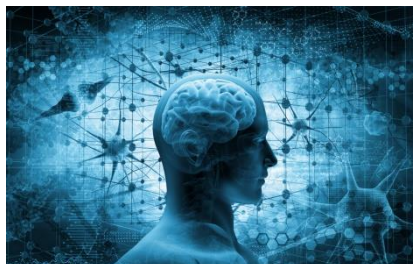




Chronic Pain Management Mini Series

Session One: Understanding pain to
focus assessment

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Chronic Pain Management webinars by Pete Gladwell PhD MCSP

Session 1: Understanding pain to focus assessment

Dualism: why should it matter to a physiotherapist?

At the start of every Pain Training and Education introductory course, we talk about dualism, and the problems that it has created for physiotherapists and their patients who live with pain. Dualism is a philosophical model which suggests that the mind and body are separate. Dualism has a long history: the Greek philosopher Plato (approx. 427-347 BCE) was a dualist, and more recently, René Descartes (1596-1650) strongly influenced dualist thinking. So why should a physiotherapist be interested in philosophy, and in particular, in dualism? This text will explore these two issues, and expand on the ways in which dualism can be an obstacle to successful pain management. I will aim to use straightforward language that a member of the public could understand, because there are already many academic sources of ideas about dualism, for physiotherapists who want to read more.

Why might philosophy matter to a physiotherapist? Philosophy has been defined as “the study of knowledge”, and it addresses a range of questions about the nature of understanding, how we use language and logic, and how we make sense of causality, for example. There are specialist branches of philosophy, such as the “philosophy of science” which considers the way that we develop and test knowledge using scientific methods. The short answer to why philosophy matters to physiotherapists is that knowledge matters to us all: what we think and how we think significantly influences what we do. If we want to be as effective as possible in what we do, we need a clear understanding of the theories which guide our behaviour.

Why does dualism matter to a physiotherapist? To answer this question, we need to know more about what dualism means, and the consequences of this way of thinking. Dualism argues that the physical, tangible body is a separate entity from the mind (also known as the soul, or psyche). I think it helps to understand the origins of dualism to realise that the word “psyche” is a Greek word for breath.

Breathing was associated with life: when a person dies, they stop breathing, but the body remains. If we put aside our modern knowledge, it is easy to imagine that the breath leaving the body was the life force leaving the body: the breath was seen as having a separate existence. The belief that the mind can have a separate, ongoing existence after the death of the body is intimately linked with dualism. Dualism has therefore been associated with religious belief: a detailed history of dualism also needs to understand the way in which religious beliefs have changed and adapted to new knowledge over the centuries. Roy Porter’s book, *Flesh in the Age of Reason* (2004) provides an excellent, detailed account of these changes in Europe since the Enlightenment.

Not all the Greek philosophers were dualists, but as I’m not aiming to provide a detailed account of Greek philosophy, I’m going to skip around 2000 years of philosophy to talk about Descartes.

He is known for many reasons, but in particular for using the “Method of Doubt”, which involves putting aside any ideas which cannot be evidenced. He concluded through a process of reasoning that the only thing he did not doubt was his process of reasoning itself. This led to the famous statement, “cogito, ergo sum” (Latin: “I think, therefore I am”). He was looking for a foundation on which to build knowledge, and his foundation was the very existence of his mind. He did understand that the mind was connected to the body, but he speculated that the connection was via the pineal gland. This speculation led to considerable criticism at the time, and with our current knowledge we can understand that he was struggling to make sense of the way in which the brain “connected” the mind and the body. This model represents the mind as a “thing” or entity, with an existence that is separate from the body. Descartes argued that the body operated like a machine (perhaps influenced by contemporary advances in clock design) and that scientists should be allowed by the Church to find out how the machine worked, using dissection and experimentation. In contrast, he accepted that the mind (the soul) was the domain of the Church.

If we adopt a dualist model, how might that affect the practice of physiotherapy? To start with, it will mean that we will have to divide all health problems into physical health problems or mental health problems. Physical health problems are indicative of a machine that is not functioning properly, and the job of medicine is therefore to identify the faulty part and to fix it. Physical health problems are therefore “real” (tangible), compared to mental health problems, which in contrast are “all in the mind”. This neat categorical divide has facilitated the development of separate bodies of knowledge, and medical specialisms: for example, general medicine and orthopaedics treats the body, whereas psychiatry treats the mind. The job of a dualist physiotherapist working in a musculoskeletal department is therefore to identify the mechanical fault, and to address it. This way of thinking has dominated physiotherapy, and medicine in general, but it is problematic. It is of course an oversimplification, and this simple way of thinking actually makes it more difficult for us to develop a more complex and useful model of health and rehabilitation.

Another obvious pitfall of taking a dualist approach to health occurs when medical science cannot adequately explain a particular health problem. If current scientific methods are unable to identify a physical fault, then the finger of suspicion is pointed at the mind. It is sobering to realise that this problem affected patients with multiple sclerosis, who were once thought to have a psychological disorder, before we were able to identify demyelination. A similar problem holds back our thinking around Chronic Fatigue Syndrome/ME, which is still not widely recognised as a “real” condition because the absence of a clear biomarker has allowed dualist sceptics to carry on thinking that it is “all in the mind”. It should be clear at this point that the point I made earlier about the importance of philosophy has been evidenced over many decades, at significant cost to the health and well-being of many patients.

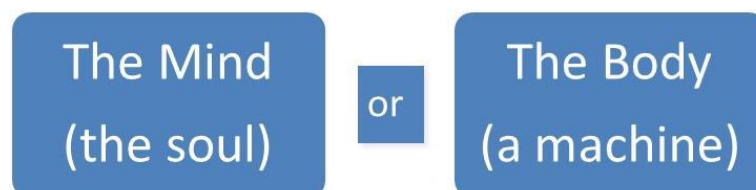
It is not just scientists and healthcare professionals who are dualists. Dualism is the dominant philosophical model in Europe, and we have all grown up within a dualist culture. Our patients are therefore likely to think like a dualist, and this can affect their understanding of any health problems that they have, and any management plan that they might undertake. A dualist patient with a pain problem, such as an osteoarthritic knee, may assume that their pain is an entirely physical phenomenon, and may therefore seek a physical remedy rather than learning to take a broader, self-management approach. They may therefore push for knee surgery as the obvious solution to “fix” the problem, which is clearly (in their way of thinking) a faulty part that needs replacing, like a worn bearing. It will be difficult for them to grasp that their pain experience may be mediated by peripheral body chemistry, and sensitisation within the nervous system at different levels. It is likely to be impossible for them to grasp the idea that all pain (regardless of its cause) is ultimately an experience that is mediated by thoughts and feelings, and hence amenable to a much broader approach to management.

If dualist thinking is a problem, what is the alternative? There are a number of approaches, and this next section will explore a strong alternative known as the “biopsychosocial model”.

From Dualism to a Biopsychosocial Model using SmartArt

In the text above, I discussed the philosophical model known as dualism, and the problems that we can end up with if we try to use dualism to understand complex health problems. I also highlighted the usefulness of philosophy for physiotherapists. This section will now aim to describe how to move from dualism towards a more useful Biopsychosocial Model, using plenty of plain English, an occasional philosophical term, and the aid of Microsoft SmartArt. It will keep up the theme about the potential for insights into how we think (philosophy) to enhance physiotherapy care.

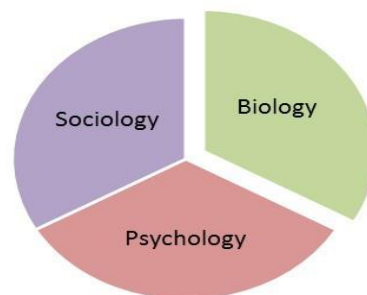
You will remember that Descartes put forward the idea that the body was like a machine, which could be treated like a piece of clockwork. To understand health problems, all we needed to do was to take the body apart, find the “broken part” and fix it. Dualism represents the mind (or the soul) as a separate thing altogether, with only a weak connection to the body. Microsoft SmartArt can show dualism like this:



Dualism encourages us to sort health problems into either physical problems, or problems with the mind. Dualism also allows us to think that physical health problems are “real” and that mental health problems are “imagined” or “all in the mind”. This is a very unhelpful way to think about our health, as was discussed in the section above. An alternative approach (or model) was put forward in 1977 by Dr George Engel. This way of thinking is known as the Biopsychosocial Model, and it has been very influential within healthcare. I will explain more about some aspects of the model later on, but first I will outline some ways in which it has been misunderstood.

Unfortunately, Engel’s rather complex ideas have been oversimplified over the years. Some people have (mis)understood the Biopsychosocial Model to just be about collecting separate sets of information about the biological, psychological and sociological factors which affect health problems. This overly simple understanding can still allow us to make the mistake of categorising health problems as either biological problems, psychological problems, or social problems. So instead of the two categories of dualism, this overly simple Biopsychosocial Model gives us three categories: perhaps we should call this “Trio-ism”?

Microsoft SmartArt can show this over-simplification like this:

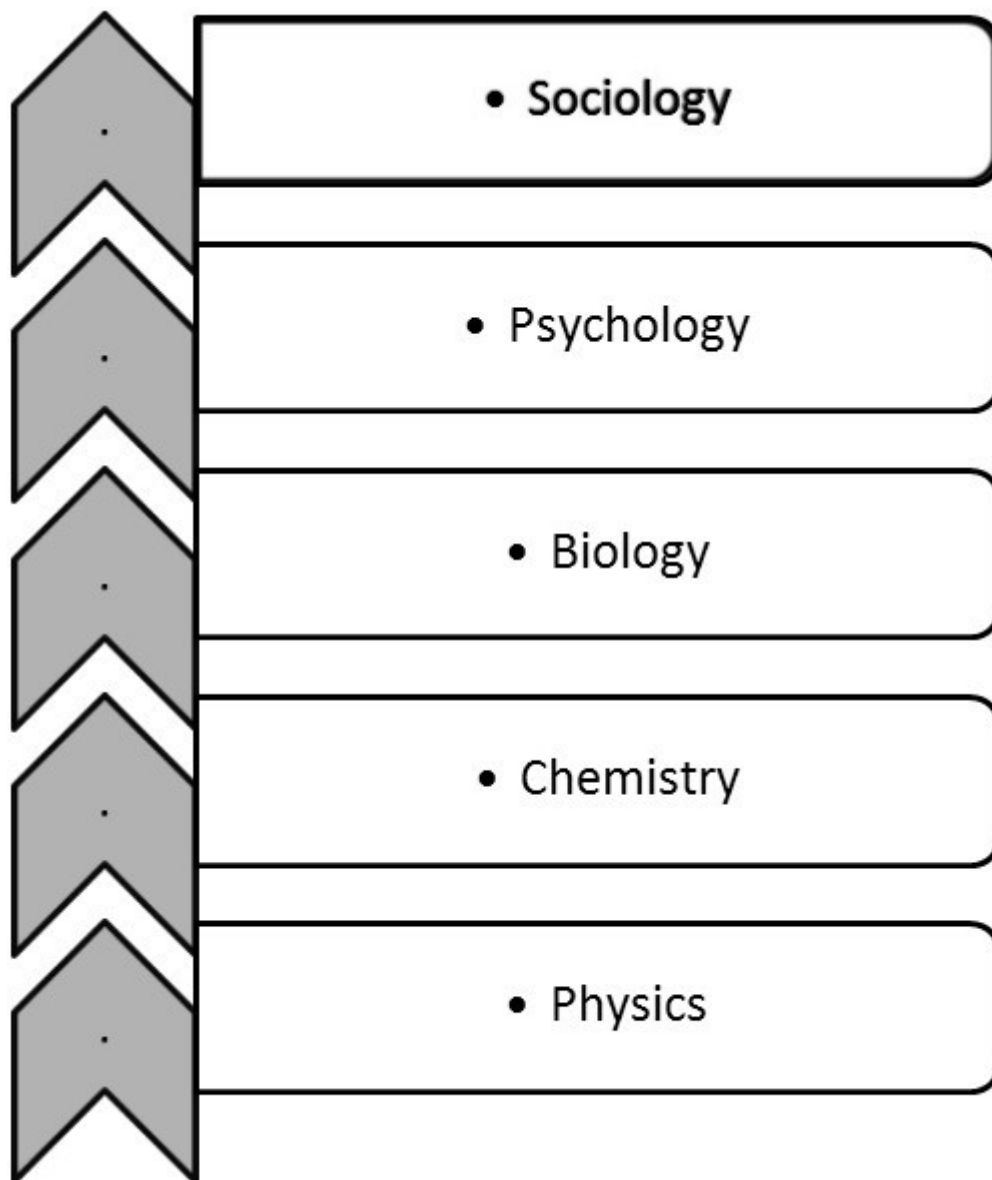


I’m going to introduce a key philosophical term here, to describe this 3-segment model. The key term is “ontology”, which is a word used to describe statements about how reality is structured: “the kind of things that exist, the conditions of their existence and the relationships between these things” (Blaikie 2007). Basically, it is a description of what people think reality is like. For example, thinking that the Earth is flat is an ontological belief. Similarly, thinking that the Sun revolves around the Earth is an ontological belief. They are both ontological statements that most people now see as inaccurate, even though they used to both be widely held. I think that the simple 3-segment Biopsychosocial Model shown above is also a mistaken ontological belief, and it can lead to misunderstandings about health problems. This way of representing the 3 segments is known as a “flat ontology”, and I will compare it now with a model which has “ontological depth”, or is “ontologically stratified”: in plain English, it has layers.

The idea that reality is “layered” has been around for a long time, but it has been developed by a philosophy known as Realism, and in particular a branch of Realism known as “Critical Realism” which has been influenced by the thinking of Roy Bhaskar (Bhaskar 1975, Collier 1994).

Realism and its' ideas about stratification can be helpful to understand complex health problems, as they don't fall into the trap of categorising health issues as only biological, psychological or social problems (Bhaskar and Danermark 2006). Ontological stratification (or layering) suggests that many scientific domains have another level of scientific study "below" them. For example, it suggests that biology cannot be fully understood without understanding chemistry. It goes further, in suggesting that biological organisms couldn't exist without the 'building blocks' which chemistry studies. Similarly, it suggests that chemistry cannot be fully understood without understanding physics. Again, it suggests that molecules couldn't exist without the 'building blocks' which physics studies.

Microsoft SmartArt can show ontological stratification like this:



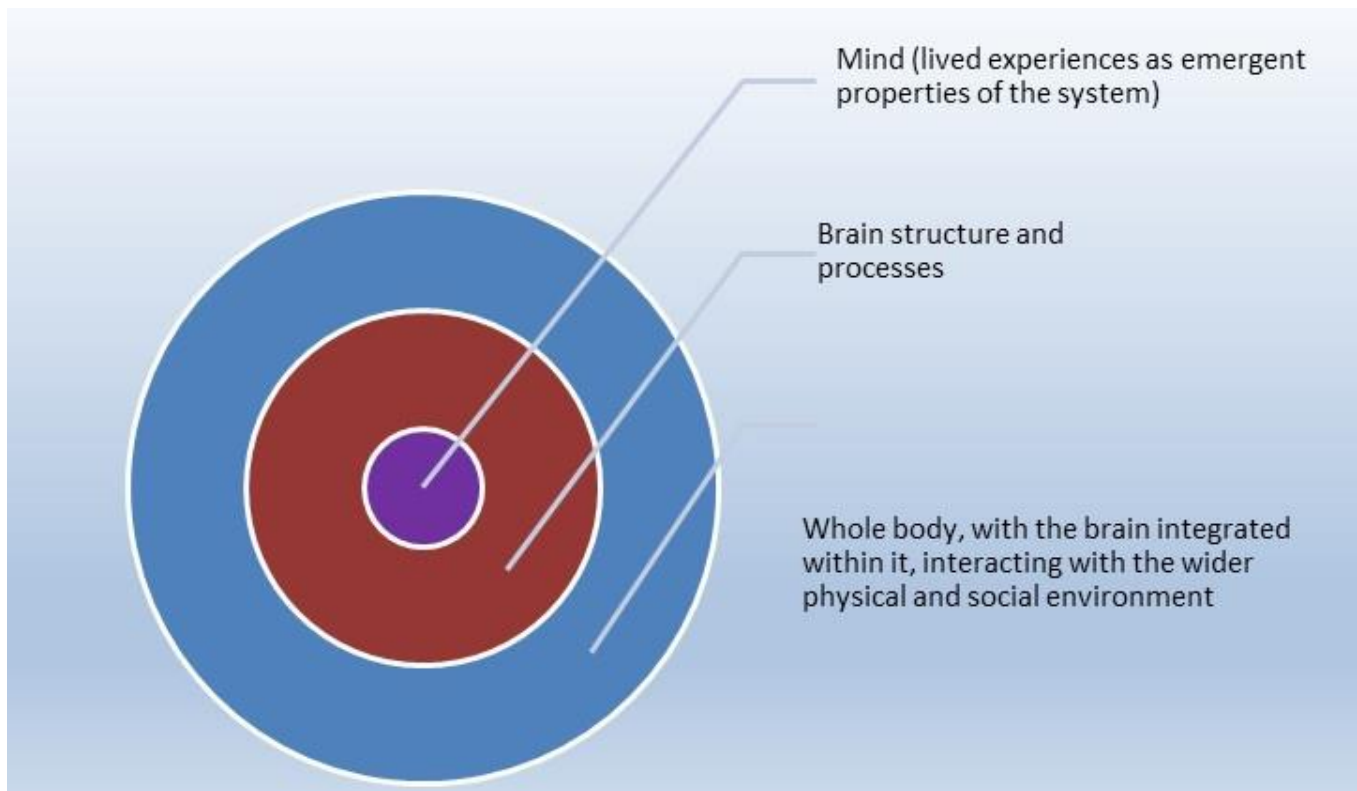
Realism is very clear in saying that a good grasp of physics doesn't allow us to confidently predict what will happen when we start to study molecules. Similarly, Realism argues that understanding chemistry won't tell everything we need to know about living organisms. Realism has a specific word for this: "underdetermination". One of the consequences of underdetermination is that studying each layer and the interaction of events occurring at all layers is necessary for a complete understanding of what is happening. This means that we cannot be "reductionist" and at the same time have a full grasp of what's going on in the world. Reductionism is a tendency to look only at smaller and smaller components in order to understand how things work. Reductionists think that the answers to all of our questions can be found by looking "down a microscope", by "moving down a layer".

There are helpful consequences which come from understanding the world using a stratified model like the one shown above. Firstly, it reminds us that psychology (the study of thoughts, feelings and behaviour) "depends upon", but is not fully determined by, events at a biological level. Of course, without biological human brain activity, there would be no human psychology to study. However, we should not expect the study of biology to explain everything about human experience. For example, we have a reasonable understanding of the changes which take place in the body when people are put under acute stress: the "flight or fight" response, as it is known. We could for example measure a person's cortisol and adrenaline levels, their blood pressure, their breathing rate, and muscle tension: but none of this would tell us what the person's next behaviour would be. That would depend to a large extent on the person's situation, because whether they are playing rugby, doing a driving test, going to war, or riding on a rollercoaster will influence the behavioural outcome of all these biological mechanisms. We therefore need to understand their social and physical context in order to understand behaviour. Ontological stratification reminds us that a full understanding of the world requires an understanding of all of the levels, and the interactions between levels. Moving down an ontological level may sometimes provide us with answers about "how" change happens (mechanisms) but we may need to move up an ontological level to fully understand the role of context in shaping the operation of these mechanisms.

If we ask whether the "fight or flight" response is biological, psychological or social we are asking the wrong question. We are trying to categorise a process which crosses all of the categories. This is the same mistake that we can make when we try to categorise common health problems such as back pain, heart disease, Chronic Fatigue Syndrome/ME, diabetes or cancer as either biological, psychological or sociological in origin.

Having explored ontological stratification, if we now return to Engel's initial ideas about the Biopsychosocial model, we can avoid overly simplistic "Trio-ism" just as we can avoid the pitfalls of Dualism. Engel suggested that we could use General Systems Theory and nested models to understand health.

Microsoft SmartArt can show a nested model like this:



I'll use a simple example to explain how this model works. A person is sitting in a bar on holiday, with a glass of their favourite wine on the table in front of them. This describes their physical and social situation, but it doesn't tell us how they might feel or what they might be thinking. Now they take a sip of their wine. The volatile chemicals in the wine enter their nostrils and stimulate the olfactory system. The liquid enters their stomach, then the alcohol enters their bloodstream, and crosses their blood-brain barrier. So far, this is a description at the chemical and biological levels: but what did they experience as they smelt and tasted their drink? How might the alcohol affect their experience as they drink more? Whilst their experience is dependent upon biology, which again is dependent on brain chemistry and its' relationship with the alcohol, the experience itself it is not simply determined by these factors. Their "lived experience" is more complex: it can be thought of as an "emergent property" of the entire system, dependent upon all of the elements in the system but not explainable by looking at the parts alone. How might their experience be different on the first, or last, evening of their holiday? This is a "nested" model, as suggested by Engel: a "Biopsychosocial model" of drinking a glass of wine. If we need a stratified biopsychosocial model to understand a holiday drink, we certainly need one to understand health and illness.

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Explaining Pain using a multilevel model of pain

This section follows on from some of the ideas in the two sections above, which highlight the problems of mind-body dualism and the usefulness of a biopsychosocial model which incorporates ontological depth. I have included below an A4-sized copy of a multilevel model of pain which I'm currently using with some patients within the Pain Service to explore some of the complex interactions which can be influenced to improve somebody's outcome. It's not suitable for everyone, but it has sparked off some interesting discussions with patients who wanted to understand more about pain. In particular, it seems to be helpful for people who have followed a purely biomedical model, and ended up struggling with a reductionist way of thinking about pain.

A purely biomedical model focuses on identifying an impairment (a fault with a structure or its function) which is leading to disease. The patient presents to a healthcare practitioner with symptoms, the practitioner takes a history, examines to elicit signs, and arranges any necessary investigations. This information is all collated to form a diagnosis, which then guides the treatment, which is focused upon fixing the fault. This is a model which most of us grew up with, and were probably trained in. Our patients are of course also used to it, and often expect us to be working with them to identify the broken part (the "Find It and Fix It" approach). I work in a secondary care Pain Clinic, so I meet a number of patients who have persisted with this way of thinking, but it has not led them to a successful outcome. Sometimes they are well aware of this themselves, and may have reached an understanding that they are not really expecting a cure. However, sometimes the "Find it and Fix It" approach is still their main aim. I may therefore spend a few minutes exploring these interactions using the multilevel model, and this seems to have helped a number of people to broaden their view of pain management to incorporate a number of other strategies.

The model makes reference to a number of domains which we know are relevant to the operation, development and prognosis of a pain problem. It is structured in a broadly hierarchical way, with smaller scale domains at the bottom, and larger scale domains at the top.

This doesn't mean that any one domain is more important than any other: they are all operating at once, and one domain may for a time be more relevant for an individual than another domain.

The model is consistent with a biopsychosocial model, with Louis Gifford's Mature Organism Model, with the World Health Organisation International Classification of Functioning, Disability and Health (ICF), with a General Systems approach, and with Critical Realism, which is a "metatheory" which I used as a basis for my PhD. So, I don't think there's anything new in this way of organising ideas, but it does allow me to discuss quite a few issues with patients, all of which fit onto a sheet of A4 paper.

Critical Realism is one of a number of "integrated theories" which argue that we shouldn't just be focusing on one domain of reality in order to make sense of what's happening in the world. It suggests that reality is structured in a hierarchical manner, for example that psychological events are built on a foundation of biological events, which are at a smaller scale built on chemistry and below this, physics. This isn't in itself a new suggestion, but it links to other interesting ideas. Firstly, it argues that biological events "underdetermine" psychological events: in other words, that our thoughts and feelings depend upon neurobiology but are not completely determined by them. This is an idea which is often called "emergence": in plain English, this means that "the whole is greater than the sum of the parts". There is a practical relevance to emergence: a burst of adrenaline (a biological event) may lead to a change in our thinking and emotions which may lead to a change in our communication with others and our behaviour. However, we interact with others and our environment at a different level of reality from the chemical level: somebody experiencing heightened adrenaline may end up running out of a supermarket, or scoring a goal if they happen to be playing football. All of these events are not just determined by neurobiology, but neurobiology is foundational to these events. What actually happens is strongly dependent upon context.

A further consequence of this way of thinking is that activity at one level can influence events at another level, with mechanisms acting which may not be immediately obvious. Clinically, I use this diagram to discuss with patients how, for example, a "significant other" not taking their pain seriously may affect the patients' thoughts, which may in turn affect their autonomic nervous system, muscle tension, emotions, etc. It is easy to draw arrows on the table which link up these areas: each of these arrows represents a mechanism, a way in which events at one level of reality can influence events at another level. I did this once with a group of patients, and they were able to draw many arrows on the diagram, which immediately represents a complex system with interactions which patients recognised as "vicious circles".

Once our patients are clear about the nature of these complex interactions, it is easy to understand why we would not expect a strong correlation (measured on a population level) between abnormalities in the tissues, and pain itself.

However, partial correlations are still important within a systems approach: we shouldn't overlook weak correlations if they are part of a broader, interactive model which is, taken together, a more explanatory one. It may be that they lead us to explore whether a combination of other factors (such as genetic factors, diurnal variations in cortisol levels, nerve root irritation, catastrophizing, poor sleep and reduced activity) which when combined together make a better model. This would require researchers from different specialties to collaborate to understand the emergent properties of complex systems that end up with suffering and disability.

