Re-imagining Healthcare from an ecosystemic perspective

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Our Context

20th Century Era Captured by Alfred Chandler
Push Economy

Infrastructure capabilities drive organization architecture
And Scalable Efficiency becomes the goal.

21st C infrastructure: no stability in sight driven by continual exponential advances in computation

then

The Big Shift Happened
Technical, Regulatory & Social Practices evolve around new technologies

18th, 19th, 20th C infrastructure

21st C infrastructure

S-curve

rapid set of punctuated moves

We have moved from an era of equilibrium to a new normal—
an era of constant dis-equilibrium.

Our business models and our ways of working,
organizing, innovating, etc needs to be reframed.

Here is what is happening in the corporate world when we got stuck with yesterday’s lenses

The return on assets (ROA) for U.S. firms has steadily fallen to almost one-quarter of 1965 levels

Yes we disguise this sad story by ROE/debt financing

We have moved from an era of equilibrium to a new normal—
an era of constant dis-equilibrium.

Our approach to healthcare also needs to be reframed.

We now have 4 great IT pillars

Cloud + Mobile + Social + Big Data (nosql)

Each advancing at exponential rate that together could be a real game changer!

Potential Shifts of Focus

Sickness => Wellness
from thinking disease as a thing
to wellness as dependent on context

Quantified self to the extreme
from physician as driver to physician as consultant

Content => Context
Shaping context to change behavior

1st Shift of Focus

Sickness => Wellness
from thinking disease as a thing
to wellness as dependent on context
This shift means: we need to think about health and personalized healthcare not like a watch but like an emergent, complex ecosystem.

A mechanical system—a watch for instance—is divisible, while an ecosystem is indivisible because of well developed interdependences.

Because ecosystems are indivisible, they are environments where all work feeds back into the system, affecting the entire system.

P4 Medicine – a novel approach to individualized medical care

- shift from waiting for disease to develop to understanding propensities
- applying treatments or behavioral changes to delay the onset of disease
- develop a life strategy wellness plan for each individual
- empowering patients to create precise strategies to promote wellness & using social networks and gamification to get consumer to take ownership of their health

EHR --> PHR

Cancer as a thing to Cancering as an ecosystemic process i.e. radically contingent on context

BUT if one cannot solve or model complex systems, then what?

Danny Hillis
David Agus
Three things you can work on:
boundaries
probes
modulators

listen to feedback, augment and amplify the good, quickly remove the bad, look for patterns and centers of gravity, nodes of efficacy.

Boundaries
determine what agents constitute the ecosystem

External: age related, disease related, geographic, socio economic, combination of these etc.
Internal: genetic and epigenetic

Probes
things you put in the system to read the system

biochemical: genetic and epigenetic testing
behavioral:
  medical data from devices – e.g. fitbit
  reality mining –digital breadcrumbs (real time/place with gps),
  behavior tracking with smart phones
  social network monitoring;
  micro-narratives;

Modulators
things you put in the system to read the systems affect change in the system

Biochemical: genetically targeted drugs

Behavioral:
games and gamification;
texting for health;
psychology;
coaching

Gamification
use of game play mechanics for non-game applications.

motivation through accomplishment, peer approval, status building, fun

leveling up may be one of the most important drivers of incremental change.
Texting 4 Health

using smart phones as prompts, coaches, aggregating information for early disease detection . . .

2nd Shifts of Focus
The (extreme) Quantified Self

I know about QS but extreme????

Larry Smarr

Larry Smarr's Approach
comprehensive integrated data collection over time!!

Externals: diet, exercise, sleep, stress reduction
Internals: Genomic analysis
100 blood variables monthly
Stool samples for microbiome analysis including metagenomic analysis
MRI imaging turned into 3D models
but are there elements of the ecosystem for health – wellness – Larry is missing?

what about the social dimension?

We are affected by our social networks in ways I never thought!

and shape (topology) matters, too.

Christakis and Fowler – how people’s networks affect health

good summary: your friends’ friends’ friends affect everything you feel, think and do.

The Human Superorganism
Networks of cooperation can lead to self-sustaining “organisms,” whether it be cells in a human body or human bodies in a neighborhood!

Friendship ties on Facebook

and what if the social network is not robust enough to scaffold?

“our social network can fray at the edges, like a yarn that comes loose at the end of a sweater. If we are concerned about combatting the feeling of loneliness in our society, we should aggressively target the people on the periphery with interventions to repair the social networks” (Christakis and Fowler)
Useful But A Bit Scary

Social bots can be designed to augment the shape and topology of a social network.

Web Ecology project
Socialbot competition 2011

Hmmm, sounds like Eliza has gone social on twitter

but are there elements of the ecosystem for health - wellness - Larry is missing?

Will data really change behavior as Larry suggests?

More generally

How do we really affect behavior especially at scale?

Might transmedia be a new tool here?

what is transmedia?

Transmedia storytelling is the technique of telling a single story experience across multiple platforms and formats...

...it involves creating content that engages the audience using various techniques to permeate their daily lives - multiple forms of media delivering unique pieces of content in each channel.
Harry Potter Worldwide Movement
Are we prepared for students used to creating their own global collective, intertwined with a networked imagination?

Fanfiction.com
65,000 stories & podcasts
forums
wikis
videos
podcasts
contests

6,314 communities of interest; 1,774 discussion forums; 386,000 stories archived

most recently: The Hunger Games

How does this work?
In transmedia stories are told as facts – and more than told only, they are enacted as well – pervasively, and extended over time for sustained emotional impact.

How does this work for health?
For providing information in context
For behavior role models and all the things one needs to do to ‘be like’
For triggering
Support for sustaining

The Bigger Picture
The emerging era of long tail science

Powerful networked tools now allow small groups of folks to do amazing things in science. Some big science can now go small & distributed. But what is missing is a language of data that captures context to enhance share-ability.

Ah – honoring diversity of approaches yet making the whole more than the sum of the parts.

A Cambrian Moment
Reimagining Healthcare
Using emerging capabilities of Science, IT and the Social to move from sickness to wellbeing

Efflorescence to Flourishing

Thank You

By Ann Pendleton-Jullian
John Seely Brown

The Power of Pull
How Small Moves, Smartly Made, Can Sing Big Things in Business

Design Unbound
A New Tension Between Control and Freedom