The Application of Complexity
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Plenary

<u>Caroline</u>

I think the answer to the question of why we chose to be part of the ICoSS project was the academic rigour, the variety of methodologies, particularly the complexity thinking. This chimed with me because in terms of the people population we consist of very different organisations. We have many kinds of health care workers and engineers and the rigour of complexity thinking made a lot of sense. I think we had many insights into organisational structure and relationships. We could already see in the organisation the value of relationships and what those do as opposed to formal descriptions of structure and intuitively we knew that restructuring wasn't the answer.

The information on mergers and acquisitions was useful because we merge willy-nilly with other organisations and we employ bodies within the NHS when it makes financial sense to do so. I know that the business approach to that is an entirely different ball-game and in that sense we have a much more closed market, but we still have to deal with change in a merger and as an organisation we need to capture the entrepreneurial as well as the traditional. As we can see from Kate's presentation, we needed globetrotters and an organisation that values and recognises skill right across the globe. That's not to say we will completely change our development and recruitment policies in order to get better at 'green' (refer LoM categories); it's about valuing what we've got in the organisation and fitting the development to that. We need entrepreneurs and we need traditionalist because we have different audiences and different customer bases to talk to.

For me the organisational development program is one piece of the jigsaw. There are lots of other ways to change the culture, manage people change, and attract and reward staff. There are many other things going on and we should see this as a part of an organisation's effort in its transformation and transition to a new state. Lastly I think the 'Landscape of the Mind' made it very easy to adopt the framework of complexity thinking because it's a really good tool. It enables people in the organisation to have a real interest, to seek it out and look for more feedback on development needs and then start to open up to the rest of complexity thinking by asking the question: 'How does this fit?' with the other tools.

<u>Terry</u>

I agree with all of those points and one other. You came up against the power of language, and you gave the example of what was meant by the term 'process'. We had similar difficulties with what was meant by 'system' because we were looking to move from being a seller of products to a seller of systems and people would sometimes ask, 'what is a system?' It was particularly important to clarify this where we had a multi-national culture.

Les

I agree with all those comments, but for me the striking bit about the Modernisation Agency situation was the correlation with our own problems. Being able to use the Landscape of the Mind tool enabled us to talk about all sorts of issues concerning strategic direction, like 'have we got the right sort of preferences in a particular group of people to carry out the tasks that they have been given'. That was very strong and with the triangulation tools worked very well within Rolls Royce Marine, so I'm please to hear that it worked within the Modernisation Agency.

Questioner 1: Talking about the use of language I wonder if you could tell me a little more about triangulation? Is it more than simply a correlation between the different tools?

Eve: We use the term quite loosely and what we mean is that we are concerned to validate one set of findings with another. I think that's important because if we had very different result from other tools something would be seriously wrong.

Questioner 1: And is that a manual process or is there some kind of triangulation tool.

Eve: No, it is the process we go through in analysing everything together.

Caroline: It is often validating something you know, but although you may already know it, it is often difficult to talk about it in some settings, but perhaps over a drink it becomes easier to talk. People will happily say: 'This or that really irritates me' or 'this is what is really great about the place'. It's often a process for validating what you know, but one of the benefits is that it makes you unpack things even though you don't particularly want to.

Terry: I think the term stems from the world of land surveying, where you take a series of readings in a triangle to check that you are where you think you are. It's a fix on your position.

Les: It works very well with the underlying assumptions because you derive the assumptions from the interviews and if for example, you had the assumption that everybody wants to be told what to do, then you can look at the LoM data and say this population has those sort of preferences; or not as the case may be.

Kate: I also think it's true that different people respond to different kinds of tools. LoM will make sense to some people and be of little interest to others whilst NetMap will perhaps give slightly harder evidence. So it is about finding different ways of engaging the issues.

Questioner 2: I think what has been said about LoM has been very comprehensive and very powerful. What would you say were the limitations of this approach and what is it that it cannot do? To me it seems the process is about survival and adaptation and change and response. If you take the Modernisation Agency as an example, it hasn't survived therefore was something missing from the process. Although you may use a bottom up approach it suggests that you've got to look up as well as down because if your survival is affected by Government the methodology has to be moved up to

understand what the broader context is in which you operate, or in which you may disappear. You need either to adapt or to change the environment.

Caroline: I'll answer that, but I think there are two things that strike me. One is that we're not disappearing. It is critical that the people that we have skilled up and who have the talent, stay within the system and that we don't lose them to other companies and other sectors. In terms of the broader system, yes, you can't look at the work within this framework without considering the space that you occupy and the factors that significantly influence that are political. I suppose it comes back to different audiences and what they want. If there was one thing we could do differently it would be to buy back two years and do what we have done around the boundary of the work we're doing. But now I'm true to the program of localising the dividend of the metrics work (?) that we've done. The Treasury is buying it and Ministers are buying it, so it will secure funding for improvement in the future. And again, it's not the only bit of the jigsaw. If we went to John Reid or any of the other Ministers without pounds and pence attached they would say they were not interested. We haven't said what the cost impact of our work is and there may be something in taking what we've done and applying it to this framework in order to make it a currency cost system. Then maybe the Treasury and others would be interested in it, but I do think it is a case of audiences and what they're looking for and that may be very different from what this work offers for an organisation's development.

Eve: Yes, perhaps you remember Caroline, that we tried to do a rough calculation of the value of the work and found it was quite significant in terms of its contribution, but I'd like to answer the question about the limitations of the approach. One very strong limitation is when people simply do not want to start the process.

Les: It needs an enabling environment.

Eve: Yes, but there is no way we can go into an organisation and impose anything that we do. That why I defined a 'natural experiment' as meaning that the people in the organisation wanted to explore alternatives. I see that as the major limitation of the approach.

Caroline: We had lots of people who didn't buy into this at all and a lot of the e-mail traffic challenged the approach right from the start. However our chief executive and people around him bought into it and if people want me to do it there needs to be strength in leadership. The acceptance created a ripple in our organisation. When that happens you have to take advantage of the dynamic. It's a case of striking when you know the organisation is ready for it.

Terry: I don't necessarily view this approach as being all that there is either. I think it could be developed to incorporate the use of other tools and methodologies. If you go to any of the big consultancies they have a whole range of diagnostics and survey approaches that you could use. This approach could be supplemented with some of that.
	To answer your question about what it won't do; it won't solve world hunger or sort out the Middle East problem, but before you get to that stage there are a lot of tricky problems in organisations where you can use this approach. The other thing I want to say is that it's possible to achieve the same end by different means. We could

have worked with some agency like McKinsey's and arrived at a similar or even better solution, but it was something that worked for us.

Eve: That question was asked at the Willis (?) workshop. Someone asked, 'why this particular tool and not any other?' Of course you can use any other tool you want as long as the logic of complexity underpins it. The ones we are using at the moment are the ones we have found appropriate, but there are others as long as they don't contravene the principles of complexity. As to the political issue, I've just spent a weekend preparing a report for Caroline that will feed into the one she is preparing for Ministers and I hope that some of that complexity thinking will find its way into that.

Terry says it cannot do anything for Third World hunger. Well, actually we are talking with an organisation which deals with the extremely poor around the world and they would like us to work with some of the teams in Africa and South America and India to see how projects are set up with children. This will be to see whether an enabling framework can be established so that other teams can build on it within their own context.

Questioner 3: Could you elaborate a bit on the interview techniques and the content of them?

Eve: Yes, thank you, that's a good question because I didn't have time to explore it and it's important to understand that part of the process in order to avoid an interpretation bias. With the Modernisation Agency which has been our most recent project, there were four researchers working on it. We all did the interviews and then assessed them by each person analysing some of their own interviews and getting others to do the rest. In practice, every interview was analysed by a minimum of two people and never the same pairs, so it's always quite a complicated affair. After that people come together and spent one, two, three, or four days brainstorming, to try to understand what the key questions and the dilemmas are, and that is a very intensive process. By the time we finished that part with the Modernisation Agency we had a deep understanding and because we each came from a different perspective, we minimised interpretation bias. Findings are then validated through the reflect-back workshop and one-to-one feedbacks and there is constant discussion and interaction.

Questioner 3: Which software do you use?

Eve: Well one person used Atlas, but Kate, I and Nazreen did it the old fashioned way with pen and paper. Although I'm very experienced it still takes me a minimum of half a day to do one interview and that's a first pass analysis. So in effect it takes me one whole day to analyse one interview and write it all up and then we have to cluster the themes and so on. But even where a software package is used the thinking is always in people's heads.

Questioner 4: Could I just ask a little more about content. I understand there were eight open questions related to the theme.

Eve: No, they're open questions.

Questioner 4: So they're not around a theme?

Eve: They are primarily trigger questions to open up specific areas that we want to explore. We have our basic eight but we always ask our sponsors if they want to substitute or add one or two if they want to focus on something specific. But the questions are never in terms of facts and figures they are more in the form of, 'what do you think about the objectives of the organisation?' or 'how far do you think it has achieved them?', 'what still needs to be done?' or 'what would you like to see happen in the future?'. They are very much about the perspective of the individual and what change means to that person.

Questioner 5: Just to come back to language for a moment. I know I made the mistake once of taking down the things that people were saying and interpreting them as I did it. How do you hang on to the semantics in the language that people use?

Eve: We record everything on mini discs and work from transcriptions because notes are always an interpretation. How people use the language is very important. We have to listen not just to what they say but how they say it. As I said earlier, what they say 'between the lines' is as important as what they actually say. You have to become skilled in understanding what is implicit.

Questioner 5: But there must come a point, in your brainstorming for example, where you're synthesising in the process. Do you have to be careful to hang on to the original language?

Eve: Yes, that's why we use quotations to illustrate.

Caroline: One way of doing the analysis of the interviews was simply to cluster the quotes in terms of dilemmas and functions. Pulling them together in that way enabled an interpretation.

Questioner 5: So ultimately it's at the reflecting-back stage that it gets refined?

Eve: It goes through a constant refining process but it's not one imposed by us.

Questioner 5: So it's only the company that changes the language or synthesises a new way of thinking?

Eve: Yes, it's really a sense-making exercise.

Questioner 3: I think you said that sometimes the client or the organisation cannot see the problem or later on you realise that what they thought was the problem is not really the problem. When you start asking the questions do you start from a defined problem?

Eve: We have to focus on that initial problem but by the nature of the questions we will explore the area around it. In other words we are working with emergent patterns. That is important and that is why although you start with problem situation you have to expand and explore it.

Questioner 3: Aren't you worried that if you start with that problem you may bias the direction?

Urooj: erall we looked at what enables or pivots change so we took a broad line. That initial problem might be considered but we look at the overall catch in terms of communication and the issues change over time. But it's a way of getting through initially.

Eve: Yes, the whole thing evolved through its three year span.

Questioner 4: Can we take it as a lateral conclusion of complexity theory that the size of a business should be limited? We've had examples where there has been a million or 7000 people in an organisation. As far as NetMapping is concerned it seems to me one person can only handle so many relationships whether organisational or social and that they feel most comfortable when their boundaries are set. Is that something you've considered?

Terry: Very good question, don't know the answer.

Caroline: There seems to be a tipping point of about 150 in a team. At that number people all know and can interact. As you get above 150 you begin to lose that, but I must confess that's all I know about it.

Eve: Thank you for that. What we see happening is that you do not have to limit size, but you do have to re-hink how an organisation structures itself and we keep finding that optimum networks are the things that organisations are now beginning to explore. The optimum number of people for a team does come out at around 150 – 200 and interestingly Gerald Fairclough who is leading the next seminar wrote a book many years ago where he set up an organisation based on that principle. He used the analogy of a biological cell which when it reaches a certain size it divides. We found that happening a lot with networks. So for an organisation as a whole it's not the size but the networks within it and how they spread throughout the organisation and that fits with the theory.

Questioner 5: You know the elevator pitch? You're an entrepreneur, stuck in an elevator with a venture capitalist and you've got sixteen words to put your case before he gets out. The project was part of a program conceived by a bunch of engineers who persuaded ESRC to cough up twenty million. Now although engineers they understood the need for organisational considerations and its knock on consequences for technical systems. Now I'm stuck with the chief executives of EPSRC, hard hatted, hard science engineering types who want to know what contribution to knowledge the project will bring. Suddenly the chief executive says, 'you've just wasted all my money and you got sixteen words to say, 'no, what we discovered was that…'. Well Eve and Terry, what's the answer?

Terry: Well I've used up my sixteen words already, but I would say something around, 'this is an approach that worked for us' and I don't make any further claims than that. It was an approach that came at the right time and it delivered some very useful benefits to our organisation.

Eve: By changing the emphasis. 'Changing a way of thinking', is the way I would put it and in a way that for this organisation, worked.

Kate: Many different organisations say that it has worked.

Questioner 5: So you would want me to characterise what 'it' is?

Terry: Yes it is a logical approach that can perhaps be applied to all types of organisations.

Questioner 6: Can I add something to that? It has given you something that will work no matter what the changes in the environment will be, because you already the flexibility and the mechanisms that will help your company adapt.

Caroline: The only bit that's missing is the bit about paying attention to leadership. We have the tools for recognising patterns. The methodology results in a process that you go through and the triangulation reinforces the findings, but at the end of the day you do still need leadership and some sort of power base sign up to this that you don't necessarily see from the work of the project. I suppose the non-atterning might imply this.

Questioner 7: Just to go back to the question of allowing emerging theories to take hold. I'm quite interested that if you go down that road of emergence, what happens to accountability and responsibilities. Do they tend to become clearer for the individual or do they themselves become less bounded and more fluid and more indirect?

Eve: OK, one organisation that has been mentioned today is the Training and Enterprise Council. They used complexity ideas over several years, in fact almost before we started working with them and what they found was that it changed the organisation quite dramatically in that it brought in very sharp accountability and responsibility. It allowed freedom of the individual to explore his or her own boundary but the person had to carry the responsibility for any action on behalf of the organisation. The chief executive said, 'You can bind the organisation, but don't sink the ship'. You could see that right through the organisation everyone was taking part in a very active way to make the organisation successful.
  I don't know whether you are familiar with what the Training and Enterprise Council used to do but they used to work in a particular geographic area with all the companies from the very small to the very large in terms of training, and the Investors in People project and so on. So even though they were fairly small their effect was huge. The 150 individuals who worked for the organisation were exploring new ways of doing the job and creating value for their clients. It involved a significant increase in responsibility and accountability. Now that doesn't suit everyone and some people left because they could not work in an area where the boundaries were not set for them. And that's something that happens if you're working with the theory at full gallop, the structures become very relaxed but there are other things which come in and you have peer support as well as peer pressure. The dynamics change completely and what was even more interesting was that the Humberside organisation was just one of seventy within a Civil Service background and they had to be almost schizophrenic in their approach. One approach was towards the people in the organisation and the other was to their Civil Service masters. They learned how to give their masters what they required so that they would leave them alone to get on

with things. And they were one of the most successful organisations in terms of efficiency, effectiveness and cost.

Questioner 8: Is that written up as a case study?

Eve: We're writing it and as soon as it's done it will go on our website.

Terry: I think it's a complex issue. There are a whole bunch of trade-offs in my mind that come in. If you go for the smaller organisation you get a lot more clarity, responsibility and accountability and focus. The speed of decision might be faster and you're closer to your customer and so on, but you trade that off against economies of scale and skill in terms of having a centre of excellence type of approach. You might lose out in terms of market share and market power by going for smaller units so it's hard to generalise about what is optimal. I think you have to consider a precise set of circumstances and then work it out.

Les: I think in larger organisations a lot of people shy away from responsibility because they don't feel that they have a support network or that they know what's going on and how to access information and one of the things we looked at was how to develop relationships and develop networks. If people feel that they have that support structure which is not implicit in the organisation chart or the hierarchy, then my experience is that people take the responsibility and feel happier about making decisions.

Questioner 9: One of the problems is that people see complexity and complex evolution as merely biological metaphors and applying that to an organisation warps the politics and the power relationships within the organisation and they see it as just another managerial tool to impose change. When I'm teaching it that's often what I get.

Eve: Well I do not see complexity either as a metaphor or an analogy. Organisations are complex evolving systems in their own right and we don't need to use the ideas as a metaphor or an analogy. The question we ask is: 'how do they operate as complex systems'. If you don't understand their characteristics as complex systems per se you cannot get to them through an analogy. Press an analogy beyond its capability to suggest and it breaks down. If you look at an organisation as a complex system in its own right then you can explore it to the required depth.

I also disagree with the point about power relationships. The power relationships and leadership relationships are very much part of it because what comes through is the question of how you facilitate the distributed leadership and distributed power within the organisation. There is a greater distribution of power and the power politics change.

Questioner 9: So hierarchies disappear?

Eve: Hierarchies change quite dramatically.

Urooj : I agree that the power and politics have not been talked about explicitly in the way the literature speaks about the question of hierarchy, and I agree that work has to be done to articulate that independence that comes from the bottom up. I think that the description has to be sharpened.

As a person who has worked on this project for two years and been with it every step of the way, I want to ask our partners something which would add to my interest in further development and sharpen the methodology. What did you find that was useful about our complexity approach and what did you find that was not so useful compared with other things you have done in the past?

Terry: What was useful and what was not useful? Well overall I've given the impression that the whole thing was useful, but if you're forcing me to pick some particular piece of it I'd say that probably the analysis was the key, and it was the most difficult to manage. How do you make sense of such a huge amount of data. It takes that funnelling process to get something meaningful that you can actually work with. That for me was the most useful. With agent-based modelling there's a lot of scope and potentially it's a very useful tool and NetMap is very powerful and we've only just started to explore with it, but there's potentially lots of power there. But in terms of our project we didn't get very much out of those because they're still quite developmental

Caroline: I suppose for us, if you have to categorise things as being useful or not useful then I think we're at the point of stepping back and saying what can be got from this data and how are we going to use it? I think we're on the cusp of going through that fundamental process and I sense from the presentations today that the true value is about to come out of that. What we've seen is that the power lies in triangulation and in the opportunity of the analysis of variety of the tools. I suppose I'm struck by the difficulty of expressing the organisation to people that we're inviting in, in a very intimate way and saying come and help us and mirror us, and have us reflect on our condition. It's always difficult to convey the story to an adequate level or depth when time money and diaries always get in the way. So there's a continual conflict over the time that you, the researchers, expect from us and we expect from you and trying to offer the right thing both ways. You have experience of working with other organisations and a sense of the time or brain space that's needed and we're constantly saying, 'haven't got the time, money's a problem, diaries are full and if you come in and talk theory we'll probably throw five theories back at you. We've had that all the way through. It hasn't been so much people saying, 'this is a management tool' but more 'you've got a framework? I've got a better one.' So there is a battle.

Les: It's other things that are going on in the organisation at the same time. Certainly from my experience what worked really well was using the internal resource alongside the LSE to do the research because one of the things that Eve knows I wrestled a lot with at the beginning was trying to apply the tools. Some of them were easier than others and if you don't have that business knowledge as part of the team that's trying to implement the process then you may be taking a file to hammer a nail in. You may have a good tool but it's not the one for what you're looking at. I think there has to be close correlation between the business or the people who know the organisation against the academic methodology and theory.

Terry: We did get quite a bit of help out of LoM and we're continuing to work with Kate both at individual level with the middle management group that we're hoping to develop, but also looking at the outputs from that group together with the senior

management group to see what collective development there might be for the organisation.

Questioner 10: This is more like a research question but I am interested in contingency management and stress levels. In other words how contingency affects your feeling of well being.

Caroline: What do you mean by contingency?

Questioner 10: I mean you have less structure in being told how to organise the work. There is more contingency in how you carry out your work and in what is expected of you and what you are accountable against. Some of the literature suggests that you need a certain level of structure for your personal well being and satisfaction in your job. I was just wondering what your experience was when you implemented the process.

Caroline: I suppose this was a tool among a number of tools and only part of the jigsaw in holding something together on behalf of the organisation. The other pieces of the jigsaw would be measuring the stress and our year-on-year performance and I think there is a connection with ambiguity. Personally I love ambiguity and thrive on it yet I have a team and can spot the people who have been turned into shivering wrecks because I happen to go past and say, 'can you just do this or that?' We need to be able to cope with the dynamic and personal preferences and that means getting it right for the team and the individual. If you know you're getting it right for the organisation then there are techniques and tools you can employ to answer that question and you have to be alert and deliberate about any interventions that you're taking in the organisation and knowing what impact they have.

Terry: I also think that there is probably a close link between stress levels and high levels of ambiguity though I have no particular evidence for that. I think what we were seeing when we got the results of our conference which had 'clarify roles and responsibilities' as the number one priority was indicative of a lot of stress and anxiety. It showed that coping with the ambiguity of the situation was difficult. I have no real data on this issue but I know we have had high levels of stress in parts of our organisation and we had to make interventions around that. I think that's improving as the ambiguity tails off.

Caroline: There was something you said earlier about the power of offering the vote. We can put up things on the screen saying this is what is causing us concern and this is what we want to see happening and this is what we need to do. Going back to employees and saying, 'these are things we can't do or we can't make clear' often drops the level of anxiety. Being able to act cohesively as a leadership team and saying, 'we don't know, but we'll keep telling you as soon as we do know something', saw a significant drop in stress levels.

Kate: Can I just add to that. It does seem to be the case that tolerance varies depending on inner skills preferences. Some people have a high tolerance for ambiguity and some people don't. Once people know that they can be a bit more sensitive to what the impact is likely to be. That's one thing. Another is that stress levels of course vary with other things like job security but also co-vary with what the

individual (or team) is being asked to do and their preference profile. The closer the match is with preferences, the higher the feeling of well being.

Eve: I'll just finish up with the observation that there were quite distinct differences between the TEC and what we saw in the early stages of the process with Rolls Royce Marine. In the latter there were two completely different contexts and cultures. It was a culture of acquisition where people were feeling uncomfortable because they were asked to work in a different way. They were not given permission to explore their ordinance possibilities which were given to them with insufficient prior knowledge of what they were. In the TEC the exact opposite happened. The environment and the framework was created in which people were constantly discussing and exploring such questions as, 'What training do I need?' or 'what support do I need?'. It was very different and people did not get to the point that we found in the early stages of Rolls Royce.

Questioner 11: I know that we're running out of time but I feel this is probably the crux of the matter. If complexity is in that fuzzy space at the edge of chaos, where people are expecting emergence without knowing what that emergence might be it requires a very different mind set. We have been talking about two public sector organisations which no longer exist in their old form. I think it is very much about changing people's mind sets or ways of thinking as they go into these unknowns and I think we need to be careful not to be smug about people's anxiety, because in different ways it is out there for all of us.

Eve: I think that's very good and it's a question of how you face that anxiety and face it in a generative way rather than one which makes you unable to cope with it.

Questioner 11: To avoid being in denial.

Eve: Yes.

Questioner 12: Very quick question. With Rolls Royce what did you do in the lead up to the conference.

Terry: The specific trigger was that our senior management identified 'clarify roles and responsibilities' as the number one thing that we needed to sort out.

Questioner 12: Where did that come from?

Terry: It was triggered by the acquisition and the fact that there hadn't been a proper integration plan.

Eve: And that was two years after the acquisition.

Terry: That was probably a root cause of the issue. However I must say that it is a very successful business that has grown consistently since the acquisition. It's really that we would like it to be just that little bit better.