Later we will look at other, perhaps more subtle, instances of step-removed actions and their implications.

Axiom Two. *The only valid Tier Two activities of Government are those designed to directly raise the level of infocap within the syston.*

The second axiom is concerned with what we will refer to loosely as 'the good' of the syston (later we may try and work out what this tag really means). It suggests that the syston will operate better, more successfully, the greater the amount of infocap it contains, and that should be the second-priority concern of the syston government.

Because infocap includes such a diverse spread of things figuring in society, it is important to note that this Axiom does not single out any particular form. It says that increase in any form of infocap will benefit the syston. Obviously it will include education, public works, and especially formal research, but will also include less obvious things such as entertainment and encouraging its systels to visit out-syston, as in overseas tourism.

When this Axiom is presented in the form of its corresponding Question, it can provide an answer to some of the things people argue about. As an example, consider the competing claims of the 'public utility' and the 'commercial business' camps in the matter of electricity supply.

When Question Two is asked about this matter, it gives an answer which most would view as reasonable. That answer is, it is justified for government to be involved in setting-up a new electricity supply to service its own syston, because that action increases its infocap content. It is not justified for a government to continue to maintain involvement in electricity supply when private business is ready and able to act competitively in this. However, even when the latter situation is attained, it is still justified for the government to fund research into improved electricity supply techniques, whether or not 'the government' will benefit financially from the research.

A local example concerns an endowment land grant which the WA Government was making to a new private university which was being set up. Existing public universities in the State made a great outcry about the 'fairness' of this — saying it was "unjustified to spend public funds on a private institution". Ask Question Two, and the justification is apparent.

Axiom Three. *The only valid Tier Three activities of Government involve the minimum taxing of syston synenergy needed to carry out Tier One and Tier Two activities.*

This Axiom says that the wherewithal to operate the first two tiers of government activity is to be drawn from 'taxing' syston synenergy, and that this taxing is to be kept at the minimum feasible level.

In this Axiom, 'taxing' means both conventional taxation mechanisms and other measures which have the same effect. The actual mechanisms will obviously vary with the nature of the syston. With a Parents & Citizens Association, for example, the 'taxing' may be a contribution of labour or thought to the fund-raising school fete.

An important distinction here from the previous Axiom is the use of 'synenergy' rather than 'infocap'. It implies that activities are to be taxed, rather than assets. The implications of this point are very considerable.

The requirement that taxing be at a minimum stems from Axiom Two, in that excessive taxing reduces possible infocap content gains. Axiom Two also gives the grounds for the synenergy/ infocap distinction, in that asset taxation directly reduces infocap itself, while taxing its movement need not.

Axiom Four. *The synenergy taxation needed is at a minimum where government activities are moved into the narrowest possible syston government.*

The implications of this Axiom are that de-centralized government activities will be more efficient in overall syston benefit terms than will centralized ones. As an example, schools run by local authorities will be more efficient than a single centralized State system — provided that the local councils have sufficient infocap resources to maintain the schools.

On the other hand, testing of new car drivers for proficiency might well be an activity under the oversight of a central government, because Asking Question One about this activity would give a 'Yes'. Of course, this response does not preclude the central government from contracting-out actual testing while still overseeing standards, nor would it preclude local authorities from offering their own Advanced Driving course, in an effort to have a higher local Threshold.

There is an echo here of Proposition 110E, which suggests the advantages of contracting-out syston functions. The essence of the reasoning here is that infocap resources are better shared, since infocap is not necessarily conserved, which means that using these resources does not necessarily use them up — the same idea can be used time and time again.

Against this is the requirement for infocap to aggregate or clump, in order to permit infocap breeding and maintain syston skins.

All this has obvious economic implications, and so far in this book, economics has hardly figured at all. A proper venture into the steaming morass of economics will have to wait until Chapter 201 in Book II.

The Matrix Jostle

Readers will be able to see that the Four Axioms developed here give a handle to looking at all sorts of competing systons, jostling together in the Matrix. For example, if different political parties are considered, the differences between them may come down to different emphases on the various Axioms — one may stress Axiom One to the exclusion of Axiom Two, another the converse. A third may sit like a spider with a good balance between the pulls of the different Axioms. We will add detail to this area in Chapter 125, a Matrix Geography.

Another area which has been avoided so far in this book is the matter of rights and wrongs, what is fair and what is not. That will be tackled sooner, in Chapter 122. But first we will leave Governments, and look at other important types of systel active in the systons.

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Chapter 117

IT'S NOT MY FAULT — Scapegoats, Idols, and Resonodes

"Let him go for a scapegoat, into the wilderness"

— Leviticus 16: 10

The Officer I/C Blame

Once in an organization where I worked, we idly toyed with the idea of creating a new position in the Management Team.

The position was to be Officer in Charge of Blame. The concept was to create this as a dummy position; every year or so, or after a particularly notable blunder, we would sack the dummy OICB, and from then on till the next sacking, all errors or unfortunate occurrences which came to light in the organization would be attributed to, say, 'Dummy-No.6', "who we had to get rid of last year". In the meantime, we would share his salary among us.

Now that was a nice idea, but of course it wasn't serious. But when we come to examine the inner workings of a syston, we will often find that it contains an OICB. In this book, we will call this entity a 'scapegoat', and give it a symbol resembling a bucket (Figure 117.1).

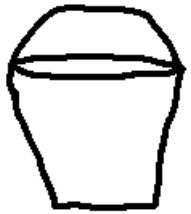

Fig. 117.1. The MT symbol for a 'scapegoat'

The concept of there existing one or more scapegoats in a syston isn't a particularly novel one. Look around at the systons which are making the news nowadays, and you can usually spot them. What we are more concerned with here, from the MT viewpoint, is their function as specialist systels in the syston.

The connection between scapegoats and SIOS will be apparent to the reader, in that scapegoats are usually the victims — or rather the recipients — of SIOS. However, the relationship is not entirely straightforward. Scapegoats usually exist within a syston, whereas SIOS is mainly directed to those outside the syston.

The Medium is the Message

In his wonderfully wide-ranging book *Lifetide*, Lyall Watson [1980] considers various aspects of what we class as 'The Supernatural'. A more detailed review of the relationship of this area with MT will feature in Chapter 218, but for the moment we will dwell briefly on one aspect of the supernatural, that of seances.

The concept of seances, where 'spirits are recalled from the Other World', usually through a human mediator called the Medium, is a familiar one. Seances were particularly popular in Victorian times, and they still go on today, even though the tendency of the modern veneer of sophistication is to reject them as 'unscientific', and therefore nonsense.

Watson reports a number of serious investigations of seances, and also an interesting technical fact. It appears that for successful manifestation of many apparently psychic phenomena, it is very important that a 'scapegoat' is present who can be blamed for anything that is viewed as bad.

This scapegoat might be a real person, or an inanimate object, but most often is an imaginary being, usually one from the Spirit World. By adopting this concept as a practical technique, Watson says, groups of perfectly ordinary people, without any psychic pretensions, are producing paranormal phenomena "simply by pretending that the rules of science don't exist".

Watson has been involved with a Canadian seance group in Toronto, who blame what they do on an imaginary ghost they call Philip. By consciously attempting to behave like children, singing rude and silly songs and regressing to a fantasy-world state, they have regularly produced phenomena such as levitation and rapping sounds, even on live television. These phenomena, they insist, 'tongue in cheek', are the results of Philip's responses to the bawdy conversations they hold with him.

The fact that some of these phenomena appear to be genuinely paranormal — Philip's raps, for example, last only 0.16 of a second, one-third of the time a rap with your knuckles lasts — are not of relevance here. What is important is the suggestion that anyone can produce such results through the use of a technique, one involving setting up a 'dummy' as a deliberate scapegoat.

A Little Oil

Some years ago I read a science fiction story about a group who were sent off on a long interstellar exploration expedition, one lasting some years. Naturally the group included a

number of different specialists in the various scientific disciplines under study.

In the story, which was called *A Little Oil* (I haven't been able to trace the author), as well as all the experts and qualified crew, there was what amounted to an odd-job man, who I will call Joey. Joey had to do all the routine stuff — washing up after the cook, cleaning up the test apparatus after use — which the highly qualified experts didn't have time for.

He wasn't always particularly good at these jobs, being noticeably accident-prone, and not infrequently made an utter fool of himself. Either he would trip over some minor object, crashing to the ground and covering himself with the remains of the team's last meal, or he would misunderstand some simple request and end up in a hopeless situation from which he had to be rescued, twittering and explaining.

As with any small number of people cramped together over a long time, tensions and disagreements arose among the experts in the group. Somehow, though, whenever things started to become really serious, the tension was usually relieved by a good laugh at Joey's latest catastrophe.

Finally, after many years, the work of the expedition was completed, and the ship returned to Earth. After the landing, the celebrations, and dispersal to their home parts, a secret came out. Joey was himself a specialist. He was a world-class circus clown. He had been drafted into the crew as a scapegoat.

Proposition 117A*. The functioning of a syston may be enhanced by the presence of a specialist 'scapegoat' systel to which blame may be attributed

Someone to Look Up To

All right, what about the opposite to a scapegoat, somebody who gets all the praise? It seems to be that this, too, is an important systel function.

In this book, I will call this specialist systel an 'Idol'. For a representational symbol, I will use a star (Figure 117.2). The usage of both these terms will be familiar to the reader, as with film idols, pop stars, and the like. As always with MT, though, their use will be applied throughout the matrix, to any level of syston.

As with scapegoats, idols may be of the most varied type. A useful attribute of an Idol is when it is not involved in any essential operation within its syston. In Britain, the arch-Idol for its inhabitants is probably still the Queen. The British monarchy, regarded as essentially above politics and not involved in the day-to-day running of the country, performs a valuable role as an Idol.

It is noteworthy that this Idol is not really an individual — essentially it is a monarchy-syston, and its CEO, as it were, may change from time to time ("The King is dead, long live the King"). The symbol persists — I was recently called up as a juror, and was interested that the case was presented as the defendant versus "Our Sovereign Lady the Queen". And, of course, this syston-symbol often has a name, 'The Crown'.

In most cases, Idols are individuals, and this does mean that they have a limited life span.

Fig. 117.2. The MT symbol for an 'idol'

An important feature of Idols is that they may have super powers. In Britain, and formerly in Australia, when all legal channels were exhausted, the last resort was an Appeal to the Sovereign. And in practice, without any legal or financial advantage, an Idol may be able to get something done solely because they are an idol — they are surrounded by an aura which makes people want to support their beliefs. As an example, consider the success of film star Brigitte Bardot in reducing the slaughter of seals.

In a recent Australian television programme, Frank Blount, a US telecommunications executive, was asked about an episode in his past when he abandoned the industry to carry out an assignment involving public education. "The President asked my company to release me for that", he said. "You just don't say no to the President of the United States, at least in my country".

In MT terms, such logically unwarranted super-powers may not be a bad thing. Just as scapegoats provide a useful outlet for feelings of guilt or inadequacy — a sort of sink for unwanted synenergy flows — so too may idols provide a useful, clearly recognized target for other, perhaps excess, synenergy flows. And they may further benefit their syston by providing mechanisms for 'magical' powers — powers beyond those usually recognized as normal for the syston.

Proposition 117B*. The functioning of a syston may be enhanced by the presence of a specialist 'idol' systel to which praise may be allocated

Who Wants to be an Entrepreneur?

In the mid 1980's, it was quite common to see advertisements in Western Australia for talks and courses on 'How to Be an Entrepreneur'. Now, in the aftermath of continued revelations of business and government scandals, to be called an 'entrepreneur' amounts almost to an insult.

Public perceptions can change very quickly. And so, a systel functioning as an idol can quite quickly become a scapegoat. The reverse is less common.

And the government systel we looked at in the last chapter can also change from idol to scapegoat, seldom the other way. "It's all the Goverment's fault", isn't this a very common cry? Of course governments have a hard time remaining as idols because they are involved

in the day-to-day running of their systons.

Readers will be able to identify other specialist types of systel operating. Here we will look at just one more type — but a very important one.

Drilling Through Diamonds

Diamond is the hardest natural substance known. For this reason, it is unexcelled in wire extrusion dies, where a softened metal is forced like spaghetti through a tiny hole. Softer die material would wear much more quickly.

But how to make the hole? Diamonds cannot be worked with normal materials, which are all softer, when a diamond is 'cut' it is actually just split along one of its natural lines of cleavage. The answer lies in the pulsed laser.

With this, a very high-energy pulse of light in a very narrow, parallel beam is produced in the laser, and this has the power to actually burn through the diamond and produce an excellent smooth hole. The power is built up in the laser through a process called resonance or 'pumping'.

Another way of producing very high power levels is through optical focussing. For example, ordinary sunlight can actually melt a small piece of steel, if it is concentrated in a solar furnace — essentially a giant magnifying glass.

In the MT apparatus we have built up so far, we have seen the parallels between everyday forms of power and energy and the phenomena involved in infocap and synenergy flows. In looking at a third type of specialist systel, we will again draw on these parallels.

Resonodes

The basis of this treatment is the suggestion that a type of systel operating in many systons has the ability to focus or amplify synenergy within itself, through some process of resonance. In a way, these systels are a bit like a computerized telephone exchange, taking in incoming connections and concentrating them into an optical-fibre cable connected to another distant exchange. They can be regarded as nodes within the general Matrix.

Proposition 117C. Systons may contain elements which have the ability to focus synenergy flows through internal resonance — 'resonodes'***

For this type of systel, I have had to coin a name, derived from 'resonance node', because I have not been able to find any really suitable parallel term in everyday life. A resonode, in the present interpretation, could also be called a focus-gate, or an emotion-concentrator, but these too are only made-up terms. We will get a better feel for the term by looking at some examples.

Earlier in this chapter we mentioned seances. In seances, the resonode is the 'medium', the gate and focus between the participants and the 'spirit world'.

Too airy-fairy? A more everyday example is found in the performing arts, particularly concerts. There, the conductor, perhaps described as a "brilliant interpreter of Mozart's score", is clearly doing more than just performing his own manual actions. Somehow he is

able to focus all the efforts of the individual musicians and deliver a resonated product to the audience, and perhaps also channel back audience reaction, feedback, to the orchestra members.

Orchestral concerts, and indeed many large gatherings of people, generate a form of synenergy which is called 'atmosphere'. In Chapter 124 I will mention an instance of atmosphere at an Ella Fitzgerald concert, and its role in actual formation of short-lived systons.

Individuals with notable resonode abilities may be said to have 'charisma', or 'magnetic personalities'. Sometimes the exercise of this ability is resented, as when a woman claims that a man is "undressing her with his eyes".

Later in this book we will encounter other examples of Resonodes. As in the other specialized systels, they need not be individuals — some research centres, for example, may be able to mobilize a whole industry or scientific discipline along some exciting development direction.

As usual, we will introduce a symbol for a Resonode (Figure 117.3). This symbol is intended to evoke the idea of a microwave dish unit receiving, processing, and transmitting information.

Fig. 117.3. The MT symbol for a 'resonode'

Going a Bit Far

Having got this far, we might as well go the whole way, and declare where all this is leading to. At the risk of being declared 'beyond the fringe', I will extrapolate and generalize the concept discussed with another big jump.

Proposition 117D*. Resonodes are the means by which systons interact with the Matrix as a whole***

We will not push this concept much more here, though it will be referred back to in later parts of the book, especially in Chapter 218, on the 'supernatural'. This last word is, after all, only a tag applied to phenomena for which we do not have a satisfactory explanation, for which

no clear mechanisms are available. Perhaps MT can move toward providing them.

For example, it starts to give a handle on such concepts as Rupert Sheldrake's 'morphic resonance'. According to this concept, when an advance is made in one part of the world, perhaps as little as a group in Liverpool learning some words out of a synthetic language or symbol set, it immediately becomes easier for a distant group in Australia to do the same thing — like the presence of a minute 'seed crystal' enabling larger crystals to grow from a supersaturated solution. Actual tests of the 'morphic resonance' concept have given results tending to support it.

Something perhaps more readily acceptable is the notion that advances are made when 'there is something in the air'. Examples of parallel development of basic ideas, as with Newton and Leibnitz both coming up with the mathematical calculus, or with Darwin and Wallace independently hitting on the Theory of Evolution, are not especially hard to find. Whether such instances are purely a matter of the conditions being ripe, the solution being brought to supersaturation as it were, or whether there is more to it, is something we may hope to have clarification of in the future.

There is an observation concerning resonodes which may be helpful in explaining things that happen in human society. Functioning as resonodes is much more common with women than it is with men.

Why Can't a Woman ... Be More Like a Man?

"Why can't a woman be more like a man?". That was Professor Higgins' plaintive cry in 'My Fair Lady'. He could not understand why women had to be so illogical, so unpredictable, and so sensitive, not at all like "us regular chaps".

And, on the other side of the fence, similar cries are heard. Why is it that men are so thoughtless, insensitive, and uncaring? Why won't they take responsibility for the children, why don't they appreciate all the work involved in running a house? And, above all, *why won't they communicate?*

There seems little doubt that huge catalogues of these characteristics could be compiled by those on either side of the Battle of the Sexes, which we looked at briefly in Chapter 107. These weighty catalogues may be useful armaments for the two sides to throw at each during the course of this battle, but are they of any other use?

The relationship between the sexes must have been a concern of humans from their earliest days, and the ebb and flow of the battlefront has always been a topic of keen interest, or perhaps of great passion and indignation. A recent snapshot of this matter has been produced by columnist Ruth Ostrow [1991].

Ostrow quotes a former man friend of hers: *"You women want men to be sensitive and caring and read you poetry and massage oil into your feet after cooking you a nice meal. But then you get shitty if the man isn't out building empires. If he is out building empires and slaying dragons to protect you and buy you nice things, you get shitty he hasn't got the energy to read poetry, see art films with you or make love all night. You're all the same. You set up this impossible catch-22. Who needs it?"*.

Ostrow comments: *"My women friends sit around huffing, puffing and sighing. They have heard it all before. All have had to deal with men going physically or emotionally AWOL. All, at some stage, asked for a deserved commitment that was never given.*

The lessons for women in the '90s seem to be: listen to what men are asking of us; accept the brutal reality that we are very different; learn to let go."

Wise words, perhaps. From the MT viewpoint, the middle piece of advice is the most important. Men and women are very different.

No doubt the existence of some physical and psychological differences has always been obvious. But an increasing number and range of such differences are becoming apparent. Clair McIntosh [1992] says that "researchers in dozens of fields, from neurobiology to psychology to linguistics, are discovering more and more areas in which the sexes seem to part company".

McIntosh tags the differences as follows: *"She lives longer; She sleeps better; He's long-winded; She's verbal, He's visual; She gets more migraines; She sings blues, He tunes out; She weighs all the facts; She can't drink as much; She gets assertive with age, He gets softer; She gives more gifts; He changes the channel; He says "I'm sorry"; He's more likely to be violent; She's more sensitive and intuitive; He runs faster (but She's gaining)"*; and finally [who could believe this?], *"He's so vain"*.

Stand Back Three Paces

All right, let us back off and apply a bit of MT to this situation. First of all, Professor Higgins' dire plaints and those from the other quarters are not much help. They identify male/female differences, sure, but they then make an unwarranted step. That step says, "You are different to me; I am right; therefore you are wrong".

And from this unwarranted step derives most of the fire which fuels the Battle of the Sexes. It is an expression of the SIOS which permeates all systons. In MT terms, the step is unjustified because it goes against basic MT assumptions that diversity is best (eg Proposition 109A), and that syston task-sharing is better allocated in a complementary way (eg Propositions 107A and 107C).

In another derivation, it seems reasonable that the differences between men and women have continued in existence, rather than being bred out by natural selection, because they perform some useful role for the race. The syston benefits from the diversity of the systels, however inconvenient that may be for them, and the diversified syston survives preferentially over other systons without that diversity.

Male/female relationships are such an important part of human society that we might spend another Proposition for this particular case.

Proposition 117E*. Men and women have different characteristics, both physical and mental, because the consequent diversity is of value to society

Children and Dogs Always Know

Back to the main theme of this chapter. We have looked at the operation of specialist systels, and I have suggested that women are more effective as Resonodes than are men.

Look at the characteristics ascribed to women — sensitive; intuitive; communicating. All these things suggest that women, generally, have an effective way of interacting with the Matrix. They are better at delivering emotions, providing the glue in the person-mix of society, adding 'a little oil'. Of a friend of ours, the only girl in the family, her brother said "Alli holds the family together".

The characteristics of women have another facet: illogicality. The straight male SIOS interpretation of this is that it is Bad. The MT interpretation is that resonoding is a valid method of interacting with the Matrix, perhaps as powerful in its own right as the Scientific Method which is more the preserve of men. In an expression of Proposition 107C, the two systems dominate society, both competing and complementing.

Look where women predominate. The medium in a seance is almost always a woman, the fortune-teller or clairvoyant, the seer in the ancient temple, all are usually women.

So far I have referred to men and women, rather than males and females. It is an interesting physiological fact, that men undergo one more development stage than women. While there are obvious differences from birth, boy and girl children may be psychologically more similar to each other than they are to adults. All children tend to have imaginary friends, tend to see monsters in the shadows, tend to play-act, whatever their sex.

As they grow older, the boys differentiate from the girls, their voices break, their body hair proliferates, their muscles grow. Physically, the girls are left behind, behind a physiological and psychological hump which only the boys surmount.

A friend once said to me "Children and dogs always know what is going on in a family". It may be, that as boys mature, they lose some of their resonoding ability as they move into the apparatus of logic. Resonoding may fall off with age.

Proposition 117F*. As systels move through their development cycle, their ability to act as resonodes may diminish

Dividing up South America

In 1493 Pope Alexander VI (perhaps the most unusual pope in history) signed a Papal Bull which divided the lands of the New World between Spain and Portugal — including South America, which was yet to be discovered. The Pope's five acknowledged children included a son who rose to the rank of Cardinal (on his own merits?), and was accused of murdering his older brother — a Duke. The Duke's stabbed body was found floating in the Tiber. There was also a daughter, Lucrezia Borgia, one of history's most acknowledged experts on poisoning.

The Pope's action is ultimately the reason why Brazil speaks Portuguese, and the other South American countries Spanish. Let us now try to emulate the Pope, and divide up the Matrix World into two portions, male and female.

To get a 'feel' for the male/female relationship in the MT picture, we can construct another example of a matrix cocoon (Figure 117.1). In this picture, male and female are each represented by a circle within the cocoon.

This representation is a flat, two-dimensional one. In actual fact, instead of a flat circle,

each gender could be represented by a round mountain, so that the bell curves in Figure 109.3 would be a cross-section across these mountains. The circles would then be replaced by contour lines, and the points F and M would be the peaks of these mountains.

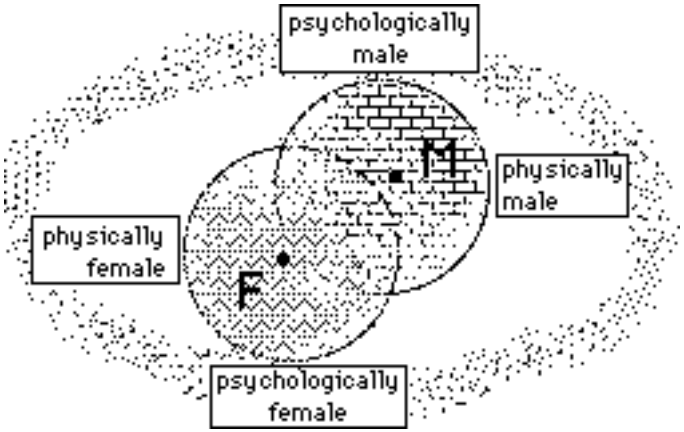

Fig. 117.1. Male and female influence in the Matrix Cocoon

But that is perhaps complicating things too much. The important thing to get over is the idea that when we talk about 'men' and 'women' we tend to identify these concepts as the points M and F in the picture. In actual fact, they are far more spread out, more diffuse, and — a very important point — they are also overlapping.

This two-dimensional representation can be used to plot the position of a particular systel, a particular individual in this case. Only women who are very close in both physical and psychological makeup to the mode — the most common situation for women — will be at the mountain peak F. If they differ from the 'norm', which sits where the point F is, in common parlance, they will be further out towards the edge of their circle, towards the foot of their mountain.

In this picture, physiologies which are more female are to the left, more male to the right. Psychologies which are more male are to the top, those more female to the bottom. This picture gives a visual representation to the matters which were discussed in Chapter 109.

A typical linear view of the situation would see only the mountain peaks F and M, all else is obscured by a rising mist of complexity. In practice, we are not quite as tight-banded as this. McIntosh, for example, is at pains to point out that rules about men as a group, or women as a group, are frequently contradicted by individual examples.

Life in the Col

In the common view of the Battle of the Sexes, the opposing forces are camped at strategic positions on the tops of mountains F and M, firing fusillades of accusations at each other.

Those who live in the extreme southwest or northeast are somewhat shielded from the action. Although they are far-out, at least they know where they stand — they have a clear F or M written on their bellies.

Those living on the approaches to the pass between the mountains are in a more difficult position. Often they are not certain which mountain they are on — the boundary is not particularly clear. A common saying is that they do not know whether they are arFur or Martha.

Those living right in the Col itself, the part of the pass directly on the line between F and M, are in the most hazardous position of all. They can take it for granted that SIOS will repel them from both of the safe hilltop keeps.

And yet these Col Dwellers possess some of the most valuable gifts, in the form of less usual combinations of characteristics. These combinations allow them to carry out functions in society not possible for those having only some of their characteristics.

Proposition 117G*. Homosexuals can perform valuable roles in society because they have less usual combinations of characteristics which suit them for these roles

Here then are reasons for why homosexual elements continue to exist in human society. An explanation of why homosexual men are unusually common in the resonoding roles — acting, painting, conducting, cooking, writing — functions which need the ability to interact in a non-logical way with the Matrix as a whole. And why women homosexuals may be prominent, not only in clearly physical arenas such as sports, but also in 'logical' areas such as the hard sciences.

Perhaps it is still necessary, even here, to emphasize that nothing in the above is intended even remotely to imply that all male actors are homosexuals, or all female scientists are lesbians. Nor is it intended to imply that homosexuality should be encouraged.

As always with MT, there is only a view over an undulating and extensive sweep of ground. Within this view, there is an observation that only relatively few people are able to fully embrace both the rational, logical, and confined approach more typical of men, and also the intuitive, sensitive, and far-reaching approach more common in women. Usually, it seems, one approach necessarily displaces the other.

It may be appropriate at this point to try and encapsulate the MT response to such questions as "Which are best, men or women?", or "Which is best, science or the arts?", or "Which is best, logic or intuition?". The MT answer to all these questions is "Yes".

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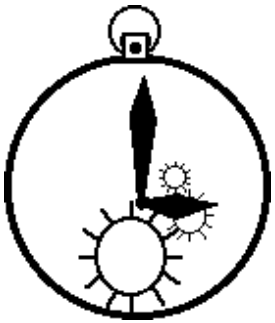
Chapter 118



FOUR CELLS IN A COCKROACH — Syston Pacemakers and Halflives

"An organism's response to an external stimulus varies critically with the phase of the rhythmic cycle that it happens to be in at the time"

— Ritchie R Ward

Living Clocks

In his fascinating book *The Living Clocks*, Ritchie Ward [1971] tells of the researches of the Cambridge scientist Dr Janet Harker on cockroaches.

Cockroaches, the most primitive of all creatures which possess wings, are perhaps a long way removed from humans. But they have organizational simplicity, and functions which may depend on a complex interaction of organs in higher animals may be much more localized in such a simple creature. So they can form a good starting point in researches about such functions.

The area which Janet Harker was researching was that of time senses in animals. Every living creature possesses some sort of 'time sense', and often a complete range of different senses for different periods. These time periods range down from decades, as in the Talipot Palm of Sri Lanka which may wait 60 years to flower for the first and only time, down to fractions of a second, as in the recharge cycle in animal vision.

Underlying each of these periods or cycle times is some sort of clock mechanism. One of the most important cycles in life processes is the diurnal rhythm, that dependent on the alternation of day and night.

Obviously many of these clock mechanisms are dependent on external signals, on what we might call pacemakers. With the diurnal cycle, the main pacemaker is the rising and setting

of the sun. But that is not the whole story.

Most creatures have their own internal pacemakers as well. That is why jet-lag occurs in people who rapidly fly between different time-zones — there is a conflict between their internal and external pacemakers. And this may be the reason why so many people dislike the practice of altering local time twice each year with 'daylight saving'.

A number of interesting studies have been done of people isolated in deep caverns, well out of contact with sunlight and external time indicators, but with lighting and such under their own control. Invariably such people settle down to a quite precise 'day' of their own, maintaining their day-length fixed within a few minutes, purely from their own internal pacemakers.

So far I have not seen a convincing explanation of why these 'private' day-lengths vary from the usual 24 hours, because vary they do. Different creatures — plants as well as animals — may adopt or adapt to private day-lengths varying by as much as an hour or more from the norm. Of course this is not a large variation, only 5%.

The important thing is that it is clearly evident that creatures do possess accurate internal pacemakers. Many people are able to wake up each morning at a given time, without the benefit of an alarm clock. Some can even set an 'alarm clock' inside their heads to wake at a particular time the next morning — I can sometimes do this myself. The fact that the pacemakers involved are really internal ones (and not due, say, to an unexplained ability to 'sense' the position of the sun even though underground) is shown by the fact that the 'private' day-lengths do not match the ordinary 24-hour one.

Other Life Time-Cycles

Many other time-cycles are very important to life. The heart pacemakers used in people with irregular heart rhythms are, presumably, only a manufactured substitute for a natural function which is not performing well — somewhere inside each animal is a 'circuit' which generates the next heart-pulse.

Longer-term cycles may concern reproduction. The fertility/ menstrual cycles in women are, of course, paced externally by the movement of the moon, as well as internal clocks. Poinsettias can be made to flower out of season by altering their apparent day-length; flowering and fruiting behaviour is paced by both day and seasonal influences.

Shorter-term cycles are more subtle and, as yet, very imperfectly known. But it does appear that many of the shorter-term life cycles are paced by oscillating chemical or physiological states, where a reaction can take place at one point in the cycle, but not at another.

Consider, for example, the growing twig of a pecan tree. As the twig extends, most of the new cells being formed are of 'standard' twig tissue. But every so often, the new cells are formed into a leaf bud, or the start of a male or female flower. How does the plant do this?

At The Fair

Presumably there is a chemical cycle going on in the twig, with the amount of some chemical 'trigger' being built up until it reaches a threshold, initiates a changed action, and is exhausted. The 'standard' action then continues.

In a way, it is like one of the giant swing-boat amusements at a fair. After the passengers get in, a push is applied to the boat, and it starts to swing a little. At the end of each swing, another push is given, and the amplitude of the swing increases.

Gradually the swing is built up, is pumped or resonated, until the boat is at its highest. At the peak, you can do things not possible lower in the cycle — see over the fairground fence, perhaps. It might take 100 seconds to reach this 'trigger' or 'threshold' condition.

In the analogous chemical reaction, the cycle time to reach the activation threshold may be very short, in an explosive reaction it is only a tiny fraction of a second. But all such actions and reactions do have cycle times.

Other actions are electro-chemical. For a nerve impulse to move, a receptor cell, fully charged and ready to go, is triggered by some external event (say a bang, in the case of a hearing impulse). This cell discharges, sending an impulse into the next cell in the nerve line, which itself discharges into the next, and so on.

After discharge, a nerve cell must re-charge before it can operate again. This is not an instantaneous process. Nor is the cell discharge pulse cycle instantaneous, which is why the 'speed of thought' is not actually very fast — only about 10 metres per second.

With human vision, the receptor cells in the retina of the eye take around a twenty-fifth of a second to recharge. This is why separate picture sequences viewed more rapidly than this, as with the frames of a cinematograph film, appear to have continuous movement. And television images, which are paced by the cycle of the alternating-current power supply, would appear jerky if this supply was, say, 10 cycles/second instead of the normal 50 (60 in the US!).

In modern small computers, the suppliers proudly claim that their machine runs at, say, '200 megahertz'. A megahertz is a million cycles per second, and in the case of these computers, the pacemaker is a special crystal which oscillates at the rated speed. Each crystal cycle drives one tiny operation of the machine — without this pacing it could not operate.

Say When . . .

All the above background is leading up to a fairly obvious conclusion. That is, that regular processes in living creatures and some of their analogues require continual regular prompting to operate successfully. We can state this as a Proposition for all systons.

Proposition 118A. All systons need some forms of pacemaking for successful operation of their regular internal processes***

Let us examine a real question as an illustration of this. Why do we, in democratic societies, have General Elections? Now hold on, I am not asking why we have elections, but why they should be all lumped together at the same time.

There could be a good linear-logic case for staggering election terms. If seats were held for four years, each seat could be held to the end of a given month, and in each month elections would be held for about one-fortyeighth of the seats. This would enable a small, experienced team of election officials to be moved on from one election to the next, instead of needing to engage a huge team of inexperienced workers for a once-in-four-years effort.

Electoral rolls could be updated and checked leisurely in sequence, instead of a great rush. And from the public's point of view, every month would bring an opportunity for them to express a view on current issues, as now happens with by-elections. From parliament's point of view, the Government should have more continuity and stability, with changes to its composition being gradual rather than holus-bolus. This stability and continuity is supposed to be the reason why in the Australian Senate, seats are held for two terms rather than one. In the US, Senate seats are held for three 2-year terms.

So why don't we run things this way? Look at the situation now from the MT viewpoint, look at what all the general-election hullaballoo is really about.

First, the general election is a pacemaker. Its occurrence switches people's interest from other matters into that of the election, and moves them into a different section of the political cycle, one where actions which are 'chemically impossible' most of the time do become possible. It diverts some synenergy flow from normal to special purposes — as if the pecan-tree syston is preparing to make a flower bud.

Second, it thickens up the skins of the competing systons involved in the election process, to make their boundaries more obvious and, temporarily, effective at holding the individual systons together. Now is the time for the individual to declare which syston he is standing in, and not sit on the fence through uncertainty or disinterest.

Finally, the actual election ritual focusses and forms new and temporary, often unnamed and unrealized, systons, as 'the mood of the people' wavers. Ideas, discussions, 'memes', ricochet around in the syston mix, just as when an 'ugly mood' overtakes a crowd, and unsuspected ephemeral systons are formed, to be collapsed, discharged like a nerve cell, at the actual election.

I suspect that this last phenomenon is a reason why pre-election opinion polls often do not reflect actual election results. However accurate the sampling and polling of individuals before the election may be, on the day, the ephemeral election-systons hold sway. And if infocap and synenergy are not necessarily additive over systons (Proposition 114B), then of course adding individual pollings together will not accurately reflect the wider syston position.

When Things Go Wrong

But back to the cockroaches. Cockroaches, like all insects, really have two brains. The main one is above the mouth, but the second one, called the 'sub-oesophageal ganglion' is below the gullet. It is about the size of a pinhead, and it is this ganglion which controls typical insect movements.

It is this feature which makes it hard to stop a cockroach in its tracks. A cockroach with its head cut off can still run about for days, and perform many functions — even copulate. Eating is a problem, though, and eventually the creature just runs down.

In her researches, Janet Harker developed very precise microsurgery skills, and used these to experimentally determine where cockroaches kept their internal timing function. She was able to track down this 'clock' to a group of just four neurosecretory cells in the sub-oesophageal ganglion. She was able to prove that these cells were the real clocks by surgically replacing the four cells in normally-conditioned cockroaches — what we could regard as

running on Greenwich Mean Time — with those from cockroaches conditioned to a displaced day/night cycle — running on New Zealand time, as it were.

All the 'British' cockroaches immediately behaved as if they were running on New Zealand time, and kept up the displaced cycle for days.

And then, in a further experiment, Harker tried the effect of transplanting *single* neurosecretory cells from a time-displaced cockroach into a normally-timed one. The effect was to to equip the cockroach with *two* clocks, running at different times. This experiment gave a totally unexpected result.

All the cockroaches treated in this way quickly developed intestinal cancer and died. Tumours in insects are very rare, but the stresses involved in having two out-of-phase pacemakers operating at the same time were evidently enough to completely upset the normal biochemical reactions in the creatures.

There is a possibly useful clue to cancer-causing mechanisms here. Extrapolate far enough, and we could say that Daylight Saving causes cancer! But in this book, we are concerned with a generalized deduction:

Proposition 118B. Pacemakers are vital in some syston processes, but such a process will not continue successfully with two competing pacemakers***

This Proposition is in contrast with Proposition 107C, which suggested that systons functioned most successfully with two dominant systels in competition. There is no actual conflict, however, as long as the distinction between a process and a systel is kept in mind.

Halflives

It will be useful in refining the MT apparatus assembled so far if we establish some quantitative measures for the timescales over which various things take place.

First, the measure we can use when talking about systons. This was mentioned back in Chapter 105, when we went into the 'half-life' of civilizations, and suggested that this figure was around 250 years.

The 'half-life' of some group of entities or objects is the time taken for half of them to reach the end of their lives. The concept originated with radioactive elements, they have this name because the individual atoms tend to break down and radiate energy as they do so. If we extracted a sample of a billion Iodine-129 atoms, and placed them in a container away from all outside influences, they would gradually break down spontaneously. After a quite definite time, only half of them would be left. This is the half-life, for Iodine-129 it is 16 million years.

Other Iodine isotopes have different halflives. That for Iodine-128 is only 25 minutes. And the common form of iodine, Iodine-127, is stable — a cautious physicist would say its half-life is long compared to the age of the Universe.

Although we know these atomic half-lives quite precisely, we have no way at present to predict *which* of the atoms will be affected, which half-billion of the sample will have broken down after the given time. So the half-life is a convenient way of specifying lifetimes for a group of entities with individual lifetimes which vary considerably among themselves.

This half-life is not quite the same thing as average life expectancy. Suppose you wanted to work out the half-life for a group of people, say the current population of Australia, and suppose you had all the relevant statistics.

If this is 1992, and you move backwards and look at the people who were born in particular years, the proportion of these who are still alive today will decrease as you go further back. Perhaps 95% of those born in 1982 are still alive, and only 10% of those born in 1913. The difference between the year in which exactly 50% of those born then are still alive and the year of measurement is the half-life. According to the last available Australian Government figures [Australian, 1991], the half-life of Australians as at 1986 June 30 was about 79.1 years, whereas their life expectancy at that time was about 76.0 years. This is the average for males and females — females are 5-6 years ahead of males in both measurements.

Cycle Times

Cycle times are similar to lifetimes, but they apply to processes rather than entities. A process with which we are all familiar is that the Earth turns on its axis. The time between when the sun is due north or south from a given spot and the next occasion when this is true we call a day.

Cycle times may be regular or may vary over a distribution, perhaps like that shown in Figure 109.2. Our day-cycle is very, but not completely, regular — at 8 am, 1992 July 1, one 'leap second' was added to Perth clocks to account for a very slight slowing down of the Earth's rotational speed, so that day was 24 hours and one second long.

It is sometimes important to know exactly what a particular cycle time actually measures. For example, a 'day-cycle' is not the time the Earth takes to turn once on its axis, that cycle is about 23 hours and 56 minutes long. The four-minute difference occurs because the Earth is itself orbiting around the Sun, and after one complete rotation it has to rotate a little more to be in the same orientation with respect to the sun.

In this book we will sometimes use the term 'half-cycle time'. It does refer simply to half the cycle time, and is used to be directly comparable with syston half-lives.

These timing concepts have been introduced here to allow us to 'tighten-up' some of the Propositions used. For example, back in Proposition 113A, it was suggested that a syston would be 'ultimately disadvantaged' by systel discrimination, and to put a limit on how 'ultimate', it was suggested that this was not longer than the syston halflife or process half-cycle time involved.

Biorhythms

The importance of so-called biorhythms has been increasingly realized in recent years. Many of the processes which occur in life are, in fact, critically dependent on these rhythms. Most of these rhythms are process cycles, only a few are syston halflives. The rhythm interval is exactly the same thing as the cycle time, the time taken to get back to the same point in the cycle.

It will be apparent that not only living creatures, but in fact any sort of syston, may have the equivalent of biorhythms.

Rituals, Rites, Rhythms, and Cycle Pumping

A feature of a cycle is that it moves through varying conditions until it gets back to the same point in the cycle. Within any complete cycle there may be any number of smaller cycles operating. Within an average sleep cycle, for example, your heart may pump around 33,600 times.

There seems to be little doubt that when you come to look at what is actually going on within a process cycle, the progression of the cycle is often dependent on so-called 'pumping' effects. When you pump up the tyre on a bicycle, a particular sort of cycle, progressive inflation of the tyre depends on you compressing the batch of air in the pump cylinder to the point where its pressure becomes greater than that in the tyre itself. Only at that point will the tyre valve open to allow the additional air in.

A great many of the cycles we will come across in the MT analyses which follow will be pumped cycles. Like the pumped laser mentioned in the last chapter, or the fairground swing-boat mentioned in this, the process cycle is completed by progressive injection of a series of sub-pulses of energy.

We will frequently find that the pumping mechanisms involved in MT processes and syston lives are what are usually called rituals, rites, and rhythms. In more official terms, they may be called standard operating procedures or something similar.

Proposition 118C. Syston processes are usually pumped through rituals and similar synenergy-injection procedures***

A familiar example of rituals is those involved in religious services, say a marriage ceremony. The congregation assemble, the vicar or priest appears, there may be music or songs, readings and addresses, the wedding text is read and responded to, rings are exchanged. Once started, the whole process continues on inexorably, each little sub-ritual pumping it on a little further.

Similar rituals are involved in forming and developing all sorts of systons. In a temporary orchestral-performance-audience syston, the 'atmosphere' is built up with the entry and seating of the audience, the appearance of the members of the orchestra, the tuning-up, the standard pre-coughing, peaking with the appearance of the conductor. In longer-lasting systons, such as production of a legislative body, the rituals involved in the election procedures may be far more extended.

We will not labour the details of rituals here — the reader will be able to pick out the rituals involved in familiar systons of every sort. We should, however, make one point. Rituals may be effective, may be essential, without us having any clear idea of how they work.

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