**Moral flux in primary care: the effect of complexity**

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***Introduction***

In this article, we examine the inter-relationship between moral theory and the unpredictable and complex world of primary health care, where the values of patient and doctor, or groups of patients and doctors, may often clash. We introduce complexity science and its relevance to primary care; going on to explore how it can assist in understanding ethical decision-making as well as considering implications for clinical practice. We use the word ‘flux’ in the sense of change, or moving on, to suggest that moral change is particularly relevant to primary care because of the nature of its practice. Throughout the article we showcase aspects and key concepts using examples and a case study developed from our day-to-day experience working as clinical practitioners in primary care.

***Complex systems and primary care***

The science of complexity seeks to describe and understand the nature of interacting elements of a system. Complexity science views systems as networks of elements that, through their interaction with each other, change the context of an individual component as well as of the system itself. Complex systems are all around us: from the interaction of humans with each other to the unpredictable interplay of weather systems. The complexity of a system arises from the rich interactions between its component parts rather than from its structures. Complex systems interact with the inside and outside world, continually being influenced by and influencing their surroundings[[1]](#endnote-1). The interactions that take place within a complex system have non-linear impacts and are unpredictable: a small external influence can have a large impact. Conversely, a large external influence may have very little effect.

An interaction between two people, for example, a clinician and a patient, is an example of a complex system in that what emerges as a result is unpredictable and may lead to unexpected, new ways of understanding for one or both protagonists. Many of us will recognise that our consultations with patients follow a non-linear path - seemingly minor interventions on the part of the clinician or the patient can have either a minimal or a profound effect on the other. A consultation disrupted by external forces (e.g. a patient’s life events) can have a profound destabilising effect, leading to the emergence of new ways of understanding the world on the part of both the doctor and patient [[2]](#endnote-2). The notion of control in doctor-patient interactions is thus illusory and it becomes apparent that the flow of the interaction changes and influences both parties. Importantly, the clinician has affected the patient’s perspective and vice versa, which will in turn have wider effects on other relationships and systems of which both are part. Any version of an interaction between a doctor and patient can have many variations. A presenting problem is contextually likely to be nested within other physical and social issues, which the doctor has a duty to consider. It is not difficult to identify the very much larger potential for variation in the conduct and outcome of a consultation whose content is mainly psychological - this is manifest complexity.

The primary care team is another example of a complex system and is, typically, comprised of receptionists, nurses, allied healthcare professionals, doctors and management staff interacting continually with one another, with their patients and with other medical services such as community nursing teams and secondary care, as well as with their material environment - the surgery equipment and the building itself. A seemingly small disruption such as a faulty telephone line can have unexpectedly significant effects, with patients deciding to go to hospital instead of to the surgery; clinicians unable to get specialist advice; an increase in patient complaints and reduced staff morale. On the other hand, there may be relatively few discernible consequences. Alternatively, such disruption may even generate new ways of working (e.g. back-up power grids for computer and telephone services). Thus, from the disruption of a complex system new ways of working may emerge.

Emergence is a key property of complex systems and refers to what parts of a system do together that they wouldn’t do alone; or to how the system functions in relation to its environment. The interactive behaviour of the collective is different to the sum of its isolated parts, in ways which are not predictable. Complex systems are constantly changing through internal and external influences and it is the nature of the interactions between components of a complex system that determine its emergent properties. Emergence is therefore by its nature unpredictable. All complex systems are driven towards achieving equilibrium, or in other words, a level of self-organisation. The further a complex system is from its equilibrium, the more likely it is to change and evolve so that novel and unique patterns of interaction and behaviour emerge.

Rules and patterns of behaviour can emerge from within any complex system. Patterns of interactions produce collective values which influence the behaviour of the system through mechanisms we will describe in the next section. For example, some practices may privilege efficiency whilst others privilege redressing social inequality. Such self organising behaviour is characteristic of complex systems.

***Moral theory and complex systems***

Modern healthcare places significant emphasis on the use of normative moral theory to guide decision-making. It is used in the education of clinical practitioners from undergraduate studies through to continuing professional development; the development and provision of services and treatments; and informing legal and professional frameworks to guide interactions between clinicians and patients. However, the use of normative moral theory in this manner has been subject to several criticisms, and these are relevant to the practice of medicine [[3]](#endnote-3) in complex systems.

Normative moral theory assumes that applying a set of principles or ideas will inform the most appropriate course of action – this is especially so with utilitarianism and rule-based ethics [[4]](#endnote-4). These two moral theories, along with others, form the basis of the widely accepted ‘Four Principles of Medical Ethics’ of Beauchamp and Childress [[5]](#endnote-5). Whilst familiar to most doctors in the Western world, there is some doubt as to how much they actually inform clinical practice [[6]](#endnote-6) [[7]](#endnote-7) or, that all the potential consequences of an action can be pre-determined (based on logic and prior experience) and are therefore amenable to analysis as a means of guiding the physician. In addition, there is an assumption that ethical rules are independent of and unchanged by the context in which they are being applied. We will challenge this assumption within our analysis.

It is our contention that a normative morality, which changes little over time, is unlikely to be responsive to the essential unpredictability of complex systems or to emergence. A relational and social complexity worldview offers an alternative perspective– where questions about how we relate to each other have relevance; and where our subjective experience of the unpredictability of relationships and the emergent nature of understanding arising from interactions are valued. In the following section we introduce a clinical case and explore the challenges generated through an ethical lens identifying the limits of applying normative ethical theory and how complexity can offer new learning in guiding primary care clinicians

***A clinical dilemma***

*Mr. Hobbs is an 84-year-old widower with one grown up daughter who lives with her own family 200 miles away. He sees her infrequently. He has been found to have a new normocytic anaemia of 105g/l on a routine blood test, with borderline iron deficiency. He has no gastrointestinal symptoms but is known to have hypertension and stable chronic kidney disease. He is not keen on being subjected to any invasive interventions or unnecessary hospital visits and would not accept surgery. He would much prefer conservative management where possible.*

*Mr. Hobbs is mistrustful of doctors as a result of his own childhood experience of illness and does not attend the surgery frequently. It is a large practice with many clinicians and Mr Hobbs does not have a regular doctor.*

*The GP seeing him considers the differential diagnosis of Mr. Hobbs’ anaemia to include malignancy, anaemia from poor diet or from chronic kidney disease. National cancer guidelines recommend an urgent referral to a gastroenterologist to exclude bowel cancer. Mr. Hobbs’ GP has recently been involved in a discussion with the local gastroenterology team about the importance of early detection of bowel cancer, the practice has been directed to undertake peer-based joint learning sessions to improve cancer detection, and the GP is aware of a difficult complaint directed against a friend of hers from a patient whose diagnosis of bowel cancer was delayed. The GP discusses the case with her colleagues and decides that the correct decision is to refer Mr. Hobbs urgently under a cancer referral pathway.*

***Analysis***

This kind of case is part of the daily experience of any primary care clinician. Though it contains many themes meriting ethical analysis, we concentrate (in the following sections) on those pertinent to the evolving moral perspectives of the doctor and the practice; and those that complexity science may have a bearing upon. We briefly explore the influence of context on personal and professional autonomy; power relations between patients and clinicians amongst team members; the development of group and professional identity; and the development of norms in complex systems.

*1 Influence of context on personal and professional autonomy*

Western philosophy accords considerable importance to the notion of individual moral agency, a facet of which is the personal autonomy underlying a patient’s clinical decision making. Such a view is represented by our fictitious patient in the face of potentially serious illness. Involving complexity as we have described it has several important consequences. Our patients do not arrive at medical interactions in isolation: they have families and contexts within which their decisions are made. Like Mr. Hobbs, they are nested in complex systems. Similarly, the decisions made by the doctor in our case have been influenced by the relationships she has within the practice and outside it.

Interactions between clinicians and patients in primary care are thus complex, dynamic, and continually evolving. Each brings their moral positions to the clinical encounter, which as we have seen are determined by the systems of which they are part. When these moral positions differ, it can bring challenge to both parties [[8]](#endnote-8). These differences may be influenced by religious or ethnic perspectives and expectations and by the culture of the practice. The temporal relationship between clinician and patient can augment this challenge.

Moreover, we would challenge the notion that in the interaction between patient and doctor, autonomy (personal choice and decision-making ability) is independent of the interaction itself, a concept which underpins normative ethical theories. Autonomy, as seen through the lens of a doctor-patient interaction, is realised through the choices made available to a patient by the doctor and those entertained by the patient. Personal autonomy could in fact be considered illusory in the absence of an interaction that acts as a catalyst for the realisation of choice and the enactment of decision-making.

In the dynamic, and continually evolving (sometimes rapidly) interaction between clinician and patient, normative moral theory struggles to take account of the complexity arising from multiple interactions between agents.

*2 Power relations*

There may be a tension between the desire of the individual clinician to provide patient-centered, context specific care to his or her patient and the need for the practice as an organisation to be seen to be achieving quality markers and to be adhering to standard practice. The way in which this tension is resolved will depend on how communication takes place within the practice and on the relationship the GP has with their patient. Launer [[9]](#endnote-9) suggests that in some practices, it is possible to talk openly about the effect of power differentials on roles and relationships, whereas in other practices, these factors remain hidden, influencing the type of conversation that can take place. The types of communication which are ‘permitted’ within the practice emerge through historic cycles of interaction (gesture-response cycles), which determine who is ‘allowed’ to speak and who is heard. This includes not just verbal and non-verbal communication between individuals, but also emails, social media and other communications from external bodies. So, in the example of Mr. Hobbs, power relations are relevant not only to the interactions of staff within the practice, but also to the way in which the practice relates to external regulatory bodies and how health policy is communicated to individual clinicians. In our example, the history of the communication between these external regulators and the practice has resulted in an implicit acceptance of the current dominant discourse which privileges the extending of life over other considerations, in this case through the early detection of cancer.

*3 Group identity and the development of values*

Group and professional identity are developed and maintained through a process of repeated interaction between members of the group and with those from outside the group. It can be surmised that norms and rules emerge from the complex interactions of a group, and we would assert that moral rules can be considered similarly. Knowledge creation, narrative, and group identity are the product of an ongoing iterative communication between individuals that ultimately define the ethical rules which the group abides by. In our case, the GP responds as she does because she is part of the practice and the decision to refer is based on the rules of medical behaviour which have emerged as a result of the interactions of staff with each other and with the external structures of the NHS. Or put differently, it is in the nature of groups to identify ways of being and ways of doing that approximate to normative ethical rules[[10]](#endnote-10). Clinicians in primary care specialise in clinical generalism but this does not extrapolate to assuming an affinity with moral generalism! A rational decision to move away from a collective, principle derived course of action may be justified if the particular situation demands it. [[11]](#endnote-11). There are an infinitely variable number of clinical dilemmas in primary care, which are not amenable to rule or principle-based analysis. In this moral particularism there may lie a similarity to the complexity we describe.

*4 Characteristics of primary care*

There are certain features of primary care [or its analogues general practice and family medicine] which are unique, and which are relevant when considering the interplay of complexity and normative approaches. Archetypally, primary care is typified by long term relationships between clinician (with an increasingly multi-professional representation) and patient, encompassing a wide spread of clinical presentations, which are influenced by families and communities; with clinicians embedded within these [[12]](#endnote-12). Aspects relevant to the present discussion include the degree of uncertainty about diagnosis and outcome [[13]](#endnote-13), and the notion of ‘first contact’ whereby patients consult as their initial engagement with organised health care[[14]](#endnote-14). Of significance is the claim of primary care, in some jurisdictions, to universal coverage such that all persons have access to that first contact care, and to specialist input if needed thereafter[[15]](#endnote-15). In addition to the diagnostic uncertainty and multimorbidity encountered in primary care, classification of health status is challenging compared to the more controlled and structured environment of a hospital.

As described above, the nature of the relationship between the patient and his GP is likely to be salient in any treatment decision. If the GP has an established relationship with the patient unlike in our case), it may alter what is privileged as she makes the decision about whether to refer; the role of the doctor as representing the practice may be subordinated to the individual doctor-patient relationship.

 In some encounters between a GP and a patient, a degree of persuasion may be involved: clearly persuasion lies on a spectrum between *laissez faire* and enforcement, which impacts upon or respects the autonomous decision making of patients. Such persuasion may be mediated by the continuing relationship of the doctor and patient. Autonomy and shared decision making are thus constrained and liberated by the nature of the interaction where power differentials, flow of communication and diversity of thought play important parts.

 A morally appropriate outcome should recognise the influence of these contextual issues as well as the unpredictable and emergent nature of such complex interactions. We suggest that traditional moral theory has not in fact recognised, other than rather superficially, the dilemma central to our case, or other aspects of primary care practice.

*5 Moral theory and primary care*

Primary care is not particularly unusual in its access to traditional moral theory: including utilitarianism, deontological theory, and virtue theory. A consequentialist view of our patient’s case would suggest a straightforward involvement of secondary care in the aim of a better, life extending, clinical outcome. A deontological view would likely do the opposite – making the patients’ decision a question of respect for persons, and the autonomy which flows from it.

Utilitarianism is a consequentialist theory which involves practicing in a way which the clinician believes will result in the greatest good for the greatest number of people. This usually involves rationing resources based on a judgement of what seems to the clinician to be fair or reasonable; and this judgement may conflict with that of their patients. Such a judgement rests on a ‘dual role’ for primary care practitioners, conflating the duty to the individual patient with the responsibly for the community served. In some jurisdictions, this population role is formalised into that of a commissioner or gate keeper. In our case, the drive for early cancer diagnosis could be described as a population health outcome, which improves health overall. Utilitarianism assumes that outcomes resulting from actions or policy are predictable. Complexity theory by contrast asserts that the future is essentially unpredictable.

The ethical theories of consequentialism and deontology consider that the stance adopted by a practitioner is chosen purely on its own merits rather than being influenced by factors we have discussed above - guidelines, performative technologies which incentivise particular outcomes, external quality regulators and the complex interactions which occur between members of the group and which are responsible for the emergence of the moral rules adopted by the group. They also assume that there are predetermined moral positions which are not influenced by the interaction between clinician and patient.

The links between virtue theory and primary care are perhaps harder to see. Virtue theory is not concerned as much with the approach taken by the GP to ensure a satisfactory outcome for her patient; but more with the definable attributes that underlie her practice [[16]](#endnote-16) [[17]](#endnote-17). Some authors, such as Mercer, have argued that the empathetic skills of the clinician are a particularly valuable element of the therapeutic relationship, motivated by a kind of moral altruism [[18]](#endnote-18). We might argue that the doctor in our case should be honest with her patient and his relatives, that she should show courage in dealing with the clinical situation as she finds it, should not let self-interest influence her decision making and exercise wisdom in applying her knowledge and skills to the dilemma. In doing this she will have displayed three of the five focal virtues put forward by Beauchamp and Childress [[19]](#endnote-19). That there are virtues which primary care practitioners should aspire to has been proposed [[20]](#endnote-20) in recent years; and to some extent the key characteristics of primary care practice as described above could be held to be relevant. For example, being a first contact clinician demands the focal virtue of courage more than in encounters where patients have been ‘processed’ through the layers of initial exploration and investigation later down pathways of care. In considering virtue theory in the context of complexity, it is worth questioning whether the virtues described above are immutable within individuals or whether they develop with continuing care over time, involving evolving conversations with patients. We suggest that choice and decision-making (autonomy) are in fact framed within these interactions between the two protagonists rather than being wholly dependent on any inherent characteristic of the protagonists themselves. This is reminiscent of the theory of narrative practice, where values are shared and confirmed between clinicians and patients [[21]](#endnote-21). Conversely, it is possible that if virtues are intrinsic, then they are subject to erosion by external and internal influences within a system.

**Conclusion**

Normative ethical theory may fail to consider the multiple influences which in the end determine moral choice, both at the level of the individual clinician and at a practice level. As we have seen, decisions are never made in a vacuum but are relational and depend on the context they are made in. The moral position adopted by a clinician during a particular encounter is not fixed but will depend on an unpredictable multiplicity of factors.

There is merit in attempting to understand the moral positions of our patients and adopting a moral universalist stance may impede our ability to do so. Engaging with a different moral perspective involves actively considering whether our own moral stance should evolve thus, so that we make the decision of whether to suspend or subjugate it in a specific context. Engaging with diversity of thought and values influences the nature of power in relationships within the practice and therefore its group identity.

In a manner of speaking, empiricism aims to render complex systems more intelligible, while moral analysis seeks to identify the emergent values and norms of complex systems [[22]](#endnote-22). This has been described in a general care context as the conjunction of evidence based medicine and values based medicine.[[23]](#endnote-23)

Values are influenced by multiple interactions within a system over time and evolve because of these interactions. The way in which normative ethical theory is applied within a complex system will depend on the values and culture of the system. Acknowledging the relativism inherent in the application of normative ethical theory empowers individuals within the systems of which they are part to realise that change is possible and that historic patterns of interaction may need to be scrutinised and challenged.

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