

The Falcondale Collection

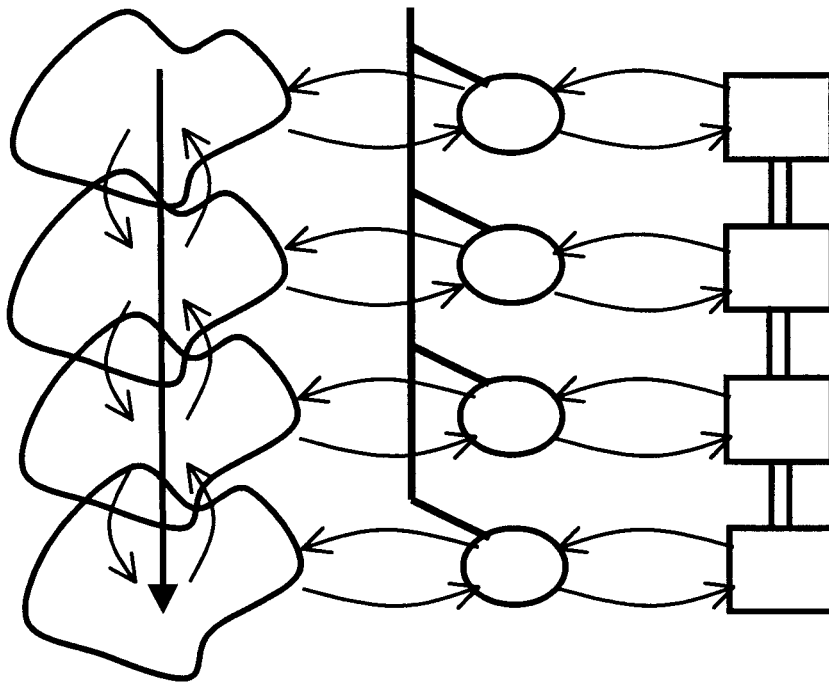
Stafford Beer

Initiates an Audience into the World of
Systems and Managerial Cybernetics

Session 7

The Viable System Model:
'The Inside & Now'

So let's start.



[Stafford refers to chart on wall]

I left you with that part of the diagram, and you were supposed to be trying to find out what the Systems' One were of your group, and I wondered if you would like to begin by a quick run down on that.

Nominate a group somebody.

Well the Welsh Parliament one..., we've got slight problems with it, well a lot of problems,when we are talking about Parliament and Government and civil servants and all that....

Is out.

is part of the environment.....we thought that maybe constituencies might be System Ones

Aren't you going to have any Ministers?

Well yes.....or even political parties

That's a different thing altogether. Yes. What I usually do, and I have actually gone to the

lengths of bringing a paper called 'Disseminated Regulation in Real Time' or 'How to run a Country'! (laughter).

And I have brought that for you which I will give to you at the end of the day, because it's got the whole model in it. But, what I usually do, and I've done a lot of this, you see, is I take the Ministries, because, forget the Civil Service, the Ministries themselves, are a legislative affairs, the Minister has to get stuff through into Law, doesn't he? So I start with that and then the Regions of the country usually in the environment. Now you could do that by constituencies, but you will be accused of gerrymandering.

There are various ways to do it. What I want you to get the feel of at the moment, is quite simply that each of those things is supposed to be a viable system in its own right.

What then..., I can see that different System Ones, but then what I couldn't relate it to was that I mean would the... a minister be one of them?

One of the square boxes, yes.

And then the round middle bit is...

Is the process that he has got under his control, or hopes he has. Which probably includes the Civil Service you see. But it's going to include in the long run, the programmes that this guy is trying to deliver.

Yes but if we are just looking at Parliament rather than Government then the process is the process of getting the laws agreed.

If that's where you're sticking, yes. All times with this stuff you've got to keep the levels of recursion very clearly in mind. You see, the Parliament is going to be embedded in a whole system of Government, isn't it. Yes, got you.

Well that's coming along. Let's not spend too long on this, I just want you too feel that you're making some progress, and then when you've got the whole model, then you will say, Ah., I see it all now.

And if not, I shall have gone!

What's another group?

Retail group. And an excellent example this morning in the paper, which gave us the chance to really study the System One. And that was W M... the William... William Lowe ...

Sainsbury take-over...

We were having a problem with which level of recursion we were going to work at, because

does retail include, do we have to include all the manufacturing processes as well because it's still all related. Or, do we just do it, like one company level we had a problem how much we were going to detail at first. So.. this helped us this morning because we were able to put this one situation into the model

It was talking about.., the Board of W.M.Lowe recommending that this take-over should take place. And so really we were looking at the Board, which could easily be a higher level within a system of W.M.Lowe but then we were thinking that no, it's a System One within Commerce, if you like.

Levels of recursion again, you see.

We had a long time to get to grips with this..

Yes, well I'm not surprised. These ideas are pretty complicated. This is why I would like you to try it out.

Now, when you say retailing. Retailing can be like Sainsburys, an end in itself. Or it can be part of a manufacturing company with a retail arm. So that's the next level of recursion up. Sainsburys hasn't got a next level of recursion up except for the industry, which it is part. And then you get Sainsburys, I've run out of names... Tesco etc.

Good, so much for that, that's starting.

Next one.

Education. There are two really nice articles. One on Gillian Shepherd, the take over from Patten. That was nice because she had addressed the most non militant union and it was all full of increasing variety a very good example that.. So the System Ones in that we decided were that Unions Assembly.. Also the systems of Secondary, Primary and Tertiary.

Education

And the Government body

Oh yes, and the fact that she was being advised by some of, you know...

Well, I think, you may find out that some of the things you've mentioned belong elsewhere in the system, because... For instance, an Advisory Body is certainly not what the system is there to do, and that's your criteria. And always please, when do you think you are focusing on the level of recursion you want to study always look at the one lower down and the one higher up. Then you get the sense of being centred. That's a very valuable tip.

The other one was about success of boys against girls. Girls seem to be achieving better exam results, so they have decided to remove boys from the system and educate them in isolation.

Who has?

Oh well, one school in particular.

Well, that's not going to do the girls any good is it!

No! This school in Chelmsfield..., there's, although it's co-ed, is now all single sex classes

Dear me!

And they're teaching these girls. There was also in the same article a good example of another school which had said 'Yes boys don't perform because their language is poorer than girls. They don't talk as much, and their attitude is different etc. etc.'. And they pinpointed these things And actually worked on them and said well instead of having hands up lets have the answer. We'll always have them working in pairs. So they increase their language and this was actually having a positive knock on effect with standards..

Knock on effect. Sounds like it to me! Yes. We seem to be going backwards, don't we?

Incredible.

Well the simplest way to look at the educational thing in the practical sense as distinct from Government, is, is obviously what you have included in that, is to take primary, secondary, tertiary further and so on, as branches of education, all of which are Systems One. And then within that, you get to a particular school, for instance, and you are several layers down now, and now you've got forms, classes, whatever you are going to call them. It makes a very neat model this education one.

We have another one?

Transport we're doing British Rail. Awkward. We really don't know how to separate it into systems, whether to do it by, kind of like, by stations sort of,...

By what Clare?

By stations. But that's not really any use. We thought of doing by region, which is all right for the ones which stay in that region but it doesn't work for the ones which go through a few regions. Or by path of one train? We didn't get very far with that.

You're talking about the whole of transport, so the first breakdown, surely is going to be rail, road, air, telepathy!

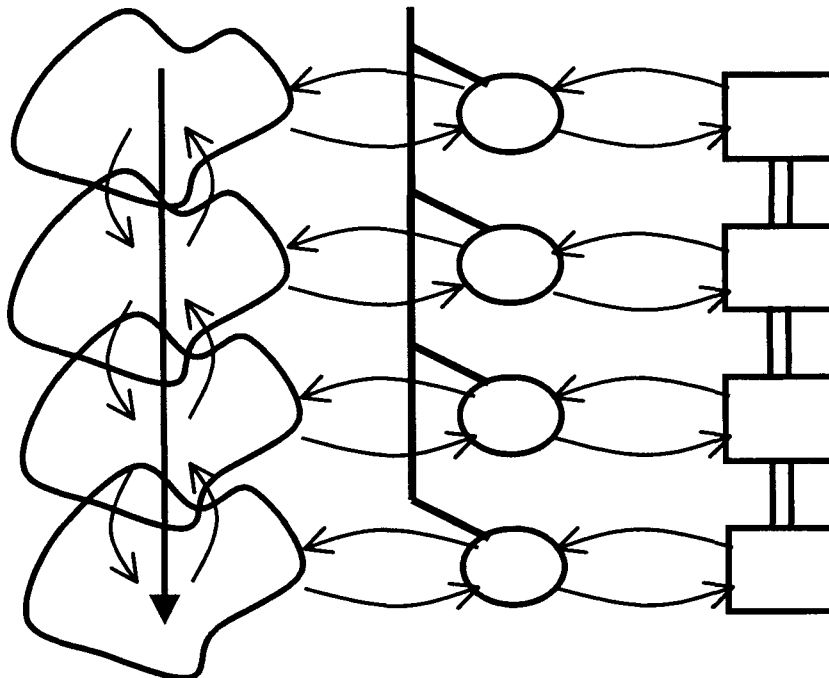
Okay, well you're getting the hang of this.

We better get on with this wretched model.

As you see, System One is what you are in business for, whatever you're doing here. So that is why you've spent so long on it. It is crucial, and the rest falls into place around it as I've said.

Well now, if it's that important. The next question is. Why isn't that it? Why do you have to do anything else? I'll try and demonstrate to you what's going to go wrong straight away.

We have given powers to each of these strips, the horizontal axis. We have used the argument that unless the management is allowed to use its skills to the full, it's going to have a hell of a job getting its variety across its own neck of the woods, and we've said that people should have autonomy, and I hope you realise from this argument, that autonomy is a relative thing and not an absolute thing, and that is why it's so damned difficult to handle in practice.



System 1

It's a bit like the business of the viable system. We said that viable systems exist independently, and then we found out that, of course, we don't actually mean totally independently. And in this same way, we don't actually mean total freedom. Because what's going to happen is this. That this fellow and this woman these two management units, pursuing their own goals, which they are told to do and are entitled to do, are going to clash. Aren't they?

Now, I want to make it graphic as possible. I have mentioned steel several times, because it's strongly connected, iron, steel, rolling, you know. You go straight down from a chunk of ore to a piece of watch spring. Now, supposing you are in the middle, you're management in the middle of this and you would then say, because you're trying to optimise your performance, you say to

the previous department, 'I want 10 tonnes an hour, always, all the time', because that is going to keep me nicely moving. But the guy that you are addressing, has just sent you a bit of electronic mail saying you're going to get the whole blessed lot on a Friday afternoon. Naturally, he can't afford to make it in 10 tonnes an hour for you, he has got other people to look after. So clash! And then, the people you are serving, on this downward path, you'll say to them, we are going to send you your stuff and they are coming back to you saying 'Oh, no, thanks very much, we need it on these days'. So the potential for clash, is gigantic, especially in the strongly connected case.

So, what are you going to do? You can't come down that red line and tell everybody what to do, that is absolutely destructive to everything that you have been trying to understand. And that is the reason for System Two.

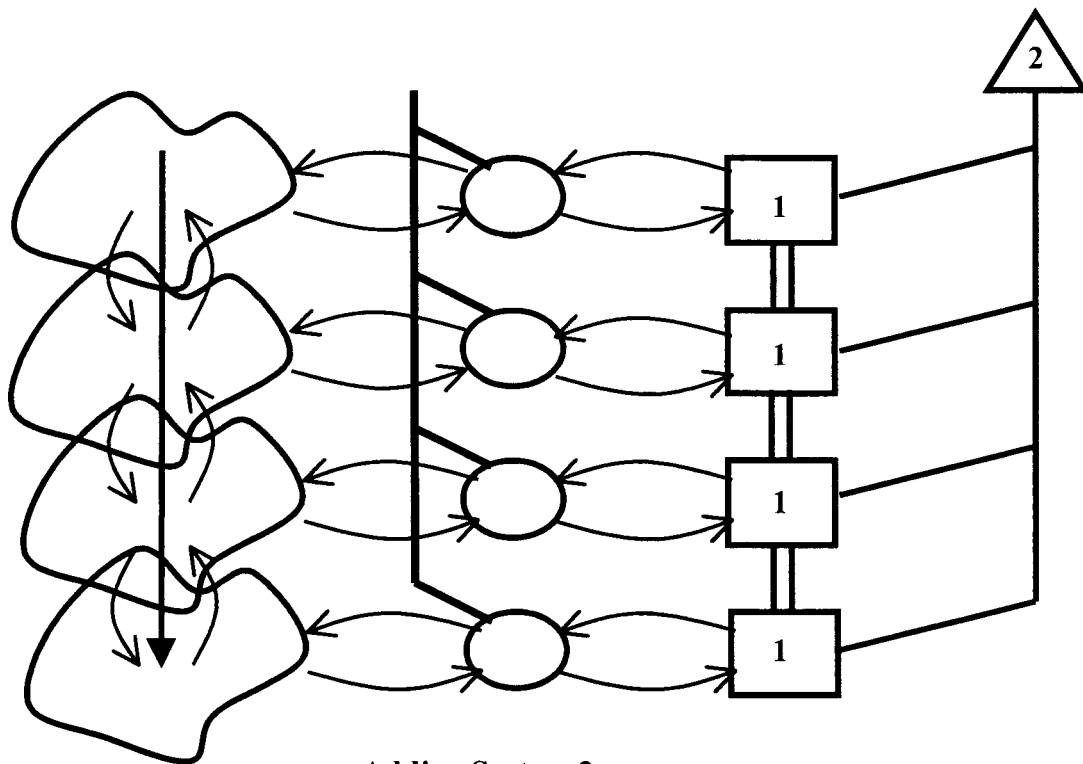
Have I got another colour here? Now I think I'll stick to black!

System Two which I depict like this (See over)

All these are Ones. System Two exists precisely to control oscillatory behaviour between the Systems' One. And you will notice that it isn't a command function.

You remember my story about the Bible and breaking it up? Everybody can see that this is required. Now I first realised this when, I mentioned to you that I was Production Controller of a steel works when I was very young, I was twenty-three. Now, hoary old steel works managers, melting shop Yorkshire men, and even worse blast furnace Lincolnshire men, they are not going to take a lot of lip from a twenty-three year old, with a pretence of being an academic intellectual person by no means. But they can see that unless someone sorts out this muddle it's going to blow up more or less literally, oscillations start like that and go like this as we all know.

So that's the job, and if you play it cleverly enough, as a service, then nobody's going to get upset and nobody's going to feel that their personal autonomy is being infringed. So that's the big secret.



Adding System 2

Now, let's take the school example because this is a well nigh perfect example. What in a school, a school with a lot of classes, a big comprehensive lets say, what is the System Two?

Teachers

No the teacher's in the box trying to run the class.

The Head

No, no, no.

The time table.

Got it in one or two!

Yes, the timetable, is the thing that stops everybody arriving in one place simultaneously and saying, 'Please Sir, Miss told us to come here!' And you've got five hundred people trying to get in the same room, and all the teachers going somewhere else. I mean good heavens. So this is a perfect example of that and I have never met a teacher who has said, 'I'm victimised by the Timetable, I'm not allowed to do my thing', for that reason.

The timetable is obviously a service, and if you are a teacher and have to go to the dentist in a hurry you look at the timetable and you say to your friend. 'I see you've got a free period, would

you mind invigilating my class?' and it's a really valuable service. So we've seen that in the steel works, we've seen it in the

Now what are the other projects.

Retail

Retail. Well now, we haven't yet established for sure which level of recursion you are at.

Well we started off when we originally looked at it, at the level of an actual store, store management, local management, just imagine any DIY company, large DIY..

DIY, I see, I was thinking of, you set me off on groceries with Tesco etc. Well, you tell me what System Two is then?

Stock Control?

Absolutely

You can't have all this butter here and no marge, sort of thing. And if you look at the whole of Tesco's, you've got a very interesting example, because you've got all these stores dotted round, in a region, let's say, there's probably a regional warehouse, and somebody has got to stop all that oscillating. You don't want all the butter in Ollenshaw and all the marge in Aberystwyth.

So, what's the next example we are trying? I'll get used to this in a minute.

Transport. Well now again, timetabling, obviously.

Any more?

Who else is with Clare? I don't want to pick on you. Oh yes! Kathy you try.

Signals as well

The signals are likely to be, whether we like it or not, the red line phenomenon because they are mandatory. If you bust a signal you're going to have a crash, and that's no good. No it's things that are a little more subtle than that. And again I suppose timetabling is really the big example and as we break up the Rail system for Privatisation, it's quite evident that getting from one system to another, from one company to another is going to be an absolute nightmare.

Already Allenna found, she visits North Wales quite a lot, there is a bit of Privatised Railway up there and they wouldn't tell her what intersects with British Rail, they didn't want to know. I mean, come on!

So System Two, we have been looking at the most outstanding examples, but you see anything

that controls, damps is the word not controls, damps oscillation will count. Now let me give you an odd example because it might not have occurred to you.

If you have got a big company of any sort. And the individual divisions or sub-companies, whatever they are going to be inside that, pursuing the public image, they design letterheads. Now, if you've got one of those companies saying, 'Our perception is that we have to be staid and respectable' And they do a super Harrod job on the letterhead and another company says 'We are after the youth' and so forth and has a big jazzy affair. And they both say 'Members of the something Group', **[jet passes overhead]** on the bottom this isn't going to work. So that's why you have such a thing as a House Style and you have to study the requirements of all the bits and come to some agreement. Now again, with any luck, that won't be imposed from above. What I should say if I was the Managing Director of the Group like that is, at the management meeting I would say to all the bosses of the units, of Systems One, that is. Nominate somebody, each of you, please, to a committee to discuss this and we'll hire the best designer we can think of and between them they come up with something and it is passed around. And I've done this often actually, it works a treat. And nobody is going to accuse you of Fascist behaviour if you play that. And that is a System Two because it's stopping the oscillations, that would set in, if everybody tries to outdo everybody else, and spends a fortune on design and letterheads and God knows what.

So in Parliament is the System Two the procedures?

I'm sorry, we, I forgot that. Yes, yes well erm.

And the Whips office you see is going to be...

That's an interesting case isn't it? Because a lot of Parliamentarians regard the Whips as [*****] and they're not supposed to be. They are supposed to be there to smooth business, so that's a very nice example. But rules of procedure. What do they call it in Westminster? The Erskin May is it? Anyway there is a book that you look up and precedence and all this kind of stuff, which is administered by the Speaker. And again, you see the Speaker is the sort of head of System Two in Parliament, isn't she. Because, although she occasionally does a red line job and says - 'Withdraw and throw him out', most of the time she's trying to damp oscillation. Doing a very good job too as far as I can see. We've been very lucky with our Speakers. If you think that who was that splendid Welsh guy before Betty Boothroyd?

Tonypandy

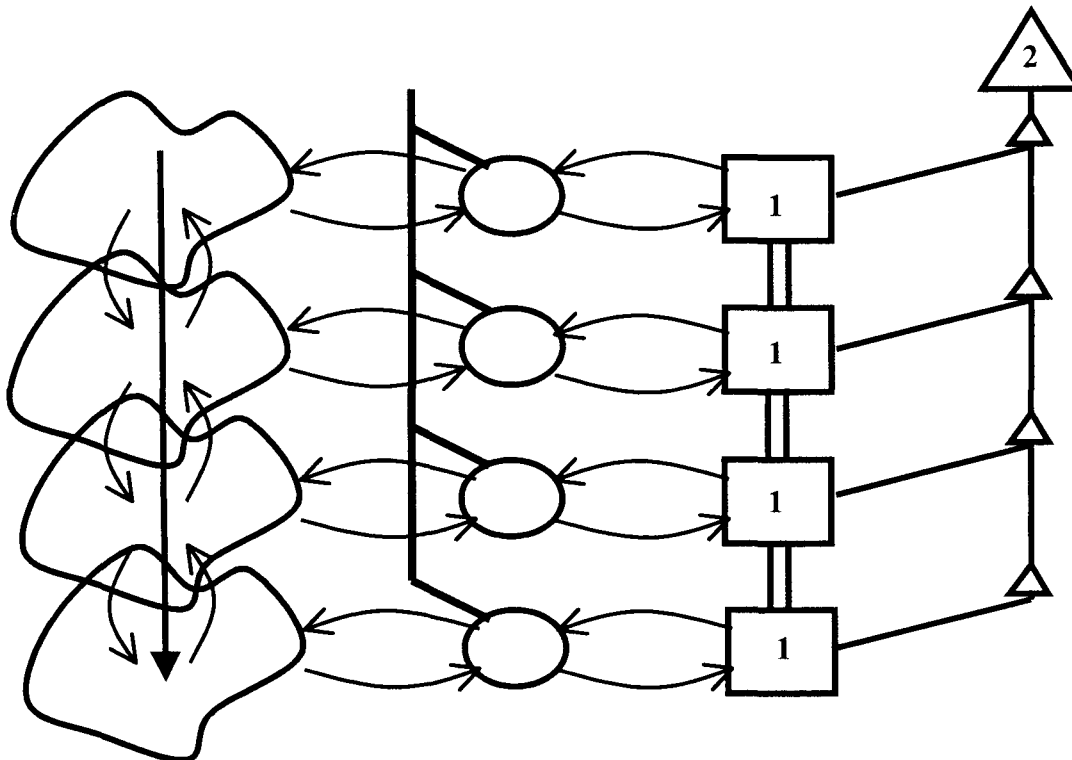
Tonypandy. Yes, I don't know why we can't get Ministers we deserve, we have got Speakers we deserve. It's just System Two in charge, it's not right!

So now we have seen why we have to have a System Two. Do you think you've got that firmly? Because it's a very interested thing and much misrepresented by people who try to use this model. They find the notion of anti-oscillation pretty complex, and it is, but you grapple with it. So the result is that many people say 'it's the office function'. Well good heavens, offices do all

sorts of things and I, it really annoys me to see this.

It's System Two....

Yes, what I said to you yesterday, was any line on here is actually a loop, but I can't keep drawing loops all over the place because the System Two is entering there and coming back out again.



Adding System 2

And actually there is quite a complex thing going on at these interchanges. You'll find that when you get the full diagram it's much more complicated than I am drawing it. **[SB updates diagram]** For instance there is a triangle here in each case which, in the case of, for instance, Production Control, of the steel works. These are local Production Controllers that owe some sort of allegiance to this one because they are using a uniform kind of planning system let's say, but also an allegiance across here. And you know one of the troubles with the old family tree Organisation chart is that it became an item of faith and you couldn't have more than one boss. But this is clearly silly in human affairs. In human affairs we have all sorts of allegiances and it's not that simple. That why I said the Family Tree chart was a means for blaming, it's your fault, your fault, your fault.

So those triangles that you have just drawn aren't like those triangles on the arrow over there?

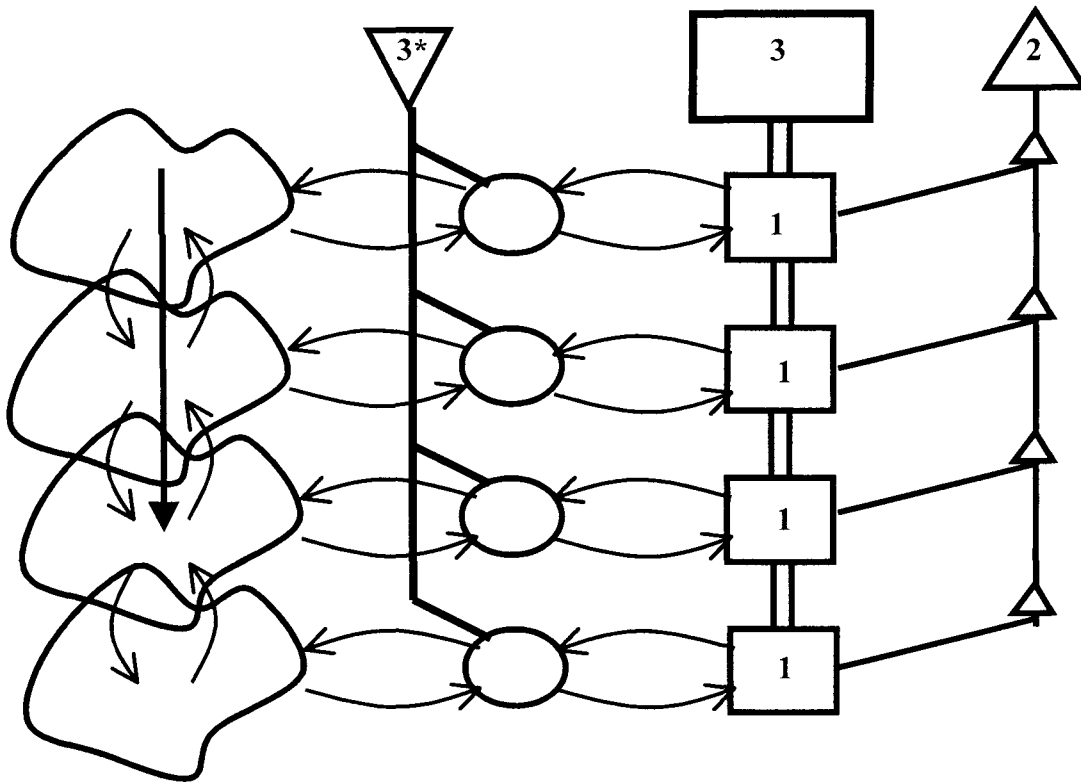
Oh no! Those are amplifiers. No, I beg your pardon. There is a limited number of basic symbols that I use. The amoeba for environments, the circle for process, the square for the management and this triangle this way up for anti-oscillatory behaviour, [SB updates diagram] now the green line has the triangle the other way up and looks like that. And that is System Three Star. Well just a minute we haven't got the System Three yet.

Now I want to go on applying this rule that in trying to find out what the laws of viability actually are, what I did was say I will look at what is necessary and sufficient. Now System One is obviously necessary because without it you haven't got have anything. And then I ask the question is that going to be sufficient? And we say 'no' because of oscillatory behaviour setting in, we must have a System Two. Now can we stop there? Well we could, but please note. There isn't anybody on the Board at the moment who knows what's happening everywhere. Each of these people knows what he or she is up to and probably knows something about the others but not necessarily very much.

Now System Three.

System Three (See over) exists precisely because it has the overall view and that is where you are going to find all the management techniques that are known a optimising techniques. Things like Operational Research, in so far as they are dealing with optimisation, you see, could result..... Have any of you met Linear Programming? You will certainly . You too, yes.

Well these things, these techniques, what are they doing in principle? They are taking chunks of activity here and putting them together and trying to get the optimum result for the whole. Now, in the limit, please note, that could result in sending for this person, and saying 'awfully sorry old chap or old girl, whatever it's going to be, we don't need you. We make more profit without your thing. Although individually it's making a profit, we can invest the money better in a different mix. Now that is an extreme case but it betokens the fact that if you do look at this level at the whole you can almost certainly improve the allocations, especially in some businesses. Certainly in transport. Certainly in retailing. I am trying desperately to hang on to our examples. I don't think anything can improve upon them. Schools of course. You can optimise. You try to get a group of classes together. You see this very much in Further Education, Allenna teaches a lot in the Further Education System and she doesn't know from one year to the next whether she will have a class where she had it last year, because it may get dissolved in the process of trying to optimise the budget. It depends on how many people come, and where the subsidy is coming from and whether the class is paying, it's all that mix, is going to give you a System Three problem.



Adding Systems 2, 3 and 3*

So given that this is now, we are running into Senior Management compared with Local Management. Then obviously we are going to make System Two dependent from System Three. That's where it's going to get its authority from and so is System Three Star because it's System Three which is going to summon up these Audits that we were talking about. They are going to cause things to be examined either financially or man management or electric motors we were on about. And that now is the autonomic part of this system. Now, why do I say autonomic? I have often mentioned that this all began by studying viability in the human body, with the models of human physiology and particularly the mathematical models of the central nervous system, which includes the brain, of course. Well it's worth mentioning this, I think, because it fixes it in your mind quite well.

This is the autonomic nervous system, we are talking about, where the Systems One are the major functions of the body, things like the liver system and the kidney system and the respiration system. And you'll notice that they are all autonomic. Now that's a nice word because the Greek here is 'self' of course, auto, nomos is law. And they are self governing, and yet obviously they can't run amok, we can't have that.

So it fixes clearly in your mind that what is the meaning of this word autonomy, that I am very

very anxious gets a full airing, in your thinking. And to think of the autonomic nervous system as representing that is quite helpful I think. You see, how shall I put this, consider the debate that, you have, in management circles in all our examples,..... it's invariable that you have debates about centralisation versus de-centralisation. And in our big institutions it's come down to this. That you hire consultants and they say you are over centralised! de-centralise. And then the next time around you hire another lot of consultants and they say you're very decentralised this isn't the current wisdom, get more central. You'll have a joint buying policy you'll save a lot of money. And this goes back and forth like a pendulum and I've really seen a lot of that in forty years of this game.

So what light does the central nervous system throw on that business of centralisation and de-centralisation, well it's awfully obvious, isn't it? I'm talking to you and you are listening bless you. We can't afford to take time off to remember to make our hearts pump or breathe. If we did we wouldn't be able to pay any attention. You would say 'Oh my God I've forgotten'. It's just ridiculous. That is an autonomic function and it goes on and it's got requisite variety built into it. On the other hand if I say there is my bus I must catch it. I can go like that. Suck in a load of oxygen, totally interfering with the autonomy of the respiration system, you notice. And off I go and catch my bus. Adrenaline starts all the necessary things happen, with that intervention. Now, in our management model, you can intervene in that, if you're the top management and have got a good reason and think you can handle it, you can intervene. And of course most of our industrial troubles and management troubles arise because of people intervening in things that they should damn well leave alone, or things where they don't understand the effects of their intervention, which is very much the common one, wouldn't you agree?

The body however, the body functions are changeable you don't start off life with one set of autonomous functions they change throughout your life. That's what habits are. Things that you go from conscious thoughts to sub-conscious thoughts and become habits and I suppose vice versa it happens as well you can lose habits so it should be the same in industry.

Yes well it is isn't it! You start saying 'this is how we do it around here' and before you know that is a useful habit in the start and then it ends up being a total resistance to any kind of change and you go down the tubes.

So you were quite right about that I thought you were going to say the body renews itself on a kind of seven year cycle. You renew all your cells. I think that is quite fascinating. Why am I still recognisable to someone I haven't seen me for ten years given that I am totally reconstructed?

So this really pin points the fact that systems are fundamentally a reflection of the relationships between the elements. That is what matters more than the elements themselves. That is why we were saying before, a hospital can be a hospital for sick children for hundreds of years. Because all the elements are changing but the relationships are firmly in place. Good. Well then that's the argument for autonomy. Don't interfere! Unless you know what you are doing or have good reason and all the rest of it.

So in Parliament. British Parliament as opposed to our wonderful Welsh Parliament that we haven't got. Three would be the Government, ...

Trouble is it's a very difficult job defining what you mean by Parliament. Under some definitions Three could be the bloke who runs the building.

Leader of the House

Leader of the House maybe, yes that's a good one.

But again we get back to whips fulfilling all these functions when they are only supposed to be System Two, but they manoeuvre and finagle until the cows come home, to manipulate the business of the House which is a Three function and not a Two function.

If you have a constitutional Parliament would three be the Head of State?

No, we haven't got the him or her yet. You see the Head of State is hugely emblematic for one thing and this is getting on with running things.

Now I often refer to this system Three, Two, One, I often call it that, which is what we've got on the board, and what I describe it as, in all my writings, is 'inside and now'. Meaning this is what is going on inside our Organisation and it's in real time with a vengeance and therefore, all the lines you see, all these homeostatic loops, ought to be in real time, but they never are. They've got awful lags, and differential lags and some things take longer than others to get through the system and so on, oh boy! All of this is so clear from a cybernetic point of view. You go in to clean a place up you can instantly see, once you've made this mapping onto the model. You can instantly see what you have got to do. That is what I have spent most of my life doing. Going around, in so far as I have been using the V.S.M. I do other things. I get very tired of getting an Albatross called the V.S.M. round my neck, but in so far as we are doing that, that is the trick.

And I will move into a clients place lie in the hotel on the bedroom floor until the early hours making maps onto this model and then go in and say 'Well I can't understand how this works, and everybody goes white and they think who's the leak? Who is the spy?' It really does happen all the time. It is a source of constant amusement to me. They have been trying to conceal this but you can instantly see that System Two hasn't got requisite variety for example, you see?

That's your criterion, and now we're well away from the problem of actually counting all these states because we know what it means and you can see that if you have a production department, of three men to save money with no computers but a planning board, to save money, and you are trying to run a whole steel works. It isn't going to work. You see, requisite variety, come off it. And yet that's what they do. People are always saying to me at this practical level of business, which I haven't dealt with much in recent years, because I've been working so much for Government. They are always saying to me "we want a cheap and effective system". This is

practically an oxymoron, you see, because the more complex the business the more complex the ... It's just there I'm sorry, it would be very nice, but.....

Now there are simplifying things of course, which come under the heading of amplification one of my favourite thoughts about that is traffic. If everyone got onto the roads in motor cars and drove all over the place there would be instant chaos and we have this thing called the rule of the road. And we drive on the left if you're French you drive on the right. As long as everybody agrees which. There are all these jokes about the Channel Tunnel. What happens in the middle? Anyway.

This rule of the road is a huge amplifier, isn't it? Because for one simple statement 'Keep to the Left', you get a huge amount of regulatory power. You just think of what... Suppose nobody had stumbled on that?

Why isn't it an attenuator?

Haven't you discovered, yet, Kate that most things are both, depending on how you are looking at them. It is regulatory power on behalf of the people who are policing the roads, and trying to make the system work, it's an attenuator of people who would like to drive willy nilly. Quite right.

But they very often, these loops are something, especially if it is a powerful thing you do, systemically powerful thing, it's likely to have its amplifier element and its attenuating element both working in that same loop. And one of the diagrams I am going to give you is a device for analysing a homeostatic loop, and I'll show you it when we get there. But I thought I'd just mention it because it shows two blocks and it shows all the transducers, and all the channels.

And the criterion of stability in the middle, and you are invited to fill that in, if you are using this technique. Well the interesting thing is that if you start trying to count the number of homeostats in this diagram you run into thousands, almost instantly, you really do, it's quite alarming.

Clearly you are not going to be able to do that for the whole shebang. And a lot of it would be repetitive anyway because you are in a certain type of business, let's say and certain patterns would keep reproducing themselves. But what it does enable you to do, if you are puzzled by something if you don't like the look of something, if something keeps malfunctioning, move in there with this chart and analyse the hell out of it, you see and say, 'I know what's the matter is here, these transducers aren't working, or this channel has to be opened up'.

So we are now beginning to get a grip on this thing, aren't we, and the last thing I want to say about this part of the diagram and about autonomy, which really applies to the whole diagram but you can begin to see this emerge at this level of the 'inside and now', is the law of cohesion, of a viable system. And that simply says that you restrict variety to the extent required to maintain the identity of the system and no more.

Now if you can adhere to that rule you see that it gives you the okay to take away from people's autonomy, but only if that action is justified by coherent identity of the whole. And so many things when we intervene with people in authority don't have that sanction. When you analyse them, there's just interference for Gods sake. So that's what we want to bare in mind. Now automatically that means that you have to drive decision down, you have to drive decision down the system to the smallest most junior, trivial level where it can satisfactorily be taken and what is the criteria for that? Have they got the information? If you have got someone who is very junior and hasn't got the information to take the decision then the decision has to rise in the organisation. But you see in real life decisions rise in the organisation for all sorts of bogus reasons, such as I'm not touching this with a... let someone else put his head on the chop....But that's not good cybernetics.

It works the other way as well, they don't let people put their head on the chop. Perhaps they should be paid to do so.

It does. Absolutely

Well I'd like you to remember that point Glen, in a little while we shall come to something where that is.... I have caused an awful lot of trouble by my views on that very point.

So. So much for the 'inside and now'. What does that suggest? We are dealing necessary and sufficient conditions of viability. We have got the 'inside and now' sorted out, can we leave it at that?

If its important to this identity, we need a boundary for the system.

Yes that's true. We began by considering that, Kate, because we said we've got to know what we're talking about, so you've got a boundary, well the boundary of this paper would do. Very hard to define but you have got to try to define it you say 'Now that's where we are working'. Now may I repeat my question? We are dealing with the 'inside and now', what does that leave over?

Definition says it 'inside and now'. 'Outside and the future'

I call it 'outside and then'. So that is System Four.

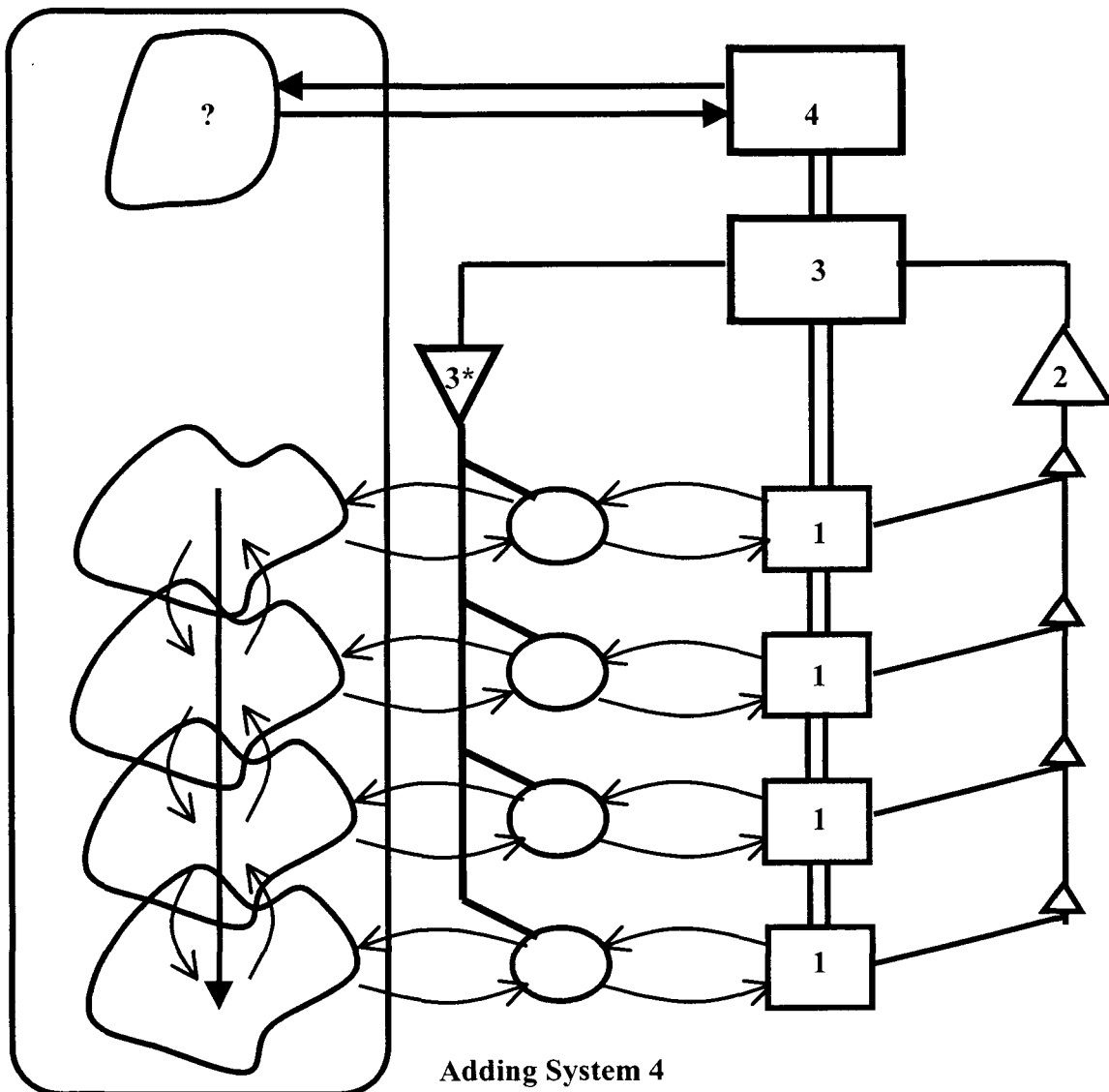
Now, I feel a real need to justify these breakdowns. You see you heard me carrying on no end about reductionism and so on and the need for holistic thinking and yet as soon as you start work here I go carving things up again. Now, the way things have got carved up in the past owe a great deal to history. Companies grew by take-overs and mergers and amalgamations and adding bits on and new bits of technology and they are not coherent at all, they are probably coherent in somebody's mind, who decided to do that, but it really defies sensible analysis. By which I mean if you look at any institution that has been around for some time and say to yourself, take the Health Service and say to yourself, we are spending more money on this than anything. It's the biggest business in the country. How would you design it, given that we have got all this

money? It is inconceivable that it would be anything like what we have got because it is frozen out of history and you try and tell a hospital that it doesn't exist any longer that it's going to be done some other way, they'll have a purple fit.

So, partly it's historical, these divisions, partly it's the functional divisions that have come out of professionalism. So you say, 'well I'm the Production man and you salesmen can go and take a running jump. I am the man that produces this stuff'. The salesmen say, anybody can produce that's no good it will all stay in the warehouse' and so you get this functional division, somebody else says this has got to be financed and none of you ginks know anything about money. I'm the financial wizard and so accountancy grows and grows and all these things become professions and they have their own institutions none of which helps, because they end by fighting one another in a very real sense, I think..

Now all right this is my attack on reductionism and now what am I doing here? Well, you see the thing is you've got to have some division otherwise you'll have just big blobs. So there's no insight into anything, so you've got to do something. My defence of the Three and Four division is that it is very biological. If you look at biological systems like the body as I said Three, Two, One is the autonomic nervous system and is understandable as such. Four is easily understandable as the whole sensory system and the mid brain and limbic system, so called, that sits on top of the old part of the brain. Now the, this stuff ends about here...**[Stafford points to the back of his neck]** it's the spinal chord ending in the medulla pons and the bulb at the top and the cerebellum which is the thing which keeps you upright and stops you from falling over and so on with a bit of luck, hopefully. That is the old part of the brain, then we develop this new thing, which gives us foresight, which most animals don't have so you see, so that's a natural division. If you look at whole species, you find that the reproductive system, is in there to keep the species going beyond the individuals. And that really is a rather separate system from the one that keeps the individual alive. So I argue that, if you've got to make a break this is a rather clever and sensible and understandable way of doing it. And so, I come along with System Four. Now please realise that this is not a hierarchy. Because it's drawn like its drawn, people think it's a hierarchy, it was never intended to be a hierarchy. System Four has a homeostatic loop which is doing this to the outside and the future. That's why the question mark.

Now please note that these are outside too. But these outsides are defined in terms of what each of these people is doing. So the totality of the company, of the company's environment is this.



It includes these outsides and it includes a bigger outside that they are too localised to recognise, but which the company as a whole must recognise, and an unknown future. Now don't forget this is recursive. These people also have an unknown future which is in there.

The whole model is reproducible don't forget, at the next level of recursion so these people quite happily looking at the environment saying we don't know everything about this and we don't know what the future holds and so on. But what I am emphatic about is the awful mistake that people constantly make of thinking that the addition of the Systems Four of the constituent Systems One, in that sum, is the company's environment and clearly it isn't even that simple Venn diagram here about the amount of space we are using up. There are whole acres of space here which only the totality is going to be addressing.

Let's try and make this more real. Let's suppose that we are dealing with an insurance company, and these horizontal lines are Manufacturers Life in Canada, Manufacturers Life in United States,

Manufacturers Life in England, Manufacturers Life in Hong Kong all of which actually exist by the way. Those local managers couldn't care less about the rest of the world or whether to set one up in Borneo. It's nothing to do with them. If you're running the Canadian enterprise you could think whether you should have an extra office in Saskatchewan. But you wouldn't be thinking if well perhaps we ought to have an office in Florida, except that you wouldn't get away with it of course.

Do see that the higher level of recursion is not the sum of the lower levels. That is very, very important. Now very, very often when you get to something like Research and Development, you find that the total company has got in place R & D activity in all its units and they think that that is it and it never is, and that is where they get caught out of course, because huge new innovations come out of the total industrial setting and not out of some particular thing. Which is already more or less redundant and archaic. Little do they know it but its on a wider point of view you can see it's had it.

Nobody is buying $33\frac{1}{3}$ vinyl's any longer and there were people around saying 'We will always do this'. Just as Hugh Cudlip always used to say to me "People will always read the Daily Mirror", and I said "I doubt it". We sold $5\frac{1}{4}$ million copies a day when I was there. Almost half that now. Less than half.

So what are you going to find in System Four?

Marketing

Marketing well some of the marketing is going to be in Three isn't it. Let's be a bit more precise about the terms.

Market Research you are going to find in Four.

How about advertising.

Advertising is certainly on that loop.

R & D

R & D I have already mentioned but we better make it more precise. That's probably the major thing.

Come on there is a lot more you could shove in here if you let your mind roam.

Can customer relations come in there...customer service and that.

Absolutely, and of course.....

Customer Relations come in at this next level down, System Four. They have got to look to their

customers, but there is going to be any overall customer relations problem. Policy with a bit of luck which is going to come out of System Four.

Does the body of people that set, like safety standards and all that?

That's very interesting because I reckon that a thing like that has got to come out of the ethos right at the top of the Organisation, but you know very well where safety is going to be dealt with in this model. Don't you Katherine?

Well it could be dealt with several places.

Yes it could. Well analyse it.

Well you have got to have laws about safety, so that is the Red line?

That's Red Line, yes.

You're going to have safety checks that would be coming down the Green line.

Right.

Does anyone else want to jump in here?

You're missing the most obvious thing.

It could be dealt with in level one

But now you've slipped a level of recursion we were looking at this level.

There are lots of shareholders in there responsible for....they are going to say we are ultimately....you are answerable to what they want, they are the owners of the business

Quite so, we are talking about safety here Lee. (Laughter)

It's System Two for goodness sake. You're trying to stop oscillating behaviour. It's no use sending somebody out of this line into the next line without a hard hat if he is going to have rocks dropped on his head. You know there has to be a uniform understanding through the company, of what is safe practice in our kind of industry, doesn't there? And that's where it will get fed in. So you stumbled on a very interesting thing, which is evident with all these major functions like safety, certainly it is in accounting when you start looking at some issue of, financial management let's call it.

You find it in all these Five Systems and that is very powerful method of analysis, because you're no longer dealing with their technical jargon and their close knit little group of experts. You can see where some of it's going down here, and some of it's going down here, **[Stafford gestures]** and that's why I got into a tangle yesterday, much to my embarrassment, when I said

there were six lines and I could only find five, because System Two was the sixth. So the whole idea is that the vertical and the horizontal varieties ultimately match. That's the key.

Now we were talking about System Four. Let's get back to Lee's point.

The Shareholders, indeed. Well they are a very mysterious lot, because most of them don't know what the business is about, and the theory of enterprise is very very short on this. I got into a terrible skirmish with Mr. Macmillan, who is Harold's son. What was his name?. He was a minister, he was a Tory with this big banner saying 'A Property owning Democracy' and he said 'Everybody should have shares in everything they could afford' and then we spread authority and we spread responsibility and so on. Oh come on!

I have got one hundred shares in General Motors, I have to be taken seriously, I should Coco.

Now none the less the point is a correct one, and legally this is the state of affairs so you get people buying one hundred shares in order to stir up hell at the Annual General Meeting. As you all know not nearly enough is that done. So I have worked in these huge organisations all my life, mainly as a consultant but also, as you know, as a manager. You never hear the shareholders mentioned, ever, accept when the Annual General Meeting is coming up. I was present, I was talking to the Chairman over a drink in his office when the Financial Director came in, I was on the management at this stage, not a Consultant. And the Chairman said to the Financial Director, 'How is it coming', I'm thinking of the AGM because this is the one time the Chairman has to be up front and actually make himself visible enough to get shot. And the Financial Director being a typical Financial Director, a very nice quiet man said 'Well it's, all right' and the Chairman said 'Well what is the overall picture look like? Are we in profit? Are we are in much profit? Are we hitting a dicey period?' He doesn't even know this, you notice because you are running this huge great machine. The Financial Director, the Chairman said 'What's the balance sheet going to say Thursday or next month?' The Financial Director said, 'What do you want it to say Chairman?' Just that cool. Terrible.

I was really shocked at the time but I have been around longer now, and I know that these things are doctored in all sorts of ways, and it is only when some cataclysmic event happens, that somebody gets caught.

What happened to poor old Bob Maxwell, who I knew awfully well, would happen to practically all the big shots if they died at the wrong moment without time to.... You know.... People borrow money from funds all over the place and pay them back and manoeuvre the thing and the idea that this guy actually burying gold bricks in the cellar and stealing the money, is the popular press kind of version, but what the guys are doing is having an enormous amount of fun manipulating all sorts of things.

I get very tired of this. There is a whole lot of seminars on Business Ethics going on at the moment which aren't founded in reality at all to me. So it's your point Lee, what are you going to say about it?

Well I'm not criticising at all, but the shareholders do come in...

They should do, is the short answer but they are marginalised.

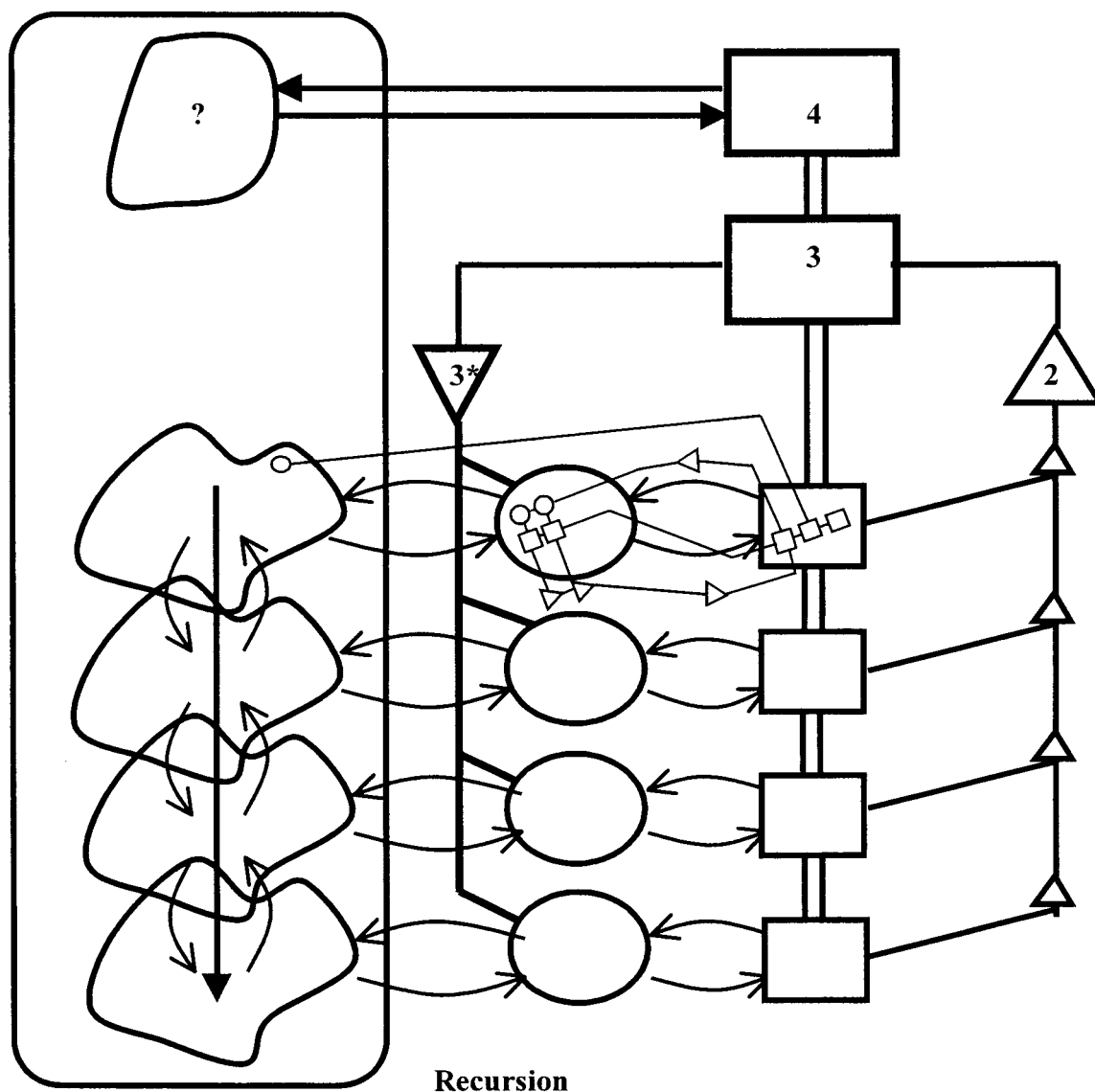
Don't shareholders just see the company, or generally see the company as a black box though and the input is the £2.50 per share.

Absolutely, I did say that most of them don't know what the Company does and that applies to the extent of External Directors, you know. I said to one very famous Lord. Whose name was bought to put on the letterhead. I said accordingly to Who's Who, Tony, 'You are a Director of 47 companies, do you really think you could tell me what they all do?'

He said, 'Don't ask silly questions, have another drink'.

How could he? Not requisite variety, you just take your little fee, look down the balance sheet and say that looks to be healthy enough.

We keep talking about organisations and the level Four seems to be the very high level, talking about Shareholders and Advertising and Market Research, whatever. If you were somewhere lower down in your Manufacturing Company so you were in a different level of recursion. So what you have got is in your System One is a group of machines working autonomously. What would your System Four be there?



Well it' the one, this one, lets draw this! See, the way I draw this, let me try and put this in. I've run out of colours. I'll put this in, in red so you can see it. Inside this box, which we now know as System One, at the next level of recursion, is Five, Four, Three, Two, Three Star, it's all there.

You've got the whole thing reduplicated. Now at this lowly level System Four it depends how lowly we are, if you're talking about a weaving shed in Lancashire, the System Four is the boss in the shed who has a bath once a month and has a good idea, that's the best you can do. But if it's a Division of I.C.I., with all this research going on and the members of the division ought to be able to find out what it is. That's why you have the Company Newsletter, and so on, going across here. Whether they can find out what this is, is another matter altogether. Lot of it is secret because you are planning into the future.

I want to stop this session here because of the time factor.

I just want to remind you. Do you know what the Buggy Whip Syndrome is?

Ever heard of it?

No!

I'm very fond of this, everybody used to know what it was, about thirty years ago. It's dropped out of the currency.

Here is a manufacturer of buggy whips. A buggy is a little horse drawn cart and this great long whip, you know. He improves his machinery, improves his leather, does all the right things. Cuts his cost, can't understand why he's making a loss. He doesn't happen to notice that buggies are going out and motor cars are taking over.

Now this is a very serious problem and no body mentioned Corporate Planning as a name when we were talking about what's in System Four. But probably that's the most important thing.

Proactive Management

In my nomenclature I have 'Strategy' at System Three. I call Four 'Developmental' and Five 'Normative'. So we haven't got Five yet. Let's put it in for the sake of completeness.

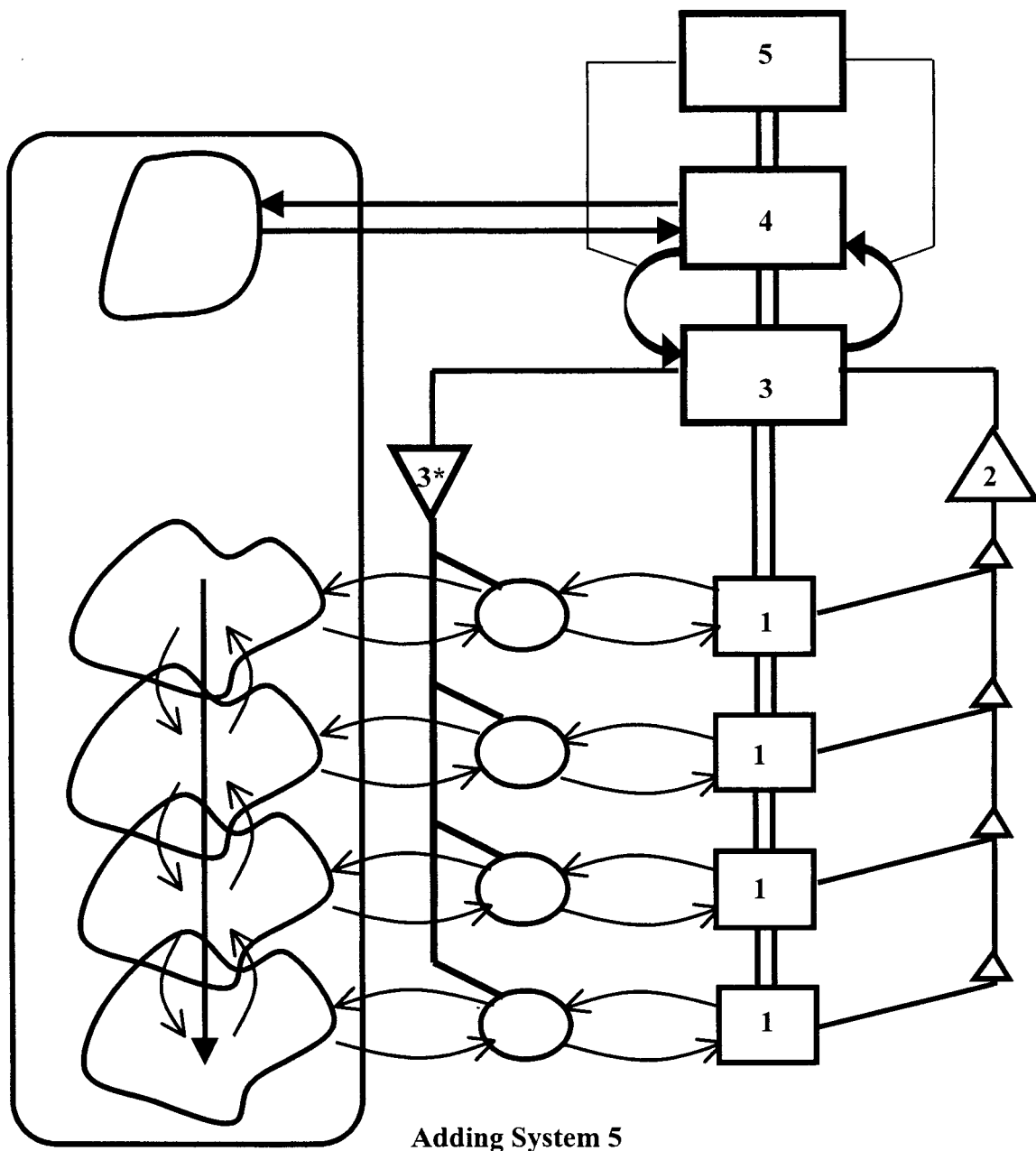
[See Over]

So we've got these two things being the 'inside and now' and the 'outside and then'.

Now we've got this massive problem, haven't we and I usually put these huge arrows in like this. What is this that I am drawing folks?

They are communicating the balance?

What is this?



A homeostat, Now the problem is you have to balance your investment and I don't just mean money, I mean time, care, attention, talent. In between keeping the show on the road and looking out in the rapidly changing world and this is no easy task, so this is why you need System Five in here. Because System Five is much more concerned with monitoring the homeostat than with issuing orders down here. Lets leave it at that, and then we'll blow this up and have a good look at it after the break. Thank you.