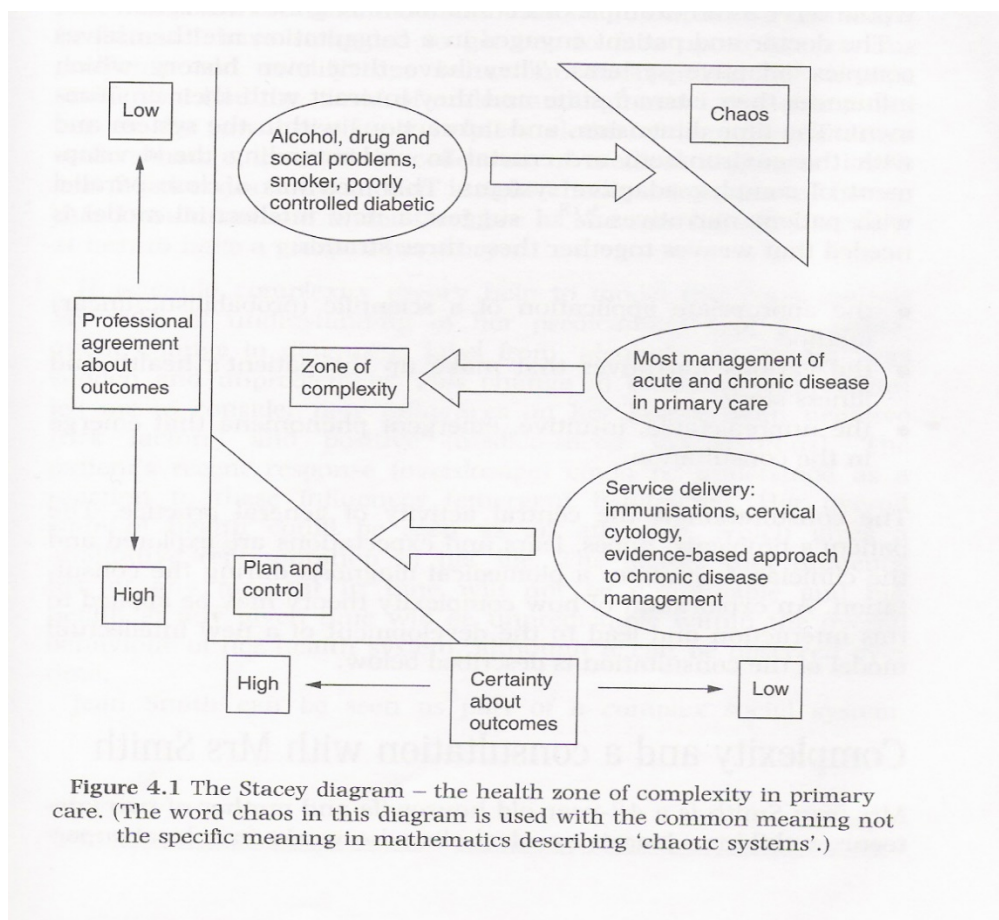


## Complexity and the consultation

*This is an excerpt from "Complexity and the clinical encounter" by Alan Hassey - A chapter from the wonderful book "Complexity and Healthcare: an introduction" (2002) Sweeney, K & Griffiths, F (Eds) Abingdon, Radcliffe Medical Press. I encourage you to buy and read the book...*

Where in the application of linear models is there a place for the unstructured problems that patients present to their doctors, which do not fit easily within an evidence-based approach, or for the intuitive insights and Balint-like 'flashes' of understanding that doctors are suddenly aware of in the consultation? How can we develop an understanding of the everyday clinical practice of a primary care physician, and develop a model for the consultation that reflects the real nature of the clinical encounter? One way of modeling the content of primary care is to use a Stacey diagram.

In the Stacey diagram (Figure 4.1), the zone at the bottom left represents medical conditions for which there is a high degree of certainty and agreement about actions and their effects on outcomes. As our evidence base expands, more conditions should move to the bottom left zone.



A linear, evidence-based approach is likely to be appropriate for managing these types of conditions. This zone typically represents a population-based approach to service delivery. The zone in the top right of the diagram represents areas in which agreement and certainty about outcomes is low. There is unlikely to be any (good) evidence to apply to conditions that fall into this zone and a scientific, linear approach is unlikely to be successful. The middle zone represents 'the zone of complexity' where there are only modest levels of agreement and certainty. This applies to individual patients and populations within primary care. Tudor Hart's observations about hypertension in primary care would serve as an example of a condition falling into this zone.

The doctor and patient engaged in a consultation are themselves complex adaptive systems. They have their own history which influences their current state and they interact with their environment. The time dimension, and interactions within the system and with the environment are crucial to understanding the development of complex adaptive systems. This idea has a close parallel with patient narratives. I suggest a new intellectual model is needed that weaves together these three strands:

- the appropriate application of a scientific (probabilistic/linear) method
- the various narratives that make up the patient's health and illness story
- the unpredictable, intuitive, emergent phenomena that emerge in the consultation.

The consultation is the central activity of general practice. The patient's problems, hopes, fears and expectations are explored and the clinician formulates a biomedical diagnosis during the consultation. An exploration of how complexity theory may be applied to this interaction and lead to the development of a new intellectual model of the consultation is described below.

## **Complexity and a consultation with Mrs Smith**

Mrs Jean Smith is a 48-year-old housewife and mother of two late teenage children. Jean is an alcoholic who works in a local supermarket. She recently faced disciplinary action for drunkenness at work and poor attendance. At home she is unhappy and has suffered alleged sexual abuse from her husband and physical abuse from both her children. She is a heavy smoker with frequent winter chest infections and is being treated for hypertension. She has just been discharged from hospital after a serious suicide attempt. She attended the surgery for a sick-note to return to work. Despite her recent admission to hospital she looked remarkably well, smiling and chatting. She told me how friendly and supportive her family, friends and employer had all been and insisted that she was now ready to turn over a new leaf. Over the past few years I seem to have had little or no impact on this lady's health as I have struggled to get her to face up to her various problems and modify her behaviour to improve her health. Suddenly I had my 'flash' of understanding and I was able to see her as she saw herself - a helpless victim of her circumstances rather than a 'heart-sink' collection of medical diagnostic labels and Read codes. My sudden insight changed my view of her so that I could see and understand her as she saw herself. I seemed, at last, to have a grasp of her story.

How could complexity theory help to model this consultation? My flash of understanding of her predicament and the subsequent change in diagnostic label from 'alcoholic' to 'victim' was sudden and unpredictable. This change in direction (bifurcation) led me to consider new influences on her health, both negative (risk factors) and positive (medico-social interventions). The patient's recent response (overdosage) could be understood as a reaction to these influences (emergent behaviour). Her overall state of health could be seen as an attractor, which gives a qualitative representation of her life. The factors that influence her at any moment in time will not be quantifiable and her health at any given time will be unpredictable within the overall behaviour of her health system, although it can be observed over time.

Jean Smith can be seen as part of a complex social system. Understanding her problems required a lot more effort than the application of a few diagnostic labels (e.g. alcoholic). My new understanding required the ability to see (model) her relationships and roles within her social network. The support and recognition her actions brought from the local community, family and friends were crucial factors in her rehabilitation and somewhat enhanced status after her overdose. She now has a new status and new relationships within the system and, paradoxically, has probably benefited from her actions. These actions have had non-linear effects on herself, her family and carers. Feedback loops have undoubtedly been triggered by recent events, so she has now reached a new state of 'criticality' within her complex environment.

Complexity theory provides both a framework for modeling my patient's health story and a clue to intuitive reasoning. Perhaps my flash of understanding was the final piece in the jigsaw of developing an accurate mental model that (at last) represented something of the complexity of this woman's overall health influences. This shift in understanding came as a revelation to me and can be seen as the result of complex processes within my own mind as I struggled to develop a mental model for my patient. Such a radical shift in my thinking cannot be explained by linear hypothetico-deductive methods or by the recognition of a 'pattern' of illness. I believe that my new understanding of the patient arose as a result of complex processes within my own 'neural-net' that helped me to understand her illness script and the complex nature of her responses to her situation.

This links back to Neighbour's 'right brain responder' and seems to be the antithesis of a logical, linear, hypothetico-deductive or reductionist approach to clinical problem solving, and to demonstrate the need for an integrated, complex and essentially nonlinear reasoning model to supplement the traditional scientific clinical method. I suggest that we need to include an opportunity to consider intuitive/non-linear interactions within the consultation, particularly where the issues are difficult and the illness multifactorial. Complexity theory provides such a framework. This links back to the earlier work of Balint, Berne and Neighbour as they all sought to understand and promote clinician behaviours that could enhance the consultation.

## **Complexity and clinical knowledge**

Complexity theory presents us with a challenge to the way that we perceive scientific knowledge. It also affects the way we think about research, particularly about the

application of scientific 'method', where the choice of method influences the types of results. Scientific results need to be interpreted in the light of the methods used rather than generalised in ways that may be inappropriate - either to the situation or to the individual patient. The effects of interventions will also be unpredictable for my individual patient. This closely reflects the experience of many clinicians and has profound implications for the interpretation and application of population-based studies to the individual. Using biomedical evidence in clinical practice is difficult, because evidence from group studies cannot predict outcomes for individuals and is further complicated by the context of the consultation.

Perhaps we need to think in new ways based more on the relationships between individuals rather than on deterministic statistical methods. This has traditionally been the realm of qualitative research, but new statistical methods are now being developed that should increase our understanding of complex systems. This has implications for the way we undertake, interpret and enact research results. Population-based research can never predict how an individual will respond to a medical intervention (the doctor or the drug). An individual lives and interacts within a complex social environment. This too will affect that individual's response to treatment. This is particularly important as we enter the brave new world of clinical governance and the pressures that we will be under to apply an evidence-based approach to individual patients and their problems.

The application of complexity theory provides a framework for incorporating non-linear science into clinical practice. This means we can consider narrative and intuition within a scientific clinical methodology. The world is complex, but organised. Descriptions of the world cannot always be reduced to simple deterministic statements. Complexity provides a framework within which we can study the complex, non-linear stories of our patients and our consultations.

Practising medicine requires interpretive skills - recognising the patterns of symptoms and signs that are the essence of an expert clinical method. These methods of knowing have more in common with the social sciences, economics and law than the physical sciences. I believe that we should acknowledge the richness and complexity of the social interaction that sits at the heart of the doctor-patient relationship and move away from measurement and reductionist methods.

How is this relevant to the patient and doctor in everyday clinical practice? I believe that we should extend our clinical method to include non-linear science. Complexity theory provides an intellectual framework for the integration of non-linear science into our clinical method. By adopting this approach, clinicians give themselves an opportunity to understand the full richness and complexity of their patients' lives and illness and to open new options for diagnosis, treatment and understanding. We are now in the position to establish a new model for clinical method that incorporates both the science and art of medicine. This demands that the linear and non-linear parts of the consultation must be given equal value and has major implications for learning and teaching clinical method at all levels in future.

What might such a clinical methods model look like? A simple scheme to represent these ideas is shown below.

# A new model for clinical method - the art and science of medicine

## Linear

Traditional scientific method

Left brain

Logical cognitive model

Hypothetico-deductive

Probabilistic

Reductionist

Quantitative

Evidence-based

Good for complicated problems

## Non-linear

The 'art' of medicine

Right brain

Intuitive cognitive model Interpretive, contextual Unpredictable (within boundaries) Holistic

Qualitative

Narrative-based

Good for complex problems

Complementing the traditional scientific clinical method with new models helps us recognise and deal with the intuitive, non-linear, qualitative aspects of the consultation:

- the appropriate application of a scientific method to medical problems (alcoholism, hypertension, smoker)

- the various narratives that make up the patient's health story (family, sexual and work problems)
- the unpredictable, intuitive, Balint-like flash of understanding (patient as powerless victim, understanding of context).

## Looking to the future

We can and should use probabilistic reasoning and an evidence-based approach *when it is appropriate to do so*. To fully appreciate our patients and their health needs, we need to understand and apply a clinical method that incorporates the best scientific evidence but also appreciates the illness narrative and the complexity, including the non-linearity, of the patient's and health professional's experience.

The application of complexity theory is not an argument against evidence-based practice. I believe it is possible to practice evidence-based medicine in a complex, narrative-based world. Applying the best available evidence to support an intervention can complement the crucial medical skills of eliciting and interpreting the patient's story. However, in the real world, the evidence base may only apply to a small proportion of our patients. The application of complexity theory to an understanding of the clinical encounter can enhance our models, interpretation and understanding of the problems our patients present to us. Through this better understanding, we should be able to offer appropriate interventions based on a sound clinical method. McWhinney acknowledges the complexity of (general practice) medicine by promoting an organismic rather than mechanistic metaphor of biology. In other words, we are more than the sum of our parts.