, 'the show was on'.

They had to feign endless resilience and an eternally upbeat mood. In contrast to the pilots, these stewardesses had been selected for their socio-emotional skills. Their irregular schedules and prolonged absences, however, put heavy pressures on their home

lives: with friends and family, partners and sometimes children. This was one explanation for the high absenteeism.

Of course many other themes came up as well. On the one hand, airline companies had a military, bureaucratic and technically tainted culture, with a heavy emphasis on the strictest of procedures. On the other hand, they were also 'carriers of the flag', and emotions did also play a role. The colours of such national companies had traditionally stirred pride, for instance, among both personnel and local customers. But it turned out that this pride was eroding rapidly.

The tension between surface rationality and hidden emotionality in the organization and its procedures was often (1) not recognized, (2) not understood, and (3) not always handled well. This was the case in such domains as supervision, seniority and perks. Other researchers and advisers came up with similar observations, and over the next few years a number of profound changes were introduced.[3]

5.4 France Telecom: An Epidemic of Suicides at Work

Now let us look at another example of managerial hubris in the hi-tech sector and employee demoralization. New European guidelines had demanded that a wide range of (semi)public companies be privatized: water and electricity, transport and communication, and so forth. The former PTTs were split up into post, packages and telecom parts. The latter then over-expanded during the subsequent Internet boom, but had to scale back drastically again, and to drive up productivity, after the bubble burst.

France was a particular case. I have lived in that country for a large part of my adult life, but it still surprises me for its extremely hierarchical ways of doing things: in politics, social affairs and economics. The privatization of France Telecom had been half-hearted. A quarter of the shares remained in government hands, and two-thirds of the employees remained civil servants.

After overpaying for the acquisition of its British competitor Orange, the bursting Internet bubble forced it to downsize very quickly. A first batch of twenty thousand employees left more or less voluntarily, but a second batch of twenty thousand concerned more difficult cases. Technical people were forced into commercial jobs. Some were even transferred to call centres, where they were told to closely follow a conversation script, devote no more than three minutes to a client on average, and use part of that to sell them a more expensive service as well.

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3 **Airline:** In the summer of 1996, I prepared a 4-volume, 440 pages, internal report on *Company climate* and *Feelings about work* among cockpit and cabin personnel. Some of the results were later quoted in company magazines. **Similar themes:** S. A. Haslam. (2004). *Psychology in organizations – The social identity approach* (2nd ed.). London: Sage. R. L. Payne & C. L. Cooper (Eds.). (2001). *Emotions at work.* Chichester: Wiley. S. Fineman. (2000). *Emotions in organizations* (2nd ed.). London: Sage. And the modern classic by A. Hochschild. (1983). *The managed heart.* Berkeley: University of California Press.

I know this from personal experience, because over the many years as their client, France Telecom almost never solved any of my telephone problems for me, and usually created more instead. 'It is hell', one new call centre employee confirmed, adding that many therefore kept 'The Box' at hand on their desks – with antidepressants.

For further cost-cutting, a new management team was brought in. But the new CEO was again mostly 'excited by technology and strategy'. According to one of his staff, 'management is not his culture'. So a heavy-handed deputy was brought in, from a major 'global consultancy company' to push 'efficiency'. For him 'people were variables of adjustment'. According to another staff member, 'psychology is not his thing'.

In an interview with a financial journal, the new deputy boasted, 'I keep the pressure up all the time; I leave no room for manoeuvre'. One author published a monograph about the newly introduced system of 'management by stress' at France Telecom, which pushed people who would not quit to nervous breakdown. Many staff members left, therefore. The staff commented: '*We* had the possibility of finding nice jobs elsewhere. But at the bottom, the people suffer in silence. Or, for the most fragile, they throw themselves out of the window'.

This is because in the summer of 2009, things came to a head. 'In many cases the choice of where they committed suicide and notes they left show that problems linked to their professional environment played a large role', said one union representative. 'The suicides then feed on each other, because each one further makes people fragile and poisons the work environment.' But the CEO dismissively talked about *'a fashion* of suicides'.

The company claimed that some twenty to thirty suicides per year were perfectly average, for a French company with so many employees. But critics retorted that the normal rate was much lower for people of employment age with a steady job, and, by contrast, much higher for the unemployed and the elderly.

Moreover, most suicides would under normal circumstances be committed for personal reasons at home, not for the climate on the job. A psychiatrist specializing in workplace relations also pointed to the spectacular nature of many incidents – like that of a man who desperately plunged a knife into his stomach, in the midst of yet another meeting on reorganization.

In the autumn of that same year, therefore, a change of the 'can do' management team was undertaken. Further reorganizations were postponed for a while, union representatives were to be consulted more, managers were suddenly told to be sensitive to signals from their subordinates, medical and psychological services were expanded and a telephone helpline was opened – free of charge.

'The company, known for an autocratic centralized management, is now reaching out to workers', one newspaper observed. With regard to another issue, the new CEO said: 'Most disputes of this nature are ninety percent emotional and ten percent rational'. When we left the first part out, 'the rest came quickly'.

The work-related suicide epidemic was not an isolated case, though. In France, there had earlier been a similar wave at a Renault car factory: another public company hastily taken private, and pushed too hard too quickly to become 'lean and mean'. Abroad, there was going to be a similar wave in the giant plants of the Taiwanese company Foxconn, around Shenzhen on the Chinese mainland, where workers were under heavy pressure to keep up with the sudden craze for Apple iPads and their like. In reaction, the company decided to invest billions in . . . *real* robots.

Over recent years, an entirely new field has therefore arisen, studying copycat behaviour in (mass) suicides and (mass) murders – and how the precise character of media reports may play a role in them.[4]

5.5 Work as Play in Silicon Valley

So employee 'morale' is of the utmost importance. Israeli-American Daniel Ariely is a professor of behavioural economics, and a very inventive researcher. His earlier bestseller *Predictably irrational* was later followed by a sequel on *The upside of irrationality,* on 'The unexpected benefits of defying logic at work and at home'. One little experiment was about worker morale. He gave subjects forty pieces of a well-known construction toy and had them make a Lego 'Bionicle' fighting robot from them.

In one condition, these were obviously disassembled afterwards for re-use. In another condition, however, they were disassembled right away, while the subject was still busy with the next one. This latter condition was of course de-motivating, and led to inferior results. Motivation is a key factor at work. Many elements play a role: from fairness to conditions and results. This lesson seems to have been learned particularly well in Silicon Valley, near San Francisco in California – with its focused but yet relaxed atmosphere.

One of the most booming businesses today is Google. Their story is well known. Before the turn of the century, two Ph.D. students at nearby Stanford University developed a better way to search the World Wide Web, and founded a company which began in the proverbial garage. Today, they handle two-thirds of all Web searches; in May 2011 it passed the mark of 1 billion queries per day.

They make their money by privileging certain results in their presentation and by placing ads next to them, but also by 'fine tuning' the 'targeting' of those, through 'data mining' of user behaviour. Although their corporate slogan is 'Don't be evil', therefore, they don't show much concern for old-fashioned notions such as personal privacy.

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4 **France Telecom:** Rendering based on clipping files from the daily *Le Monde* and the weekly *Télérama* as well as the Dutch daily *NRC Handelsblad,* the BBC daily electronic newsletter and the *IHT*.

Privacy International thus gave it the lowest possible rating. The critical consumer group Google Watch noted that the company stored 'cookies' with a unique ID and a lifespan of more than thirty-two years. Google's executive chairman conceded that 'it is possible that all that information could be made available to the authorities'. (American authorities, that is, not necessarily others.)

At a recent 'Techonomy' conference, he also predicted the Internet would move to 'true transparency and no anonymity'. He also boasted: 'If I look at enough of your messaging and your location, and use artificial intelligence, we can predict where you are going to go'. If they can already monitor our computers, they now encourage us to store all our personal information on their 'cloud' servers. That sounds very much like the all-knowing 'Big Brother' that George Orwell's classical dystopian sci-fi novel *1984* warned against – even if they also reserved 1 billion dollars for various good causes.

Google has extremely deep pockets and continues to expand in every possible direction – for instance, by buying Motorola to confront Apple. Therefore it needs a very innovative climate. So it also invests heavily in exemplary facilities that boost employee morale – like its famous HQ campus in Mountain View, California, a more recent equivalent building in Manhattan, New York, and at other new locations.

The headquarters are the usual steel and glass, but partly powered by solar panels, and the lawns are mowed by . . . goats. 'The lobby is decorated with a piano, lava lamps, old server clusters, and a projection of search queries on the wall. The hallways are full of exercise balls and bicycles'.

Each employee has access to the corporate recreation centres. They include a workout room, 'locker rooms, washers and dryers, a massage room, assorted video games', etc. Free food is available 24/7, so that employees can continue work during evenings and over weekends – if they feel like it. Every Friday afternoon there used to be a real or online meeting with *all* company employees: to sum up what had been achieved so far and what the next goals were. To keep the enthusiasm virus alive and kicking.

The company also fosters a playful atmosphere, by including 'Easter eggs' in some overly obvious search results, and engaging in annual April Fools' jokes. Some of their famous mottos are 'you can be serious without a suit' and 'work should be challenging and fun'.

Under the 'Time Off' rule, employees could at one point spend 20 per cent of their time (or a full day per week) on their own personal research hobbies. According to one vice-president, half of all new product launches derived from such private pet projects of employees. Think of improvements to the entire portfolio of Adsense, Android, Chrome, Google+, Maps, News, Street View, You Tube and many others. It should not come as a surprise, therefore, that employee morale is extremely high and the company culture is vibrant.

So they have no problem finding new recruits, and can in fact select rather stringently. In 2010, a 'talent attraction index' nominated Google the world's most attractive employer

for graduating students. In recent years, it was also in first or top positions on 'reputation' lists and 'best companies to work for'. So maybe the Californian hi-tech 'work is play' approach can teach a few lessons, even to more conventional companies in less sunny climates.[5]

5.6 Conclusion

We have seen that formal elements may be highly visible in organizations, but informal elements lie hidden underneath. Motivations and emotions are often overlooked. Yet contagious moods and the enthusiasm virus may make a difference of night and day. Compare the hubris and overconfidence of managers and staff, for instance during repeated mergers and reorganizations, with the growing demoralization of employees lower down the ladder.

It turns out hi-tech organizations driven by engineers and financial wizards are particularly prone to a one-sided 'can do' attitude and narrow-minded emphasis on efficiency alone – within a space organization, an airline company or a telecom division. Silicon Valley is a counter-example, where ample profits facilitate good working conditions and high employee morale.

But these are all examples where groups of people work closely together. Can such contagious moods also spread through networks of people? Even among those who have never met, and will never meet? If so, how is this possible?

5 Information and quotes from the company website, Wikipedia English, and recent *IHT* clippings.

6 *Social Networks*, Information Campaigns and Shifting Norms

So moods can spread contagiously within small groups as well as larger audiences, within early social movements and established organizations. But can they also spread if people neither meet face-to-face, nor are connected through explicit coordination? Can they spread through implicit exchanges within a population, just like that?

What about religious beliefs, closely related to feelings of rectitude or shame? How have they spread around the world, over the last millennia? And what about present-day feelings about health and disease, or even happiness and optimism? Can they also spread like contagious epidemics? We will see that they can.

6.1 The Clash of Civilizations and How Beliefs Spread

The attacks on the World Trade Centre were a painful reminder that the neighbourly religions of Islam and Christianity have periodically been at war since the Crusades a thousand years ago. Both have also inspired pogroms against the Jews. The three monotheistic religions originating from the Middle East came about because newly emerging nations and empires there at one point needed to impose unified systems of values and norms on a bewildering mosaic of pre-existing local cults.

All three religions spread in different directions. Christianity merged with Greco-Roman civilization and spread to Europe and later the Americas and other western colonies. Islam spread to North Africa and South Asia. After the destruction of the temple, the Jews were forced to flee abroad, to settle as religious minorities in both areas.

All three share a number of key values and norms. They share large parts of the 'Old Testament' and of the 'Ten Commandments'. But why were they so successful in the first place? One reason is that many of their rules favoured the spreading of Abraham's *genes* – which they supposedly shared in the past.

Their name-giving rules favoured trans-generational solidarity within extended families. Rules on premarital chastity and extramarital sex were meant to favour stable and productive nuclear families. Children were in return told to honour and obey their father and their mother.

Taboos on sex during menstruation, on birth control, on abortion, on masturbation, sodomy and homosexuality favoured the birth of as many children as possible. Circumcision was supposedly related to sexual hygiene and preventing venereal disease. Other hygienic taboos, with regard to food and drinks, helped prevent epidemics and poisoning.

Regular fasting kept populations resilient. All these rules cumulated to favour the continuous reinforcement of the religious network . . . through the promotion of maximum numbers of offspring and the spreading of genes.

But what about the other half of their religious rules? Many of those seem to thwart productivity instead. Devoting one day a week to rest and to the worship of their single god, promoting the celibacy of separate categories of monks and priests, calling for bloody crusades and holy wars, to spread the faith to heathen lands, promoting suicide missions, saying that martyrs for the faith go straight to heaven. Those are rules that seem to hamper the multiplication and survival of the believers instead.

Yet they compensate for that by directly favouring proselytizing. Similar things hold for the commandment to worship only their one and only god, not to worship other idols or images, not to misuse his name – reinforced by the threat of a sudden doomsday and immediate settling of accounts, at any unexpected point in the future. This other half of the rules favours an epidemic spreading of the faith. Timidly, at first, through oral communication, but then suddenly exploding: with the coincidental spread of writing, followed by the coincidental invention of printing.

With the growing sophistication of computer models, it turned out one could easily simulate the evolution of such rules out of a mere random 'idea pool'. Calculate their relative strength, in an ongoing 'struggle for life' with other ideas, and an ultimate 'survival of the fittest'.

The former half of these religious rules would inevitably come out on top in a mathematical simulation, because it favoured procreation and the spreading of the *genes* of the believers. The latter half of these religious rules would come out on top in a mathematical simulation, because it favoured proselytizing, missionary work and the direct spreading of the *ideas* of the faithful.

One of the first books to spell out this Darwinian logic was *Thought Contagion.* It was written by Aaron Lynch: a former engineering physicist at the advanced Fermi lab, who was familiar with the ins and outs of algorithms, and who procured a private grant to develop this theory on *How Belief Spreads Through Society.* It was only at a very late stage, he said, that he became aware of a similar drift that had already been going on in biology and psychology.

The new reasoning looked immediately plausible to others closely familiar with the personal computer and its operating systems. Richard Brodie, for one, had worked at almighty Microsoft, where he had been a technical 'personal assistant' to its founder and boss Bill Gates, and had helped develop the 'Word' text processing application.

Later he published the book *Virus of the Mind.* It opened with a titillating warning to the reader: 'This book contains a *live* mind virus. Do not read further unless you are willing to be infected . . . [As it may] turn your current worldview inside out'. It claimed *The revolutionary new science of the meme* implied a profound paradigm shift, to a doubly evolutionary psychology, based on entirely new premises.
Memes? What are memes?

Figure 11 The Distribution of the Genes and Memes of Major Religions Throughout the World

Source: Arshin Adib-Moghaddam (2011), *A metahistory of the Clash of Civilizations – Us and Them beyond Orientalism*. London: Hurst.

6.2 Breeding Memes, Inside Your Head

British biologist Richard Dawkins had earlier revolutionized evolution theory with his book *The Selfish Gene* (long before he published an atheist book on the spreading of religion, *The God Delusion*). The last chapter of his older book on genes had contained an interesting afterthought.

Genes were simple replicators, he said. But 'I think that a new kind of replicator has recently emerged on this very planet. It is staring us in the face. It is still in its infancy, still drifting clumsily about in its primeval soup, but already it is achieving evolutionary change at a rate which leaves the old gene panting far behind' (p. 206).

He proposed to call these new replicators *memes* (related to the word imitation). Memes are the smallest bits of cultural information that people can store in their brains, communicate, and copy from each other, such as ideas on language and religion.

Another oft-quoted example is that of the infectious first four notes of Beethoven's Fifth symphony: Tatatadaa. The evolution of our genes has ultimately equipped us for an entirely new form of replication, Dawkins claimed: memes. The notion had gone largely ignored for almost two decades. But after the emergence of the Internet, a range of scientists had suddenly picked it up as a plausible and possibly useful approach.

The unconventional British psychologist Susan Blackmore developed an elaborate treatise on this new view of man as *The meme machine,* prefaced by the same Richard Dawkins. She considered the evolutionary steps from homo habilis, to erectus, to sapiens.

They had profoundly changed the human head, brain and mind, she said. As well as the jaw, mouth, and neck – which facilitated the modulation of sounds, speech and language. As with genes, three factors determine the success of memes as a replicator, both said, namely: fecundity, fidelity and longevity. As with genes, memes can turn each other on and off, or combine in meme(com)plexes.

This is immediately recognizable in the field of word of mouth and 'word of mouse': the field of gossip, rumour and urban legends (to which we will return in the later chapter on product markets). But it may also apply to all other forms of fantasy and invention – as the improvement of transport, communication, media and the Internet have gradually accelerated the spreading of such idea-memes, and ultimately even of the new field of 'memetics' itself.

At the time of her writing, Blackmore found only five thousand references to that latter word on the entire Internet. At the time of my writing, this had already exploded to a million. There has been an online electronic *Journal* devoted to the subject, and a gamut of books. However, Internet research proper has since gained the upper hand over the further development of a 'memology' proper. (See the last chapter of this book, on the new technique of 'sentiment analysis'.)

6.3 The Small World of Networks, in Three to Six Degrees

Memes, ideas and stories spread through social networks – although the word 'net-work' suggests a degree of concreteness and permanence that is rather misleading, I feel. The word 'Web' better conveys its frequent fragility and even volatility.

Networks consist of an array of spokes and hubs. Early network research was of the 'PTT' type: related to post, telegraph and telephone communication. What is the most efficient way for a postman to make his rounds? UPS nowadays distributes packages by car, and has learned . . . to favour right turns over left turns, for instance, as they take less time because you never have to wait for oncoming traffic. In the right-driving United States, that is, not in the left-driving United Kingdom.

A related and familiar problem is that of the 'travelling salesman', who seeks to connect a maximum number of places by covering the shortest distance and time. Operators also used to guess the best ways to route a call; nowadays this is calculated automatically by computers. So how efficient are our interconnections?

That was the central question in another research project by the creative social psychologist Stanley Milgram, whom we have already met before. Just after the mid-sixties, he and a colleague gave a sample of people in a rural mid-Western state postcards, accompanied by an unusual request. They were asked to forward them to someone they knew, and so on, but in such a way that they would ultimately reach an identified professional in the sophisticated city of Boston, on the East coast – whom they did not know.

The first version of the experiment was not very successful, but later versions were. It became known as the 'small world problem', and found that most strangers are connected through . . . no more than 'six degrees of separation', although some people and links did of course play a greater role as hubs and spokes than others. The terms were later popularized through a theatre play and a trivia game. More recently, the experiment was replicated online with e-mail and similar results.

But how do memes and ideas spread through such social networks? Following up on election research, social psychologists Elihu Katz and Paul Lazarsfeld published a classical study on *Personal Influence,* which found there often was a 'two-step flow' of information and persuasion. From mass media to 'opinion leaders', and then onwards to wider audiences around them. Some people were considered opinion leaders on gardening or car maintenance by their peers, others on politics.

Opinion leaders are often consulted and trusted more than strangers. That is also why direct recommendation through Facebook or Twitter has been found to be much more effective than advertising and marketing recently. Other early research by Everett Rogers looked at the *Diffusion of Innovations,* among traditional farmers or in developing countries. He made the picture even slightly more complicated, sometimes with a direct influence and sometimes a multi-step flow.

Recent research has confirmed that our personal influence extends approximately three degrees into our networks. So not only to the 'friends of a friend' or 'Foafs' mentioned before, but even to the 'friends of a friend of a friend' or 'Foafoafs'.

If you have twenty close family members and neighbours, colleagues and friends, and so do the others, your beliefs, feelings and behaviours may ultimately affect a mid-sized town with as many as $20 \times 20 \times 20 = 8{,}000$ people, in widening circles around you. This observation is familiar to users of online social networks such as Facebook or LinkedIn.[1]

6.4 The Framington Study and Health Epidemics

Unhealthy behaviour often spreads like an epidemic. But so do . . . healthy alternatives. Smoking took a hundred years to spread through the social networks of the world, for instance: from old to young, from male to female, from middle to lower class, from white to non-white. But since twenty years or so, so does quitting.

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1 **Six degrees:** Milgram's original articles were published between 1967 and 1969. The theatre play was by John Guare (1990), the trivia game related to Hollywood actor Kevin Bacon. The e-mail replication was reported by Peter Dodd *et al.* (in *Science* 2003); also see Duncan Watts' book *Six degrees* (2003). **Two-step flow:** D. Katz & P. Lazarsfeld, *Personal influence* (1955) and E. Rogers, *The diffusion of innovations* (1962 – with later updates). A recent bestseller by E. Keller & J. Berry (2003) on *The influentials* thus claimed in its subtitle that *one American in ten tells the other nine how to vote, where to eat and what to buy.*

Alcohol abuse and drunken driving are facilitated by the periodical get-togethers of social networks. On Saturdays – holiday – and New Years' night, the roads are therefore particularly dangerous. But the idea of designating a non-drinking driver was also gradually adopted through social networks.

Brian Wansink is an American professor of consumer behaviour. In his book *Mindless Eating* (2005), he described all kinds of fascinating experiments with binge eating. One of them is taking someone to a cafeteria, unwittingly putting him or her next to a total stranger – secretly an accomplice. They will overeat if the neighbour in question overeats: there is unwitting social contagion. Wansink has also shown that we will automatically eat more of even completely tasteless food if it is served in larger portions (the infamous 'super-sizing' at KFC, McDonalds and particularly Burger King).

We will also automatically eat more if the food carries labels like 'healthy,' 'low on sugar' or 'low on fat', and of course, if we are made to feel we 'deserve' a little extra: to offset feeling stressed, tired or down. Shifting references and norms, feelings of entitlement and shame, are of course key mediating factors.

An official animated map shows how the obesity epidemic has spread throughout the United States, in just a few decades. Today, it already affects 30 per cent of the population, costs at least a hundred billion dollars per year and tends to spread to Europe and elsewhere. But dieting fads and healthy living also do spread like epidemics. So how does this work?

Figure 12 The Spreading of the Obesity Epidemic in the United States, as a Result of Shifting References, Norms and Related Emotions. Projections Are that Around 2020, Three-Quarters of All Americans Will Be Either Overweight or Obese

Source: U.S. Obesity and overweight trends 1985-2006, Centers for Disease Control, 27 July 2007. Also in Wikipedia item.

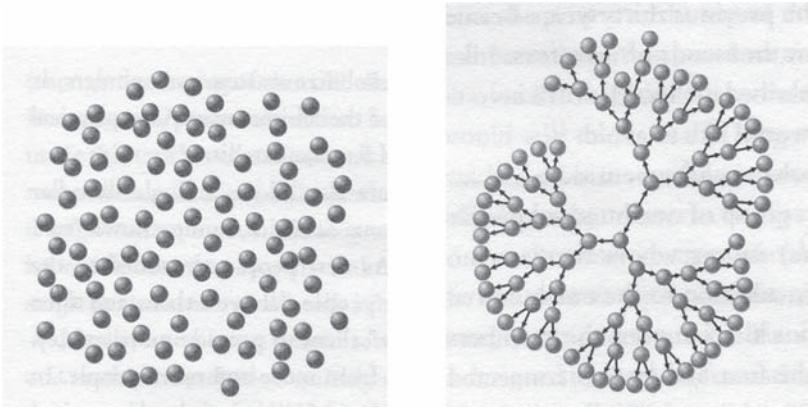
Nicholas Christakis was trained in medicine, James Fowler in political science. They were 'close strangers' at Harvard University, as they had a similar interest in social networks, but worked in entirely different departments and buildings. After they finally met, they began

to scour the country for large-scale databases together – elaborate surveys that would contain detailed information not only on behaviour patterns, for instance concerning sickness and health, but also on the relationships between the participants.

One early find was a major 'heart condition' study begun close by, soon after the war: in Framington, near Boston. It had tracked participants as they moved, even recruited their children and grandchildren, until it covered well over twelve thousand people. Through sophisticated statistical analyses, the two researchers were able to reconstruct how unhealthy and healthy habits had seemingly spread like ebb and flow – among neighbours, family and friends.

Obesity, for instance, turned out to 'break out' in clusters. But other research found that enthusiasm for slimming was contagious as well, not only because family members shared leaner diets, but also because they became more aware of the problem. Thus the partners of 'weight watchers' would shed kilos . . . without even being aware of it.

Figure 13 Unconnected Group vs. Network



Source: Christakis and Fowler, p. 12.

So Christakis and Fowler found that non-contagious diseases spread like epidemics, but so do health initiatives. Smoking, drinking and overeating did, as well as pill and drug abuse. But visiting doctors, coming on time, following their advice and taking your prescriptions did too, as well as donating organs.

They even pointed to a fascinating study by German colleagues about the sudden spreading of complaints about 'lower back pain' among workers. It showed that after the fall of the Berlin Wall, the low East German numbers had soon jumped to the much higher West German level.

Similar epidemic patterns suggested themselves for office complaints such as Repetitive Strain Injury or RSI. Such patterns result from so-called 'information cascades', which may lead to heightened awareness, changing references, emerging new norms and ultimately altered behaviour.

Meanwhile Christakis and Fowler extended their investigation to many other domains, and found that almost everything 'spread' in this way. It had long been said that looking for a job or a date was best done through exploring the distant 'weak ties' (rather than the close strong ones) within one's social networks. Deviant sexual behaviour, finding a date, getting a stable partner, having children and extramarital affairs seemed to spread through social networks, as well as divorce.

This was because if one type of behaviour became more prominent within one's social environment, it would automatically lower the threshold for adoption by oneself. People would no longer feel bad about it, or would begin to feel good about it. This even held for the political field: with regard to voter turnout, civic duties, grass-roots activism and party choice.

The book attracted widespread attention, although some statisticians later expressed doubt whether the correlations it noted did necessarily imply causation. Contagion might indeed play a role, they added, but it could not so easily be isolated from other factors.[2]

6.5 The King of Bhutan, and the Spreading of Happiness

Nepal and Bhutan are two independent mountain states, on the Himalayan 'roof of the world'. The small countries are positioned right between the most populous states on earth, China and India. They have meanwhile swallowed the two other mountain states: larger Tibet and smaller Sikkim.

All four were dead poor. That is why the former Buddhist king, Jigme Singye Wangchuck of Bhutan, opposed a development strategy based on an obsession with Gross National Product or GNP four decades ago, and instead proposed a focus on 'Gross National Happiness' or GNH.

So demographers dutifully devised a regular national survey based on the 'four pillars, nine domains and seventy-two indicators of happiness'. The questionnaire was

2 **Alcohol, United States:** At the beginning of their second bestseller *Superfreakonomics* (pp. 2-3), alternative economists Steven D. Levitt & Stephen J. Dubner calculate that in the United States one may drive drunk for 27,000 miles (or 43,000 kilometers), on average, before getting arrested. Meanwhile drunken drivers are 13× more likely to cause an accident, but drunken walkers are 8× more likely to get killed. Toronto professor Donald Redelmeier added that talking on cell phones was just as dangerous. **Survival:** He also found that success had contradictory effects on people. Medical school class presidents live a few years shorter than peers, but Oscar winners a few years longer. (*IHT,* 2 September 2010). **Germany:** H. Raspe *et al.* (2008). Back pain – a communicable disease? *International Journal of Epidemiology, 37*, 69-74. RSI: The Netherlands government stopped an information campaign because it was reportedly counter-productive. *NRC Handelsblad* weekly edition, 11 December 2001.

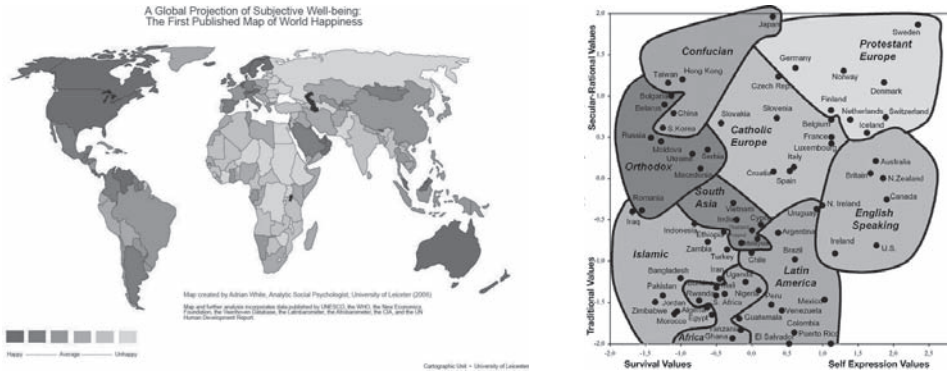
co-developed with a Canadian researcher, who used a slightly more general version back home. The idea of monitoring such subjective feelings has since taken hold worldwide.

A European pioneer of the field is social psychologist Ruut Veenhoven, of the Erasmus University of Rotterdam in The Netherlands. Over the last quarter century, he published four major books on the subject, and even founded a *Journal of Happiness Studies* – now a respected international journal. His group assembled a huge global database that included 6,484 publications, with 3,189 empirical investigations, of which 1,369 studies employ no fewer than 719 different measures of happiness.

Several large-scale studies have been done by others. A team led by social psychologist Adrian White at the British University of Leicester used the responses of 80,000 people on subjective well-being and satisfaction with quality of life in various UN and other surveys to produce the first world map of happiness in 2006. Not surprisingly, wealth turned out to be a critical factor, but Bhutan, although poor, still turned out to be the happiest country in Asia.

The World Social Values Survey, directed by University of Michigan political scientist Ronald Inglehart (administered from the Swedish capital of Stockholm) compiled data from 350,000 people and several decades up to 2008. It found that the progress of freedom and tolerance had indeed gradually made people happier, but that the Protestant countries of Scandinavia and North-western Europe were more successful at promoting happiness and 'self-expression' than Catholic and other cultures. Hence, the contagious spreading of memes and meme(com)plexes that we referred to at the beginning of this chapter and that may somehow play a role.

Figure 14 World Map of Happiness (Left), and Cultural Correlates of 'Self-Expression' in the World Values Survey (Right).



Source: Left: Wiki Commons. Right: WVS.

A related very American field is that of 'positive psychology', promoted by Ed Diener (Illinois) and colleagues. He is often nicknamed 'Dr. Happiness', and by pure coincidence also holds the 'Smiley' chair. In 2009, the field celebrated its tenth anniversary with a first world congress in Philadelphia, duly reported in *Time* magazine.

Daniel Gilbert's book *Stumbling on Happiness* (2006) had already claimed that a positive attitude in life led to greater wealth, happier marriages, better health and more longevity. Recently, he even launched a happiness app for your smartphone.

Martin Seligman's earlier book on *Authentic Happiness* (2002) had claimed that people would return to the same happiness levels within a year, whether they won the lottery or became paraplegic. But in his keynote speech, Diener now conceded that such findings might have been oversimplified by the media, and that it depended very much on the precise circumstances.

Collective moods also do change in large-scale waves, as we will see again in the later chapter on public opinion. Analyses of on-line texts have recently shown that people are happier on Fridays, birthdays and holidays, for instance, and less happy on Mondays or immediately after the death of celebrities. Other research shows that factors such as age and gender, children and self-help have largely counter-intuitive effects on people's happiness.

Overall it turns out, though, that evolution favoured the genes for a certain 'optimism bias' in the vast majority of people – even though some people are of course more optimistic than others. Twin and brain research have linked this partly to inherited personality traits and even neural mechanisms.

But analysis of social networks has also found that optimism and happiness seem at the same time . . . highly contagious. Part of that effect can of course be attributed to popularity versus loneliness: as highly connected people at the centre of networks are happier than little connected people at the periphery of networks.

But after discounting all other possible explanations, the analyses also found it is partly due to memes spreading through the proverbial 'friend of a friend' or Foaf. 'If your friend's friend's friend becomes happy, that has a bigger impact on you than putting an extra five thousand dollars in your pocket', network researchers Christakis and Fowler claimed. Even physical distance played a role. 'A next-door neighbor's joy increased one's chance of being happy by thirty-four percent, but a neighbor down the block had no effect. A friend living half a mile away was good for a forty-two percent bounce, but the effect was almost half that for a friend two miles away'.

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3 **Happiness.** A. White (2007). A global projection of subjective well-being. *Psychtalk, 56*, 17-20. R. Inglehart *et al.* (2008). Development, freedom and rising happiness. *Perspectives on Psychological Science, 3*(4), 264 *et seq*. Also: *Bloomberg Business Week,* 11 October 2006 & 20 August 2008. According to United States research, people grow happier with age, but women have not grown happier through emancipation (E. Weiner. Happiness is low expectations. *IHT* (22 July 2009)). Other research claims gender equality plays a positive role. **Counter-intuitive effects:** According to new doctoral research in The Netherlands by Babette Pouwels (Utrecht, 2011), children do not make parents happier. According to new doctoral research by Ad Bergsma (Rotterdam, 2011), neither do self-help books. **Positive psychology:** C. Wallis (8 July 2009). The science of happiness turns 10. *Time*. **Temporal effects:** A corpus-based approach to finding happiness.

So it is indeed surprising how infectious memes and contagious moods affect us like ripples in a pond, without our ever becoming aware of it.[3]

6.6 Conclusion

So information, moods and behavioural patterns travel – in widening circles. We are all affected: not only by people immediately around us, but also by those beyond the horizon. This is obvious for culture and the distribution of the major religions. It is not only the genes of those populations that have spread, but also their memes or key ideas. There is a multi-step flow through the hubs and spokes of social networks – of real epidemics and disease, but also of healthy behaviour and even happiness.

But what about the direct influence of mass media? Is it plausible that families watching television in their living rooms at home are somehow resonating 'in sync' to what they see and hear? Or even that this is reflected in murder statistics and primal fears, as well as in birth statistics and sexual activity? It seems hard to believe, but just read on.

American Association of Artificial Intelligence 2006; An unobtrusive model of 'Gross National Happiness'. International Conference on Human Factors in Computing Systems 2010. *IHT,* 14 October 2011. **Inherited optimism:** The question was first posed in an older article by Peter Shulman *et al.* (July 1993). Is optimism heritable – A study of twins. *Behaviour Research and Therapy, 31*(6), 569-574 (now online). Christakis & Fowler (2010) did related studies on trust/trustworthiness and gregariousness in twins (pp. 227-234). Recent research has found correlations between extraversion and **brain structure.** *See:* C. G. DeYoung (2010). Testing Predictions from Personality Neuroscience. *Psychological Science, 21*(6), 820-828, quoted in the *IHT*, July 1, 2012 And also between optimism bias and neural pathways. *See:* T. Sharot *et al.* (2007). Neural Mechanisms Mediating Optimism Bias, *Nature* (online). Meanwhile genes have been found to regulate serotonin uptake, and the release of feel-good chemicals in the brain. **Foafs:** The two quotes are from the newspaper report on their early scientific paper in the *IHT,* 5 December 2008. The complete findings are also in their subsequent book, *see* above, pp. 49-56. Criticism: *IHT,* 10 August 2011.

7 *Mass Media*, Audience Scares and Hypes

In the chapter on performance audiences, physically assembled in concert halls and stadiums, we have seen that the synchronization of individual reactions through rhythm and music may facilitate mood contagion. Movements, organizations and networks are intermediary forms, where some people meet face-to-face from time to time.

But what about media audiences that might be completely isolated in their living rooms at home: completely physically dispersed but only connected psychologically? Do fictional movies or topical news also trigger similar reactions in their brains? We will see that they can, to a much larger extent than used to be assumed. Ripples reaching us through the media and the Internet do affect our moods all the time. Terrorist acts, epidemic fears, sports matches all do.

7.1 Spaghetti Westerns and Movie Audiences

You immediately recognize the tune when it is played, and it will probably continue to resonate through your head for the rest of the day – as the characteristic top hit and evergreen was based on an extremely simple but haunting little melody, written by Italian Ennio Morricone, possibly the best composer of film music, ever.

The theme song for *The Good, the Bad and the Ugly,* the last film in the famous mid-1960s 'Dollar' spaghetti western trilogy, directed by his compatriot Sergio Leone. Partly shot in the desolately arid landscapes of Spain, with American macho actors Clint Eastwood and Lee Van Cleef in two of the main roles. Its signature opening and closing scenes remain particularly memorable.

The film was made on a relatively small budget, and generated only modest box-office revenues at the time. This is because the movie was trashed as cartoonish, cynical and violent by many mainstream reviewers, particularly in the United States. On second thought, however, it is today widely regarded as a masterpiece of the genre.

American director Quentin Tarantino squarely called it 'the best-directed film of all time'. It was voted into the fourth place by the hundreds of thousands of users of the authoritative Internet Movie Database. It was also included in *Time*'s 'top hundred' films of the twentieth century. Because of its highly punctuated drama, it looks like an ideal tool for . . . media audience research.

That, at least, was the feeling of Uri Masson and a team of neurobiologists from the Weizmann Institute, the Tel Aviv and Hebrew universities in Israel. They put a limited number of subjects in a scanner, and compared their brains' reactions to a half-hour fragment from the aforementioned movie.

In a more recent follow-up study, they also compared reactions to a fragment from the *Bang! You're Dead!* episode in the television series 'Alfred Hitchcock presents', and to Charlie Chaplin's silent classic *City Lights*. They found the commercial 'made for effect' movies and television had much more impact than . . . real-life unedited video. But they also found something else.

It turned out the 'brain waves' in various parts of the skull of the spectators often matched each other extremely closely. They even appeared to be synchronized and to 'tick together' in lockstep. Not only in the immediate (regionally distinct) visual and auditory areas of the sensory cortex, but also in (more spatially distributed) general reactions in 'higher order' association areas – linked to related feelings.

They also checked that such correlations were absent in the 'control situation' of a mere dark room. The follow-up study found a high degree of correlation not only between the brain waves of different viewers, but also between a first and second viewing by the same person.

The results make it plausible that brain synchronization does indeed play a role in large groups – not only those that are physically assembled, such as the performance audiences we discussed before, but even those that are physically dispersed, such as audio-visual media audiences (including those of highly topical 'hot' news footage on television).

The researchers also suggested that the findings might help develop a future 'social' neuroscience tool, based on the observed distinction between three categories of brain processes – those that turned out to be near-universal, those that proved unique to a specific demographic subgroup and those that resulted from individual idiosyncrasies.[1]

7.2 9/11 and the Brains of Television Audiences

If fiction can have such effects, what about topical news? For instance, shocking news, such as the two space shuttle accidents we discussed before, witnessed live or through recorded images, endlessly repeated? In recent years, there has also been a lot of psychological and psychiatric research on the impact of terrorist attacks, in particular 9/11.

Once you have seen those images, they are etched into the primitive amygdala and hippocampus of your brain: the fear centre and emotional memory. First, the mighty glass-and-steel Twin Towers of the World Trade Centre in New York; then, planes crashing right into them, causing an orange ball of fire, followed by a dark grey explosion of clouds.

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1 **Spaghetti western:** U. Masson *et al.* (12 March 2004). Intersubject synchronization of cortical activity during natural vision. *Science, 303*, 1634-1640. (Also *see:* Zweig, J. (2007) Your Money and Your Brain. London: Souvenir Press. pp. 167-168; and *IHT,* 18 March 2004). *See* <www.weizmann.ac.il/neurobiology/labs/malach/ReverseCorrelation>. Follow-up study: U. Masson *et al.* (2009). Reliability of cortical activity during natural stimulation. *Trends in Cognitive Sciences, 14*(1), 40-48.

Tiny figures leaping to their death in desperation; later, the huge buildings suddenly collapsing like a house of cards. People running towards the camera in panic. You can hear the cries and sirens, almost smell the burning and smoke.

As an expert on mass psychology and collective behaviour sociology, I was asked to contribute newspaper articles on its impact the day after, the year after, and again five years after the event. It was an attack that came from the most underdeveloped poor mountainous area in the world: the Islamic-fundamentalist rural regions of Afghanistan. It was an attack directed against the most highly developed rich urban area in the world: New York City. Also the town with the largest and most wealthy Jewish population anywhere.

The gleaming towers close to Wall Street had become a key symbol of America's might. The financial district was the most closely watched square kilometre in the world: constantly monitored by photo and film cameras. According to many observers, the event was obviously inspired by Hollywood disaster movies, and designed for its unprecedented media impact.

It was also the most murderous attack by any outside enemy on U.S. territory, ever. It shattered the illusion that complete invulnerability could finally be achieved, for instance through the installation of an SDI 'star wars' anti-missile space shield. So it is a most appropriate subject for studies on collective fear.

In the wake of the Vietnam war, and after the return of veterans with mental health problems, there had been a surge in studies on PTSD, or Post Traumatic Stress Disorder. It had even been included in the authoritative DSM, or Diagnostic Statistical Manual for psychotherapists and psychiatrists, from the third edition onwards.

Doctors predicted and found an explosion of PTSD in emergency personnel called to the WTC disaster scene and in ordinary citizens in Lower Manhattan. It was more surprising that they also found such symptoms in adults and children in the other boroughs, the larger City and the State, even the mid-West and the rest of the country – immediately after, but also very long after the facts.

The New York Times had first called an academic PTSD specialist barely an hour after the attacks. A decade later, no less than 350 scientific studies had been published on the subject. It turned out people elsewhere had been affected in so far as they felt similar, and identified with, the victims on the spot.

But several studies also found a direct relation between the seriousness of those complaints, the number of hours people had watched television reports about the events, and the intensity of those endlessly repeated images – particularly in those cases where the onset of symptoms did not occur immediately, but only much later. Terrorism also catapulted to first place among the 'top ten' fears of adolescents throughout the country.[2]

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2 **Own articles on 9/11:** in the dailies *Het Parool* and *Trouw* (and another one on the subsequent anthrax germ scare in the Amsterdam university weekly *Folia*). De oerbeelden die zich in ons hoofd etsen, *Het Parool,* 13 September 2001. Osama had dit nooit gedacht, *Het Parool,* 14 September 2002. Alleen chaostheorie kan angst bezweren *Folia* No 2. 2001. Osama is aan de winnende hand [door voortgaande polarisatie], *Trouw*. 9 September 2006.

7.3 Television Violence, Traffic Accidents and Heart Attacks

Terrorist attacks and their media coverage do of course also shift public behaviour: not only during and immediately after the events, but also days and weeks, months and even years later. People stay away for some time from places they perceive as risky, such as high skyscrapers or underground subways.

They take precautions and are more anxious. In the aftermath of such attacks, there have been hundreds of false alarms, particularly over 'suspicious behaviour' of men in djellabas or women with scarves in public places – even though most such terrorists were Western educated and wore Western clothes.

In the months after 9/11, many people were also afraid of flying and thus took to driving instead, even long distances and in cold weather, on the occasion of traditional family reunions such as Thanksgiving and Christmas. According to a 2005 study by three associate professors in management and economics at Cornell University in Ithaca, near New York, this led to an estimated extra . . . 2,170 driving deaths in a few months, on top of the 2,604 that had been killed in and around the Twin Towers. Stress and anxiety do apparently also play a role.

According to a 2004 study by an American and an Israeli researcher, terrorist attacks in Israel proved in turn to be followed by a temporary lull in light accidents, and then by a 35 per cent spike in fatal accidents three days later – as it supposedly takes some time for the media to come up with extensive reports, and for them to 'sink in'. Changes in moods and preoccupations apparently lead to changes in the probability distribution of various reaction patterns.

So traumatic events trigger negative feelings in victims, but salient images also trigger them, to a lesser extent, in media audiences. Individual brains probably respond to key moments in similar ways; and reactions are more or less synchronized in groups watching the same material at the same time. Emotions do thus resonate throughout populations, and change moods.

Similar waves of reactions were probably triggered by key images from the subsequent 'war on terrorism'. From the lynching of Americans in Falluja, Iraq, to the shooting of a group of civilians from an army helicopter in its capital, Baghdad (in the notorious

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More elaborate essays in S. Harchaoui (Ed.). (2006). *Hedendaags radicalisme*. Amsterdam: Spinhuis; in the *International Communication Gazette, 69*(4) (August 2007), 323-334, and in my previous English-language book *Stranger danger and the epidemic of fear.* **PTSD:** Overview of studies in the tenth anniversary issue of the journal of the American Psychological Association. **Tv:** K. T. Bernstein *et al.* (2007). Television watching and the risk of incident-probable PTSD. *Journal of Nervous and Mental Disease, 195*(1), 41-47. Also *see:* M. A. Schuster. (2001). *New England Journal of Medicine, 345*(20), 1507 *et seq*.; W. E. Schlenger *et al.* (2002). *Journal of the American Medical Association, 288*(5), 581-588; G. Fairbrother. (2003). *Ambulatory Pediatrics, 3*(6), 304-311, etc.

online Wikileaks video); from the abuse of prisoners in Abu Ghraib to that in Guantanamo. And even the relief and exultation after the capture and killing of Saddam and Osama, the destruction of the former's billboards and statues.[3]

7.4 Sports Coverage Leading to Murder and Birth Spikes

But what about the media effects of more everyday events, such as violent sports and fighting matches? A classical study has been done by a media sociologist at the University of California in San Diego. A few days after the boxing match of Muhammad Ali against George Foreman, the murder rate had spiked 24 per cent; after the one against Joe Bugner it had spiked 24 per cent; and after the bout with Joe Frazier as much as 32 per cent.

The researcher decided to take a closer look at heavyweight U.S. boxing championships that had been televised nationwide. After he had corrected for all possible other influences, he found three media effects related to mood contagion.

First, on the third and fourth days after the fights, there was a spike in murder rates, of an average of eleven cases. Second, the victim of those murders was more likely to resemble the loser of the fight (for instance in race, white versus black). Third, the effect also turned out to be related to the amount of publicity the fights had generated.

That sounds plausible. But what about more peaceful sports with a large fan base? The most popular sport in the world and in Europe is soccer. Most important matches are played over the weekend and are televised entirely or in highlights. Emergency services have long noted spikes in heart attacks, strokes and general cardiovascular mortality, particularly in middle-aged gentlemen. Many turn out to be related to decisive goals or nearly missed ones by their preferred clubs. A British traffic researcher even noted a spike in accidents at such precise moments if drivers had the radio on. But there is not only bad news; there is also some good news.

The release of extra alcohol and testosterone seems to lead to more carefree lovemaking in the wake of the enthusiasm, immediately after championship matches. A pharmaceutical data bank in the Netherlands noticed a spike of no less than 40 per cent in sales of the morning-after pill, on the days after Dutch victories during the European championships. Pregnancy classes and birth clinics in Germany noticed a spike of 10 to 15 per cent, exactly nine months after Germany had won the world championship.

But there is also a downside to this. Economic researchers have found that stock markets tend to take a dip of almost half a per cent in the countries that lose such finals.

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3 **NY Twin Towers:** G. Blalock *et al.* (5 December 2005). *Driving fatalities after 9/11*. Paper, Cornell University. **Israel:** G. Stecklow & J. Goldstein. (24 September 2004). Terror attacks influence driving behavior. *Proceedings of the National Academy of Sciences (US), 101*(40), 14551-14556.

Also if similar other sports are concerned. Often it is not such immediate mood changes that count, however but more gradual medium-term social processes.[4]

7.5 The 'Social Construction' of the Great Mexican Flu Scare

So let us look at a symptomatic health scare. As is often the case, the first discovery of the new virus was made by mere chance. In late April 2009, American researchers came across a previously unknown mutation, while developing a new flu test. Upon closer inspection, they also found indications of anomalous events beyond the Southern border, in Mexico. Google noticed a spike in searches for flu-related terms there.

In an earlier article, I elaborately analyzed how the whole further rise, spread and fall of the epidemic was accompanied by a strange battle over labels and blame – a process of 'social construction' of the disease, with related forms of collective behaviour and intriguing contrasts in cultural reactions.

In early May, the relevant local health authorities already reported that the new flu epidemic appeared to be neither more contagious nor more deadly than ordinary flu (which kills between a quarter and half a million people around the world every year) – that is to say, far less than the notorious 'Spanish' influenza pandemic after World War I (which killed an estimated 25 to 50 million people, or even twice as many). Yet the World Health Organization soon labelled the new outbreak a 'pandemic' as well.

Few overseas policymakers, journalists and citizens were immediately aware, however, that the WHO had only very recently greatly expanded its *definition* of a pandemic. From just epidemics with 'enormous numbers of deaths' to even 'mild' ones as long as they simply became widespread.

This original sin of miscommunication helped trigger a scare that lasted for half a year, even across the Atlantic and the Pacific. The European Union urgently convened its health authorities in Luxemburg. A number of member states immediately ordered huge numbers of flu shots from the pharmaceutical industry, as it would take the whole summer to get them ready in time for the autumn flu season.

One medium-sized North-western European country provides a good illustration: The Netherlands. Its foremost academic virologist had warned for many years against the rising threat of new viruses. The Interior Ministry had thus earlier adopted the viewpoint

4 **Boxing:** D. Phillips. (1986). Natural experiments on the effects of mass media violence on fatal aggression. In L. Berkowitz (Ed.). *Advances in experimental social psychology* (Vol. 19, pp. 207-250). New York, NY: Academic Press. **Soccer.** Netherlands, morning after pills: Dutch daily *NRC Handelsblad,* 22 June 2001. Germany, birth rate: weekly *Der Spiegel,* 21 February 2007. Shares: A. Edmans *et al.* (May 2006). Sports sentiment and stock returns. Working paper presented at the 16th annual Utah winter finance conference, and at the EFA Moscow meetings. <http://ssrn.com/abstract=677103>.

that an unusual flu epidemic was 'one of the largest risks that threatened society', as it might possibly kill as much as 5 per cent of the population, or eighty thousand people.

The major elite newspaper therefore carried an early headline with 'Alarm Mexico'. The major popular newspaper carried early headlines like 'Catastrophe lurking' and 'Flu gets closer'. It got thousands of reader reactions: a clear majority expressed the view that the risk of a pandemic was underestimated.

Although the first infection passed relatively unnoticed (as there was also a murderous attack on the queen around that same day), the minister disbursed no less than 200 million Euros to order a double flu shot for every single citizen. It turned out, however, that only limited numbers were really needed, and large parts were ultimately destroyed when no other buyers turned up.

There were two problems with the vaccination campaign. On the one hand, the new flu epidemic was extremely mild. It killed only five completely healthy people throughout the country and fifty-eight others previously weakened by other ailments. Whereas a thousand people were killed every year by the 'ordinary' winter flu, and hundred sixty thousand would have been killed if there had indeed been an equivalent of the post-WWI Spanish flu.

On the other hand, part of the public had become wary of the eagerness to vaccinate. There had been reports of severe side effects: some plausible, some doubtful. For the medical authorities it was a matter of statistics: the shots would surely save a number of lives, whereas the proven side effects were limited. So they dismissed sceptics as paranoid or superstitious. With the benefit of hindsight, however, one should admit that this reaction itself was also much too simplistic.[5]

7.6 Media Scare, on an Imaginary Worldwide Pandemic

The relevant authorities felt that the media were partly to blame. When the 'national news monitor' (an offspring of the Communication Department at Amsterdam University where I long worked) decided to investigate, they gladly supported the project.

Two years after the outbreak, therefore, a full report came out. The lead author was Peter Vasterman of the adjacent department of Media Studies, who had already done an

5 **Own article:** J. van Ginneken, 'De pandemie-paniek' in the December 2009 issue of *Psyche & Brein* (the Dutch edition of *Mind* of the *Scientific American,* and its German counterpart *Gehirn und Geist*). **Vaccine controversy:** In Finland, 2.5 million people had been vaccinated against swine flu. Some 750 reported side effects. This included a rapidly rising number of cases of narcolepsy. Sweden reported similar phenomena. (*See The Independent,* 25 August 2010, and many others.) Furthermore, analyses in the on-line journal *Eurosurveillance* concluded that only between one- and two-thirds of the flu shots of the last season had provided real protection. In the summer of 2011, the European Medicine Authority, EMA, decided that the vaccine should henceforth only be used in real emergency situations. (*NRC Handelsblad* weekly edition, 28 March and 1 August 2011).

interesting Ph.D. with an empirical study of media hypes and moral panics. The triumvirate team supervised a content analysis of no less than 1,400 articles in eight national dailies and a hundred items on the evening news programmes of three national television channels.

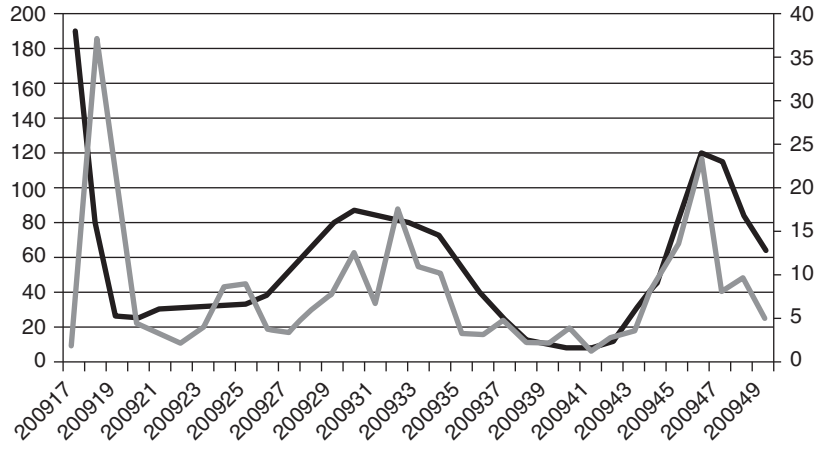
They found that there had clearly been a 'social amplification of risk'. Media coverage had been intense, particularly during the first few weeks. It had relied heavily on the two virologists in an official capacity. They had frequently mentioned 'worst case scenarios', although they had also emphasized that much was still unknown and that the epidemic could also turn out to be much milder.

Sceptics among their colleagues (such as myself), however, initially got little or no attention in the media, the monitor found. One result was that most published statements had been disquieting rather than reassuring.

The team analyzed twenty thousand online messages on the four most relevant websites as well, and categorized eight hundred thousand questions put to the most relevant government information desk ('Post box 51'). They found the rise and fall in media attention had run more or less parallel to the contagious mood among the public.

The degree of worry was measured by the percentage of the population that said the epidemic was 'the most important problem' faced by society at that point in time – in an ongoing weekly opinion poll or 'barometer' taken by the national crisis centre.

Figure 15 The Three Waves of the 2009 Flu Scare in The Netherlands. Left/dark grey: Number of Articles in the National Press, Per Week. Right/light grey: Percentage of the Population Feeling This Is 'the Most Important Problem' Facing Society



Source: *Nederlandse Nieuwsmonitor. PM.*

The researchers were prudent in their conclusions, although they suggested there was considerable room for improvement. They also quoted an earlier report by the Council of Europe that had criticized the handling of communication by the WHO and the national authorities as well as 'the media's role in fuelling fear' and an 'unjustified scare', which had led to a 'waste of large sums of public money'.

The insistence and intensity of news coverage draw the attention of both policymakers and the public. Their 'agenda-setting' function thus makes us recognize certain vague problems and insist on an immediate solution. Very often, however, this is a highly illusory exercise, as we intently chase some ghosts, but ignore plenty of others.[6]

7.7 Frames and Metaphors, on Sweeteners and Biotech

Dominant frames, and the emotions accompanying them, can be shown to change over time. One example is an analysis of more than fifty articles, which *The New York Times* published about artificial sweeteners over more than a quarter century – with notable highs and lows – particularly about the 'first generation' (saccharin, cyclamate and aspartame), as compared with the 'second generation' (sucralose and others).

The generated networks of co-occurring words revealed important shifts, as for instance in the changing centrality of keywords like 'cancer' or 'diet'. Obviously, such analyses can also be of help in the planning of effective information campaigns by both neutral and interested parties, pro and con.

The first author on that project was Iina Hellsten. She is of Finnish origin and had done a 'magna cum laude' dissertation on *Politics of Metaphors: Biotechnology and Biodiversity in the Media.* Metaphors are of course a way to describe an unfamiliar phenomenon in terms of a familiar one. In this book, for instance, mood contagion is repeatedly presented in terms of viruses and epidemics.

Metaphors often play a key role in scientific discovery itself (by Newton, Darwin, Einstein and many others) and its presentation to the outside world. But even more so in media discussions about them, in resulting popular debate and therefore in key policy decisions – as she explains in a recent book chapter.

Science metaphors tend to be complex and to change rapidly, she says, whereas media metaphors tend to be simpler and change much more slowly. This often leads to a growing divergence, which can lead to unforeseen results. Media coverage of new discoveries is also often exaggerated in terms of either a hopeful hype ('future cure for a fatal illness') or a dreadful scare ('the inevitable creation of terrible monsters').

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6 **Report:** P. L. M. Vasterman, N. Ruigrok, & O. Scholten. (30 May 2011). *Mexicaanse griep in Nederland.* Amsterdam: Nederlandse Nieuwsmonitor, 106 pages.

The latter media clichés often hark back to sci-fi horror fiction (Huxley's *Brave New World,* Shelley's *Frankenstein*) or tragic Greek mythology (Icarus, etc.). In her work, Hellsten illustrates this by contrasting the initial reactions to three different biotech breakthroughs, which led to positive or negative decisions by the U.S. president, and therefore had a huge impact.

A first example was the Human Genome Project. It was compared to a 'magnificent map' once presented to founding father Jefferson, the product of a 'courageous expedition across the American frontier'. And even to Galileo, who 'learned the language in which God created life', leading to an 'immense new power to heal'. Those were the terms that President Clinton used in a press conference pledging full support for the two HGP pioneers.

But related breakthroughs earlier and later, on cloning and stem cells, were initially denounced as ultimately leading to 'cheap' industrial mass production of human beings and 'spare parts'. They also led to initial bans on government-funded research, by Presidents Clinton and Bush Jr. Such emerging early associations and metaphors play a key role in triggering hypes and scares, with huge consequences for further research and development.[7]

7.8 The Media Hype on Eclipse Fever

Science fields particularly prone to scares and hypes are astronomy and meteorology. They regularly issue dire warnings about impending disasters, chances of which are extremely slim, and which may never materialize – or exalted announcements about unique experiences that turn out to be rather banal instead. In such cases media coverage becomes self-reinforcing, in both scope and intensity. Eclipses of the sun by the moon are cases in point.

Complete solar eclipses are the stuff of ancient myths, since they occur only once every 370 years at any given point on earth – although almost every year at some point or other. A huge hype surrounded the 'last eclipse of the millennium', particularly in the three largest and most media-mighty countries of North-western Europe. The hype began to build three full months in advance, as special spring supplements of most major dailies and weeklies exhorted hundreds of millions of readers to plan their entire summer holidays around it.

They predicted the 'clear summer skies' would be ideal to witness the unforgettable 'once in a lifetime' view – travelling through a strip of a hundred kilometres wide at a breakneck speed of three thousand kilometres per hour – onwards to Eastern Europe, West and Southern Asia. They also triggered a continent-wide craze for special protective glasses to look at the sun during those mere two minutes – including 'paw-proof' ones for . . . pets.

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7 **Artificial sweeteners:** I. Hellsten, J. Dawson, & L. Leydesdorff. (2010). Implicit media frames. *Public Understanding of Science, 19*(5), 590-608. **Biotech:** I. Hellsten. (2009). Metaphors as time capsules – Their uses in the biosciences and the mass media. In B. Nerlich *et al. Communicating biological sciences* (Ch. 12, pp. 185-200). Farnham: Ashgate.

The enthusiasm virus spread, and continually built a contagious mood of 'wanna see' and 'wanna be' there. Many hotels and camping sites along the entire route were thus fully booked well in advance. The moon shadow was to land on the extreme south-western tip of England on 11 August, at eleven and eleven minutes (actually twelve, but this way the story presented even better).

By coincidence, this region of Cornwall is also the mythical land of King Arthur and the legendary dawn of British civilization. The current royal family owns large swaths in the area, by the way, which has remained one of the poorest in the whole country. So early on, the county hired a retired army officer to draw as many as 1.2 million tourists for the occasion. One entrepreneur, for instance, invested one hundred fifty thousand pounds to upgrade two campsites for no fewer than ten thousand visitors.

On the fateful date, news media again opened with 'great expectations'. The highways and roads around the band were therefore also full of traffic in Northern France, with head-tail collisions provoking huge traffic jams. Authorities in Southern Germany had proposed to put all traffic lights to red, to avoid chaos.

Many shops closed to prevent shoplifting. Office personnel went outside, and workers dropped their tools. The stock markets showed a lull. The London Chamber of Commerce estimated the national loss of productivity in Britain alone at half a billion pounds.

So how did the unique 'once in a lifetime' experience work out? As is often the case at that time of year, most of North-western Europe was covered by clouds. Animals in the zoos did not go mad, as some had predicted, nor did night animals such as owls and bats turn out to show themselves. There was just the occasional rooster giving an encore.

Yet one man from The Netherlands claimed on RTL television that the very brief dark spell had been just as overwhelming as . . . the birth of his first child. But another man who had driven 800 miles from the North of Scotland with his wife and three boys conceded with typical understatement: 'This is a little disappointing'. Still, three hundred fifty people called Moorsfield eye hospital in London because they had forgotten to put on their special glasses when looking at bright patches.

Well, people can always travel to North or South America, where further eclipses are foreseen along small stretches between 2017 and 2020 – although the question remains whether frequent grey-blue and orange-yellow sunrises and sunsets are not much more spectacular than two minutes of an ordinary night during an ordinary day.

7.9 Conclusion

Research on the impact of one ultra-violent 'spaghetti western' has shown that our brain reactions do often closely match each other. It is therefore reasonable to conclude that they would synchronize between people: whether in a cinema theatre or in front of television sets.

Research on the impact of the news images of 9/11 has shown in turn that they profoundly affected many, and changed their subsequent behaviours. Even sports coverage turns out to lead to murder and birth spikes. Health scares often drive authorities to squander billions. But the opposite happens as well. The prospect of briefly seeing a black spot in the sky displaces entire populations. It triggers the enthusiasm virus and makes many change their holiday plans. So media messages can indeed lead to collective behaviour and shifts. How does this affect product markets and businesses? Can subtle changes in public perception lead to massive consumer boycotts, or, on the contrary, to product crazes?

8 *Product Markets*, Rumours and Buzz

Can contagious moods play a role in the marketing of products and brands? Companies spend billions on advertising, and their good reputation may even be worth tens of billions. But contradictions and instability can never completely be banned, so their image is always at risk.

Therefore, even the vague suspicion of a 'product failure' may warrant a major recall operation. But what about minor incidents leading to collective delusions? And what about product rumours, 'urban legends' and modern folklore? They may affect the perceptions of a brand and feelings about the product. At the same time, ambivalent emotions can also be used to promote a brand and a product, for instance via social networks and home sales.

8.1 Coke and the Great Soft Drink Nausea Scare

At that point Belgium was entirely in the grip of the first European dioxin scandal (others were later to follow in The Netherlands and Germany). 'Melters' were supposed to recycle oil and fats of organic origin, to be added to animal feed. But some unscrupulous suppliers and buyers had gradually adopted the practice of occasionally adding industrial oils to the mix as well.

Insiders had long been aware of this, as had been agricultural policymakers – often Christian democrats closely linked to a farmer electorate. But when an excess of PCBs with associated cancer risks was finally demonstrated in mass-produced chicken and pigs in Belgium, health authorities felt forced to intervene. Millions of animals and eggs had to be eliminated from the food chain; supermarket shelves remained empty for weeks on end. The food scare reverberated throughout the entire spring, and further made the Christian Democrats lose the elections, for the first time in decades.

Meanwhile, secondary school students throughout Flanders had other things on their minds, as the highly stressful end-of-year exams approached. During lunch break, they treated themselves to a bottle of cool sparkling Coca Cola.

In one school, students later said they had faintly smelled 'rotten eggs' after opening them. Three of them soon reported to the secretarial office with vague health complaints. After lessons had started again, six more students from different classes complained about feeling ill as well. The nurse called in a doctor, who in turn called in ambulances and the police. Thirty-three students were brought to the emergency unit in the local hospital; twelve were kept overnight. The next day, another six reported ill.

Radio and television, daily and weekly papers immediately picked up on the new contamination scare. Two days later, after it had sunk in, another seventy-two students in four other schools reported not feeling well, and on the third day three more.

This time, cans with Cola Light and Fanta Orange were implicated as well; later reports spoke of a 'medicine-like odour'. Complaints ranged from weakness, dizziness and nausea to headaches, respiratory trouble and abdominal pains – with isolated cases of diarrhoea and vomiting. The National Poison Centre received no fewer than 1,400 calls. Most concerned complaints after drinking Coke.

Health authorities imposed a moratorium on sales of the popular drink. The company removed 30 million bottles and cans throughout the country, and even from neighbouring Netherlands, Luxemburg and France. The recall, estimated at 200 million dollars, became the costliest in their over one hundred-year history. But was it justified?

The company investigated the batches, but it turned out the first came from its Antwerp plant, whereas the later ones came from different ones in Gent and even Dunkirk, across the border. It later reported the drinks in the first case might have liberated minimal traces of excess sulfides (producing a characteristic 'rotten egg' smell).

The exterior of the cans in the further cases might have contained minimal traces of a fungicide used to keep wooden pallets from rotting. But in both cases, it said, the excess quantities were indeed extremely small and could not possibly have led to serious symptoms.

The health authorities also had blood and urine samples taken, but the results from the first school later turned out to be 'inaccessible', whereas those from the further schools did not show anything untoward. Analysis seemed to indicate a marginal overrepresentation of girls and of somewhat more anxious personalities, but these results were hardly clear-cut.

After some hesitation, the Ministry of Public Health ordered a full-scale investigation by its Scientific Institute and the Epidemiological Unit. In the end, it concluded that there might indeed have been minute contaminants, particularly in the case of the first school. But it also suggested the further spreading might be attributed to a mysterious affliction known as MPI.[1]

8.2 Contagious Anxiety Through 'MPI'

The scientific abbreviation MPI stands for 'Mass Psychogenic Illness', also called 'Mass Sociogenic Illness'. They seem to be instances of 'mood contagion' par excellence,

1 **Coke:** Early scientific discussions of the case can be found in *The Lancet* and the *British Medical Journal.* The report and its final conclusions were extensively rendered in: A. Gallay *et al.* (2002). Belgian Coca-Cola-related outbreak: Intoxication, mass sociogenic illness, or both? *American Journal of Epidemiology, 155*(2), 140-147. **Cost:** V. Johnson & S. C. Peppas. (2003). Crisis management in Belgium. *Corporate communications, 8*(1), 18-22. **MPI:** Science editor Marcel Hulspas mentioned half a dozen similar Dutch cases with other substances in just three years' time (daily *De Pers,* 7 November 2007). Namely: November 2004 in Haarlem and Arnhem; December 2005 in Amsterdam; April 2006 in Vlaardingen; December in Oldenzaal; June 2007 in Heesch.

although there is some difference of opinion about what phenomena should be grouped under this heading.

MPI is usually the insider jargon of public health officials for exceptional cases of health complaints, suddenly spreading throughout a smaller or larger group. They are initially ascribed to some kind of contamination, but upon closer inspection are also caused or at least aggravated by psychological and sociological factors.

Most of the time, MPI erupts in relatively close-knit groups that are under some kind of pressure. Such groups share similar demographic backgrounds (gender, age, occupation, etc.) and easily identify with one another. They may be living and/or working together on a daily basis, in the same compound or neighbourhood. Many early examples concerned monasteries, or rather convents and nunneries.

In the spirit of those earlier times, women, girls and children were held to be particularly vulnerable. Present-day examples concern schools, particularly boarding schools, as well as factory workshops, civilians under threat of attack or military units. For a variety of reasons, these groups may be heavily regimented, with limited possibilities of expressing themselves in other ways. But incidents have been reported from all epochs and all cultures.

The trigger for MPI is usually some vague hint of contamination. Faintly 'off' smells or tastes may suddenly stand out. Vague sounds (*i.e.* creaking in an old building), or sights (*i.e.* seemingly unusual insects) may also do the trick. They are noted or highlighted by one or a few persons, and thus become the centre of attention. They may provoke initial unease, usually against the wider background of a climate of fear. This may translate into a sudden panic and a wide range of involuntary reactions.

Hyperventilating, dry throat, coughing. Dizziness, nausea, vomiting. Itches, watering eyes, blurry vision. Stress, rising blood pressure, headaches. Witnessing such reactions in others in turn fosters them in onlookers. As the group drama unfolds, outsiders are brought in to assist: experts and authorities, ambulances and police cars, flashing lights and wailing sirens.

But this adds to the general sense of crisis – particularly after photo and television cameras turn up, and nosy reporters. Media coverage may thus help prolong and extend the self-reinforcing feedback loop, making the incident bigger and bigger.

Of course, some caution is warranted, as representatives of the institutions involved may have an interest in playing down their responsibility for 'real' forms of contamination, however marginal (as in the example cited of Coca Cola). Furthermore, those forms of contamination may have been volatile and may soon have disappeared without leaving any trace of evidence.

Observers often make the classical mistake of hastily concluding that an 'absence of proof' is a 'proof of absence' (of contamination). But even allowing for this proviso, it is clear that some of such cases of collective panic are indeed triggered or aggravated by MPI.

Historical research has identified hundreds of detailed descriptions in older articles and books, including possibly related archaic forms such as dancing manias and witch-hunts. The emerging fields of psychology, psychotherapy and psychiatry later devoted ample

attention to the possible causes and consequences of 'collective hysteria' in women and 'shell shock' in men.

But historians of those fields have pointed out that labels for such diseases are always subject to a 'negotiation of meaning' between doctors and patients – as they are both under pressure to fashion a syndrome out of a 'culturally condoned' pool of 'legitimate symptoms'.

One historian even related this to the modern controversies over recovered memory and chronic fatigue. One may also think of the oft-debated effects of electro-magnetic radiation and depleted uranium. The threat of terrorism, of chemical or biological attacks, by the way, have been a frequent cause of exaggerated waves of health complaints – far beyond the times and places really concerned. Think of the example of the huge scare over anthrax-tainted letters, after 9/11.[2]

8.3 'WoM', Product Rumours and Buzz

In product markets today, all major brands are usually of good quality. Research has shown that most consumers cannot really pick out their favourite brand in a blind test. Brain research has shown that it is often the sight of the characteristic name and logo and package that ultimately triggers our 'pleasure centre', not the taste or smell. As well as the stories and images associated with it.

Macho images for filter-tipped cigarettes otherwise perceived as 'too feminine'. Crystal-clear waterfalls suggesting fresh air rather than dirty smoke. Marketing and advertising weave a network of preferred associations, often to overrule unwelcome associations. Tea, for instance, is now consistently associated with strength, to compete with coffee and to blot out unwelcome associations with weakness.

Yet many brand images do somehow remain paradoxical, and communicators may decide to try and shift the emphasis. Opel cars shied away from positioning themselves as overly German during the post-war decades, but have now embraced that label as widely denoting 'reliability' abroad. Rabobank shied away from its small-town past, but later embraced it as denoting 'trustworthiness'.

An opposite example is Heineken's Buckler low alcohol beer. A stand-up comedian derided it as 'too light' to be considered real beer, so that it had to be taken off the home market that it used to dominate. Once such views take hold among buyers, it may become too hard and costly to even try to change them. It may become easier and cheaper to use another sub-brand to recapture that particular niche.

At one point, I wrote booklets on such subjects to accompany large-scale events by the national science information board. One was on 'behaviour management' in everyday

2 **Historical overview:** R. E. Bartholomew & S. Wessely. (2002). Protean nature of mass sociogenic illness. *British Journal of Psychiatry, 180*, 300-306. **Modern controversies:** E. Showalter. (1997). *Hystories – Hysterical epidemics and modern culture.* New York, NY: Picador (Columbia University Press), in particular p. 15.

life, for a psychology fair in the national Trade Fair in Utrecht. Another was on 'unpredictable behaviour', for an economics fair in the former stock market in Amsterdam. The latter also dealt with product rumours and urban legends recurring around major American consumer brands such as Coca Cola, Kentucky Fried Chicken, Marlboro, McDonalds, Procter and Gamble and many others.

'Word of mouth' (today also 'Word of mouse') or WoM-stories spread through social networks, and are often attributed to a 'Friend of a friend' or Foaf. In a more elaborate later book, I devoted a larger chapter to research on this subject. It is often marginal people who try to make themselves important by gossip and claiming 'insider knowledge'.

What are the best subjects for convivial everyday conversations? Food and drinks are the most logical subjects to talk about over food and drinks. The stories may be subject to further 'serial distortion': levelling, sharpening and assimilation – to suit the preconceptions of those who pass them on.

Professional communicators may in turn try to start an enthusiastic 'buzz' campaign about a new product. Heath and Heath provide a formula for 'stickiness' and 'succes' (with one s), for: 'Salient, Unexpected, Concrete, Credible and Emotional Stories'. They cite the example of the Subway chain and its customer Jared, who said everywhere he had lost a hundred pounds by sticking to their lean, natural sandwiches – and then showed the huge pants that he had shed.

Figure 16 The Subway Chain Used This Image of Jared to Emphasize Their Lean Natural Sandwiches, not Those Others Packed with Endless Layers of Meat

Source: Subway. Also in Wikipedia Commons.

After a lecture on the subject, I was approached by the manager of a marketer and distributor for foreign spirits firms. One of their major brands was a cream liqueur that was particularly popular among girls and young women. But if one drank a tonic just before or after it, an emerging urban legend said, it would turn indigestible and would 'lie like a brick on the stomach' (in line with an idiomatic Dutch expression).

There were stories of people having been rushed to the hospital, 'sometimes in vain' – mentioning times and places and relationships ('last month, at a fancy fair in Maastricht, the daughter of the baker of my niece witnessed a nun who had stealthily tried it', etc.).[3]

8.4 Cream and Liqueur: An Unbelievable Story

I had personally never heard the rumour, but being a mass psychologist, I began to investigate the problem. By coincidence, I taught both communication students at Amsterdam University and journalism students at a Utrecht professional school that year. So I devised a form with some thirty successive questions, carefully phrased to be non-directive and non-suggestive. Participation was voluntary, but most proved willing to fill it out.

It started with vague inquiries about various types of drinks, the example of liqueur and cream mixes, whether they could name any brands, whether they had heard any stories about them, and so on and so forth. It turned out a majority of the fifty students had heard the specific story, and many actually . . . believed them. The form continued with questions like: who told you this story, under what circumstances, why do you think it is true, etc.

I analyzed the results in a research paper of a few dozen pages. There seemed to be some demographic contrasts, for instance between men and women. Furthermore, the story seemed to originate more often from Catholics in the Southern half of the country than from Protestants in the Northern half. But other details caught my eye as well. One was that some 'natural allies' of the company occasionally turned out to be its worse enemies, namely . . . bartenders.

Imagine the scene, which was described several times to me. An adolescent girl pays one of her first unsupervised visits to a bar, on a Saturday night. But she feels insecure about consuming too much alcohol. So she first orders a safe liqueur cream, and a quarter later an even safer tonic. So far, so good.

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3 **Brands:** see my overview discussion in the central and last sections of Mark C. Gray (Ed.). (2009). *Cool brands – The guru book.* Amsterdam: Cool Unlimited. And also experts like: Franzen & Bouwman (2001), Lindstrom (2008) and others. **Commercial rumours:** The earlier Dutch book was *Crazes and crashes,* Ch. 4. I returned to the subject in *Collective behavior and public opinion,* Ch. 2. **WoM promotion:** Rosen (2001). **Subway:** *see* Heath & Heath (2007), pp. 218-223.

But the bartender apparently sees his chance to make a big number, and responds loudly, 'What? Don't you know? I wouldn't do that!' Heads turn, and conversations stop. With a dramatic gesture, he puts a big glass on the table. First pours a basis of liqueur cream, then adds tonic. Since the fancy brand uses real cream (whereas the cheaper knock-offs do not), the mixture thickens and curdles somewhat – as is to be expected.

Then comes the urban legend: 'You can see with your own eyes that it becomes hard like stone!' Somehow, this interpretation looks convincing, as seeing is believing. Of course there is nothing wrong: it is just a weird and slightly unsavoury sight.

When I flew to the company's headquarters abroad, they even reported that they had wanted to be absolutely certain that nothing could go wrong. So they had recruited volunteers, had them drink one glass after the other, had surgeons peek into their stomachs, to verify that nothing untoward happened.

One other detail that fascinated me was the following. After some reflection, I realized that from a semiotic and anthropological point of view, a liqueur cream may be seen as a somewhat paradoxical and therefore impossible drink.

As there exist a whole range of drinks: from tea and coffee, juices and soft drinks on the one hand to beers and wines on the other. At one extreme, this continuum began with cream and milk: the most motherly and soothing drinks of all. At the other extreme, it ended with whisky and hard liqueur: the most challenging and macho drink of all. A combination somehow seems to sin against the laws of nature, and therefore invite disaster.

A further indication was that the cause of the supposed problem was never placed in the transparent tonic drink, as might just as well have been done, but only in the opaque liqueur cream.

8.5 Sex, and Inviting Intimate Friends to a 'Home Party'

But are there also ways in which friends, networks and conversations can be used to strengthen a marketing campaign? Indeed there are. Let us take a closer look at one telling example.

The electronic guestbook on the website says: 'Thank you Liz, had a wicked night on Monday . . . Was a really good laugh for me and my girlies . . . Thank you for making my birthday extra good'. What are they talking about so enthusiastically? About a snowball phenomenon that has silently turned into an unstoppable avalanche over the last few decades. Let's do a quick quiz, to see if you can guess.

1. What has become the most rapidly booming business all around, within the broader context of a 'hedonistic' consumer culture?
2. Which sector long generated as much turnover on the Internet as all other sectors combined?
3. What adult toys are also mostly made in China but generate much larger profits than children's toys?

4. Why did the relevant entrepreneurs long fail to reach almost half of their potential market?
5. How have they used mood contagion to reach the other 50 per cent?

Answers 1-3: Sex. 4: Women. 5: Ladies' nights, in the intimacy of their own living rooms.

My wife moves in Anglo circles in Southern France. At one point, she got an invitation for a party at a friend's house, sponsored by the local Piment Rose ('pink pepper') chain. She went, had many giggles and great fun. The phenomenon peaked around the turn of the century, in large parts of North America and Western Europe.

Of course sexy lingerie and toys had long been sold in sex shops. But originally most of these were in sleazy neighbourhoods, and limited to an all-male clientele. Then came chains, increasingly named after women, with discreet shops on main street. Some key articles were even relabelled (*i.e.* as 'electric massage stick') to be offered through ordinary drug stores, supermarkets and home-order catalogues.

Today, the huge German Beate Uhse/Christine Le Duc group is the largest specialized chain on the European continent. It organizes quarterly 'ladies only' nights at their shops, but this has not shielded it from a slump. The British Ann Summers chain chose a somewhat different approach, by contrast, to crack a supposedly prudish market.

The chain had been named after the secretary of the founder, but they fell out. After that, she retired to sunny Tuscany; he sold to a new owner, who in turn put his young adult daughter in charge. She chose to reinforce the targeting of women, and the use of ladies' nights at home as a marketing tool. So their website recruits women willing to be 'facilitators', for fun and an extra buck, with a percentage of sales and extra prizes to be won.

They are told to ask an acquaintance to host a party, encourage their friends to bring another friend along, as well as 'a bottle'. They will begin with an 'icebreaker round'. Like the ABC game: call out a letter, respond with a corresponding body part, and/or things you can do with it. Or the Cadbury game: let everyone take a 'chocolate finger' from a cookie box of that brand, and see who is most experienced in quickly sucking the top layer off.

After that, they turn to the real business at hand. They are dared to try on some sexy lingerie, and show it off. Then comes the demonstration of toys, their passing around, along with a catalogue. They use a special vocabulary of casual euphemisms, like 'button' for clitoris, and so on. Towards the end, participants may discreetly place and pay their orders in a separate room. After which they are encouraged to host another party themselves.

The chain came to be extremely successful at this. In recent years, it had well over a hundred retail outlets across the United Kingdom, claimed over seven thousand five hundred 'organizers', and over two hundred thousand parties per year, which may have reached . . . a total of 2 million women per year (or 10 per cent of the relevant age bracket).

It also sold 2 million of its specially designed 'Rampant Rabbit' vibrators per year, and had an annual turnover of more than a hundred million pounds.

A recent survey among over a thousand similar U.S. 'facilitators' published in a relevant scientific journal even advocated recognizing such parties as an effective 'health information tool'. The expansion of the business has since come to a halt, but it still was a fascinating case.

Of course this marketing trick of using the personal networks of women and of convivial parties at their homes, as a tool for the demonstration and sale of new products, is in fact much older. After the war, two trends had come together.

One the one hand, women who had worked in the war industry were sent back to their households, looking for some economic activity and extra money to be made. On the other hand, military production had reverted to civilian production, churning out new types of deep freezers, refrigerators and ovens, made accessible through the introduction of consumer credit.

Earl Edward Tupper had developed little plastic containers for food that could be sealed airtight with a signature burp. It was a female sales representative, however, who developed the immensely successful Tupperware party program. They, too, fell out, and she retired to Florida.

But the revival of the strategy for the marketing of sex toys was even more appropriate, as those are all about bipolar contagious emotions of shame and lust. They had long remained a taboo product, so they were best demonstrated and sold in the intimacy of a group of friends, at a member's home – a much more effective approach than to wait for women to turn up at a seedy sex shop in a city centre.[4]

8.6 Conclusion

In saturated markets, the success of a product and brand do very much depend on the stories and images associated with them in the mind of the consumer. On some occasions, marketers and advertisers succeed in co-opting 'WoM': 'word of mouth' or 'word of mouse' (since the PC and Internet age) and create a positive 'buzz' to strengthen their unique selling proposition ('those sandwiches are really lean, and fit well into a healthy diet').

On other occasions, the spontaneous emergence of rumours and 'urban legends' may threaten to derail a carefully developed strategy. Anxiety and fear may suddenly take over,

4 **Sex toy parties:** D. Herbenick & M. Reece. (April 2009). In-home sex toy party facilitators as sex educators. *American Journal of Sexuality Education, 4*(2), 173-193. M. McCaughey & C. French. (September 2001). *Sexuality & Culture, 5*(3), 77-96.

if there seems to be something 'weird' about the product, either in its normal incarnation, or in a particular instance. These feelings may once again spread rapidly and widely. So a key question for managers is how to deal with mood contagion.

But what about more abstract and general moods of daring or caution? How do they spread in economic, social and political opinion? Is there reason to believe there are large-scale mood waves lasting years or decades on end?

9 *Public Opinion*, Long-Term Mood Waves and the 'Zeitgeist'

So far, we have been looking at mood contagion spreading through some kind of emotion viruses to various kinds of large groups. In concentric circles, like the micro-ripples in a pond. Now, let us take a closer look at further possible results, and some mysterious macro-wave patterns in public opinion – resulting in a changing 'spirit of the times' or 'Zeitgeist'.

Are we collectively victims of some kind of bipolar disorder, of alternating manic and depressed moods? Is it possible to demonstrate a clear alternation of upward and downward spirals, of enthusiasm and demoralization, in various fields?

Can multi-annual mood waves indeed be discerned in the economy and on the stock market, in society and in fashion preferences, in politics and in presidential popularity? Can we even trace the building of frustration and anger in public opinion, setting the mood for a future outbreak of violence: in rebellion or revolution, in military intervention or larger conflict? Can some kinds of strange collective rhythms be discerned there?
Recent years have brought some surprising discoveries in this regard, which at first sight seemed to confirm astrological claims – but upon closer inspection did not.[1]

9.1 Economic Mood Waves, and the Historic Skyscraper Race

Between World Wars I and II, the heart of the capitalist system moved across the Atlantic: from Great Britain, London and the City to the United States, New York and Wall Street. Charles Dow and Edward Jones had founded the Dow Jones company and the *Wall Street Journal* there. They had also introduced a composite stock market index, which could be plotted over days and weeks, months and years. Enthusiastic so-called 'bull' markets of rapid growth (as in the 1920s) appeared to alternate with 'bear' markets of low or no growth, or even decline (as in the 1930s).

Accountant Ralph Elliott lost part of his savings because of that Great Crash, began to study the evolution of the index, and felt he could discern a repetitive pattern of mood waves as they abound throughout nature: often displaying the 'phi' factor, 'Golden Rule'

1 **Astrology?:** One spectacular finding was that school and sports achievements did indeed rise and fall with . . . specific months of birth. But after some years of further scrutiny, it turned out this had nothing to do with the stars. As it makes individuals fit early or late into school years (beginning September) or sports years (sometimes beginning in January), thus giving them a slight edge or handicap – compared with the average. For more: *see* Malcolm Gladwell's third and fourth bestsellers, *Outliers* and *What the dog saw*.

proportions or similar 'Fibonacci' numbers. After World War II, this led to the emergence of the new field of 'chart reading' or 'technical analysis' of the stock market.

The idea was that changes in investor sentiment usually expressed themselves in a succession of 'waves', resulting from a shifting balance between massive upward and downward pressures. A study of the recent past could thus lead to predictions about the near future, or at least to a limited range of possible or probable developments. The estimates were produced by means of elaborate calculations and geometric extrapolations. Today, this is a multibillion global forecasting business, and many professional investors take such results into account, even if some academics continue to express scepticism.

Its major proponent became Robert Prechter. He had a bachelor's degree in psychology from Yale when he joined the Merrill Lynch investment bank, where he discovered the surprising claims of technical analysis. He tended to agree: 'After I decided to make markets a career, I realized that *mass psychology* is what they're all about'.

He set up his own shop, founded a newsletter called the *Elliot Wave Theorist,* and republished all of Elliot's available writings. He further elaborated the system, began to make predictions, scored some major early successes and thus acquired a 'guru' status – although some of his later forecasts did also prove wrong.

His theory had several key elements. First of all, upward and downward movements on the stock market were not the *cause* but the *result* of collective mood swings, he said – a claim doubted by others. Secondly, stock market indexes such as the Dow Jones or Standard & Poor's were the most detailed and precise ongoing indicators for the *general mood* of the country. Thirdly, they were also linked to, and good predictors of, a wide range of related other social and psychological phenomena throughout society.

Prechter showed that economic moods and stock market movements corresponded not only with changes in consumer behaviour, but also with a range of other trends. His books thus proclaimed the birth of a new discipline called *Socionomics* (1999, 2003), which studied the varied effects of such collective mood waves. Mathematician John Casti recently published an overview of a range of such claims and findings for a wider audience: *Mood Matters – From Rising Skirt Lengths to the Collapse of World Powers* (2010).

He begins with the fascinating example of the enthusiastic race to build the world's largest skyscraper: from the Empire State building to the WTC Twin Towers in New York; from the Petronas Twin Towers in Kuala Lumpur to the Burj Khalifa in Dubai. This has since been followed by the announcement of the one-kilometre high Kingdom tower in Jidda, Saudi Arabia, to be built by the construction company of . . . the Bin Laden family. All these projects were initiated during a local economic boom and real estate bubble – which had already burst by the time they were completed.[2]

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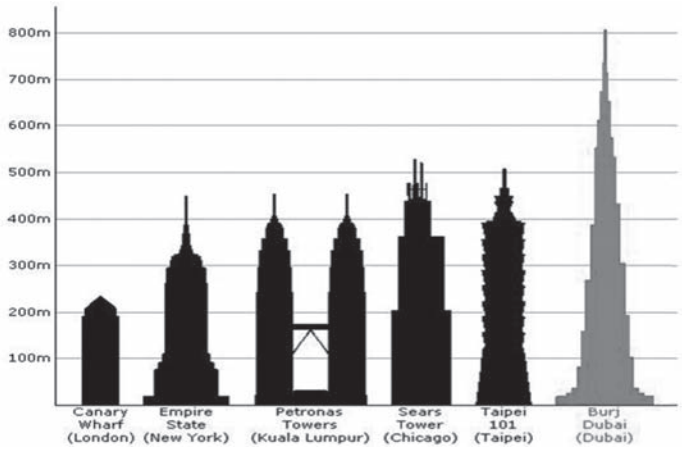
2 **Economic and financial psychology:** *see* my previous Dutch books *Crazes and crashes* (1993) and *Mad with money* (2010). **Prechter:** Quote from *Prechter's perspective* (1996/2004), p. 6 and Wikipedia.

Figure 17 The Ongoing Race to Build the Largest Skyscraper



Source: Available from a range of sources on the Internet.

9.2 Playgirls, Miniskirts and Birth Rates

One of the many student jobs I once held was to participate in a marketing study for *Simca,* a French car brand that has since disappeared. It turned out that Northern consumers felt Southern cars were not well protected enough against the Northern weather. To this very day, I regularly see television spots for French cars that are apparently still built around this same theme: by showing their models easily surviving an onslaught of rain, snow or ice.

A few years ago, I briefly returned to the automobile sector, but for an altogether different reason: after the economic crisis of 2008, people from the car industry asked me to give a series of presentations about recession psychology, and ensuing changes in consumer preferences and behaviour.

The car industry had soon been hit particularly hard, and to their dismay I forecast that the 'shake-out' might become even worse, with the accelerated shift to energy efficiency, less profitable small cars, and cheaper emerging country producers. While delving into these subjects, I came across rather fascinating recent research on how recessions translated into consumer sentiments.

There had long been claims that economic mood waves also corresponded to changing tastes and fashions, but the evidence had often been presented in rather impressionistic ways. Over the last fifteen years, however, one academic initiated a wide range of rigorous research projects on these themes – together with colleagues. He is an associate psychology professor currently teaching at Coastal University in Conway,

South Carolina: Terry Frank Pettijohn II (not to be confused with his father, who has the same initials and profession but is a psychology professor at Ohio State in Marion).

The first major step was the collection of the U.S. unemployment rates, disposable personal income, consumer price index, and demographic rates (birth, marriage, divorce, death, homicide and suicide): from the eve of World War II to the present day. These numbers were then standardized and combined into a composite *General Hard Times Measure* or GHTM.

His subsequent research built on the *Environmental Security Hypothesis* or ESH, which says that in hard times the public generally prefers more soothing messages and performers. So he and his colleagues investigated in great detail whether the measure correlated with various characteristic elements of media culture: preferred pop music, feature films, performers and actors, or even nude models.

Music is of course a good indicator of mood, as we have already seen. One series of projects thus focused on the 'number one' records on the authoritative hit lists of *Billboard* magazine. One year this was the upbeat summer hit *Macarena* by the Spanish duo Los Del Rio, for instance, another year the sad *Candle in the Wind* by Elton John (in the wake of the widespread emotion wave over the tragic death of Lady Di).

The researchers found that when social and economic times were relatively threatening, the most popular songs tended to be longer in duration, more meaningful in content, more comforting, more romantic and slower. They also found that the preferred type of performer differed, as well as his or her . . . facial characteristics.

Because in hard times, they had more mature facial features, including smaller eyes, narrower faces, and larger chins. This effect became even more pronounced after sound came to be accompanied by moving images, that is to say after the onset of music television.

The facial results built on earlier evolutionary research, which had found that people in all cultures prefer partners with faces and bodies that signal health and reproductive promise. Men generally prefer women with young or 'neonatal' features (read baby faces): relatively large eyes and mouth, a relatively small nose and chin. (Think Britney Spears).

When people feel uncertain, however (as such younger women themselves often did), the reverse is true: they prefer partners and performers with some experience and 'mature' features, as they can supposedly be better trusted and relied upon to care. (Think Bruce Springsteen.)

Pettijohn and a colleague even verified this in experimental research with students in the lab. He and others found that this tendency also translates into a preference for political candidates with . . . longer faces, as they are automatically deemed 'more competent'.

Another series of projects by Pettijohn and colleagues focused on the top five most popular actors/actresses and Hollywood blockbuster movies, as rated by the most authoritative *Motion Picture Almanac* and *Entertainment Almanac*. The research confirmed that during hard times, actresses with more mature facial features were preferred. The same effects were not found for actors.

The research did confirm, however, that during hard times, male stars were more popular than female ones. But contrary to expectation, they tended to be younger rather than older, and there was a preference for comedies rather than for dramas. So on some scores people may also tend to compensate for the harsh realities of the day in other ways.

A final series of projects by Pettijohn and colleagues focused on 'Playmates of the year', as selected annually by Hugh Hefner, his editorial staff and photographers at *Playboy* magazine (with an eye on earlier reader reactions to monthly models in preceding issues).

These are of course nude pictures printed on an extra-large centrefold/fold-out page; during its heydays they were seen by an estimated 10 million men. One example was the 24-year-old Vicky Lynn Hogan, better known as Anna Nicole Smith. Only two years later she scored a marriage with an eighty-nine-year-old Texan billionaire, predictably soon followed by his death — but later also followed by her own premature death, and then . . . a musical about her life.

The magazine maintains an accessible database with the 'key numbers' on these women; further research turned up additional data. It found that during hard times, the preferred playmates were older, taller and heavier. They had smaller eyes, larger waists, different waist-to-hip ratios and bust-to-waist ratios and smaller body mass index values.

Another related question is, of course, how men and women present themselves to others, what their fashion preferences are. Ever since the roaring 1920s and the depressed 1930s, it had been surmised that skirt lengths tended to go up and down with the stock market index. When women felt confident, they dared to be slightly more provocative; when they felt insecure, they were slightly more conservative.

This had been confirmed in an older unpublished master's thesis, and by later scientific articles. When men and women felt secure, this also changed their sex lives. As there did indeed turn out to be a close correlation between the Dow Jones stock market index and . . . the birth rate. To this very day.[3]

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3 **Pop music:** T. F. Pettijohn II & D. F. Sacco Jr. (2009). Tough times, meaningful music, mature performers – Popular Billboard songs and performer preferences across social and economic conditions in the U.S.A. *Psychology of Music, 37*(2), 155-179. **Lab:** T. F. Pettijohn II & A. Tesser. (2005). Threat and social choice: When eye size matters. *Journal of Social Psychology, 145*(5), 547-570. **Movies:** T. F. Pettijohn II. (2003). Relationships between U.S. social and economic hard times and popular motion picture actor gender, actor age, and movie genre preferences. *North American Journal of Psychology, 5*(1), pp. 61-66. **Nudes:** T. F. Pettijohn II & B. Jungeberg. (2004). Playboy playmate curves: Changes in facial and body feature preferences across U.S. social and economic conditions. *Personality and Social Psychology Bulletin, 30*(9), 1186-1197. **Fashion & birth rates.** Master's thesis: M. A. Mabry. *The relationship between fluctuations in hemlines and stock market average from 1921-1971* (defended in the latter year, at the University of Tennessee in Knoxville). Scientific article: N. Barber. (1999). Women's dress fashions as a function of reproductive strategy. *Sex roles, 40*, 459-471. Also *see* Pettijohn & Jungeberg (2004), p. 1188. 'Socionomist' R. Prechter also published graphs on the close correspondence between Dow Jones, skirt lengths and birth rates in 1999 (Casti, 2010, pp. 44 & 65). Within the Dutch language area, related research on business cycle, fashion colours and models has been done by the founder of the social and political science faculty in the Flemish capital of Gent, Helmut Gaus. *See: Mensen en mode* (with others 1992) and *Why yesterday tells of tomorrow* (2001), both published by Garant in Leuven.

9.3 Political Mood Waves and the President's Predicament

Another domain characterized by collective mood waves is politics. As in the case of share indexes, we dispose of quasi-objective quantitative measures here – since most major Western countries held regular public opinion polls since around World War II.

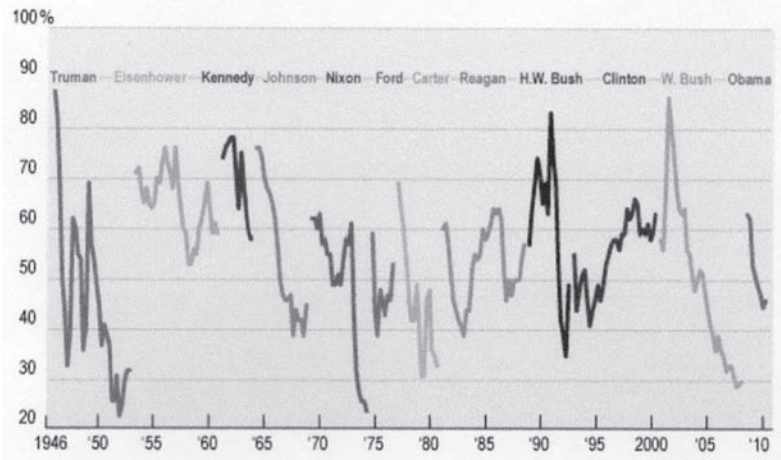
Dissecting the precise political atmosphere in any of those countries at any given point in time is, of course, a very complicated affair. But things get simpler if we just limit ourselves to the mere popularity ratings of individual top politicians, particularly those who get elected to the highest office, stay in power for some time, and are then forced out again. Their ratings go up and down, in a complicated combination of short and long waves.

If a country does not have fixed election years and terms, as is the case in most of the democratic world, the rhythms may become extremely irregular. But if a country does have fixed election years for one or two terms of four years, as is the case in the United States, some patterns can well be distinguished.

American presidents are voted in when they gather a majority of electors (more or less corresponding to votes), and ejected when they are only able to gather a minority. There is usually a brief honeymoon period with enthusiastic high hopes at the beginning, and a pre-divorce period with serious disappointments at the end of their rule.

George Gallup introduced political opinion polls in the United States during the 1930s, soon followed by others. One typical question they regularly put to voters was: 'Do you approve or disapprove of the way the president is handling his job?' This produced combined charts for all presidents since Roosevelt. At first sight they seem to be related to a succession of unique events, but upon closer inspection they reveal recurring regularities.

Figure 18 Post-War Evolution of U.S. Presidential Popularity, Overview



Source: WSJ.

The *Wall Street Journal* today has its own poll, together with broadcaster NBC. But its website has also compiled an interesting 'interactive' comparison chart on the evolution of the job approval ratings from Truman to Obama. The overview looks like a seismograph reading, with large tremors every four years. Most new presidents begin with a rather high score, and then embark on an almost immediate sharp slide downwards. The only exceptions were Bush, both father and son, who had extended 'honeymoons' for slightly different reasons.

After the overview, the same website gives the detailed graphs for these dozen presidents, and identifies a number of turning points for each of them. Favourable or unfavourable economic results do of course play a key role. In domestic politics, moreover, 'soft' measures (on taxes, social security, unions and strikes) do often seem to contribute to a downward slide in popularity of a few percentage points (*e.g.* under Johnson and initially under Obama).

In contrast, a failure to get such measures passed may contribute to an upward movement (*e.g.* under Clinton), as do 'harsh' social measures (*e.g.* under Truman and Bush Sr.). So alpha male posturing seems to pay – as is also clear, in retrospect, from the closer inspection of the events that led to a few dozen key turning points in presidential popularity.[4]

9.4 Psychohistory and the Drift Toward Collective Violence

Other wave-like phenomena appear to be related to sudden explosions of a contagious mood of anger. Early psychological theories and research on 'conditioning' had spawned the 'frustration-aggression hypothesis', saying that if individual people felt thwarted they might of course get angry and act out.

With the U.S. urban riots and military involvements of the 1960s, political scientists even tried to develop similar models of the origins of *collective* violence, that is, outbreaks of revolt and rebellion, revolution and war, and how they could be prevented. A key role was assigned to the management of expectations and perceptions. Other schools focused on analyzing unwitting signals in personal expression and in media reports.

Lloyd DeMause was a lay psychoanalyst who did graduate work in political science at Columbia University in New York. He adopted the term 'psychohistory', produced a thousand and three hundred-item bibliography of the emerging field, founded an institute (which later claimed eighteen overseas branches), an association with annual meetings, a *Journal* and a monograph series. Their approach was hailed by some academics as highly innovative, but denounced by others as not nearly rigorous enough.

DeMause and his colleagues developed a technique whereby they focused on the eruption of highly emotional terms in key speeches and press conferences by presidents, or in

4 **History** of social surveys & public opinion polls: van Ginneken (1993a, 2004). **Turning points** in presidential popularity: *Wall Street Journal* overview.

front-page headlines and articles of major newspapers, which they felt were indicative of 'group fantasies' and collective mood swings. So also the use of highly emotional images in accompanying cartoons, news pictures and on the covers of the major newsweeklies.

They then tried to analyze the unconscious associations of both leaders and followers along the Freudian lines of 'defence mechanisms'. For instance, how a rising tide of aggressive words and images pushed people to violent action.

The 1970s and 1980s seemed to provide a particularly suitable ground for a study of public mood waves. In spite of a continuous escalation of the war in Vietnam and its neighbours, the revelation of the 'Pentagon papers' by *The New York Times* underlined that the U.S. experts had long known they were slipping. Nixon and Kissinger tried the 'mad dog' approach, followed by the Paris peace accords with the North, but his presidency ended with near-impeachment because of the Watergate scandal. Under his replacement, Ford, the southern capital Saigon finally fell.

After another election, hopes were high for a fresh start. But in their book *Jimmy Carter and American Fantasy,* Henry Ebel and Lloyd DeMause predicted that the honeymoon would only be brief. The deposition of the Shah of Iran, the hostage-taking in the American embassy in Teheran, the failed helicopter rescue action, did indeed spell further humiliation. This even affected individual citizens, they said.

One of them was John Hinckley, who attempted to shoot the next president. In his subsequent book *Reagan's America,* based on 'fantasy analyses' of more than a hundred periodicals over four years, Lloyd DeMause claimed the president's stay in the hospital and triumphant return boosted Reagan's movie image as a 'tough guy'. Frustration was now ready to be turned into more aggressive action.

As this seemed to reinforce his mandate for confrontational policies on the home front (*e.g.* as a strike-buster), overseas (with renewed interventions in the Caribbean and Central America) and in the Cold War with the Soviet Union, with a resumption of the arms race through the Strategic Defense Initiative – dubbed *Star Wars* after the popular movie series of those days.

Some key 'emotional fantasy words' in his State of the Nation address announcing the turn had been: 'mess . . . out of control . . . runaway . . . like radioactivity . . . wars . . . freeze . . . cuts . . . exploded . . . unleash . . . stalled . . . judgment day . . . shattered' (p. 4). The successful *Rambo* and *Rocky* movies of those days also captured the new mood particularly well. Later, deMause published another book on *The Emotional Life of Nations,* whereas the *Journal of Psychohistory* published an article on 'The magical presidency of George W. Bush'.

The aforementioned 'socionomists' have in turn claimed that it was frustrating (downward) corrections in stock prices and the economy that preceded most major armed conflicts. In my own research on the social history of opinion polls, I came across

clear evidence of mood waves at the beginning and the end of both Word Wars I and II: from a rising U.S. willingness to enter the conflict to a total collapse of civilian morale in Germany.[5]

9.5 Conclusion

Throughout this book we have seen that contagious mood waves may affect large groups through some kind of emotional viruses – with changing views leading to changed behaviour. In this chapter, we have seen that these micro-ripples may sometimes converge in macro-waves. This has long been clear in economics and on the stock market, although it is less clear to what extent these trends can more or less be forecast.

Consumer sentiment also turns out to correspond to preferences in top hits and music performers, in movie blockbusters and film actresses, even in nude models, skirt lengths and birth rates. The terms of top politicians are, of course, also marked by wave patterns in their popularity – most clearly so for U.S. presidents. Even the readiness to engage in collective violence may show mood waves.

The final big question is, of course, whether we can see a mood change coming. What indicators do we have?

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5 **Frustration-aggression hypothesis.** The original hypothesis on individual behaviour was formulated by John Dollard *et al.* in 1939, and reformulated by Leonard Berkowitz twenty years later. Dollard, J. (1939) *Frustration and Aggression*. New Haven, Conn: Yale University Press. Berkowitz, L. (1962) *Aggression – A Social Psychological Analysis*. New York, NY: McGraw Hill. Models on collective behaviour by Ted Gurr (Gurr, T. (1970) *Why Men Rebel*. Princeton, NJ: Princeton University Press) and James Davies (Davies, J. (1971) *When Men Revolt and Why*. New York, NY: Free Press). For an analysis of Rambo, Rocky and other **war movies,** *see* van Ginneken (2007). **Public opinion and war:** *see* the graphs on the collapse of German morale at the end of World War I from Albig, W. (1939) *Public Opinion*. New York, NY: McGraw Hill and on the rising willingness of the American population to enter World War II from Cantril, H. (1967) *The Human Dimension*. New Brunswick, NJ: Rutgers University Press. Both reproduced next to the relevant chapter in J. van Ginneken & J. Jansz. (1986). *Psychologische praktijken* (Psychological practices – A 20th century history). Den Haag: Vuga, pp. 191, 208.

Epilogue: The Future, with Ongoing 'Sentiment Analysis'

We have seen throughout this book that collective feelings are potentially much more capricious than managers and policymakers would like to admit, as they may well flip-flop from positive to negative almost overnight, or vice versa. After my lectures on these subjects, this is always the first question people ask: if it is impossible to make entirely reliable forecasts, why bother at all? Is there nothing we can do about this?

One answer is not to be content with overly facile research and analysis, to always try to dig deeper. We do not simply live within 'true' reality, but within our *representations* of reality – which has entirely different implications. Several intervening layers mediate what we think, feel and tend to do: at the crossroads of neural, psychological and social processes. Those layers are infinitely complex and potentially unstable.

Another answer is to cultivate resilience, also by maintaining social support through constant dialogue – even with critics. Let us take a look at the underlying fundamental issues, and at the revolutionary new approaches that have emerged in recent years.[1]

The Original Sin of Mass Psychology

Public perceptions about a certain issue may long have looked perfectly stable, even stagnant or blocked. But there is always a degree of hidden ambiguity built into them. Invisible strains may have built up between the surface and the underlying emotional or even unconscious layers. That is to say, even a limited salient incident may abruptly trigger a dramatic shift.

I have earlier compared this to slowly moving tectonic plates. The original titles of two earlier books on this subject therefore likened these sudden collective mind shifts to earthquakes (1999/2003), and the subsequent collective shockwaves to tsunamis (2001/2008). They also argued that public opinion should be understood as a 'complex adaptive system' like the weather.

The systems in this newly identified category all consist of a large number of free entities with similar behavioural repertories, in constant interaction with each other and with the wider environment. Think of anything from pebbles in a riverbed to animal

1 *See* Taleb's fourth book *Antifragile,* and Zolli & Healy's book *Resilience*.

populations in their natural habitat. A key characteristic of such systems is that chaos and order may alternate within them, as well as old and entirely new forms of order.

I identified a number of relevant meta-principles in this regard, which apply to public opinion and mass behaviour as well. Throughout the system, there is constant minor change: in the entities (people), as well as in the relations between them, and in the larger environment. Most of the time, these changes have only very limited localized impact. But sometimes, they suddenly begin to spread: through amplification, positive feedback loops and 'circular reaction'.

This may then (1) be accompanied by the emergence of new forms of synergy, lowered resistance to change, and a boosting of relevant processes; (2) culminating in a change of dominant patterns, which (3) may even begin to lead a life of their own ('auto-poiesis'), *e.g.* with the emergence of early social movements.

Additional factors are changing contexts, critical thresholds and developments being 'drawn into' certain pathways ('attractors', *e.g.* with the emergence of polarization and escalation). This may ultimately tip the entire system into a qualitatively different state ('phase transitions', *e.g.* from hypo- to hyper-reactivity).

My book *Collective Behavior and Public Opinion* argued that the net results may be exponential or even sudden 'non-linear' effects, which are impossible to foresee for fundamental reasons (as they depend on minuscule contingencies and initial pathways). It may happen only one in ten or a hundred times, but the effects on that one single occasion may be larger than those of all others combined. So there is good reason to thoroughly consider this.

This came to be known as the *Lorenz' butterfly effect,* in reference to a meteorologist who used the image of the flap of a butterfly's wings in Brazil that might ultimately contribute to triggering a storm in Texas – thousands of miles away.

Think of Malcolm Gladwell's simultaneous bestseller on *The Tipping Point,* and also of Nicholas Taleb's provocative first book about *The Black Swan.* These views are completely at odds with our widespread naive and conventional belief in the 'holy trinity' of linear, mechanical science, where precise 'measuring' automatically leads to 'knowing, predicting and controlling' the future.

Automatic Mood Monitoring and Virus Alarm

All this is also the key reason why mass psychology and collective behaviour sociology have led a rather episodic life from their start in the late 19th century, with little or no solid institutionalization. After every major crisis, there seemed to be a sudden rush of official interest in the fields: commissions were formed, research into the case was funded, elaborate reports were published. But that same official interest usually faded soon afterward, as it seemed hard to catch the idiosyncratic and volatile eruptions under a stable umbrella.

Specialized departments have therefore always had a limited lifespan – from the 1960s and 1970s Baschwitz Institute at Amsterdam University, where I studied and worked, to a more recent ambitious project at Stanford University. As this present book has shown, many key studies relevant to mood contagion are also dispersed over a wide range of other disciplines ranging from physics to neurology.

The other sciences of man and society had meanwhile evolved from general theories to more practical studies of a 'quantitative empirical' nature, such as experiments and surveys. But the most typical collective behaviour phenomena tend to erupt suddenly, on a dramatic scale, frequently at times and places where they are least expected. Therefore, it is difficult to deploy adequate observation teams with predefined observation grids. Furthermore, these phenomena are rather complex and layered, as we have seen, so it is not even obvious on what levels one should zoom in.

Investigations have become easier, though, now that ever more mass events are directly captured on photo, film and video – not only by professionals but also by amateurs – and increasingly on smart phones as well. Think of footage of the successive 'colour and flower' revolutions in Eastern Europe and the Arab world. Such digital images – often available online – can now be dissected in much greater detail after the fact.

But even more important was the simultaneous rise of the World Wide Web and hyper-connectivity itself. Billions of people are already using the Internet every day. Most companies and government institutions have set up websites with information, for instance, to facilitate sales and services. Search machines index them, and provide systematic access. Google has become the dominant global player in this domain, next to Yahoo and others.

But it soon realized that the search behaviour of the public also revealed an unprecedented wealth of useful new data for managers and policymakers. One could now track the sudden explosion in the global use of a limited or local term on the World Wide Web. Think back to the examples mentioned earlier: the Jasmine revolution, Fukushima, DSK, Anders Breivik, but also EHEC, H1N1 and so on.

Google Trends began to monitor weekly and monthly commercial queries per industry, and found it could predict short-term and long-term future sales reasonably well on this basis, for instance travel (per country), car sales (per class and brand), other retail turnover, and even home sales. They turned out to correlate closely with consumer sentiment and future spending in general, as estimated by older tools. We have already mentioned that it also noticed a rise in searches related to flu-like phenomena, well before officials declared an outbreak of a new type in Mexico. This way, Google can help alert institutions to newly emerging problems worldwide.[2]

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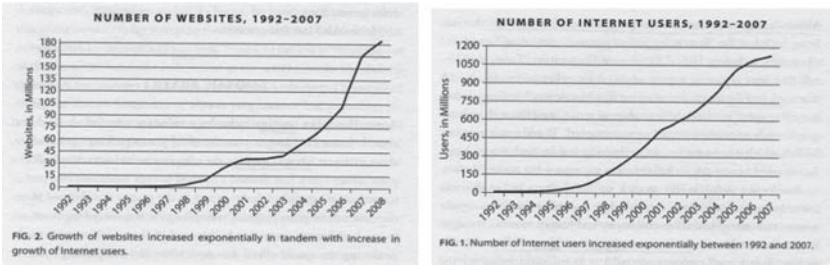
2 **Forecasting:** H. Choi & H. Varian. (10 April 2009). *Predicting the present with Google trends*. Draft paper, Google Inc.

Figure 19 The Explosion of Hyper-Connectivity



Source: Penenberg (2009, 2010), p. 45.

Twitter, from Mumbai to Abbottabad

Through other research projects, I have also looked closely at the historical evolution of one particularly fruitful tool for psychological and sociological research: the opinion poll. It added considerably to our understanding of perception shifts. But on the one hand it usually works with limited representative samples, with 'rapid changers' often in a small minority at first. On the other hand, these questionnaires submitted in person or by phone – as well as their evaluation – demanded a lot of wo/man hours, from both interviewers and analysts.

So the method is rather time and money consuming. In recent years, therefore, there has been a shift to the Internet. Researchers recruited much larger panels, which they could try to question entirely or in part, through standardized forms, and obtain almost immediate results. At first, the outcomes had to be heavily corrected and 'weighed', because of the overrepresentation of digitally savvy 'young, urban, educated, white, middle-class males'. Today, however, the Internet has become so ubiquitous that this is no longer a major problem.

But meanwhile an even much more radical revolution is unfolding. This trend began with the adoption of e-mail and personal websites by the general public. Growing numbers began to post weblogs or 'blogs' online: diaries and commentaries on a wide range of subjects, accessible for those with similar interests or indeed for any outsider.

Then came the social networks: LinkedIn for professionals, Facebook for ordinary people – first youngsters, then adults. Within that framework, users could form groups with colleagues or friends, share pictures and texts. Live on-line conversations became an increasingly common sight as well – in line with the earlier SMS-message exchanges on mobile phones.

Then came Twitter, a micro-blogging service, where one could share brief 'tweets' of no more than one hundred forty characters with one's 'followers' – about anything that

one saw or felt. Twitter thus became the first to spread news of a passenger plane landing on the Hudson river in the heart of New York, the news of a terrorist attack in the Indian port of Mumbai (the former Bombay), or of the American assault on the compound of Osama bin Laden in Abbottabad, Pakistan.

At this point in time, there are estimated to be 200 million users worldwide, averaging at least one such short message a day. Soon a new generation of researchers realized that all this provided huge amounts of digital text: already typed into standard electronic formats and freely accessible for further analysis. Blogs, and even more so tweets, could be seen as a vast body of unsolicited opinion.

The older methods of 'content analysis' of such written material had originally also been extremely labour intensive, time consuming and costly – as researchers had to identify and count key words, group and evaluate them, distil themes and trends – all by hand. Now, however, automatic computer programmes can increasingly be calibrated to do this work, and do it well. So one can 'harvest' huge amounts of online talk, run them through a statistical 'grinder' and get relevant information – almost in 'real time'.[3]

The Revolution of 'Opinion Mining' and 'Sentiment Analysis'

This was particularly useful for 'early warnings' on mass psychological phenomena such as emerging crazes, fads and manias. Several key media domains were dominated by such enthusiastic behaviours.

Pop music had its 'top hits', nowadays downloaded from iTunes and other specialized websites. Book publishing had its bestseller lists, with Amazon keeping sales ranks. One research project found that an analysis of talk on webpages, blogs and other online materials could reasonably well predict such book sales ranks. Other research projects found similar indications for the ratings of television shows or blockbuster movies. An analysis of online talk in the week before could reasonably well predict the programme ratings, or the opening weekend ticket sales as well as overall box office returns. And even . . . Oscar Academy Award winners.

So 'online talk' proved to be a good indicator of consumer sentiment and future sales: even if they concerned relatively capricious behaviour. But what about the feelings of audiences on less material matters? Why not launch wider attempts at 'opinion mining' on the Internet and 'sentiment analysis' about public issues – to complement or even replace the traditional polls?

Few realized at first that this also held promise for the 'real time monitoring' of highly dynamic mood shifts, for instance after a nuclear disaster or a food scare – the type of

3 **History** of public opinion research: J. van Ginneken. (2004). Social orientations. In J. Jansz & P. van Drunen (Eds.). *A social history of psychology* (Ch. 7, pp. 220-244). Cambridge: Blackwell. And an early Dutch research publication on *The invention of the public* (1993).

issues that mass psychology and collective behaviour sociology had always wrestled with. How could this be achieved?

One approach, crude at first but gradually refined, was to simply assign values to the relevant words in a short online text. A whole range of such tools is now available through the Internet: some free, others paying, whereas specialized agencies also offer their services. One example of a free tool for academics is *SentiStrength,* developed by Mike Thelwall at the University of Wolverhampton in the United Kingdom and his colleagues. It scores 'emotion bearing' words for the associated strength of negative or positive sentiment, for instance on a scale from minus five to plus five – but many variations exist.

One may add and subtract the total scores for lines or sentences, or calculate coefficients. One may also choose the breadth of a limited textual context that one is interested in, such as ten or a hundred words before, after or around a keyword (like the name of a brand or a product). One may compare the total scores for different types of texts, or texts from different time periods (for instance before and after a persuasion campaign).

Various complications have arisen, which researchers have tried to overcome one by one. These include 'booster words' (We are 'very' happy), negations (We are 'not' really happy) or irony (We are 'supposed to be' very happy). Thelwall even went so far as to score slang expressions and emoticons, such as ;-), to produce elaborate word lists and tables.

Of course one can endlessly refine such models, for instance by adding more grammatical analysis and by constantly testing what their strong and weak points are. One application is automatic alerts for institutions, when Internet discussions about a relevant subject get highly agitated, or suddenly focus on a newly emerging controversy (such as the supposed dangers of vaccines). The European Union initially subsidized the CREEN project about 'Critical Events in Evolving Networks' and the related Cyber-emotions consortium, in which scholars from a wide range of universities in East and West participated.[4]

Web Scraping for 'Real Beauty'

In an earlier book I included an elaborate case description of enthusiasm for the Body Shop, an alternative 'challenger brand' to mainstream *Fortune* 500 'personal hygiene' giants, such as European Unilever and American Procter and Gamble.

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4 **Book sales:** D. Gruhl *et al.* (2005). The predictive power of online chatter. *Proceedings of the 11th SIGKDD conference on knowledge discovery and data mining.* New York, NY: ACM, pp. 78-87. **Movie sales:** G. Mishne & N. Glance. (2006). Predicting movie sales from blogger sentiment. *Spring symposium on computational approaches to analyzing weblogs.* American Association for Artificial Intelligence. **Other sales:** S. Asur & B. A. Huberman. (2006). Predicting the future with social media. *HP Labs Report.* Y. Liu *et al.* (2007). A sentiment-aware model for predicting sales performance using blogs. *Proceedings SIGIR conference* (Amsterdam, 23-27 July). ACM, pp. 607-614. **Oscars:** J. Krauss *et al.* (2008). Predicting movie success and academy awards through sentiment and social network analysis. *Proceedings, European Conference on Information systems,* pp. 2026-2037. **Sentiment analysis:** M. Thelwall *et al.* (2010). Sentiment strength detection in short informal text. *Journal of the American Society for Information Science and Technology, 61*(12), 2544-2558.

The Body Shop was founded by, and flourished under, the British 'Queen of Green' Anita Roddick. One of her 'new age' themes was the fact that at any point in time there were only eight women in the world who looked like the thin supermodels dominating the covers and ads of fashion magazines, whereas 3 billion others did not. Just before the turn of the century, this resulted in the launch of Ruby (a provocative 'anti-Barbie' doll with emphatically Rubensian forms) and a related fund to support female emancipation. After some time, this got its major competitors thinking – because a few years later, Unilever's major brand of soap, shampoo and other skin-related products Dove did launch a feel-good 'Real Beauty' campaign in turn.

Ads and spots displayed a multicultural group of half a dozen merry women in white underwear, apparently pleased with themselves – young, adult and marginally plump, rather than adolescent and waifish. It attracted a lot of attention, praise and prizes. Some billboards asked the public to phone in and tell whether they considered them 'fat' or 'fab'. Initial reactions favoured the latter, but later reactions tended to veer back to the former. One outside research project even claimed the images had proved counterproductive.

Figure 20 Dove 'Real Beauty' Campaign

Source: Unilever.

But meanwhile Unilever/Dove had apparently decided to broadly stick with this new approach. They also set up a 'Self Esteem Fund' and launched another offensive: this time the 'pro-age' campaign. It included television commercials with elderly women: tastefully filmed but . . . nude. The spots were aired in a number of European countries, but refused by the mainstream American networks (although this fact then made the influential Oprah Winfrey show).

Here again, the key question became whether the campaign would convey an image of a sympathetic and socially responsible company, or would shock and put off the target

group. As the stirred emotions might be layered and even contradictory, it was important to fathom them well.

So Dove tried a revolutionary approach to 'Customer Experience Feedback'. It approached an innovative young analytics company founded by Tom Anderson: hailed by some colleagues as 'the uncrowned father of Web 3.0 market research', and also the initiator of the 'Next Gen' network within the field.

He used 'cutting edge screen-scraping robots' to immediately harvest thousands of relevant comments about Dove from blogs, message boards and online forums. He then applied 'text mining' and 'content analysis' techniques that identified meaningful word combinations and sentiment, and measured significant differences in 'over forty psychological traits'.

Catherine Cardoso was the manager of the relevant department for Unilever/Dove in New York. She was enthusiastic. 'We were very pleased with the results and the depth of insight. The results were helpful beyond understanding reactions to our campaign. We also gained an understanding of what motivates people on discussion boards, which issues are most important to women in our target group, and how to create better products and messaging for them'.

It might further help the fine-tuning of messages concerning such intergenerational issues within the broader society. 'We have been thinking about other ways to utilize this technology which would allow us to not only continue to listen to and understand our consumers, but to create a real time two-way communication'.[5]

Predicting the Stock Market, to Make an Extra Buck

Now let us make a further step from economic to financial psychology. John Bollen is a Flemish psychologist originating from the 'Evolution, Complexity and Cognition' group at the University of Brussels. He completed a Ph.D. on Internet hyper-navigation there, before crossing the Atlantic to the United States, where he worked at the advanced national lab in Los Alamos and later at Indiana University.

Because of his background, he was familiar with an old psychological assessment tool called the 'Profile of Mood States' or POMS. It presented people with sixty-five possible terms for their current feelings, and asked them to score to what extent they applied (on a five-point scale). The test was seen as well vetted, valid and reliable; it revealed six underlying mood dimensions.

Bollen and his colleagues first expanded the original mood lexicon to almost one thousand associated terms. Then they verified whether people identified their current moods in those terms within social media text files, following expressions like 'I am', 'I feel',

5 **Dove:** About an earlier Ogilvy campaign: *see* Earls (2009), pp. 271-280. Billboards: Compare *Marketing Magazine,* 25 October 2004 and a study in the *Journal of Consumer Research,* March 2006. Sentiment analysis: <www.andersonanalytics.com/index.php?page=white-papers>.

'It makes me', etc. They called the instrument 'Google' or 'G' POMS. They identified its six dimensions as 'Calm, Alert, Sure, Vital, Kind and Happy', respectively.

They tested it on the month of November 2008, and did indeed find a clear peak for 'Happy' on the national holiday Thanksgiving late in that month, as well as a clear dip for 'Calm' (meaning anxiety) on the days before the presidential election early in that month, as well as clear peaks for 'Happy', 'Vital' and 'Sure' for the day after the results became known. The next question was what might be a profitable application for their new tool.

The previous chapter has already mentioned that public mood tends to affect the stock market and composite indexes such as the Dow Jones and Standard & Poor's. My earlier Dutch book on financial psychology referred to a wide range of serious research proving marginal effects of the weather and the seasons, as well as changes to and from daylight saving time – and even sunspots and lunar cycles, probably affecting sleep.

On more than one occasion, Friday the Thirteenth seems to have contributed to mini crashes. Wins and particularly losses in major sports championship finals popular among male investors and traders (such as soccer, cricket, rugby and basketball) were proven to have marginal effects in many countries.

There had also already been scattered attempts to analyze investor sentiment in posts and blogs, in order to predict the stock market. So Bollen and colleagues decided to try and apply their new tools to that same problem. They 'harvested' almost 10 million tweets from three months in late 2008, and ran them through their statistical 'meat grinders'.

These comprised, on the one hand, the publicly available 'Opinion Finder' software package, limiting itself to the identification of the emotional polarity (positive or negative) of words and sentences and, on the other hand, their own new G-POMS instrument presumably measuring six different mood dimensions.

They found that their sentiment analysis was fairly successful in predicting the Dow Jones Industrial Average (DJIA), even if only two of the six mood dimensions did really correlate, namely Calm (rather than anxious) and Happy (rather than depressed). The results provoked a worldwide sensation and media hype. Bollen was immediately invited to become adviser of a new hedge fund, set up by Derwent Capital Markets in the Cayman Islands tax haven, to exploit a 'secret' program with the new approach.

Foreign researchers began doing similar projects. So these kinds of financial sentiment analyses are bound to become rapidly expanded and refined as they can obviously bring considerable rewards – until they become overly common, and the initial effects wear off.[6]

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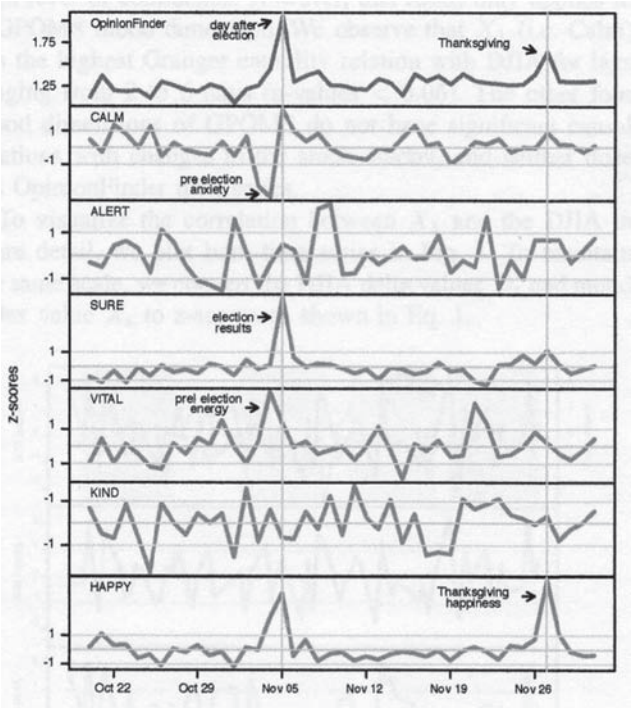
6 **Sports results:** Separate earlier papers and 2005/2006 conference presentations about this subject by Alex Edmans (MIT Sloan School of Management), by Diego Garcia (Tuck School of Business at Dartmouth) and Øyvind Norli (Norwegian School of Management) were ultimately combined in their paper 'Sport sentiment and stock returns'. **U.S. Dow Jones:** J. Bollen, H. Mao, & X.-J. Zeng. (2011). Twitter mood predicts the stock market. *Journal of Computational Science, 2*(1), 1-8. **Netherlands AEX:** L. van Leeuwen. (March 2010). *Monitoring the chatter in social media: The Amsterdam Exchange Index*. Unpublished Master's Thesis, Amsterdam University, Economics & Business Faculty. 67 pages.

Figure 21 **First: Twitter Words Associated with Positive Feelings, Late October – Late November 2008. Others: Twitter Words Associated with Six Sentiment Dimensions. (Note Peaks for the Presidential Election and Thanksgiving).**



Source: Bollen *et al.* 2010.

Conclusion

So we are entering a whole new era. On the one hand, hyper-connectivity has made the potential for social volatility through mood contagion greater than ever before. On the other hand, the Internet and the Web are also facilitating the emergence of entirely new approaches to opinion and market research in 'real time'.

They will soon become ubiquitous. Every company and government body will soon deploy such instruments to monitor relevant parameters, in order to be able to constantly position and reposition themselves – to issue early warnings, with regard to their own strengths and weaknesses, in the face of upcoming opportunities and threats.

Not only when the seas are calm, but also when storm clouds gather on the horizon. As worldwide public opinion and perception are increasingly like a weather system, obeying the laws of nature, but in ways that make it hard to predict with any confidence beyond a mere one-week horizon. You might as well get ready.

Glossary

Agenda-setting (Bernard Cohen). An agenda is a list of issues to be dealt with, their order and priority; whereas other issues may be overlooked at the same time. Certain powerful media and elites have the capacity to set the national agenda for public debates. Think of the 'CNN effect'. > Frame

Amplification. Making a signal or behaviour stronger and more noteworthy. > Circular reaction.

Attractors. A recurring path of development, into which an evolving system can be drawn, *e.g.* enemy images lead to polarization, leading to escalation, leading to confrontation.

Attribution. With regard to events and actions, we intuitively tend to 'attribute' causes and intentions to them. Making good actions derive from the intrinsically positive characteristics of ourselves, our own group and category, and bad ones from an unfortunate concurrence of circumstances. For quintessential others, we do the exact opposite.

Auto-poiesis. Self-formation and self-organization of phenomena, beginning to lead a life of their own. > Social movements.

Bandwagon effect. People instantaneously tend join a seemingly popular group and movement, like crowds following a music band on a wagon. This also applies to candidates marked as potential winners, on the eve of elections.

Behavioural economics and finance. In recent years, both fields have discovered that their implicit model of a purely 'rational economic man' was inadequate and misleading, and that they should begin to learn from experimental social psychology. > Prospect theory

Black swan (Nicholas Taleb). In earlier times, people felt there could only be white swans, until the first black swan came along. Similarly, our expectations of the future (*e.g.* on money markets) tend to rely on what we are already familiar with, and ignore the real possibility of large unprecedented events. > Holy trinity

Blog. Weblog: a personal diary with comments kept on the Internet, accessible for others to read. Microblog: a 'tweet' of maximum 140 characters, sent through Twitter.

Bonding. The creation or reinforcement of emotional bonds with another person. > Rapport

Boom & bust cycles. Alternating cycles of economic and financial activity: either expanding ('bull market') or contracting ('bear market'). > Crash

Brainwashing. The idea, dating from the early Cold war in Korea and China, that prisoners can be conditioned to change their most profound beliefs. > Indoctrination.

Butterfly effect (Edward Lorenz). The flap of a butterfly's wings may contribute to triggering a storm thousands of miles away. Tiny initial details may influence the evolution of much larger phenomena. > Chaos, Complex adaptive systems

Buzz. Enthusiastic conversation, leading to the promotion of a product. > Hearsay.

Can do attitude. The overconfident attitude of managers and engineers that they can 'force' the realization of certain complex goals. > Demoralization, Hubris.

Categorization (social). We intuitively categorize people on the basis of first impressions and known backgrounds, and make this guide our behaviour and reactions towards them. > Attribution, Stigma.

Chaos and order. Certain systems (including groups, collectives, masses) are characterized by the sudden emergence of new forms of order, and/ or the dissolution of old ones. > Complex adaptive systems, Emerging patterns, Non-linear change.

Circular reaction. A self-reinforcing feedback loop of amplification. Like when a microphone has inadvertently been placed in front of a speaker box, and produces an extremely loud and shrill sound.

Claques. Small minorities of family members or students, invited or hired to take the lead in the applause and cheers for performers, to stimulate the enthusiasm of the further theatre audience. > Minority, Square Root

Clash of civilizations (Samuel Huntington). After the end of the 'ideological and mostly secular' Cold War, older cultural and religious divides were supposed the re-emerge, particularly between the Christian West and the Islamic Middle East. > Culture, Self-fulfilling prophecy.

Climate. The atmosphere or mood within a group or organization, at a precise moment in time.

Cognitive dissonance reduction (Leon Festinger). We strive to keep our ideas, feelings and actions in line with each other. If one begins to deviate, we try to restore congruence.

Collective behaviour. Label for the range of emergent mass phenomena studied within a sub-discipline of sociology – particularly within the Anglo-American world.

Collective definition, of the situation. When people are confronted with an unforeseen situation and feel ill at ease with it, they first try to 'negotiate' an alternative 'collective definition' of it, to give it unambiguous new meaning.

Complex adaptive systems CAS. A new category of evolving phenomena, first identified in meteorology and natural science. Systems consisting of a large number of entities with similar behavioural repertories, interacting with each other and with the wider environment. They have since turned up in almost every field, including mass psychology and collective behaviour sociology, and are characterized by unusual forms of change. > Chaos and order, Emergent patterns, Non-linearity.

Con-text. The same word or image can be made to mean different things, depending on the other words or images around it. Similarly, the same situation can mean different things, depending on the other situations around it.

Convergence. Agents or developments going in the same direction, and meeting at a particular point. Sociological observation that it is often people with similar backgrounds and expectations who end up in a specific mass event. > De-individuation.

Coordination. Groups of people beginning to act together in pursuit of a certain goal often develop a spontaneous 'division of labour', even before a formal organization is set up.

Cover curse. If an individual or organization is chosen as 'best of the year', and celebrated as such on the cover of magazines, this often marks the highest point of the previous upward trend in prestige, and the beginning of a subsequent downward trend. > Hubris, Tipping point.

Crash. German: Krach. The sudden and self-reinforcing devaluation of money, shares, obligations or even material property like real estate. > Cycles, Stock market

Craze. The phenomenon where large groups of people suddenly 'go mad' for the possession of certain items: in great demand and often (temporarily) in short supply. > Fad, Hoarding, Mania.

Crisis, communication and management. A rule of thumb is that a reputation of openness, credibility, responsibility, etcetera has to be built and maintained between crises, otherwise resilience will fail when a crisis breaks out. Another says one needs to use a crisis to push through necessary measures that would otherwise have encountered too much resistance. As this had failed to be done with the credit crisis, it predictably recurred as a debt crisis. > Resilience.

Critical threshold, mass. A value or quantity that 'makes all the difference' whenever it is surpassed. As developments may begin to take a radically different turn. > Resilience, Tipping point.

Crowd, crowd psychology. A crowd or mass is a large group of people, often amorphous and not clearly organized. The word crowd places the emphasis on the fact that they are packed close together. Under certain conditions, it may begin to display specific forms of behaviour, studied within the field of crowd or mass psychology. > De-individuation, Mass, Visible

Cults. > Sects

Culture. A specific combination of 'conceiving, feeling and doing things' that characterizes groups, organizations, nations, religious or languages areas. Often implicitly, and difficult to make explicit, thus leading to miscommunication between groups.

Demoralization. > Morale.

De-individuation. (Philip Zimbardo). Conceptualization of how and why individuals seem to loose their 'ego boundaries' within a larger diffuse and agitated group. This is attributed to changes in: 1. Mental input (anonymity, sensory overload, altered states, etc.); 2. Mental throughput (impossibility to evaluate individual behaviours of self and others separately and critically); and 3. Mental output (transgressive behaviour). > Convergence.

Emerging patterns. Within large groups such as crowds and masses, new psychological and sociological configurations rise and fall, whereby the whole is much more than the mere sum of the parts, and certain details count. > Butterfly effect, Chaos and order, Complex adaptive systems.

Emotional contagion. Higher social animals and people are programmed to immediately pick up the feelings of their neighbours, as possibly relevant signals for opportunities and threats.

Environmental Security Hypothesis ESH (Terry Frank Pettijohn II). When they feel insecure, people prefer soothing messages from others. > General Hard Times Index.

Esprit de corps. French for 'spirit of a (social) body', a group or a team. Collective identity and mentality.

Fad. A temporarily very popular type of fashion, which first peaks and then fades. > Craze, Mania.

Fashion. In our make-up, external adornments, clothes and accessories, we aim to elicit positive attention from others, and to evade negative attention. This leads to eternal change and currents, attempts at imitating other's styles.

Feedback loop. There are two types of feedback. 'Negative' feedback dampens change and makes a system maintain equilibrium ('homeostasis' as with a thermostat). 'Positive' feedback accelerates change and makes a system loose its equilibrium. Resistance is lowered and innovation is boosted.

Flash mobs. With the help of mobile phones, one may suddenly direct large groups of people to a certain place at a certain time, to stage a collective activity – for marketing, charity or whatever.

Foaf: Friend of a friend. Social networks consist of hubs and spokes of relationships between people. Their basic unit is that of a 'friend of a friend'. They play a role in the spreading of hearsay, but also of illness and health. > Two step flow.

Frame (Erving Goffman). A frame is like the cadre and/ or organization of a painting: it draws our attention to some elements and keeps others 'out of the picture'; it makes some central and others marginal. That is: Certain images and texts make us see and 'read' events in a preferred way. > Agenda setting.

General Hard Times Index GHTI (Terry Frank Pettijohn II). The author calculated 'hard times' on the bases of a number of social and economic indices, and linked them to changes in the wider media culture. > Environmental Security Hypothesis.

Generation. An age cohort simply shares formal years of birth; a generation shares arch life experiences and events, producing a common feeling and psychological identity.

Global village (Marshall McLuhan). As early as the 1960s, the Canadian scholar said that the ubiquity of international communication and media would ultimately lead to a much closer engagement with people living in far-away places. This was long before even the first stirrings of the Internet came along.

Gossip. > Hearsay.

G-Poms (John Bollen). 'Profile of Mood States' derived from words found in tweets, blogs, on-line forums and their like. Through Google and other Internet search tools.

Gregariousness. Living in groups, with a social nature, like higher animals and humans. > Herd instinct.

Group dynamics (Kurt Lewin). Subfield of social psychology focused on the evolving behaviour of people, particularly within small groups. They may for instance identify with the 'in-group' of 'us', and reject the 'out-group' of 'them'.

Group think (Irving Janis). Within (national security) groups under pressure, there is often premature consensus, as the louder hawks tend to win out over the doves. This leads to a plea to appoint a 'Devil's advocate', to keep an eye on contrary views.

Hearsay. Hearsay is an umbrella term for all forms of informal communication whereby people hear something and then pass it on (gossip, rumour, urban legends, WoM). > Foaf, Serial distortion.

Herd instinct. Higher social animals and humans possess a herd instinct: they are sensitive to cues from others, and tend to conform.

Heuristics. Simplified forms of appraisal and decision making, according to 'rules of thumb'.

Hoarding. Excessive stocking up of products, resulting from vague fears of a possible future shortage. > Craze, Scare.

Holy trinity of methodology, for a largely linear and mechanical approach to science. Where precise measuring automatically leads to 'knowing, predicting and controlling' subsequent events. Does not automatically apply to collective and mass phenomena. > Complex adaptive systems, Non-linearity.

Hubris. (Dangerous) overconfidence of experts and leaders.

Hype (media). A self-reinforcing phenomenon whereby media devote disproportionate attention to a subject, because other media also do. Once publicity has reached a peak, some may initiate a critical re-evaluation and de-bunking.

Identification (social). Feeling 'one' with someone else, a group or a category – usually also in an emotional sense. > Attribution, Categorization.

Indoctrination. Making someone else adhere to your own doctrine, converting them. > Brainwashing.

Information processing. In recent years, psychologists have found that we process information via two different and contrasting routes. The central route concerns precise facts, rational arguments, logical reasoning. The peripheral route concerns vague impressions, emotional associations, split-second judgments. The latter prevail more often than we realize. > Prospect theory.

Issue. An issue is a question that people differ and argue about, leading to a certain outcome. Large-scale organizations have learned to weigh in on these public debates at an early stage, through 'issues management'.

Mania. Hyperactive pursuit of certain objects or people. > Craze, Fad, Fashion.

Mass individualization. In the electronic age, it has become possible to take a mass of questions or orders, but still to individualize the answers or deliveries. Think of Amazon, Google and their like.

Mass Psychogenic Illness MPI. Some people who live, study or work together in compact spaces, and are under some kind of pressure, may develop vague health complaints. These may then easily spread to other group members, and become more serious in nature.

Mass, mass psychology. A mass or crowd is a large group of people, not formally organized. The word mass places the emphasis on the large number forming an amorphous whole. Under certain conditions, it may begin to display specific forms of behaviour, studied within the field of mass or crowd psychology. > Crowd, Visible

Medium, media (mass). Medium is Latin for 'means', in this case of mass communication, covering everything from the press to film and television. Media is the plural form. Internet was the latest addition. > Mass individualization

Memes (Richard Dawkins). Genes are replicators. So are 'memes': the smallest bits of cultural information that people can pick up, store in their heads, and reproduce again. A new approach to the success and failure of belief systems.

Metaphors. Using a metaphor is basically explaining something that is hard to understand in terms of something that is easier to understand. Dramatic crowd and mass phenomena are therefore often compared to geological ones, like earthquakes or tsunamis. To water: ripples, cascades, streams, floods, waves. To weather: Storms and hurricanes. To chemical reactions: Fermentation, catalysts. To biomedical phenomena: Infection, contagion, virus, epidemic. Or psychological ones: hypnosis, hysteria.

Minority (active, decided). Within larger crowds or masses, small minorities do often exert disproportionate influence. > Claque, Square root.

Mirroring (social). People that empathize or try to establish a connection do often unwittingly mirror each other's expressions, gestures and postures.

Mirror neurons. Recent brain research has discovered special neurons that enable us to put ourselves in the shoes of others, to mirror their thoughts, feelings or actions.

Mood management. We are increasingly learning to 'manage' our everyday moods, not only through drinks and food, but also through scents and music.

Mood swings. The tendency of many individuals and groups to feel overly upbeat at one point in time, and overly downbeat at another.

Morale (team, organization). Morale is the feeling within a group, that they are adequately trained and equipped to take on the job at hand. De-moralization sets in when they loose this conviction.

Moral panic (Stanley Cohen). A wave of outrage over the appearance or behaviour of certain individuals or groups (*i.e.* youngsters), depicted as a threat to society. > Stigma, stigmatization

Movements (early social). They are still in a state of flux, with more or less spontaneous coordination of actions. It is only at a later stage, that they acquire a formal form of organization. > Emergence

MPI. > Mass Psychogenic Illness.

Network. A social ensemble, with people as 'hubs', and relationships between them as 'spokes', that may carry information, feelings, behaviours, and make them spread. Our influence does usually extend 3 degrees into our network (to the friends of our friends); most people within a society connect through no more than 6 degrees. > Opinion leader, two step flow.

Non-linear change. Change may be gradual, exponential or sudden. We often let ourselves be surprised by non-linear change, for better and for worse. > Black swan.

Non-violent action (Gene Sharp). Precise series of mass mobilization techniques, written down in a small manual translated into 35 languages. That contributed decisively to the 'colour and flower' revolutions in Eastern Europe and Northern Africa.

Norms (behavioural). Values guide the goals we reach for, norms the means we use to get there. In collective behaviour, old established norms do often suddenly give way to new emergent norms. For instance in sit-ins and picket lines, sleep-overs and occupations, that may veer onto violence.

Opinion leader. Some people may play an outsize role in advocating change. Such as moral authorities, prestigious intellectuals, independent scientists. > Two step flow.

Opinion mining. Searching through a large body of opinion, to distil important patterns. > Sentiment Analysis.

Organizations, formal and informal. Organizations are like icebergs. When looking at them, we usually focus on the visible parts of formal responsibilities and written reports that are aboveboard. We overlook the invisible parts of informal networks and small talk that are underwater. This may lead to dangerous misappraisals. > Climate, culture.

Panic. Extreme forms are the result of primal fears. For instance when a fire breaks out and everyone tries to get to the exits in a disco. Strictly speaking, this is ultra-individualistic behaviour that runs parallel, rather than collective behaviour proper.

Phase transition. Change into a fundamentally different state, which implies fundamentally different behaviour. In physics: ice that melts into water, and water that evaporates into steam. In mass psychology and collective behaviour: a calm and hypo-reactive group that changes into an agitated and hyper-reactive group, allowing for sudden volatility.

Pluralistic ignorance. People within a larger group do often long feel that they are only a small and powerless minority, until new information does make them feel they are in fact a large and powerful majority.

Power of swarms. Tiny insects, fish or birds may self-organize into large swarms and schools, that have a surprising capacity for massive co-ordinated movement and may boost their chances for survival.

Prospect theory (Daniel Kahneman). In contrast to what was long thought, 'rational economic man' does not make an objective calculus of a desired outcome, but a subjective calculus. Losses, for instance, often have 2.5x the psychological impact of gains, which leads to counterproductive investor strategies.

Public opinion. The whole body of opinions that citizens make public, in contrast to those they keep private. Some point of view may grow in importance, whereas another may fade away ('spiral of silence' theory, Elisabeth Noelle Neuman).

Rapport. French for affective relationship and mutual connection.

Representations. (Serge Moscovici). It is important to see that we do not live in the real world. But in our representations of the real world, which has entirely different implications. As our representations are subject to a wide range of distortions, biases and fallacies. > Heuristics.

Resilience (individual, social). Since mass phenomena can not easily be controlled, it is important to build resilience by maintaining authority, credibility, legitimacy, social responsibility, etc. > Chaos, Crisis, Holy Trinity.

Rhythm (micro). Biological, psychological and social processes may show spikes and lulls, which act like cogs on a wheel: facilitating or hampering the 'tuning in' to others. > Synchronization.

Rumour. > Hearsay.

Scare. A scare is a collective or mass panic, resulting from fear or anxiety. For instance a boycott of certain products, as long as there is a suspicion of contamination. > Craze, Hoarding.

Sects, cults. When an early social movement advocates a radically different lifestyle, this often leads to an escalating confrontation with mainstream society, and defensive measures on both sides. The interactions between group leaders and members loose their spontaneity, become strict and regulated, often leading to derailments.

Self-fulfilling prophecy (Robert Merton). When people expect something to happen, this may change their behaviour in such a way, that it actually helps the occurrence to come about.

Self-reinforcement. > Feedback, positive.

Sentiment analysis. A new technique to harvest and evaluate 'internet talk' to fathom emotions and moods among target groups.

Serial distortion. Messages passed on orally may be subject to a threefold process of 'levelling, sharpening and assimilation' – in line with the presuppositions of the people involved. > Hearsay.

Spirals. Many neurological, psychological and social processes may feed on themselves, leading to downward or upward spirals, for instance in the economy. > Circles, Tipping point.

Square root (Law of the). Mathematical simulations have shown that the decided minority one needs to sway an undecided majority in most cases is equal to the square root of the latter number. > Minority

Stickiness (Chip & Dan Heath). Salient, Unexpected, Credible, Concrete and Emotional Stories have more success at spreading. > Hearsay.

Stigma, stigmatization (Erving Goffman). Marking a group as marginal or problematic will usually contribute to make it more marginal and problematic still. *I.e.* psychiatric patients, former inmates, cultural minorities, etc.

Stock market index. Combined average of share prices for certain sectors or the economy as a whole, used as an indicator of changing investor sentiments. *I.e.* Dow Jones, Standard & Poor's. > Cycles.

Synchronization (neural, psychological, social). When we 'hook up' with one or more others, relevant processes may begin to run parallel. > Rapport, Rhythm.

Tipping point (Malcolm Gladwell). Radical change in the direction of a trend or tendency. > Critical

Trust (Stephen Covey). The invisible lubricant and facilitator of social interaction.

Two step flow. Information often first travels to lay experts in a certain field (*i.e.* gardening, cars), and only from there onwards to their wider social environment.

Urban legends. Present-day improvised fairy tales, often horrible and with an implicit warning, about the modern condition (*e.g.* about the dangers of large scale anonymous environments). > Hearsay.

Vicious/ virtuous circles > Spirals.

Visible vs. Invisible crowds/ masses (Kurt Baschwitz). The former are concentrated in one time and place, for instance a performance audience. They can see, hear, smell and feel each other. The latter are dispersed through time and space, for instance a movie audience. An intermediary category is formed by early social movements: parts of which may meet every now and then, but need not.

Volatility. A previously stable condition may suddenly turn into highly dynamic one. > Phase transitions.

Wandering web. Today, huge numbers of people around the world are permanently connected through mobile devices such as tablets and smart phones, 24/7.

Weak ties, strength of (Mark Granovetter). Strong ties in the centre of a network are often redundant, whereas weak ties at the periphery of a network are often unique and yield unexpected results.

Wildcat strikes. Spontaneous strikes after an incident; not planned by official unions.

Wisdom of crowds (James Surowiecki). If people make an appraisal as a group, it is usually better than that of individual members. At least if they have reached the decision independent of each other, not if they have influenced each other.

Witch hunts. A certain category or group may suddenly be perceived a threat to society, and thus become subject to persecution. > Moral panic.

WoM. Word of mouth, word of mouse, passed on through human networks. > Hearsay.

Zeitgeist. German term for 'Spirit of the times'

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About the Author

Jaap van Ginneken studied social psychology at Amsterdam University and did a Ph.D. with distinction on European crowd theories, their intellectual and political contexts. At the time, he taught at the Baschwitz Institute for mass psychology, propaganda and public opinion, within the social and political sciences faculty. It was later integrated into the public opinion section of the communication science department at the same university, where he long remained a part-time associate professor.

He published twenty earlier books in forty editions and five languages. Some of the most relevant English titles are: *Crowds, psychology and politics* (Cambridge University Press, 1992), *Understanding global news* (Sage, 1998), *Collective behavior and public opinion* (Erlbaum, 2003), *Screening difference* (Rowman & Littlefield, 2007), *Mass movements* (Spinhuis, 2007), *Stranger danger and the epidemic of fear* (Eleven International Publishing, 2012). A forthcoming book is about the overconfidence of top politicians.

In the course of the years, he also did a wide range of media projects, and is today a professional speaker and writer based near Nice in Southern France.