

The Meme Meme

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1.1 Sex and Sensibility

Most of the things we do would make no sense at all to a visiting Martian. That's not news. But you might not have thought about the reasons why we do these things. Some of those reasons are programmed in to the very cells of our bodies, while some are learned from family, friends, colleagues and the media. Our basic biology is impossible to change, so this book concentrates on the stuff that exists purely in our heads – I think you will be amazed by how much of our everyday reality is a shared fiction.

This is a business book, and straight away I want to point out that once you understand the reasons why your colleagues (and indeed, corporations) do what they do, then you have a good chance of changing things. If you don't understand the reasons, then your chances of delivering change are pretty much zero.

So let's start this book with things that everyone (and pretty much every animal) does – we eat, we excrete, we move about, we sleep, we have sex, we die. We do these things because our genes tell us to. There are other things that are pretty common but are not universal, and we do *these* things because....but we'll get to that later. Meanwhile, let's talk about sex.

I knew that would get your attention, because sex is really very important to your story. In fact, it's the most important thing in the world. If just one of your millions of ancestors, right back to Mr and Mrs Pigmy Shrew, decided they would rather read a book or eat a tasty worm, then you wouldn't be here reading this.

There is nothing mysterious about the urge to have sex - it's written into our behaviour at the most fundamental level. Everyone (well, almost everyone) has a sex drive whether they live in a penthouse in Manhattan or an igloo on the ice. It's an example of a behaviour that is common to our species because it is coded into our genes.

However, these gene-carried behaviours can't begin to explain the complexity or diversity of human society. Contrast *sex* with *sensibility* – a defunct literary movement concentrating on the expression of emotions and the importance of understanding and communicating feelings. There is absolutely nothing genetic about sensibility - it was a construct created in Eighteenth-century England that was popular for a few years. You've probably only heard of *sensibility* because Jane Austen wrote a book about it. In this book, the characters try to obtain sex using a variety of complex mechanisms that our igloo dweller (or any other twenty-first century male) just couldn't be bothered with – today we have our own rituals that Austen's characters would not feel at home with.

So we can safely say that the urge to for sex is universal but courting and mating rituals are learned. If you don't learn the appropriate set of rituals then your chances of success are sharply reduced, but Austen shows us that these rituals are time- and place-specific.

Our basic urges (to have sex, build shelters, eat etc) are common to every human being. How we persuade others to have sex with us, the houses we live in, and where we have lunch are very different and these are not governed by our genes.

I accept that I have yet to prove this point to you, but take it on trust for now that almost all of the structures we create – economies, political systems, societies and businesses – are learned.

Biology alone cannot explain the diversity and richness of our cultures – there must be something else going on here. Something subtle and very deep, and something which has surprising implications on how our societies and our businesses are run.

1.2 Meet the Memes

1.2.1 The Test of Universality

The key point about these subtle and mysterious factors is that, unlike genes, they are infectious – they pass, albeit imperfectly, from person to person, from business to business, and from culture to culture.

We are constantly bombarded with infectious ideas from our family and friends, through television, books (hopefully including this one) and social structures such as religions. These infectious ideas have been pithily described as “viruses of the mind” (Brodie (1996)).

In the next chapter, I will present a list of items that we come across in our business that are transmitted by these mental viruses, but for now here are some examples of everyday infectious ideas that we picked up from others:

- Our language, including vocabulary, grammatical structures, alphabets, spelling, the art of writing, pronunciation and regional accents
- Cultural fragments such as aphorisms, proverbs, fairy tales, folk stories, nursery rhymes, myths, jokes, and poetry as well as songs, symphonies, melodies and theme tunes
- All social customs (shaking hands, bowing, kissing cheeks, not belching in public etc) and concepts of acceptable behaviour, virtue or vice
- Fashions in food, clothing, architecture and political correctness¹

¹ acceptable language and behaviour varies from culture to culture and from year to year. It also varies between subcultures: there are words that some groups use to describe themselves that are regarded as a mortal insult if anyone outside the group uses them

- Religious and cultural symbols such as Christmas trees (indeed, Christmas!), totem poles, the star of David, crucifixes, crescents, the hammer and sickle, icons, logos and flags. I suppose we should also add in things like vampires, werewolves, the Loch Ness Monster and alien abduction
- QWERTY keyboards, the 'web, email, electronic messaging formats, GUI operating systems, the side of the road you drive on, traffic lights, road signs, team sports and anything else that requires co-operation between people who have never met
- Social structures such as legal, financial, political and religious systems, not to mention the arts and sciences, and knowledge structure such as units of weight, time, length, volume etc, the periodic table, taxonomies, colours, notation systems used in mathematics and the sciences, and so on
- Plagues of modern life, such as Internet scams, computer viruses, phishing, spam, urban myths (drying the poodle in the microwave, the alligator in the sewers, the Blair Witch etc)
- Absolutely everything to do with the way that businesses operate.

Nothing in that list above is common to every human everywhere, but they are all well known to the point where we don't recognise that we have learned them. They must have been somehow transmitted from one person to another, and they have clearly evolved over time, but they are not genetic.

I propose that if something is shared but is *not* universally common, then it must have been transmitted from one person to another – we shall call the transmission mechanism a 'meme' for reasons we will get to later.

To see how saturated our lives are with memes, just sing 'Happy Birthday To You'. The first meme here is the idea of a *birthday*. Next we have the *birthday party* (another meme) at which a *birthday cake* will probably be served and *birthday presents* given. Then people may sing "*Happy Birthday To You*" to the same *tune* which is so well-known that it's probably going through your head as you read this. The lyrics are well known - at least the first verse - so there's another meme. And did you know that the song is subject to *copyright* (another meme)? No? Well, you should really *pay royalties* (another one) to Time Warner when you sing it. In case you think "this is universal", I can tell you that large parts of the world either ignore birth anniversaries or use some substitute - celebrating on a day connected with the saint (another meme) you are named after (and another) is surprisingly common. So this whole set of structures has to have been learned, rather than being innate.

Human culture propagates through meme transmission and our culture is defined by a set of dominant memes that filter the way we see the world, determine what we believe, and tell us how we act.

We are no more aware of the memes than a fish is of water, but memes like *money*, *crop rotation*, *democracy* and *equality of women* have, in their turn, transformed our society.

Differences between cultures can be explained as differences between the set of memes that they run – the ‘better’ the set of memes, the more persistent the culture. You’ve heard of the Mayans? They had a good set of building memes. What about the Teotihuacán? No? Quite.

1.2.2 Take a Bow, Professor Dawkins

The “meme” meme was created by Richard Dawkins in his 1976 book, *The Selfish Gene*. The book put forward the idea that genes which maximise their chances of getting copied also maximise their chances of survival.

For example, genes which enable their carriers to stand on their hind legs mean that the carrier (meerkats, for example) can see further and therefore stand a lower chance of being eaten by a jackal. These meerkats have a better chance of passing on their genes, and after a few thousand generations, all meerkats will be able to stand on their hind legs. If Darwin’s insight was that animals evolve, Dawkin’s insight was to look at it from the gene’s point of view – to him, the successful gene is a replicator and the meerkat is just the gene’s way of making another copy of itself.

In an almost throwaway last chapter to *The Selfish Gene*, Dawkins noted that human culture cannot be fully explained by genes, and he invented another replicator which allowed ideas to be passed on without involving the genes. He called it the “meme” after “mimeme”, a Greek word meaning “something imitated”. By the way, the word is usually pronounced to rhyme with “dream”.

Dawkins developed this idea in a 1994 essay called *Viruses of the Mind*. He identified that his memes carried most, if not all, elements of our culture and that memes would be subject to evolutionary pressures just as genes are.

The meme meme was picked up by a variety of other authors, and Susan Blackmore’s 1999 book, called *The Meme Machine*, developed a lot of the current theories about how memes evolved and the role they play in our brains.

Since *The Meme Machine*, writing on memes has developed via a number of strands: consciousness research, society and religion, and personal development, and the key works will be referenced as we go along. Very little has been written about memes in business, but I expect that to change.

1.3 Memes 101

1.3.1 Myths About Memes

As you would expect from a book about effecting business change through memes, we will cover in detail how memes are transmitted, how they are accepted (or not) and what makes a good meme. We won't get to the detail for a few chapters yet, but I want to introduce a few of the basic concepts that we will be working with: how memes arise, the most important factors on their spread, how memes flock together, why they are so important to us, and finally what happens when memes and genes compete.

First, I want to kill off three myths about memes before we go much further:

- 1) memes carry ideas, not physical objects. A wheel isn't a meme – the meme is the concept of a wheel and what you might do with it, possibly together with instructions on how to make a wheel. The wheel itself is just a physical expression of the meme, just as my brown eyes are the physical expression of my genes. Neither the wheel or my brown eyes themselves replicate, but the wheel meme and the gene for brown eyes are both ancient and widespread.
- 2) memes have no free will, and no conscious drive to spread. We may occasionally in this book talk about memes 'doing' this or 'wanting' that, but such loose talk is merely a literary convenience. Memes are not alive and they do not 'want' anything, any more than genes 'want' to be replicated or water 'wants' to run downhill. An analogy: when we catch one of the innumerable winter colds, the virus attacks our noses and causes us to sneeze, spreading the virus to others. We don't talk about the virus having 'chosen' to develop the capability to make us sneeze, it's just that the viruses which didn't develop that capability quickly got selected out.
- 3) there is absolutely no point in discussing whether a meme is 'moral' or 'true'. What matters is the ability of the meme to be passed on from host to host. It doesn't matter that one meme carries a valuable contribution to human knowledge and another a worthless theme tune. A good meme, at least as far as the meme is concerned, is one which spreads.

Let's illustrate that last point with a genetic analogy: suppose a gene had arisen that caused a group of stone age men to be both extremely intelligent and extremely peaceful. You might think this was a 'good' gene that should have been preserved, but sadly its hosts would have been wiped out very quickly by their stupid and aggressive neighbours.

Similarly, memes in many ethical systems carry feelings of empathy and understanding for our fellow man (often called something like *brotherly love*), but they tend to be weakly transmitted. Memes which encourage feelings of *racial superiority*, based on the incorrect assumption that intelligence is related to external features, are strongly transmitted and fit well with a bunch of memes that cause intolerant and intolerable behaviour. As a result, *brotherly love* is rare yet

we have to stamp out *racial superiority* again and again. So what makes a bad meme from *our* point of view may be a very good meme from *its* point of view.

1.3.2 The Gooseberry Bush

The first mechanism by which memes – good or bad - arise is *design*. Some clever soul sits down and creates a piece of information (a diagram, an idea, a song, whatever) and tells all his friends. If the information is well-packaged then they will tell their friends – especially if it is useful information - and we have a new meme in circulation.

Truly novel ideas are rare, and memes are often consciously derived from other memes through a process of *directed evolution*. Vinyl records code information as bumps in the sides of a groove – the information is extracted by measuring the height of the bumps. Because the groove has to be very long, it's arranged in a spiral on a flat surface which is mechanically rotated. CDs and DVDs code and extract information digitally, but the spiral, the flat surface and the mechanical rotation have all survived into this format. More complex structures can be modified too: in *Thought Contagion* (1996), Aaron Lynch describes how Mormonism was consciously developed from mainstream Christianity and found its first converts there.

The final mechanism is *accidental evolution*. It's easy to see how this occurs in biology – an accidental mutation in the structure of a finger joint turned out to be useful, and so now we all have opposable thumbs. One of the most important criteria for a meme is that it is copied reasonably accurately from one host to another (we will call this *copy fidelity*). But *mutation* occasionally occurs, where the copy is not perfect. Most of these imperfect copies will be rejected by the new host, but some will fall on fertile ground and we have a new, competing meme. You can see accidental evolution in action in children's play – one child will introduce a game and it quickly mutates as it passes around a group.

These mechanisms can work together, quite unintentionally. Take the *Macarena*. The song was written in 1993 by a pair of Andalusian folk singers called 'Los Del Rio'. It is simple and repetitive and therefore extremely catchy, to the extent that if you've ever heard the song it will probably be going through your head right now (and if you've never heard the song, then count your blessings and don't go looking for it).

Shortly after being written, the song was picked up by a Puerto Rican political party and adopted as an election theme. Because the song carried (and was carried by) political ideas, it spread pretty widely through that society during the election period. Wikipedia speculates that, as Puerto Rico is visited by many cruise ships, they were responsible for its spread to America. An English-language version appeared in 1996 and became a worldwide hit, accompanied by a particularly annoying dance. The dance was popular in clubs throughout the mid-1990s, so the dance and the song helped each other to propagate. So what we can see here is a mix of design, directed evolution and accident, coupled with vitally important feature that we will get to shortly – memes supporting each other.

1.3.3 Infection Rates

We've already seen that viruses which cause sneezing stand a greater chance of being spread, so it should come as no surprise that we can talk about memes in terms of infection. Well, one of the key concepts in this book is that the spread of an idea or product (in an unsaturated market, at least) is governed by a simple formula:

$$\text{Infection Rate} = \text{Probability of being accepted (0-100\%)} \times \\ \text{Probability of being retained (0-100\%)} \times \\ \text{The number of times the meme is expressed (0 to } \infty \text{)} \times \\ \text{The number of times it reaches a new potential host (0 to } \infty \text{)}$$

The first element here is that the meme is somehow 'accepted'. We have to isolate it from all of the noise and then (consciously or unconsciously) accept it as 'true' or 'good'. As an experiment, I'd like you to try to identify how many concepts you are exposed to in a single hour from speech, television, reading etc. They can be hard to spot since so many of them seem like part of our daily lives, but the answer will be in many hundreds rather than the tens.

With that much being thrown at us, competition for a new meme is fierce. To avoid being overwhelmed by the sheer amount of ideas to consider, we have developed a set of filters to weed out the memes that we regard are worth considering.

The second factor is that we have to store the meme in some form – for humans, this mechanism is memory, for businesses it could (for example) be inclusion in the operating manual.

Finally, we have to pass on the meme (consciously or unconsciously) and if we try to spread it frequently and use routes likely to reach a large number of potential converts, the chances of transmission will be substantially higher.

Of course, the complexity of the meme and the attractiveness of its packaging matters enormously. The theme tune to your favourite soap opera is simple, catchy and is easily reproduced. If you wanted to spread this particular meme then all you would have to do is sing, hum or whistle it in the elevator on the way to work. If you did this every day for a week, I predict that someone else will be whistling it by Friday night!. Hegelian philosophy, on the other hand, is very hard to explain, and your chances of getting it across in an elevator journey are practically nil.

1.3.4 How Memes are Transmitted

The vast majority of the genes that make us what we are were passed down from our parents, and we shall call this generation-to-generation transmission 'vertical'. There is a small amount of 'horizontal' transmission of genes from person to person once we are born (via viruses and gene therapy) but our bodies and brains are pretty much the product of vertical transmission of DNA from our parents.

Memes are also transmitted vertically from parent to child, and very occasionally from teacher to child. However, memes have vastly more – and vastly more effective – transmission mechanisms than DNA replication. because they can also be spread horizontally from person to person. While memes transmitted vertically seem to sit more deeply in our brains (this drives national cultures, which we will get to in chapter 4), the majority of memes that we run have been spread by horizontal transmission.

The vast numbers and diversity of these sources means that horizontal transmission tends to predominate. So we are genetically the children of our sires, but memetically we are the children of our culture.

Another factor to consider is whether the meme carries the idea as a finished whole or as a set of instructions to get there. Most of us are capable of whistling the *Macarena* even if we cannot play an instrument or read music – the level of capability you need to reproduce this annoying meme is pretty low. If we wanted to build a jet engine, however, we would need to be told how. In *The Meme Machine*, Susan Blackmore distinguishes between ‘copy-the-product’ transmission of simple memes and ‘copy-the-instruction’ transmission of more complex ones.

Let me illustrate: I cook a mean *smoked salmon soufflé*, where the smokiness of the fish and the soft texture of the egg are complemented by hints of horseradish and gruyere. It’s a successful meme: I have passed it on to a number of other people and only modesty prevents me from including a recipe for it here.

However, the dish is not easy to make. Even if presented with a finished soufflé and a reasonable amount of time to examine it, taste it, smell it, weigh it etc, you would find it very hard to replicate. To absorb the meme, you would watch me make it, or at least read written descriptions of oven temperature, type of crockery, quantities of ingredients, how to beat the eggs and so forth. In other words, the *smoked salmon soufflé* meme is transmitted by copying the instructions.

On the other hand, if presented with a clay pot, a stone arrowhead, an arch, or a wheel, you could quickly grasp their essence. With time, you could recreate the product without understanding the physics behind any of them. Other examples of copy-the-product transmission in action would be a sketching a famous painting or whistling a popular song: the images and tunes that get stuck in your head did not arrive as a set of notes and staves, but as a finished product.

Copy-the-product is the basis of imitation and is a successful form of transmission for simple memes², but it relies on the skill of the copier so both copy fidelity and reproduction rates are reduced as the complexity of the idea grows. That’s why you are unlikely to gain many converts for Hegelian philosophy in an elevator journey, while you might get them whistling that soap opera theme.

² The simple and elegant ‘Love thy neighbour’ meme in the Bible can be transmitted by copy-the-product, but to really get it right you need to refer to the illustrated tutorial in the Karma Sutra

We (or our memes) developed structured mechanisms for spreading by copy-the-instruction, and we call these things 'schools'. Many business ideas, for example, are pretty complex and so are transmitted by copy-the-instructions, which is why we have apprenticeships, training courses, business schools and MBAs. Sometimes, interestingly, the instructions don't deliver the result you expect, and in chapter 4 we look at the problems you can encounter when you try to transmit ideas across cultural boundaries.

1.3.5 The Immune System

A few pages ago, we identified that we have hundreds of memes thrown at us every hour, many of them new and worth considering, but that very few of these stick. In order to avoid being swamped, we have developed a set of filters as an immune system to stop us from being overwhelmed.

We are not swept away by the quantity of memes coming at us every waking hour for the same reason that we are not killed by every sniffle we catch: we have an immune system.

The immune system also stops us from adopting some very bad ideas. To quote Brodie (1996), "you don't immediately know whether the programming you get from a given mind virus is harmful or beneficial. Nobody ever joined a religious cult with the intention of getting brainwashed, moving to Guyana and committing suicide".

It turns out that businesses have an immune system too, and that the strength of the immune system is one of the principal determinants of corporate health – too strong and the business is unable to change or adapt to new situations, too weak and it is wracked with fads and political infighting. You see this immune system in action every time you hear the phrase "the way we do things round here".

This boo also looks in depth and how to weaken this immune system and how to slip memes past it so that they become part of the new corporate programming. For now, trust me when I say that the chances of a meme being accepted are greater if:

- it supports our genetic drives to eat, to reproduce, to hunt and to find shelter
- the idea is new, but not radically so, and comes from a source we respect
- the idea is simply presented and self-consistent (repetition also helps, if the idea is new)
- the meme seems 'true', by which I mean that it fits into the set of memes we already run. This is why we would reject ideas that Zebras are pink or that God is an octopus
- the memes heighten emotion – they make us feel better or play to our fears.

With simple memes, acceptance is an entirely unconscious process – we just find ourselves humming the *Macarena* after hearing it on the radio enough times. For more complex memes, we have to go through a conscious process of evaluation and consistency checking (we call this “thinking” and will cover it in chapter 9).

1.3.6 The Memetic Mutual Support Society

Like flamingos, memes are usually found in flocks. A commonly-quoted example is the meme for a well-known brand of blue jeans, which includes sub-memes for button flies, rivets, blue dye, heavy cotton, narrow legs, belt-loops and double-sewn seams.

How does this happen? We saw in the example of the *Macarena* how it promoted, and was promoted by, the political party and then the associated dance. The mutual survivability of memes is enhanced by each other’s presence. Attaching a story to a tune makes both spread faster: using a catchy tune speeds up transmission enormously, and adding in features which press our biological buttons helps even more – I’m sure “she loves you, yeah yeah yeah” would not have spread into popular culture as effectively without a memorable tune and without the sex appeal of the Beatles.

This is not a new insight. Dawkins (1994) identified that groups of mutually compatible memes exist, and suggested that they evolved together, as each would thrive in an environment which contained the others. Blackmore expands on this idea at length but rather than repeat the rather clunky phrase “co-adapted meme complexes”, she (and I) just describe them as ‘memeplexes’.

The mutual survival mechanism has two purposes – it helps a memeplex sneak past the brain’s immune system and it fights off competing memes. If I can introduce a military analogy, the memeplex is like a stealth fighter creeping into enemy territory. Just as wings give the aeroplane lift, engines help the aircraft travel further. The aeroplane has camouflage and stealth technology that gets it through defences, and it has guns that can shoot down enemy aircraft. Individually, wings, engines, paintwork and guns have no chance of getting through the defences, but together they can succeed.

The aircraft also carries something else: a payload, which could be bombs or leaflets. The aircraft does not care about the ‘value’ or ‘rightness’ of the things it carries, and neither do memeplexes. Regardless of what you think about the ‘rightness’ of Abrahamic religions, it’s pretty obvious that they have perpetuated dietary laws that increased the chances of the memeplex’s survival in the Stone Age but aren’t really needed in the Refrigerator Age.

Let’s look at a particularly virulent kind of memeplex: the chain letter. The payload is typically some sort of irrelevant hard-luck story together with an instruction to send money to the person who passed the letter to you. It also contains promises of riches if you follow the instructions and pass it on, and warns of dire consequences if you break the chain. These letters are nothing more than “copy me!” instructions backed up by a set of threats and promises. The effort you spend in copying the letter, and the money you send, is useless because the threats are empty...but the meme still gets copied.

We can see the creation of self-supporting memeplexes in national newspapers. Some people 'inherit' their choice of newspaper from their parents, but I suspect that most adults experiment and then generally settle on one newspaper they like (unlike religions, where people can move into and out of atheism but rarely move to a religion other than that of their parents). Of course, people will naturally tend to pick a daily newspaper which resonates with their beliefs. In turn they are giving permission to the newspaper's owners and writers to expose them to new memes. The owners want to keep on top of their customers' opinions, so they use surveys to find out what their readers believe and then hire writers in tune with those beliefs. So the whole cycle feeds itself, and newspapers develop particular niches.

Of course, memes flock together in businesses, too. Your plumber will be running memes for *soldering*, *finding leaks*, *installing radiators* etc but probably not memes for *knitting* or *growing wheat*, because they are not useful to him. Similarly, your company (assuming it is primarily English-speaking – we'll get to the reason why later on) will probably be running an *appraisal system*, *sales targets* and an *bonus structure*, which each rely on the others to succeed.

In the next chapter we will look at the memes that drive and shape organisations. The rest of this chapter is something of an interesting digression: it looks at how the memes shaped our brains and our societies.

1.4 Hats, Burials and Large Heads

Why did the wearing of hats become almost universal in Western society, and then almost die out? Why have cannibalism, excarnation, burial and cremation all waxed and waned as ways of disposing of bodies? Where did stockings come from? Why do some nations bother with monarchies (clearly a hang-over from tribal times)? Why do nurses have more friends than lawyers? Well, in this book you will find an answer to all of these things, but first we must tackle a much more intractable problem: why are our heads so large?

The human brain is about three times as heavy, relative to body mass, as that of any other ape. That differential has come about extremely rapidly, certainly during the last two and a half million years, but at first glance it's hard to see why. Our huge brains use up about 25 watts (about the same as a dim light bulb), which means we have to consume more than 500 calories a day just to keep our brains ticking over. The size of the head needed to contain the brain leads to pain and increased chances of death during childbirth, and the relative helplessness of babies ties parents down for years until children learn survival skills that other animals are born with. If there were not some evolutionary advantage to big brains, then large-headed people would have been selected out long before now.

An evolutionary argument, beautifully advanced by Blackmore in *The Meme Machine* (1999), goes something like this: at some time in the past, a mutation gave an ape the ability to imitate others. The lucky proto-human would have observed others with skills that he could acquire himself, meaning that he had access to his own repertoire of skills, plus everyone else's. Some of these skills would enhance his chance of survival by increasing foraging skills or by

being more adaptable. He would get more food and therefore more mates, and so the genes for imitation were passed on. After a few millennia, those who could not imitate their peers would not survive long enough to breed. The urge to mate with the best imitators continues in the modern world, hence the fashion industry.

Although this argument is (of course) entirely speculation, it makes sense to me. The most useful skill for a gathering species is memory, and it's pretty widely shared in the animal kingdom – think of a squirrel remembering the dozens of places it has stored food. Memory is vital for a foraging species: if some berries are nutritious while others are poisonous, then without memory each meal is a game of Russian roulette.

The next most useful skill is learning through observation (Blackmore's 'imitator' argument). Our proto-human would learn survival skills by identifying that *he* ate the red berries and survived while *she* ate the white berries and died.

The next step up in the survival scramble is teaching your offspring: "Hey! Don't eat the white berries!". We don't need language for this, but spoken commands transmit information more effectively than visual means because they don't require recipients to be looking at you. And "Hey! Don't eat the white berries!" conveys a lot more survival value than a series of undifferentiated grunts and gestures. Complex language structures increase the chances of survival for recipients because it allows for transmission of more complex memes "Hey! Don't eat the red berries if the days are getting shorter".

So our foraging apes are both learning from each other by imitation and teaching each other – they are creating and processing memes, and as the language develops they can transmit more complex memes. Assuming that more complex memes enhance the chances of survival, which seems reasonable, then a harsh environment would select for larger brains and more sophisticated vocal equipment, which then allowed the apes to develop and transfer more complex and more useful memes, and so on. Wrapping language up in more memorable structures such as dance, ritual, stories, songs etc makes it more memorable, and therefore more likely to be transmitted. So you could say that the ability to imitate – to create and use memes – drove human evolution. And they haven't stopped yet.

1.5 Memes in the Modern World

1.5.1 Preventing Extinction with a Printing Press

One of the happier instances of genocide in human history was the elimination of smallpox in the early 1980s. While smallpox pandemics have murdered and scarred throughout history there is, as I write, no more smallpox apart from a few samples lying dormant in cold storage in laboratories. But is it true to say that smallpox is extinct? Not while those few samples remain.

And so it is with memes. Until the invention of writing, memes could be driven to extinction by the death or forgetfulness of their host. With the invention of writing, they had a way of

storing themselves that was not subject to the limited capacity, faulty retention and finite life of human brains.

For example, the words and music for your national anthem are encoded in your brain, placed there because you were forced to sing it at school. If you are like most of us, you can struggle through the first couple of verses and then dry up, because you don't get to practice them. However, the same notes and words are maintained with greater fidelity and longevity on paper and electronic media, and the many verses of *God Save the Queen* are stored there even if the majority of the British can sing more of the Sex Pistols version than their national anthem. Memes did not consciously develop these media to maintain their fidelity, but we did on behalf of the memes, and maintain it they do.

Another break-through has been digital storage. An argument I've heard when I advanced this idea to my friends was that "if digitisation is so good, then [insert name of god here] would have invented it for us. Well, [insert name of god here] did invent it, because our genome is stored digitally.

We are used to the decimal system (base ten) which comes from the number of digits on our hands, and use words like 'one', 'two' and 'nine' for the numbers. Most of us are also aware that computers use binary (base two), where the numbers are described as '1' and '0', or more accurately 'on' and 'off'. Replicating genes are built up from only four molecules (which we call 'Adenine', 'Cytosine', 'Guanine'; and 'Thymine') and we could write down a human being on a very large sheet of paper as a set of about 25,000 base four numbers, each of which is about 100,000 digits long: the process which makes our eggs and sperm is equivalent to photocopying this sheet of paper. Our children are the synthesis of the genes of their parents: that they are not monsters (at least, until they turn thirteen) leads us to conclude that the digital nature of the gene vastly increases its copy fidelity.

The storage and spread of memes has also been helped by digitisation – consider how the mechanisms for spreading music have developed. Until the invention of musical notation, songs and tunes could only be spread through imitation (copy-the-product). Sheet music added a copy-the-instruction mechanism, but then the spread of music really took off with analogue storage mechanisms such as tapes and vinyl discs. Recently, the medium has changed again – now music is stored digitally either on CD or on the Internet, not to mention on your MP3 player. The music didn't invent the iPod, but it made us want to invent it.

1.5.2 Memes and Modern Media

The transfer mechanism for memes has also vastly improved. The first memes might even pre-date language, as they were transferred by imitation. The introduction of speech proved a better mechanism (as it does not rely on line of sight and works in the dark), but speech has no longevity and has poor copy fidelity. Writing solves this, but suffers from relatively low reach (i.e. very few people could see each copy of the meme). This was solved to a degree in medieval Europe, where monasteries existed partly to make copies of holy texts (and vice versa: the holy texts made copies of monasteries). Of course, when printing came along it allowed widespread transfer of memes, including the meme of printing.

In the 19th Century, digitised electrical transfer mechanisms such as the telegraph increased reach and transmission speed but *decreased* richness: the complexity of the memes that could be transmitted was reduced. Later forms of electronic transfer such as radio, television and email increased the complexity of the messages that could be transmitted and still managed to get to a widespread audience.

As Evans and Wurster (2000) pointed out in *Blown to Bits*, the introduction of the World Wide Web radically increased the degree of richness – it allows customisation of messages to recipients, it allowed interaction between transmitter and receiver (via a computerised host) and it allowed pictures, words and sound to be bundled together.

There are two other qualities of the World Wide Web that improve the transmission of memes: it allows hosts to seek out ideas via search engines instead of passively receiving them, and it has vastly reduced the cost of reaching a wide audience. Any fool can create a blog or a simple web page, and many of them do. In fact, a special class of software called a ‘memetracker’ has been developed to track the spread of ideas from one blog to another to see which ideas are gaining traction.

Of course, this raises all sorts of implications as the old media rules are rejected by the YouTube generation. The people who created the content believe they have a right to profit from it. The content wants to be free – it has to spread or it will become dormant.

As modern hosts have improved the storage of memes (both as product and instructions), so the ever-better transmission media have radically increased the number of memes we are exposed to. All of these memes compete for our attention, so we can expect to see faster and more ruthless evolution in future. And because everything about corporate life is based on memes, that means faster and more ruthless evolution in the business environment also.

1.6 Nature vs Nurture

A few pages ago I said that a meme is more likely to thrive if it supports our genetic drives to eat, to reproduce, to hunt and to find shelter. Sometimes, memetic and genetic urges can contradict each other, which brings us back to where we started: the sex drive.

Consider the phrase “Good girls don’t have sex before marriage”. It’s a beautifully simple example of a memplex containing two memes: the first being the concept of *good* and particularly a *good girl*, and the second being *sex before marriage*. This is a memplex because the concepts are self-reinforcing – I must be a *good girl* because I’m not having *sex before marriage*, and I must not have *sex before marriage* because I’m a *good girl*. Young women in most societies in history have been exposed to this memplex from a young age. The same reinforcing characteristic is true of the opposing memplex – “Good girls do have sex before marriage” - but the community spreading this meme is smaller (mainly young men, I suspect) and the girls encounter it much later in their lives.

The 'abstinence' movement is particularly strong in the USA, where the *Guardian* newspaper has reported that more than *one billion dollars* of taxpayers' money has been spent promoting abstinence memes since 1998. With that sort of advertising budget, we should expect to see a strong shift in behaviour. But we don't. Not at all. A survey by Mathematica Inc. in April 2007 on behalf of the US Congress found that those who had been exposed to abstinence-only sex education lost their virginity at (on average) 14.9 years of age. The mean age in the group who had received conventional sex education was...14.9 years. The proportion of people in each group who had sex was about 45% and the proportion who had had sex with multiple partners was also roughly the same (around 25%). An earlier study from Columbia University and Yale found that young people who engage in virginity pledges have the same proportion of sexually transmitted diseases as those who don't (Brückner (2005)).

So abstinence memes, despite being heavily promoted, seem to have no effect on behaviour - at least, not in a constructive way. The reason is, of course, that we are genetically programmed to have sex and the genetic imperative is deeper and stronger than the memetic one in this case. So not only is abstinence-only sex education dangerous (in that it excludes a lot of useful advice on contraception and avoiding sexually-transmitted diseases), it doesn't work. And if you want to wear a ring to show people you are not having sex, get married like the rest of us.

So, one-nil to the genes. But the game isn't over yet: there are plenty of examples when memetic conditioning overrides biological urges:

- celibacy in clergy (where the person 'chooses' to devote all their time to spreading the religion), or the modern equivalent of deciding to concentrate on your career rather than start a family
- vegetarianism. We evolved as omnivores: deliberately eating less nutritious food in order to prevent the death of animals may be worthy, but kindness to animals conveys no biological advantage to us
- raising other people's children. If Dawkins is right about selfish genes, then childless people should be strongly motivated only to help raise their siblings' children. Blackmore points out that the strength of the urge to spread your memes explains adoption and step-parenting, as the biological origin of the child is irrelevant as far as vertical memetic transition is concerned
- contraception (a society-changing invention, to be sure, but definitely not in the gene's interest)
- writing this book instead of earning money to feed my family!