Sick healthcare suffers from LOST (Lack Of Systems Thinking)

Put yourself in my shoes. You are an old (I prefer experienced or even better seasoned) practicing physician who has taken over the care of a critically ill patient who was treated by many other, famous-in-their-own-minds physicians over the years. Unfortunately, under their care, the patient has gotten progressively and consistently worse. The name on the patient’s intake form is Healthcare.

Healthcare as two words means a service relationship between a patient and a provider. As one word, healthcare refers to a system that is supposed to facilitate the service called health care.¹

There are many patients in the Healthcare family, all of whom are in various stages of deterioration: the U.S.A., Canada, Great Britain, Italy, Spain and others. Each national government-posing-as-doctor approaches the patient like a political problem or an economic puzzle. None looks at Healthcare like what it is: a critically ill patient.

You are both an experienced physician as well as a systems theorist. You know what you need to do: utilize the principles of good medical practice – apply systems thinking. They are essentially the same thing: the first is for sick human patients and the second is for sick patients who are systems.

Practising good medicine…on Healthcare

Like any good doctor, you begin by talking with the patient rather than at the patient. (Contrast this behavior with our politicians-pretending-to-be-doctors in Washington.) You acquire a history of the patient’s symptoms. You do a physical exam and list the signs of illness. You order tests to provide quantitative data. Finally, you obtain prior medical records to learn what the previous doctors tried and why it did not work.

As a doctor, you call this the evidence phase. To the systems thinker, this is problem identification and delineation. They both then look for “why” the person or system is sick.
Doctors call this a differential diagnosis that leads to an etiology. Systems thinkers call it root cause analysis.

Whether you try to cure a human patient or “dissolve” a system problem, you must clearly define the intended and unintended outcomes. These are the hoped for results you are not getting or the undesirable results that you are getting.

For patient Healthcare, such results – signs and symptoms in medical terminology; problems according to systems thinking – would include: 1) Adverse outcomes, 2) Over-spending, 3) Insufficient access (to care), and 4) Poor, certainly less than possible, national and personal health status.

Your therapeutic options, whether medical treatment or system action, are four in number, as shown in the following table.

<table>
<thead>
<tr>
<th>Ways to Treat Medical Ailments or System Problems</th>
<th>Medical Approach</th>
<th>System Thinking Alternatives</th>
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</thead>
<tbody>
<tr>
<td>Ignore: Go play golf while your patient is in the ER complaining of chest pain</td>
<td>Absolve: Ignore or deny bad outcomes that the system is producing.</td>
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<tr>
<td>Palliate: Give painkillers to a patient who is having a heart attack.</td>
<td>Resolve: Make outcomes better than they were.</td>
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<tr>
<td>Fix: Open the blocked coronary arteries that caused the heart attack.</td>
<td>Solve: Make the outcomes best possible given the way things are.</td>
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<tr>
<td>Cure: Change the cells in the patient’s blood vessels so that they no longer build plaques in the coronary arteries.</td>
<td>Dissolve: Change the system so that the root cause no longer exists. The problem cannot recur.</td>
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If you want to cure the patient (medical practice) or dissolve the problem (systems thinking), you have to know the outcomes you want. You must understand why you are not getting these results. After defining the root causes, you must treat them, not signs or symptoms.

The number of uninsured Americans is neither a symptom nor an outcome. It is an intermediate issue. Cutting short-term spending is NOT a desired outcome. Overspending is not a root cause.

There are only three desired outcomes from Healthcare: 1) Best health possible for each and every American; 2) Longest lives possible for each and every American; and 3) Acceptable spending levels to accomplish #1 and #2. There is only one root cause: L.O.S.T. (lack of systems thinking).

Three types of systems

In the past, systems theorists used to divide systems into two types: machine or complex adaptive system (CAS). There is a third, recently described type of system called a thinking system. Patient Healthcare is such a system. Because of their experience treating humans, medical doctors inherently understand thinking systems and their implications.

Machine systems do what they are built or programmed to do. They have no will and no goal or desired outcome of their own. They cannot learn or adapt. They produce predictable, reproducible results. Automobiles, computers, and nuclear bombs are all machine systems.

A CAS has free will, can learn, adapts (by definition), and has one goal and one goal only: to survive. A CAS has three defining characteristics: self-organization, co-evolution, and emergence.
Because of emergence, the outputs or outcomes from a CAS are not precisely predictable. The system learns and makes its own adaptations to conditions or circumstances. At present, all CAS’s are biologic: an ant, a lion, and, so people used to think, human beings.

Whether singly or in groups, humans are not just CAS’s. They are “thinking systems.” They exhibit all the features of a CAS plus two attributes unique to thinking systems. They can structure their learning, both how they learn and what result they seek. A CAS learns solely by random trial and error.

Thinking systems typically have multiple goals, sometimes even including non-survival. For instance, people want long life, good health, and reasonable expenses from Healthcare, not simply survival. Thinking systems may choose non-survival, while a CAS would not do so. No lion would ever run in to a burning building to save a bunch of tigers, in contrast to the NYC firemen on 9/11. No cow would ever smoke cigarettes until it couldn’t breathe any more. Lions and cows are not thinking systems.

You cannot control a thinking system. Whether you are dealing with a single individual or 330 million people collectively known as We The Patients, you might be able to influence its decisions but you can never be certain that your order will be obeyed. Even the soldier on the battlefield chooses his or her action. Only a thinking-system-as-a-soldier would choose a course that might lead to death. No complex adaptive system does that.

Medical doctors naturally understand thinking systems for one simple reason: they deal with thinking systems every day, ones that are called human beings, with their contradictory goals and self-destructive behaviors. Only thinking systems like humans can want to be healthy and to live a long time, and yet eat themselves to 400 pounds, puff away on their cigarettes, and avoid exercise.

**Doctors are natural systems thinkers**

There may be three different types of systems, but what is a system *per se*? A “system” is an entity that maintains its existence through the mutual interaction of its parts. That definition describes a family, an operating room (OR), a hospital, Ford Motor Corporation, the U.S. Congress, your PTA, and what physicians treat every day – humans.

All systems are parts of larger systems. Your kidney is a part – a subsystem – of your body. Your body is part of a larger system called your family. Your family, a group of thinking systems, is part of your community, which is a tiny part of the nation state called the U.S.A. Our country is one part of the group of nations located on planet Earth. Earth itself is a part, a subsystem, of the solar system, and so on…

All successful, sustainable systems are integrated within themselves as well as within the larger systems of which they are a part. The human body is a successful, sustainable system. Patient Healthcare is not.

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**The body is systematic.**

<table>
<thead>
<tr>
<th>Systematic (healthy) system</th>
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<tr>
<td>Parts interact &amp; have feedback</td>
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<tr>
<td>Parts have goals in common</td>
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Body parts: • Brain  
• Muscles  
• Heart  
• Liver

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The human body in action

Brain to muscles: We are in a race. Contract faster and harder.
Muscles to brain: Okay, but we need help. Tell all the others what’s going on.
Brain to heart: Pump faster and harder. The muscles need more blood flow so we all (the body) can win this race.
Heart to brain: Okay, but tell that lazy liver to get off its rear and make more energy. Also tell the lungs that we need more oxygen and less carbon dioxide.
Brain to liver: Work harder! We need more energy. The muscles are producing lactic acid and they need you to get rid of it.
Liver to brain: Can do! I have some stored, previously prepared energy called glycogen. I can give that to the muscles right now. However, eventually you need to start this body eating food so I can make new energy.
Intestines (including the mouth) to brain: I don’t think we should eat right now. In case you missed it, we are in the middle of a race! A stop at McDonald’s doesn’t seem like a smart move. Also, you know we cannot run very fast when the stomach is full.
Liver to intestines (side conversation): You’re right. But if this race is a long one, I will run out of glycogen. If we can’t eat, then I’m gonna’ have to chop up the muscles themselves and convert the pieces into packets of energy.
Liver to heart: I know you need lots of energy and will produce it, but you are going to have to pay me back later.
Muscles to all: Thanks everyone. I am making this body go faster than anyone else. It looks like we – all, working together – will win.

The example above is a system where the parts interact and where there is feedback. This system works. When something goes wrong, the doctor must first find which part is sick and determine why. Then together, the doctor and patient fix it. Doctors, like good systems thinkers, are aware that any “fix” of one part will affect other parts in the system in addition to the one that became ill.

Suppose that the body parts did not interact and that there was no feedback. Now suppose the body is in a swimming race, and the brain decided the body would go faster if it stopped breaking the water every few seconds by raising and lowering the head. What happens when, with no feedback, the brain fails to learn that the body has run out of air?

Patient Healthcare is a system (see figure below), where interactions are only in one direction and there is no effective feedback. Within the parts of Healthcare, there is no consensus on desired goals.

The fact that doctors are natural but unknowing systems thinkers explains in part why they are all confused about patient Healthcare. Most doctors simply cannot imagine a system that survives and yet still has L.O.S.T. (lack of systems thinking). Health care providers believe, at a gut level, that anything that calls itself a system is systematic.
**Healthcare “system” in action**

**Public to government (Gov):** We want good health and to live a long time. You said that health care is our right. As a right, we shouldn’t have to pay for it. As a right, we should be able to get whatever health care we need whenever we need it.

**Gov to public:** Stop complaining. Eat your Cheetos and smoke your cigarettes. We subsidize both, with your tax dollars! As for how much care you get and when you get it, the budget determines that, not you and certainly not the over-charging doctors. First, we take our cut. What is left over is for you. As money is tight and payments to the bureaucracy must go up, we will cut reimbursements to the providers and make the rich pay more. After all, the wealthy must pay their fair share.

**Providers to Gov:** We want to provide the care the public needs and we want our work to be highly valued and therefore well paid. Healthy people who live long are the foundation of national productivity and thus success. Why are you cutting our payments below what it costs us to provide care?

**Gov to providers:** Stop complaining. After we take our cut, there is only so much left, so you have to make do with that. As for your value to society indicated by how much you get paid, we decide that, not you, and certainly not the consumers, I mean patients.

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**Healthcare: A Non-systematic system**

**Therefore, it does not work.**

<table>
<thead>
<tr>
<th>Unhealthy (non-systematic)</th>
<th>Parts act independently.</th>
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</thead>
<tbody>
<tr>
<td>Each part has a different goal.</td>
<td>No effective feedback (-----)</td>
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**System parts:**
- Government
- Hospitals & providers
- Insurance companies
- Public
- Suppliers

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Gov to insurance: Stop complaining. If you play the game by our rules, and if you avoid wasting (sorry…spending) money on patients, you will make lots of profit. That is money you can give your shareholders. By the way, that is money you can contribute to our re-election campaigns.

Providers to Gov: I overheard you talking about your rules and regulations. Do you realize the regulatory burden is making it impossible to provide care for patients. Additionally, while you are cutting reimbursements to us, you are increasing spending on the bureaucracy, rules and regs. Are you sure they are worth it?

Gov to providers: Stop complaining. Rules and regulations protect patients from your incompetence. They are worth every penny. Trust us. We know best.

Suppliers to Gov: We are having problems. You expect us to create new treatments and drugs but make it impossibly expensive to take any risk. We are getting mixed signals, especially our buddies in the pharmaceutical industry.

Gov to suppliers: Stop complaining. You make huge profits. Look at the prices you charge for drugs. Maybe we should do what Italy did and simply fix drug prices by law. We already did that to the providers.

Imagine if healthcare were a real (systematic) system, with effective feedback and all parts focused on the same desired outcome: long-living, healthy people. If that happened, providers would ‘win’ (get rewarded with respect and money); patients would ‘win’ (become and stay healthy); and Gov would ‘win’ both by spending a lot less and having healthy – therefore productive – people. …If only it were so…

Systems thinking and Patient Named Healthcare

The information below is taken from Daniel Aronson’s web site on systems thinking.7 Note how each applies to patient Healthcare.

    Systems thinkers describe eight patterns of interaction within a system that generate dysfunction and produce bad outcomes.8 Five of these eight patterns are commonly seen in sick Healthcare, especially the last.

1. Reinforcing loops – vicious (harmful) or virtuous (helpful) – where present actions magnify future problems, such as the vicious reinforcing loop demonstrated by the operating room optimization example below.

2. Shifting the burden, such as government insurers forcing private insurance plans to cover expensive patients.

3. Creeping or eroding goals. President Obama started his push for the PPAHCA with a goal of reducing unsustainable national spending on healthcare. Then the goal “creeped” to insuring all Americans. This eroded to insuring all legal Americans. In the end, PPAHCA (Patient Protection and Affordable Health Care Act of 2010) will increase spending by over $1 trillion. Note the goal creep and erosion to the point where the goal is reversed: from saving money to spending money.

4. Accidental adversaries. When doctors are paid for performance, the more care they deliver, the better they do financially. This leads to unnecessary tests and procedures making doctors the adversaries of their patients. Incentives are just as perverse with insurance plans. The less care they deliver, the more profit they make or the closer they stay to budget allocations. This makes accidental adversaries out of insurance or government and their clients or taxpayers.

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Fixes that fail, or backfire.

There are numerous examples of how Healthcare suffers from L.O.S.T. There is PPAHCA (above), HIPAA (below), and the classic operating room (O.R.) optimization tale. Whether you read the original description^9, an expanded version in the book *Uproot U.S. Healthcare*, or even in *Becker’s Hospital Review*, the O.R. story demonstrates how silo-ism, a manifestation of L.O.S.T., plays out in our sick healthcare system.

A hospital O.R. budget was out of balance: it was spending more money than it took in. Hospital management solved the problem by cutting nursing positions, thereby reducing expenditures and balancing the budget. Problem solved, so the hospital thought.

The systems thinker, as described in the citations listed above, analyzed the effects on the entire [hospital] system over time, not just the O.R. budget for this year. A systems thinker discovered that optimizing the O.R. budget *in isolation* ultimately forced the hospital to close the O.R. entirely!

Systems theory also helps explain the disproportionate results that are frequently experienced by patient Healthcare. The Butterfly Effect^10 describes how a small action can have a huge effect, and conversely, how a great effort can have little impact. The addition of fluoride to the drinking water supply or niacin to breakfast cereals have, respectively, dramatically reduced dental caries (and the need for dentists) as well as eliminated the scourge of pellagra. Each was a positive Butterfly (disproportionate) Effect: small action, big impact.

There are multiple Healthcare examples of the opposite: big action, little effect or backfire. HIPAA (Health Insurance Portability and Accountability Act of 1996) is costing billions per year (more each year). That is certainly a “big action.” It did not help people keep their health insurance – that was the “little effect.” HIPAA intensified security restrictions on health care information and the ability of providers to communicate. The result was a “backfire:” it increased medical errors and made it harder for providers to learn and innovate new ways to treat presently untreatable conditions.

The central tenet of systems thinking is that you cannot tinker with (call it “reform” when referring to Healthcare) one part of a system without affecting other parts of the system, ultimately degrading the system’s outputs.11

To improve system outputs, including cost reduction, you need to alter the entire system as a whole, not one part in its cute little, cozy self-contained silo. Before you can dissolve problems (by changing the system), you must first identify the root cause of the problem.

**The Etiology or Root Cause: L.O.S.T.**

As a doctor practicing good medicine on patient Healthcare and at the same time, a systems thinker seeking a fix that actually fixes, you must identify the root cause, or in medical terminology, the etiology.

Everyone has experienced the signs and symptoms: your mother cannot find a doctor; your neighbors can’t pay for care or for insurance; your brother had an undesirable or unexpected medical outcome. Meanwhile, there is an endless line of politicians or self-styled experts importuning us for our money and support, all saying they will fix poor, sick defenseless Healthcare.

While silo-ism – the tendency of the parts to function in isolation – may seem to be the disease that plagues patient Healthcare, it is not the only one. Signs or symptoms are misidentified as root causes. Decisions are based on logic or emotion, rather than evidence.
HIPAA or PPAHCA are good examples of evidence-free decision making. As science fiction author David Weber wrote, “Logic is a great way to err with confidence.” Meaning well often does not do well, as demonstrated by public housing projects that perpetuate poverty.12

The etiologic diagnosis or root cause of Healthcare’s illness and worsening condition through the years is L.O.S.T. (a lack of systems thinking). L.O.S.T is also the explanation for the subsequent failure to identify, much less dissolve, the root causes of specific problems, such as overspending.

Identifying a root cause leads one quickly to a cure, or in systems’ terms, a fix that fixes. If the root cause is the patient smoking cigarettes, you must design some method by which the patient will choose to stop smoking cigarettes. You don’t pass a law prohibiting the sale of cigarettes. We all know where Prohibition led with respect to drinking alcohol. You do not order the smoker to stop. Patients are thinking systems. They have to want to change, or the change you want will be subverted.

If the root cause of patient Healthcare’s sickness is L.O.S.T., then a fix that will fix is the following. Develop within We The Patients, collectively known as Healthcare, a desire for systems thinking. Straightforward – yes. Easy, simple, painless, or quick – absolutely not!

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To read more about systems thinking in practice, visit:

www.triarchypress.net/design-and-systems-thinking

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10 Lorenz E., 1972, Lecture before the American Academy for the Advancement of Science with title (actually given by Philip Merilee): “Does the flap of a butterfly’s wings in Brazil set off a tornado in Texas?”