Biomatrix Curriculum: *A w/holistic approach to* (dis)solving the complex problems of the world

Part 2

Journey into an ideal fut

The group returned from their journey depleted. They had visited so many people from so many different spheres.

POSTCARDS from our journey to the experts asking them how we can solve the problems of the world

Greetings from our journey

failure.

Although we learned much, we feel like the journey has been a

We have not quite found what we were

biomatriX^{wee} systemic management solutions

all citizens of the world

Greetings from my journey

It was FUN !!!

People are so nice everywhere! I 'II NEVER give up my search!

LET's PLANT TREES!

to: all citizens of the world

Diomatriy

looking for.....



Just then an odd looking figure emerged from thin air. It was faceless, ageless, genderless and timeless....and the figure started talking to them



We need all of the people you visited to work together to solve the problems of the world. Each person has unique strenghts and contributions to make.

Imagine what we could achieve if we placed them altogether and get them to interact in a way that would solve humanity's existing problems and not create new ones. ۲



IMAGINE

that all persons, organisations and spaces you visited were linked together meaningfully, like in a fishing net....Llike in the world wide web which allows us to have all information at our fingertips, able to connect to any information we want....

Every one is the centre of the web.

I am, you are, so is my organization and society and so are yours.

We can tap resources and link up with each other.

We can organise ourselves into larger wholes.

We are powerful.

We can co-create a sustainable world and a desirable future for all humanity and solve its complex problems

TOGETHER !!!

All of them working together! That would be extremely powerful- sounds great....

60

Who are you that you are so certain about how to solve the world's problems?

Allow me to introduce myself: I am Zeitgeist and I have different names in different cultures....and some people call me the futurist.....

> I am here to teach you how we could go about creating the context for this to be possible.

Zeitgeist

(n) The taste, outlook, and spirit characteristic of a period or generation.

Zeitgeist

..."der ...eigne Geist, in dem die Zeiten sich bespiegeln". (Goethe)

...your own spirit, in which the times mirror themselves. (Goethe) I heard you say that the experts you consulted had apparently solutions to some problems, but not to others.

You asked them because of your concern that the world's problems are apparently unsolvable.

Now, what sort of problems did you have in mind? And what did you find so unsolvable about them? And what were your insights? The problems we had in mind were poverty, war, disease, environmental deterioration, resource depletion, unsustainable systems and the like...

insights



We found that the mainstream experts have lots of solutions and apparently many more in the pipeline.

They also seem to believe that given more time, the benefits from the existing solutions will trickle down to those who currently don't have them, like more economic growth, more investment, more consumer goods, more infrastructure, more education, more health care, more democracy, more laws, more media exposure, and so on.







We also found that some of the dissident or alternative experts also seem to have answers to a lot of problems, like alternative energy and agricultural solutions and ideas about different education, health care, finance and other systems.

They also seemed very frustrated that their solutions are not used by the mainstream systems, not reported on in the media, not further researched in universities, not bought by the corporates and not included in public policies. I noticed that different people have different perceptions of a problem. Like everyone saw a different piece of the problem and thought that this is all there is.

Also, what a mainstream expert called desirable and good, the dissident or alternative expert often called bad (and usually for different reasons).

This made the problems "shifty". They seem to change depending on who looks at them and from what perspective.





For me the biggest insight was, that the problems seemed to overlap with each other....

In the end it seemed to be one big muddle.



Yes, you understand the nature of complex problems well.

Interesting that you used the word muddle. Ackoff, a famous systems thinker coined the term "mess" for this. He defined it as "a system of interrelated and mutually reinforcing problems".

He also said that we cannot solve a mess but need to **dissolve** it by changing the way the systems behave that co-produce the mess. We will learn more about this throughout this curriculum.

To manage a system effectively, you might focus on the interactions of the parts rather than their behavior taken separately.



— Russell L. Ackoff —

This mess business seems very depressing. Is there really any hope? Can we do anything meaningful about this?

6 0

If a mess is created by the interaction of our current social systems and their impact on nature, does this mean that we have to change our economic, political and cultural systems before we can dissolve the mess?

Isn't that somewhat unrealistic? Indeed, we can do something about it.

And indeed, we need a transformation of our economic, cultural and political systems.....



You are warned that this is not a body of knowledge you can complete in a quick crash course. To understand and apply it requires some serious studying.

Are you ready for the challenge?

Q: (frequently asked, when confronted with a Biomatrix course or book):

Isn't that an awful lot of effort?

Isn't that a lot of theory?

A: Surely, you wouldn't allow yourself to be operated on by a surgeon who did a one day crash course?

So why should solving complex problems in society be easier than dealing with a disease in the body?



societal evolution perspective

We are facing a transition from the industrial to the information age with its own problems. Our current cultural, economic and political systems are largely legacy systems of the industrial age, covered with some information related veneer, but not profoundly transformed yet.



Industrial Age

Information Age







BOTH.

Past and current decisions have their impact on the future. We futurists call this the current future.

Other developments are shaped by deliberate choice. So, YES, we can shape our destiny and choose a more ideal future.

Does social change

And can we influence

evolve by itself?

it?

This is why I came into your life, to give you a theory and methodology for deliberately shaping your future.

NOTE ON SOCIAL EVOLUTION

The industrial age had a steam, electricity and atomic phase.

By analogy, the **digital phase** is like the steam phase of the information age.

We are now transitioning into the **biological phase** (i.e. manipulating information in biological and other systems of nature).

This is likely to be followed by the **consciousness phase** (i.e. utilising brain / mind technologies).

the choice



@ BiomatrixWeb

IDEAL FUTURE

To create a more ideal future requires that we make a deliberate choice of what we want our future to be like and putting the effort in to work towards it.

Designing an ideal future requires a new way of thinking!

CURRENT FUTURES

If we carry on doing what we are / have been doing all along, we land up in a current future. We arrive in the future by default.

Because the environment keeps changing and will impact on our situation, the future will be different to our current situation.

Different kinds of current futures are possible.

what is your choice going to be?

time



the famous physicist Albert Einstein observed that:

one cannot solve a problem with the thinking that gave rise to it.

We need to embrace a new worldview that gives rise to different theories, methodologies and thereby provides us with a new logic of organising our societal institutions. This worldview is w/holistic thinking.



The world's problems cannot be solved by moving into a current future (that is based on more of the same strategic thinking).

Instead it requires doing things differently, from now on. This starts with designing an ideal future for our economic, cultural and political systems and putting effort into implementing the designs.

If we don't do this, the current systems – and their problems – will perpetuate themselves and worsen.









CURRICULUM

part 1: understanding complexity

(explains the messy characteristics of complex problems)

part 2: worldview

(explains the role of worldview and describes the worldviews of w/holism and reductionism)

part 3: theory

(describes the role of a w/holistic theory of system organisation and change and provides some key concepts)

part 4: methodology

(outlines the essence of w/holistic problem solving, frameworks for making sense of the world and the steps involved in system redesign)

part 5: change management

(presents some theory of change management and also describes change facilitation through:

5.1. w/holistic leaders

(explains the need for and distinction between context w/holiparts and content w/holiparts)

5.2. w/holistic change structures

(describes the structures involved in organisation and industry transformation)

5.3. w/holistic democracy

(explains a model for ongoing societal change management and governance)



The printed version of the curriculum also consists of those five parts. (You are welcome to download it for free.)

The parts overlap with each other to some extent, because:

w/holistic thinking is not a linear body of knowledge;

one cannot understand one concept before understanding all the others;

they mutually explain each other.

Underlined concepts are links to the theory webpage for more explanation.

Does this curriculum make us w/holistic leaders? It is a good start. It certainly makes you more of a w/holistic thinker.

However, to facilitate the redesign of a large social system (e.g. a business function or an organization, an industry or a government function) you will need detailed w/holistic knowledge (i.e. of *Biomatrix Theory* and *Biomatrix Methodology*).

The biomatrix webpage, books and video lectures on you tube provide more detail on the theory and the *Biomatrix Courses for Sustainable System Design* deal with the change methodology in detail (including template driven assignments for transforming a case study system chosen by the course participant).

Corporate client systems (e.g. business organizations, industries, government departments) can manage their own transformation through an in-house application of the appropriate *Biomatrix Transformation Programme*. It guides selected members of the client system to redesign their shared system and facilitates the implementation of the design and thereby transforming the system.

Back to your question: What impact can we have? Problem solving requires system redesign. We

cannot change anything before we do not know how systems could work differently.

> Of course, you cannot do any system redesign by yourself. You will need to engage the stakeholders of the system (initially a few, later the many).

You live in the information age. You have the whole information world at your fingertip.

Design is information!

We have an exciting method to engage stakeholders in redesigning their system. It is called **Biomatrix Jamming**. With it you can start the ball rolling and have considerable impact.



BIOMATRIX JAMMING

Biomatrix Jamming is an online method that allows you to engage the stakeholders of a system to identify and analyse problems, as well as identify existing and brainstorm new solutions for it.

(Also check out Art Jamming. It is fun!)

BIOMATRIX CONFERENCING

Biomatrix Conferencing is a method for engaging stakeholder representatives in integrating the brainstormed information into a coherent system design.







w/holiparts

What is a w/holipart?

W/Holiparts are leaders who think w/holistically.

They are able to assume the perspective of the whole (i.e. the containing system) and the parts (i.e. their own and the others). They also know when and how to identify with and act from the perspective of the whole and / or the part.

What do w/holiparts do?

As leaders, the w/holiparts inspire others to become w/holistic thinkers also. And they are willing to take responsibility for co-creating a more sustainable society by initiating and / or participating in the w/holistic transformation of the social system of their concern (e.g. society's education, transport, finance, electricity and whatever system).

How do the w/holiparts do this?

They learn all about *Biomatrix Theory* and *Biomatrix Methodology* to become competent w/holistic change facilitators. Then they apply this knowledge to the system of their concern to facilitate its redesign and transformation. Two method help in transforming large public systems, namely *Biomatrix Jamming* and *Biomatrix Conferencing*.





Part 1:

UNDERSTANDING COMPLEXITY (it's messy)





Memo from



If you think that you understand the world's problems and their solutions,

and believe that the current education, health care, energy, economic and political systems are able to solve them,

you are not ready for this curriculum yet.

You have a too simplistic understanding of the world.





In your reflections on what you learned from the experts you already showed a good understanding of complexity. So let us deepen this further.

Why is it important to understand complexity??

If we don't understand how complex problems are, we will implement simple solutions and then be surprised that things are not much better (or even worse) than before.



Anyone watching the news regularly will be overwhelmed by complexity. And since most news are about problems, we are also overwhelmed by problems.

Any solution we could think of soon evaporates as we are confronted with yet another problem that is related to our solution and seems to make it impossible to implement after all.

We drown in complexity. Many give up and lose hope and become lethargic.

We want to make a difference here. So, step one is **looking complexity in the eye** – steadily.

Let us quote the famous systems thinker Russel Ackoff again on complex problems (such as poverty, finance crises, war and climate change, to name but a few): Every problem interacts with other problems and is therefore part of a set of interrelated problems, a system of problems.... I choose to call such a system a mess. Russell L. Ackoff



The figure below entitled *Education "Mess"* illustrates some of the diverse co-factors in the education mess of South Africa. This exercise was done with some educationists who identified many more co-factors, of course. For illustration purposes we only included some co-factors. There is not enough space in the circle to list them all.







co-factors

Most of the co-factors are complex problems in themselves. That is why we could do a mess analysis on each of them. This would involve a second round of co-factors for each co-factor (and make the picture nicely complex!)



systems dynamics model

Let's go back to the education mess. The co-factors do not only co-produce the education mess, but they also impact on and thereby co-produce each other.

A systems dynamics model illustrates the direct impact of a co-factors on other co-factors. (*Notice the orange arrows. They indicate mutual impacts or chicken / egg situations*)



Partial System Dynamics Model of the Education Mess



The education model illustrated here uses only a few select co-factors. If we were to draw all interactions between all co-factors, the picture would become hugely messy. Nevertheless, many complexity theory models –aided by computers - work with such large number of variables (the technical term used to describe a co-factor).

Other practitioners believe in identifying and working with "higher order" variables to avoid detail complexity.



suggested exercise

Do a systems dynamics model of your problem. Take at least five of the problem co-factors which you identified in the previous exercise and see how they impact on each other.



The Boiling Frog Syndrome

Apparently if one throws a frog into hot water it will immediately jump out. But if it is put into cold water, it stays there, even if the water gets hot (as long as the increase in the water temperature is gradual). The reason is that a frog apparently has a nervous system that cannot detect small changes in temperature. In fact, before it notices that it is getting hot, it is boiled to death. (PLEASE, don't try this. Rather use it as an analogy!)

What does this mean? It means that if we are in a deteriorating situation, we adjust to the gradual decline (e.g. in health, happiness, or unsuccessful work). And when we notice that it is really getting serious, it is often too late to turn the situation around . The gradual decline results in an apparently sudden demise (e.g. a life-threatening disease, divorce, or being fired from work).

By analogy, a mess is a cesspool of frogs boiling to death and we all happily sit in it denying that it is happening. Welcome to the energy, finance, education and any other mess, including climate change and nuclear armament!






A mess spans LEVELS in the

containing systems hierarchy. For example, in a mess like poverty, cofactors arise from all levels, such as climate change at the planetary level, policies at the societal and organisational levels, economic and cultural circumstances at the community and family level, motivation and ability at the individual level, disease at the physiological level and pollution at the physical level, amongst others.



A mess spans DIMENSIONS

For example, a mess like poverty is co-produced by co-factors from the psychological (*cognitive, emotional, spiritual*), cultural (*education, science, religion, art, media*), economic, political, technological, ecological, physiological, biological and physical dimensions.





Biomatrix Spatial Framework





lets summarise what we know about a mess



I am a system of interrelated problems that co-produce each other.

I weave my way through levels and dimensions.

If you looked closely at me you would find numerous co-factors (i.e. impacts from different systems from different dimensions and levels).

As one of the problems within me changes, the others change also; in fact, they all change continuously and often quite rapidly.

I am the ultimate shape shifter, depending on who looks at me, the picture looks different. Often, what looks like a problem to one, is a benefit to another.

This is very depressing. One seems to go in circles when one tries to analyse a mess.

MP or Dogen Ling

shut

How can we dissolve a mess?

This complexity gives me a headache! How can each system redesign each other system? This seems like a chicken / egg situation!

Where should we start?

Part 2:

WORLDVIEW reductionism versus w/holism



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why worldview?



Much of the complexity and confusion we experience arises from our worldview.

Through education we learned to look at the world from a reductionist perspective. This gives us part of the truth of how things are. It gives us the perspectives that problems can be solved.

If we look from a w/holistic perspective, we suddenly see different things and connections which we did not notice before. We perceive complexity and realise that problems are messy and apparently unsolvable. Then we learn that they can be dissolved by changing the way systems behave and interact with each other.

The two worldviews don't contradict but complement each other.

Each worldvie is appropriate in a different context and for a different purpose.







change your worldview

Albert Einstein observed: One cannot solve a problem with the thinking that gave rise to it. Or to paraphrase Einstein: The logic of the problem is not the logic of the solution.

Society's current problems were and continue to be created by the way how we think and how this thinking shapes our economic, cultural and political systems and their functioning.

So, if we agree with Einstein, WE NEED TO CHANGE OUR WORLDVIEW!







reductionism – worldview of the industrial age.

reductionism /rɪˈdʌkʃ(ə)nɪz(ə)m/ ♠

noun derogatory

the practice of analysing and describing a complex phenomenon in terms of its simple or fundamental constituents, especially when this is said to provide a sufficient explanation.

In essence, reductionism views the world as consisting of parts that need to be studied in order to understand it. It is the worldview of traditional science.

It emerged as the dominant worldview of the industrial age and has and continues to shape our current cultural, economic and political systems.

The complex problems of the world are an outflow of the systems created by reductionist thinking and thereby –in final analysis - are caused by the reductionist worldview.







w/holism - worldview of the information age

Besides viewing the whole as being greater than the sum of its parts, the w/holistic worldview perceives all systems as being interconnected parts of the biomatrix (or web of life) and as <u>emerging</u> from each other's <u>co-production</u>.

The biomatrix consists of interacting <u>subwebs</u> of the naturosphere (i.e. systems of nature), psycho-sociosphere (i.e. psychological, cultural, economic and political systems) and technosphere (i.e. technological systems).

The systems evolve to be wholes that function according to generic principles of <u>system</u> organisation.

As one system changes, it impacts on other systems, forcing them to change also. Therefore, all systems are in perpetual motion and continue to change more or less fundamentally and rapidly.



w/holistic versus reductionist science.

Different scientific disciplines (*symbolised by the horizontal grey arrows*) study the systems associated with different levels in the <u>containing systems hierarchy</u> of life (*symbolised by the figure between the two orange arrows*). Each discipline studies the according system by keeping the environment constant, implying that interaction with the outer and inner levels is ignored. This describes the essence of reductionist science.

By comparison, w/holistic thinking studies the interaction of systems across levels and their emergence (as <u>emerging middle</u>) from the co-production by systems from the outer and inner levels. (*This is symbolised by the vertical orange arrows.*) This describes the essence of w/holistic science.

	w/holism	reductionism
system type	system hierarchy	scientific discipline
galaxy		e.g. astronomy, astro-physics
planet		e.g. ecological sciences, climatology
society		e.g. sociology, ethnology
institution		e.g. economic, cultural and political sciences
organisation		e.g. managerial sciences, engineering
familv		e.g. social psychology
individual		e.g. psychology
organism		e.g. medicine, physiology, botany, zoology
cell		e.g. biology, bacteriology
molecule		e.g. chemistry, mineralogy, virology, genetics
atom		a g physics, radiation and publicar asigness
sub-atomic		e.g. physics, radiation and nuclear sciences



w/holistic versus reductionist worldview

The reductionist worldview is associated with the current thinking of how the world works. It is also entrenched in the current theories and methods of science.

A w/holistic worldview gives rise to different theories of how the world works and how we can know about the world.

It also proposes new scientific theories which will extend the ones we already have and provides us with a new and different methodology for problem solving (i.e. a different scientific method). Reductionism and w/holism are **complementary** views of the world.

Ideally, all research designs should incorporate both views, whereby (amongst others) w/holism contextualises the knowledge derived from reductionist investigation.





"Learn how to see. Realize that everything connects to everything else."

Leonardo da Vinci

You talk about wholes and systems. Is this the same?

All wholes are systems. For example, a person (and an organisation, industry, society and planet) is a whole. And it is also a system, meaning that it is organised according to w/holistic or systemic principles. But not all systems are wholes. For example, a complex problem is a system (i.e. it has the characteristics and behaviour of a system), but it is not a whole.

On our journey we met some systems and complexity thinkers.

Are they w/holistic thinkers?



NOTE



w/holism versus systems, complexity and related thinking

Systems thinking and its derivatives of complexity-, ecological- and design thinking are related worldviews.

They are based on shared and overlapping theoretical concepts and models, as well as apparently contradictory approaches and with differences in emphasis and application.

They all subscribe to Aristotle's idea that "the whole is greater than the sum of its parts", but do not distinguish between wholes and systems.

Therefore, these approaches are not really w/holistic in the sense of representing the whole theoretical field. Instead, each describes some parts and different aspects of it. They are an incomplete w/holistic worldview. *Paradoxically, they are w/holistic in a partial way!*

Also, most of these approaches are derived from and associated with a specific scientific discipline (e.g. psychology, management, biological and environmental sciences) and are too specialised and fragmented to deal with trans-disciplinary problems.

By comparison, *Biomatrix Theory* is a theory of w/holism, because it

- defines different types of wholes and explains how they are organised and change
- integrates the key concepts of systems-, complexity and related approaches, together with unique conceptual contributions, into a coherent and internally consistent theory. It is therefore a meta-systems theory. It was researched by the inter-disciplinary Biomatrix Group in the context of a PhD programme with the view of creating a trans-disciplinary theory, relevant to all systems researched by science. Because the conceptual contributions by the group relate to wholes, Biomatrix theory is also a theory of w/holism.

Indeed.

The partial and fragmented change interventions derived from reductionist thinking gave and continue to give rise to the world's complex problems.

More partial interventions (even if they have w/holistic roots) will not improve the situation. On the contrary!

Only a truly w/holistic worldview, that is derived from a sound theory of w/holism and is applied through a practical w/holistic methodology can make a difference...

(Biomatrix theory and methodology provide this.)

The experts we consulted didn't think that systems and complexity thinking was all that successful in solving the world's problems!



reductionist versus wholistic worldviews

A w/holistic worldview derived from *Biomatrix Theory* involves two perspectives of thinking, which we like to refer to (a little flippantly, perhaps) as webthink and fieldthink, as opposed to the reductionist worldview which is like a boxthink.



Reductionist thinking is boxthink.

It sees systems as being isolated from each other, relatively independent from their environment and acting in their self-interest.

I am separate from you!



fieldthink

W/Holistic thinking is webthink.

It perceives systems in physical reality linking up with each other and <u>tapping mei (matter-energy-</u> information) from each other across their boundaries.

I am connected to and interacting with you.

W/Holistic thinking is also fieldthink.

It perceives the information reality (or <u>ethos</u>) of systems as overlapping, merging and synergising with each other without discrete boundaries between them.

You and I are one.



Part 3:

THEORY OF W/HOLISM: Biomatrix Theory





Why do we have to learn a lot of theory? Isn't a worldview enough? A lot of people think that they are w/holistic thinkers because they believe and even perceive) that everything is connected to everything else, complex problems emerge from the interaction of systems and therefore stakeholders have to be involved in analysing and solving problems. While all this is true, it is insufficient. In fact, it is "so what", unless there is an underlying theory explaining it and a practical methodology guiding us in shaping our social systems accordingly!

Knowing the law of gravity and therefore understanding why bridges and high-rise buildings don't collapse and airplanes don't fall out of the sky, doesn't *per se* help to design bridges, buildings and airplanes. More knowledge than that is needed (which requires years of studying engineering at a university).

Designing economic, political and cultural systems that do not co-produce the world's complex problems needs a similar effort.

The *Biomatrix Design Courses* provide essential theoretical and methodological knowledge for this.

key concepts of biomatrix theory

This is a mindmap of the key concepts of biomatrix theory and methodology. They can be studied in overview on our webpage <u>www,biomatrixtheory.com</u> and in more detail in the *Biomatrix books and design courses*.







two key concepts you need to know

To understand more about how we can solve the world's complex problems you need to know the following two key concepts which we will keep using throughout the curriculum:

(1) the web of the biomatrix and its system

(2) the seven forces of system organisation



(1) the web of the biomatrix and its systems

web

underlying comple

We call the universe the biomatrix.

The biomatrix is the web of interacting systems, both living and non-living.

It consists of the sub-webs of the naturosphere, psycho-sociosphere and techno-sphere (i.e. the systems of nature, psychological and social systems and technological systems).

The word biomatrix is derived from

- Latin bios, meaning life and
- Greek matrix, meaning pattern and womb.

and freely translated means how life's systems are patterned or organized.









Why is it important to distinguish between activity systems and entity systems? Because activity and entity systems are different types of system and are organised differently.

Therefore they also need different approaches for changing them.

For example, an entity system like an organisation is organised as a matrix, while an activity system like a function or an industry is organised as a value / supply chain.

entity versus activity system organisation

string-like activity system



An activity system is a single function system that serves an overarching aim.

It is organised as a value / supply chain.

For example, the nutrition function in your body is a supply chain. It also links up with and is an inherent part of the food supply chain which involves many natural, psycho-social and technological systems. To ensure a healthy society requires a nutrition supply chain that serves the overarching aim of providing healthy nutrition.

knot-like entity system



NOTE

The term *supply chain* refers to the flow and transformation (or processing) of mei (matterenergy-information) throughout the processing phases (or sub-systems) of the activity system

The term *value chain* emphasises the value that is created through the processing in each phase

An entity system is a multi-functional system that is organised as a three-dimensional matrix.

For example, an organisation consists of different activity systems such as a production, marketing, administration and other functions. Likewise, you as a person consist of different functions, such as working, parenting, learning, sleeping, eating, etc.

Each function has its own aim.

All activity systems together serve the aims of their containing entity system.

(2) the seven forces of system organisation

Both activity and entity systems emerge from the co-production of seven forces of system organisation.



environment: a system is co-produced by its outer and inner environment

ethos: the values and beliefs of a system determine its development

aims: the aims and purpose of a system shape its actions and outcomes

process: is responsible for the flow and transformation of resources in the system which keep it alive

structure: is responsible for the processing, as well as the form of the system

governance: steers the development of the system

substance: consists of mei (matter, energy, information) and ensures that the system actually has existence (i.e. has substance)

A change in any of the seven forces will change the system as a whole.

Incoherent change between the seven forces creates chaotic and problem-riddled systems.

Why do we need to know these seven forces that organise a system? A system design requires the description of the system in terms of the seven forces. It is also necessary to adhere to the organising principles that are associated with each force of organisation.

One can also look at an existing system from the perspective of each of the seven forces and identify organisational problems of the system, as a diagnostic procedure.

Typically problems arise from violating organising principles.

Can you give us an example of such type of problems?

EXAMPLES

Both activity and entity systems have to be designed according to generic organising principles associated with the seven forces of system organisation. Some examples of such principles and their application to a system design are the following:

For example, one of the governance principles is balance between form creating-, form maintaining and form destroying governance.

In the case of an activity system like the global banking system,

- the form-creating regulation dominates (because of huge bonuses and maximum of ROI),
- there is too little form-maintaining regulation (such as limiting excesses of trading) and
- almost no form destroying governance (such as punishment of unethical and criminal behaviour).

For example, the education system would need to be driven by form creating governance in order to encourage the creatvity and development of learners. Instead it is driven by standardisation (a rigid curriculum, standardised tests and a standardised examination system) which imply form maintaining governance. Likewise, the evaluation of universities by international accreditation bodies implies creativity destroying standardisation.

In the case of an entity system like a business organisation, an organising principle associated with structure is that entity systems consist of three generic types of activity systems. These need to interact with each other as a three-dimensional matrix. If the business organisation violates this principle and is structured in any other way (e.g. as a traditional hierarchy) it will suffer problems such as lack of coordination, internal competition, duplications, incoherence, communication, amongst many others.

A design must be shaped by all organising principles associated with the seven forces of system organisation.





W/HOLISTIC METHODOLOGY Biomatrix Methodology

4.1. making sense of the world:

- Biomatrix Frameworks

4.2. changing the world

- problem solving versus dissolving
- identifying what needs to change
- steps in system redesign



why a w/holistic methodology?

A theory only becomes interesting to practitioners, if it can be applied.

What is the use of knowing about the law of gravity if we don't know how to apply it to build bridges and fly to the moon? And who cared about the theory of electricity before Edison and Tesla harnessed it to light up our houses and plug in our appliances?

The Biomatrix Change Methodology guides us in

- making sense of the world in a different way by viewing it through w/holistic frameworks and
- changing our world through redesigning our systems w/holistically and thereby (dis)solving its complex problems.







Part 4.1

making sense of the world: - Biomatrix Frameworks



The Biomatrix frameworks (derived from Biomatrix theory) allow you to make a more w/holistic sense of the world. They allow you to experience complexity in a simple way!

Different issues require different frameworks (see following slides for illustration): The

- **Biomatrix Co-factor Framework** (with which we illustrated the education mess) is useful in working with personal problems.
- **Biomatrix Organisational Framework** of the seven forces of system organisation is used for (re)designing activity and entity systems. It also explains the organisational aspects of complex problems (like in the previously mentioned banking and education example).
- **Biomatrix Spatial Framework** of multiple levels and dimensions is useful for understanding complex issues and gathering information for a system redesign (e.g. through a Biomatrix Jam).
- Biomatrix Temporal Framework involves the punctuated multi-dimensional listing of events along a timeline. It is especially useful in a conflict or war situation and helps you to cut through the fluff of day to day news that cloud the deep issues underlying the conflict or war. It is also a useful tool for mediating in conflict situations.

frameworks are like reading glasses: they can magnify the world, colour it pink, reduce glare..... ...and there are 3 D glasses which put you in the middle of it all...



biomatrix frameworks for making sense of the world

Biomatrix Co-Factor Framework

This framework identifies the co-factors of an issue, and –if necessary –the co-factors of the co-factors.



SUGGESTED EXERCISE

If you have not done so previously, we suggest that you do this exercise now. Choose the favourite problem of your personal life and identify its co-factors.

Then, go into a second round and identify co-factors of co-factors. And if you are adventurous – try a third round.

Then reflect on what you learned.





biomatrix frameworks for making sense of the world

Biomatrix Organisational Framework

This framework identifies the co-factors of a system related to the seven forces of organisation and its organising principles.



SUGGESTED EXERCISE

To apply this framework you have to know each force and its organising principles and how to apply it to an activity and entity system.

This involves more study (e.g. by working through the theory on <u>www.biomatrixtheory.com</u> or participating in one of the *Biomatrix Design Courses*).



Biomatrix Spatial Framework

This framework identifies the multi-dimensional and multi-level co-factors associated with an issue or a complexproblem.



SUGGESTED EXERCISE

Choose any complex issue or problem and see how many cofactors you can insert in the boxes of the framework.

Or watch a discussion on TV and classify all the arguments mentioned. You will be amazed to discover how many boxes will remain empty because of what is not said!

(See case study on <u>peace</u> discussion).



biomatrix frameworks for making sense of the world

Biomatrix Temporal Framework

This framework identifies the multi-dimensional cofactors associated with the development of a situation such as a conflict.



SUGGESTED EXERCISE

Choose any current or recent conflict or war (e.g. the Palestine / Israel conflict, the Crimean conflict, the war in Syria, etc.) and identify key events that caused and shaped the conflict from its start to the present.

timeline of punctuated change




Part 4.2.

changing the world

- problem solving versus dissolving
- identifying what needs to change
- steps in system redesign

changing the world

Before we can change the world, we need to learn about a methodology to do so. This includes knowing about:

Problem solving versus dissolving

Some problems can be solved by fixing a malfunctioning part, while others need to be dissolved by changing the behaviour and interaction of the systems that co-produce the problem.

Identifying what needs to change

The problem (or "mess") co-producing activity and entity systems need to be identified and their malfunctioning diagnosed.

Identifying how to change the system

There are essentially two methodological approaches for changing systems and (dis)solving problems, namely the systems dynamics and ideal system (re)design approach. The former is useful for systems with fixed functioning like nature's systems, the latter for social systems which have a large degree of free will and choice.

Steps in system redesign

Both activity and entity system redesign requires the same steps of redesigning them and then transforming them by implementing the design.



problem solving versus dissolving

Problem solving involves finding out (e.g. through root-cause analysis) why the system has a problem. Then one needs to fix the malfunctioning part (like the broken car part). **Problem dissolving** involves changing the systems that co-produce the problems so that the problems dissolve and are not reproduced.

For example, the unhappy marriage emerges from the interaction of the marriage partners. There is no part that can be fixed. The partners need to change their behaviour towards each other. Then unhappiness dissolves.

The frogs / prince / super(wo)man brainstorming method guides us to identify a new logic of interaction.







In the fairy tale of the Frog King by the brothers Grimm,

the princess (i.e. your creative self)

has to kiss the FROG (or problem - *remember the boiling frogs?*) and thereby transforms the frog (*the problem*) into a PRINCE (the ideal).



...yes, well as problem solvers we have to do the same thing, in some sense... we have to really engage with the problems.....smooooch!



...the more problems a system has, the more fundamentally it can be transformed... smooooch! ONE CANNOT TRANSFORM A PERFECT SYSTEM!



... the prince, in the fairy tale represents the ideal...(*remember what we learned about current and ideal futures...and also about solving and dissolving problems?*) just as the frogs represent what we don't like about a system, the princes represent the ideals we would like for the system....thus a prince represents an ideal future.





According to the dictionary, an ideal cannot be achieved. But we can move towards it forever. It will keep inspiring us. And we can approximate it (e.g. we can get more and more healthy or beautiful).

Thus, if we strive for an ideal, we can continually improve our personal life and social systems, because an ideal guides us and allows us to reinterpret it in the context of a changing environment.

LOW LEVEL IDEALS GIVE RISE TO MEDIOCRE SYSTEMS!

.... and so the princess kissed all frogs, one after another and transformed them into princes ... thinking up really royal ones (based on high level ideals), not merely low level princelings ...





No, super wo/man it not part of Grimm's fairy tale. We have some mixed tales here. Or let's say we updated the fairy tale:

... the princess marries the prince (of course) and they live happily ever after in their kingdom, which is run by super (wo)men and therefore gets ever better for all its citizens who also live happily ever after...

Sigh. OK, so let's be more prosaic:

Each problem (*which we call frog*) gives rise to an ideal (*which we flippantly call prince*).

Each ideal needs several strategies or courses of action to bring it about. (These we flippantly call superwomen and supermen.)





HOW TO DO THE BRAINSTORMING EXERCISE

For each problem (*i.e. frog*) state the ideal (*i.e. prince*) you want to put in its place. Then for each ideal determine at least three courses of actions that will (nearly) co-produce the ideal. You can also determine criteria for measuring progress.

For example, if your problem (*frog*) is "getting frequently colds and flu" then your ideal (prince) could be "glowing health"

and your strategies (superwomen and supermen) could be

- · eat more healthy food
- exercise more
- take some supplements
- do stress management
- do specific prevention
- practice hygiene
- (and suchlike superwo/man stuff).

Your measurement could be no more colds and no more flu.

SUGGESTED EXERCISE

Kiss all your previously identified frogs (problem cofactors) into princes (ideals) and give each prince at least three super/women!





identifying what needs to change



To change a system one needs to know what to change and why.

In the case of an existing activity and entity system it is useful to do a *Biomatrix Diagnostic Survey* or *Biomatrix Jam.*

- In the case of an entity system, like a business, government, non-government or non-profit organisation), the *Biomatrix Diagnostic Survey* will reveal the problems of the organisation as a whole, each of its functions and external key stakeholder. It will also reveal the problems they create for each other.
- In the case of a public activity system, like an industry or public governance function, the problems associated with the industry / function as a whole, each subindustry / function, as well as external stakeholders will be captured in an online *Biomatrix Jam* (to allow widespread stakeholder participation).

Both, the survey and jam will reveal the problems of the system and provide insight if and where change needs to take place.

They also capture current solutions and guide participants to brainstorm new ones. This information is used to design the change interventions for the redesign of their system.

In the case of a **complex problem / mess**, it is necessary to dissect it into its activity and entity systems, which need to be redesigned, in order to dissolve the problem / mess.



teasing apart a mess

A mess is a jumble of entity and activity systems that co-produce it.

To dissolve it, one needs to identify the relevant activity and entity systems that need to change and be redesigned, in order to dissolve the complex problem and its many sub-problems.

The only way to mess with Mr Messy is to tease him apart, thread by activity system thread and knot by entity system knot.





case study of teasing apart the mess

YES. Let me show the case study of dissolving the HIV/AIDS mess. In order to be able to dissolve it, one needs to identify its different activity systems, analyse the specific problems (*using the spatial framework*), brainstorm solutions (*using frog / prince brainstorming*) and make a strategic design for each (*using the seven forces of system organisation*).

The different activity systems that were defined by a NGO advising Southern African governments on HIV / AIDS strategy were the following:

(1) preventing infection, (2) managing care and treatment, (3) managing disease,
(4) managing impact of disease and (5) managing impact of death.



system (re)design

I understand the part of identifying problems and brainstorming solutions.

But is that not enough? Why still do a design, if I already have all the solutions?

And how I do a design?

A shopping list of strategies or solutions is not a design. Some solutions are even contradictory or mutually exclusive.

And as we have learned, making any partial change to an already fragmented system makes the mess worse. It will also perpetuate the more or less gradual decline of the status quo.

Sadly, the current management paradigm promotes partial change and is therefore a major co-producer of the world's complex problems.

By comparison, a w/holistic design uses only some of the brainstormed solutions. They are selected according to an overall design concept, their mutual compatibility and filtered through the generic organising principles.

In many cases one would produce alternative designs (like alternative energy designs) which involve combinations of different solutions.

Each design has different implications in terms of resource use, costs, impacts on stakeholders and issues regarding implementation. These need to be explored before choosing the design that will actually be implemented.

-1

design frameworks

Because there are only two types of systems in the biomatrix (or web of life), namely activity and entity systems, a design uses either the activity or entity system framework.

As we mentioned before, they represent a different type of organisation, namely value / supply chain versus three-dimensional matrix.





case study: activity system (re)design

For example, a main problem with society's electricity industry *(as with all other industries also)* is fragmentation. The individual players *(i.e. the corporates)* in the various sub-industries plan for their system in isolation of the other sub-industries. By maximising their own benefits, they sub-optimise others.

In the case of the electricity industry, the established non-renewable energy providers dominate. By continuously generating electricity, they prevent the renewable providers *(who generate only erratically when the sun is shining and the wind is blowing)* to enter the transmission lines.

An energy transformation (*like the much discussed German Energiewende*) requires a redesign of the whole energy supply chain and changing each sub-industry according to the overarching design.

The orange circles indicate where the **complex problems** in the industry chain arise. They arise from the interaction of sub-industries, as well as their interaction with systems that have to deal with the by-products of each sub-industry, such as pollution, resource depletion, accidents, cost of industry efficiency for society, amongst others.

A w/holistic industry governance would prevent (or minimise) such problems from arising, because it would govern an industry across the whole value / supply chain, derived from a w/holistic overarching industry design and – derived from it – coherent sub-industry designs.





case study: activity system (re)design

... actually, the whole electricity industry consists of the following sub-industries that need to be considered and represented in the redesign





There are essentially two w/holistic methodological approaches for changing systems and (dis)solving problems.

The systems dynamics approach is useful for systems with relatively fixed functioning, such as nature's systems (e.g. the homeostatic functioning of the organism, or the apparent chaotic emergence from interacting natural systems, like climate). It identifies where and what kind of change interventions are needed in order to restore the system to its inherent functioning or direct it towards more desirable outcomes. Thanks to mathematical modelling, complexity theory has made major contributions in this field, making analysis of large-scale problems possible.

The ideal system (re)design approach is needed for systems in the psycho-sociosphere, (i.e. psychological, cultural, economic and political systems) because these systems have free will (to a large extent) and have evolved their functioning by choice. If they are problem riddled, they need to be redesigned according to a new logic.



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steps in system redesign

Both activity and entity system redesign involves the same steps in redesigning them:

Step 1: Analysing the current situation

Problems and the inherent dynamics of the system and its current futures are identified and analysed.

Step 2: Brainstorming

Existing solutions are collected and new ones brainstormed (by using the frogs / prince method).

Step 3: Compiling Design Notebooks

Large system redesigns require sifting, categorising and redistributing the brainstormed information.

Step 4: Ideal system (re)design

The brainstormed information is integrated into an ideal system design, based on the organizational framework of the seven forces and their generic principles of organisation. The design is cascaded into sub-designs (such as organisational sub-functions and sub-industries).

Step 5: Implementation planning

Strategies for implementing the design are determined (this is called backcasting) and resource requirements and timing are estimated for both the overarching design and each of its sub-designs.

Step 6: Design and planning iterations

The larger the system is, the more iterations between design and sub-designs and (sub)design(s) and (sub)implementation plan(s) are required in order to amend and refine them and create stakeholder alignment around them.

Step 7: Implementation

Each stakeholder needs to implement its share of the implementation plan.

Thereafter: Ongoing change and development

A w/holistic design establishes and the transformed system practices ongoing learning and development (including measurement of progress). The system has structures and procedures that allow it to change in accordance with its changing environment. It is "wired" for ongoing change.

Part 5: W/HOLISTIC CHANGE MANAGEMENT

5.1. w/holistic leadership
5.2. w/holistic organisational support structures
5.3. w/holistic democracy

need change management. Why? And what is the difference between them?

And now you say we also

This getting a lot of information! We thought that all we need is a methodology!

Phew.

The difference between a methodology and change management is like:

You have a gadget that broke down. You still have the manual and it contains a trouble shooting section. So you have a method.

Now you need to manage the change, by either doing it yourself or by using an organisational option, like a repair shop, or returning it.

Thereafter, you better make sure that you do the regular maintenance and development (e.g. timely replacements and updates).



why w/holistic change management?



Organisations and governments (and your personal life too) are littered with good ideas / strategies / designs / plans which

OK, THERE IS A SMALL CHANGE. RED BAG HAS THE SANDWICHES GREEN BAG IS YOUR PARACHUTE

- either were not implemented at all, because of lack of change management (i.e. no-one took responsibility for taking it up and / or pulling it through),
- or fail because of wrong change management.









w/holistic leadership

Remember Einstein's observation that problems cannot be solved with the thinking that gave rise to them? And that we cannot transform a current system with the same kind of thinking? (We can however destroy it with that thinking!)

To initiate change in a system requires that one of its parts assumes leadership (beyond what it is mandated by the system to do).

However, leaders that represent current thinking, are brought forth by the current economic, cultural and political systems and are widely accepted by them, recreate (or at best improve) the current systems. This is why all those numerous leaders throughout the world made so little impact on solving humanity's complex problems.

To transform a system requires leaders who think and act w/holistically. We need leaders in all systems who are w/holiparts.

A w/holistic leader is a part of the system, but also identifies with the containing whole and the other parts and acts in the interest of them all, including the own system.

A w/holistic leader knows w/holistic theory and methodology and is able to apply it by inspiring and facilitating the other parts of the system to co-design their containing or overarching system. They also inspire and arouse the motivation in stakeholders to implement the new design. I know that we asked you before, but now we have learned a lot since and your answer will make more and a different sense now: What can a bunch of kids like us do to solve the problems of the world? Remember your journey and how disappointed you were that there are no solutions for so many problems, or only part solutions that don't make sufficient impact?

Well, what we can't imagine, we can't create. If we don't have designs for how things could work differently, we can't create meaningful change (merely perpetuate what we have).

I repeat: A bunch of W/HOLIPARTS, like you, could become DIGITAL (R)EVOLUTIONARIES that lead society in reimagining its systems.

You can start off by initiating a *BiomatrixJam* for your system of concern. This will create its own momentum and could later carry on into a proper system redesign through *Biomatrix Conferencing*.

For example, you could have inspired the Wall Street Occupants to engage in a *Biomatrix Jam* on redesigning the finance system (an art jam would be quite funky!). Thereby their revolutionary stance of protesting against the current finance system (which is also important) would have been complemented with the evolutionary approach of imagining how another system could work.

Or if you care about society's energy, education, health care or any other system.....you can set the ball rolling with online jamming!



memorandum on change management

Systems resist change in the short term, but change radically in the long term.

As you will have already experienced personally: the first reaction to proposing a change is always: *No, can't be done!* or: *Change? Not in a thousand years!* (Famous words by a statesman who was out of office by this change a year or so later!)

The radical change in the longer term is often un-intentional and the result of frogs boiling to death (*Greece didn't intentionally go bankrupt*) or lack of knowing what to do (*like the repeated finance crisis which made the G-20 in 2009 comment: "We know what brought on the finance crisis, but we don't know what to do about it."*)

If we have imagined how a transformed system can work, the long-term change can be gradual or rapid, but nevertheless intentional and moving us into a desired direction.

There can even be an apparent spontaneous shift to a new order (chaos theory calls it bifurcation). This occurs when some elements in the system work according to a new order. Having reached critical mass (remember the hundredths monkey?), the new order gets established.

The yeast in the dough is another analogy. Ideal designs can act like yeast!

Once initiated, change can create its own accelerating momentum.

We are all familiar with news or other bits of information going viral. In the information age this has no bounds. It also holds the potential for direct participation in politics, instead of politics by representation.

My favourite case study of change management is the <u>Redesign</u> <u>of Paris</u> which happened in the last century, yet we have not yet caught up with its potential. (*Biomatrix Design Jamming* is a digital version thereof).

So, once you have initiated a jam about your favourite system, who knows what happens.....?



9A7



types of w/holiparts



A w/holistic leader is a w/holipart. We distinguish two types of wholiparts, namely

- context w/holiparts
- content w/holiparts

To redesign a system, one needs both types.

What's the difference between them?









conteXt w/holiparts



Context w/holiparts are the change facilitators.

They are concerned with applying *Biomatrix Theory* and *Biomatrix Methodology* correctly, such as ensuring that the right framework is used, that all its categories are represented by stakeholders, that information is classified correctly.

The context w/holiparts are not concerned with the content of the change *per se*, other than pointing out content that does not seem to adhere to the w/holistic design ethos.

They do not side with any specific stakeholder view, but ensure that all views are heard and that there is no dominance by some stakeholders or the ignoring of others.

They should be neutral in terms of the content of the change. If they have strong views on how the system should ideally look like, they cannot be good context facilitators. (They should rather join the design team as a content w/holipart.)



conteNt w/holiparts



Content w/holiparts are the leading stakeholders who participate in the redesign of their containing or overarching system.

They represent a specific part of the system and its perspectives (like the experts you met during your journey....each represented their specific field of knowledge, industry, or company...



On the one hand, the content w/holiparts know the solutions for their sub-system. They also make sure that the interests of their sub-system are considered. (Of course, this is what all stakeholders and even lobbies do and does not require w/holistic leadership).

On the other hand they are also willing and able to consider the whole, as well as the other parts. They contribute solutions to the whole from their perspective and are willing to consider changes to their sub-system in the interest of the larger whole (in a win / win instead of a maximising self-interest manner).

This requires w/holistic leadership.

For example, a sustainable world demands that renewable energy producers in the energy supply chain are phased in and the non-renewable ones are phased out, by considering a different mix of solutions from them. One such solution is that non-renewable producers, like the coal industry, change their business model from being continuous energy producers to being complementary ones. This means stepping up production when the sun does not shine or the wind not blow.... To pull through such change in the coal industry requires powerful w/holistic leadership. Alternatively, it can be achieved by w/holistic industry regulation arising from the ideal industry design.

Knowledge needed by context w/holiparts

As the word implies, context w/holiparts need to hold the context of a system transformation. This requires working knowledge of w/holistic theory, methodology, change management and tools like *Biomatrix Jamming* and *Conferencing*.

To acquire this knowledge the *context w/holiparts* will need to do the relevant *Biomatrix Course for Sustainable System Design*.

They do however not necessarily require content knowledge of the system of which they facilitate a redesign. For example, context w/holiparts can facilitate the transformation of an education, finance or electricity system without being an educationist, banker or electrical engineer. The content w/holiparts will advise them on content related issues such as customising the framework to the system that is being redesigned, amongst others.

Knowledge needed by content w/holiparts

The content w/holiparts must have knowledge of of their own sub-system, as well as sufficient knowledge of the whole (containing or overarching) system and its other parts in order to make a meaningful contribution.

They need an open mind for possible alternative redesigns of the whole system and the consequences of the design(s)on their own sub-system.

They should be able to find creative solutions for the benefit of the own, as well as the whole system and its other parts (in a win / win manner). They also need to consider and find solutions for dealing with the undesirable impacts of the sub-system on other systems (*"making lemonade from a sour lemon"*).

Unlike the context w/holiparts, they do not need detailed knowledge of w/holistic theory and methodology, merely enough knowledge to align with the generic w/holistic ethos, understand the relevance of the systemic organising principles and trust the guidance of the context w/holiparts.

They need this in order to be able to evaluate, select and work with the information generated during brainstorming and integrate it into a w/holistic design of the whole system and its sub-systems, including the own.





Part 5.2

w/holistic ORGANISATIONAL SUPPORT STRUCTURES



A group of individuals can have

influence and can change some things. But to really be effective, we need to know how to organise ourselves. We also need organisational support.

(Even apparently spontaneous mass uprisings take a lot of organisation and preparation beforehand, as Lenin and Mao taught us).

Why do we have to bother with organisational stuff?

Concerned individuals can set the ball rolling, by stimulating ideas, but ultimately, the existing systems have to transform themselves.

They have to reflect on their own relevance, how they function and what outcomes they produce.

The proposed organisation support structures facilitate this.



memorandum on organisation

The success of the *industrial age* was due to two equally powerful forces:

- Technology advancing from steam, electricity to atomic power driven technologies.
- Organisation of the production line, which breaks a system down into its different functions and each function into its smallest units of action. Each unit is performed most efficiently by a specialist who is measured and rewarded according to (mostly) quantitative output. This reductionist approach led to the progress of the industrial age.

Since the advent of the *information age*:

- Technology evolved to information technologies. However, the organisational transformation is yet to come. Besides some new forms of organising (e.g. www, social media), the industrial age legacy systems persist, still governed by reductionist thinking and functional specialisation.
- The digital revolution resulted in building information into existing systems, while a digital evolution would transform those legacy systems by harnessing the enormous computing power of information technologies (e.g. a different way of computing financial value, or direct political participation) as well as the synergistic nature of information (e.g. an education system that is developmental and synergises the worldwide availability of information into knowledge).

We need information age relevant redesigns of our cultural, economic and political systems!





The biggest difference between transforming an organisation (i.e. entity system) and industry (i.e. activity system) is that of autonomy.

An organisation (i.e. an entity system) is relatively autonomous. It has a "self" (e.g. a governing body) which is responsible for the development of the system. And it can (largely) enforce compliance. Therefore, an organisation transformation is relatively easily managed. (See the following slide for the phases and structures involved in an organisation transformation.)

An **industry** (i.e. activity system) is a collection of relatively autonomous systems such as producers and consumers who act out of their own self-interest, not in the interest of the whole industry. The industry emerges from their actions and interactions, as well as public regulation.

An industry has no governing "self" that guides its destiny, unless a monopoly, or maybe an oligarchy owns the whole industry and can control it as it sees fit. (Is the global finance industry an example of this?)

It requires a voluntary and collective effort of all its stakeholders to transform an industry so that it is sustainable, benefits all its stakeholders, serves the desirable development of society and minimises for its negative impacts (e.g. pollutants, resource depletion) and pays for them.

To achieve this would require a dedicated industry body that facilitates the transformation of the industry and its continued development.

Although government policies and regulations can drive some of this, governance is only one of seven forces of organisation and alone will be insufficient. Nevertheless, stakeholder governance would be part of a *w/holistic democr*acy and needs to be established (see later sides).

Is it naive to assume that this could happen? Maybe. Yet this is the challenge humanity faces if its complex problems should be dissolved and its future development be sustainable and beneficial and maybe if it should survive at all!

(See the following slide for the phases and structures involved in an industry transformation.)

organisational support structures



The two figures show the change management involved in an organisation (i.e. entity system) and industry (i.e. activity system) redesign and transformation.

The steps of the change methodology (*illustrated by the orange boxes*) are the same for both.

The steps are managed and facilitated by organisational support structures (*the grey boxes*) which are also similar in both cases (and can of course be adapted to specific situations.)



LINK TO TRANSFORMATION PROGRAMMES

The <u>Biomatrix Transformation</u> <u>Programmes</u> guide a system transformation through an inhouse delivery of management education to the client system.

It requires participation by a critical number of members of the client system.



organisational support structures









Part 5.3.

w/holistic DEMOCRACY



Why do you discuss democracy under change management? All systems change continuously. Social systems need to be deliberately steered into a desirable direction. This requires ongoing

a desirable direction. This requires ongoing change management. This is the function of a w/holistic democracy.

(Of course, there are other models, like oligarchies, dictatorships, or IS. The choice is ours.)

By comparison, nature's systems have evolved governance which maintains current system functioning. Although evolution continues, in most natural systems this is gradual and over long periods of time (unlike evolution in social systems which is rapid and accelerating)





In summary, the arguments we make in this democracy section are the following:

Representative Democracy

The current numbers based representative democracy model is problem riddled. It is a legacy system of the industrial age and needs to evolve to fit the information age environment. And it lacks appropriate industry governance.

Unless this is changed, nothing we discussed till now will have a significant enough impact to eliminate the world's complex problems and create sustainable societal development that benefits all stakeholders.

W/Holistic Democracy

W/Hholistic theory (*i.e. Biomatrix theory*) proposes generic organising principles which also apply to the governance of society. Accordingly, w/holistic democracy requires

entity system governance - citizens democracy

activity system governance - stakeholder democracy







We also need to explore what we want democracy to mean, since our current democracy model has not much in common with the original version of democracy in ancient Greece (which is typically quoted as its source).
No, not necessarily replace it, but transform it, based on a w/holistic worldview.

Does this mean we need to replace the current model of representative democracy?

6

NOTE ON TRANSFORMATION

A transformation does not always imply eliminating the old system completely.

By analogy, to transform a house does not necessarily imply that one needs to demolish it (although sometimes it means just this.)

One can also renovate and innovate it by knocking down some walls, putting in new floors and upgrading the infrastructure.

(And one can also live in the house while renovating it.)

Likewise, a system transformation could incorporate the old system in an amended way, with new strategies and values added and some replaced. It is not necessarily traumatic. The system evolves.

By analogy: as human beings we still have the reptilian brain which governs important functions in our body, although we have evolved limbic and cortical structures since.





current democracy model

The most fundamental characteristics of the current so-called Western democracy model (besides some variations in execution) are the following:

- decision-making by elected representatives (organised into political parties)
- ideology based political parties
- numbers-based representation
- majority rules
- time constraints (4 years voting cycle)
- lobby based public policy development (hence fragmented industry governance)
- lack of functional differentiation
- some systems have a (democratic?) veto power built in

From a w/holistic perspective the current democracy model is reductionist and deficient.







decision-making by elected representatives

Voters elect a political party or representatives which are organised into political parties.

They make decisions on-behalf of all citizens and about all functions of society, *from foreign affairs to education, health care, electricity, policing, etc.* They are advised in this by industry and other interest parties (i.e. lobbies).

The problem of this is that the elected representatives (who are typically forced to "tow the party line") can justify ANY decision they make by claiming its legitimacy based on majority support, thereby making the current democracy system non-transparent. (And we have not even discussed secret trade agreements vet!)







Within the current democracy model the complex problems of the world cannot be (dis)solved, because it has not evolved an appropriate industry governance.

Currently, industry related public policy is lobby-driven. The most influential lobbies are those that are associated with the current (unsustainable) systems and have therefore the economic power to influence public governance.

Being legally bound to respond to lobbies, but not being forced to involve all stakeholders in policy design implies that the current democracy favours some groups at the expense of others. It also leads to fragmented and patchwork policy designs and the sub-optimisation of a whole industry.

Sub-optimisation is the name of the devil! (Ackoff)

The partial policies optimise some sub-industries (e.g. the non-renewable energy providers) and sub-optimise others (e.g. the renewable energy providers, like solar), as well as the industry as a whole (which remains unsustainable, polluting and finite resource depleting).

In other words, the part represented by the lobby benefits, while the other parts and the overarching whole suffer.







ideology based political parties

Ideology based political parties are a legacy of the industrial age.

The current democratic political debate still reflects the two ideologies of the socialist left and the capitalist right, even if the content of these concepts has evolved since Marx, Lenin and Mao and the dominance of finance capitalism.

The two class society of the industrial age has disappeared and with it their ideological origin, yet their representative parties remain. They have no more distinct ideology, but overlapping, if not almost identical election promises that cannot be delivered.

In the last couple of decades voting in many societies yielded a close to 50 / 50 percent outcome for the dominant parties. Several countries experienced hanging governments. Others had weird alliances with minority parties, which thereby gained unwarranted influence. Voting rates declined in many societies.....

From a w/holistic perspective socialism and capitalism need to be integrated into one ideology.....





winner rules



The reductionist paradigm demands measurement and therefore quantitative evaluation (e.g. the economy is driven by growth, politics by number of voters).

We currently have a reductionist democracy. It reduces decision-making to a win / lose and zero sum numbers game of one wo/man one vote, the majority wins and "... the winner takes it all....."

By comparison, one of the characteristics of information is win / win. Unlike sharing a physical thing, like the proverbial cake, one does not lose information by sharing it! Another characteristic is that information is synergistic. This means that by sharing our ideas with each other, new ideas arise!

Synergy, like development, requires qualitative not quantitative decision-making. The numbers based reductionist democracy needs to evolve to w/holistic democracy which can produce synergistic outcomes for society.



winner rules







lack of functional differentiation

An entity system consists of different activity systems. Accordingly, each citizen (being an entity system) consists of different functions (or activity systems) such as work, education, health care, nutrition, travel, energy use, etc.

Rarely would two citizens have exactly the same interests and opinions about all their functions. Yet, they have to vote a representative who makes decisions for them on behalf of all those functions. How can they possibly represent the different interests of those who voted for them?

The current democracy model reduces multi-functionality to one-dimensionality.



To use a somewhat flippant analogy: If all the functions in our body would be governed by a numbers based democracy, the muscle and bone cells would dominate all decisions and the relatively few cells involved with digestion and reproduction would be overruled, leading to a poor performance of these functions, (if they function at all).

More body analogy: The body is run by functional differentiation (i.e. "stakeholder governance"). It has different types of cells for different functions (e.g. neurons, blood cells and muscle cells). Each type of cell has the inherent information to fulfill its function and is governed to do so.



time constraints



Fundamentally transforming a system like the health care, education or energy system takes at least a decade, if not two.

In the current democracy model, governments, change every 4-5 years.

Hence, they cannot effect a fundamental transformation of any public system.

They can however, make partial decisions that commit society to decades of undesirable development such as commissioning the building of atomic power stations, or entering a war.





w/holistic governance - theoretical foundation

According to Biomatrix theory there are two types of systems, entity systems (*like a person, organisation and society*) and activity systems (*like a function and industry*).

On the one hand, an entity system consists of bundles of functions (such as a society consisting of functions relating to education, infrastructure, food production, information processing, etc, or a person consisting of working, parenting, nutrition, learning and other functions). These activity systems are influenced by the values and desires of their containing entity system (such as the society or person they serve).

On the other hand, a function links with the functions of other entity systems, forming supply chains of which different entity systems are a part. (For example, the energy function of a society links with the energy functions of other societies; the different organisations concerned with producing energy are part of a larger energy supply chain; a person's work function links with those of others as part of a production supply chain). These entity systems are influenced by the values and aims of the overarching function, while at the same time shaping it according to their own values and desires.

Thus, any system is associated with two types of governance: an activity system and entity system governance.





w/holistic democracy

Since there are two types of interrelated systems that give rise to each other, any system needs to be viewed from both, an entity and activity system perspective. Accordingly society, like any other system, needs two types of governance, namely the governance of

- society as an entity system which we call Citizen Democracy and
- each function of society which we call **Stakeholder Democracy**.

These two types of governance are interrelated, whereby the entity system governance is the broad framework within which the activity system governance unfolds.

ANALOGY

By analogy, an organisation is governed by corporate governance and functional governance. The corporate governance (*i.e. by a CEO and governance board*) makes broad decisions about the development of the organisation as a whole (*such as its business strategy and organisation development , including the coordination of, balance between and allocation of resources to its functions*). At the same time, each function has its own governance, albeit limited by corporate governance.

Likewise, a person has overarching governance *(i.e. a character consisting of values, beliefs, aims and guiding rules)* which guides the development of the person as a whole and also determines life balance *(i.e. the prioritising between different functions)*. At the same time, each function (or role) has its own values, aims and rules, be it parenting, working,

nutrition or sleeping. These functions are however shaped and limited by the person's character.



citizen democracy

The current democracy is fundamentally an entity system governance model. Citizen democracy is a w/holistically amended version thereof.

A w/holistic entity system governance is concerned with holding the entity (e.g. person, organization, society) together as a coherent whole and steering its future development in a desirable direction.

At the core of an entity system is its ethos *(i.e. the culture of a society).* It refers to the values and beliefs with which its members identify. It determines the development aims and governing rules of the entity as a whole. Formulating and upholding the culture of a society and ensuring that it is expressed in all societal functions is one of the aims of a citizen democracy.

Thus, entity system governance is predominantly an ethos-driven coordinating governance. It ensures that the different functions of society are contributing appropriately to the desirable societal development. And it prioritizes between the different functions and guides the development of its industries. It also represents the governance framework *(i.e. ethos, aims and guiding rules for society's development)* within which the functional governance unfolds..

It is also likely, that in a citizen democracy of the information age, the citizens can be more directly *(i.e. digitally)* involved in decision-making. Alternative scenarios developed by the different functions *(e.g. more or less renewable energy scenarios, going to war or not)* can be directly voted for, instead of relying on a few elected representatives *(who can easily be corrupted)*, as in the case with the current democracy.









According to Biomatrix theory, there must be a balanced interaction between entity systems, including in society. The parts of a system need to contribute to it, while the whole needs to distribute resources to its parts to allow them to function.

During the industrial age each of these organising tendencies was is-represented by a different ideology, namely that of capitalism (emphasising contribution) and socialism / communism (emphasising distribution). It also led to different governance models, namely *Western representative democracy versus communist people's democracy*. Each ideology presented its perspective as the whole truth, while neglecting the perspective of the other, thereby creating different types of problems for each. This ideological divide continues to shape politics.

From a w/holistic perspective, these two ideologies need to be integrated in order to achieve balanced societal development.

There needs to be

freedom for the members of society to contribute to society (through cultural, economic and political activities), as emphasised in capitalism and

equality in the distribution of society's resources, as emphasised in socialism / communism.



THE CURRENT IDEOLOGY OF THE INFORMATION AGE?











HUH?

For me, ideology is defined only by how the coordinates of your meaningful experience of the world, and your place within society, relate to the basic tensions and antagonisms of social orders.

Communism

— Slavoj Žižek —

AZQUOTES





Stakeholder Democracy

Stakeholder Democracy is concerned with governing (i.e. designing, planning, regulating) the functions (or activity systems) of society. This includes the goods and service delivery functions of society (i.e. its industries), as well as the public governance functions (i.e. legislative, executive and jurisdiction functions).

Some of the characteristics of stakeholder governance are:

- industries, as well as governance functions need to be designed according to generic w/holistic organising principles, including the ethos of w/holism
- the w/holistic ethos of stakeholder governance includes sustainability, fair benefits for all stakeholders and minimum damage to stakeholders.
- the design needs to involve representatives of all stakeholders of the system (e.g. the education or energy stakeholders of the education or energy system respectively)
- an industry needs to be designed, managed and governed as a coherent whole (i.e. an overarching value / supply chain)
- a public governance function also needs to be governed as a coherent whole (involving governance of governance)
- an industry needs to be governed by a public / private governance body, consisting of the government department (*e.g. department of education*, or energy), the (sub) industry systems and impacted on stakeholder systems
- accountability of stakeholder governance is to both, industry stakeholders (about function specific concerns) and citizens (about compliance with the overarching ethos and aims of societal development, as well as impacts)



stakeholder concept

The stakeholder concept is a functional one. Stakeholders are the so called interest parties of a system. (And they are also systems in themselves, like a person, organization, society, or planet, etc.)

For example, the stakeholders of a school are the pupils, teachers, school principal, department of education and the parents, amongst a few others such as the systems that "uses" the school leavers, like employers, further education institutions and the unemployment section of the department of labour.

Considering the stakeholders of a system in decision-making has nothing to do with numbers. For example, the school principle and the minister of education are just one person each, the teachers are a few, while the pupils and parents are many. Decisions are not made on a number basis (like in representative democracy), but by considering and as far as possible accommodating the different perspectives and expectations of each stakeholder.

Each stakeholder interest is equally valid and should – ideally – be met. In fact, a system is only well developed, coherent and stable, if all stakeholders are (reasonably) satisfied.



NOTE

If I have no primary interest in a system, I am not a stakeholder.

Of course, ultimately, every system in the universe has some interest in every other system. (...which led Lorenz of complexity theory fame ask: "does the flap of the wing of a butterfly in China (co-)cause a hurricane in Mexico"?)

But would you manage hurricanes by eliminating butterflies? Clearly, some systems have more of a stake in something than others. Can you tell us in a nutshell, what the difference between the current and a w/holistic democracy model is? And how the current system needs to change? The difference is that the current democracy model makes the overarching governance decisions of a citizen democracy, AS WELL AS

the function- specific decisions that should be handled by a stakeholder democracy.

Thus we would need to transform some of the governance functions of the current democracy model into stakeholder governance functions.

> Transforming current public policy design to become w/holistic (look at the industry transformation figure for the "how to") would probably be a good first step.

It would take a transformation in our current societal governance system from reductionist to w/holistic democracy. You w/holiparts could start the ball rolling with a *Biomatrix Jam* on societal governance. We need a w/holistic democracy design.

What would it take to create a w/holistic democracy and what could we w/holiparts do to bring it about?

NOTE

From the perspective of change management, changing a governance system is just like any other system transformation, (be it that of the education, transport or health care system). It is not more or less difficult to redesign than other systems.

Probably most important would be creating an ideal design of it. Before we do not know in reasonable detail how the new system can work, any change merely patches up the existing system, making it more problematic.







SUMMARY of the SUMMARY of the SUMMARY

With pleasure. But I will need several sentences – after all we deal with complexity!

We have learned a lot of different things from you. Can you, please, summarise it for us in a sentence or two?

6 O

6

SUMMARY

To dissolve the complex problems of the world we need a w/holistic transformation of our current cultural, economic and political systems according to the w/holistic ethos.

To manage the transformation we need entity systems, *such* as *w/holiparts*, *private and public organisations*, *governments* and *public / private partnerships*) that lead the stakeholders of a system in the previously discussed steps in system redesign for redesigning their system of concern.

And of all the many theoretical concepts and methods you mentioned, can you tell us the three most important ones that we, as w/holiparts, need to know to be transformation leaders?

Of course, provided you first tell me which three parts of a car you would choose if you want to This slide if we ^{e!} have purchased the shutterstck pic, otherwise the following slide

And of all the many theoretical concepts and methods you mentioned,

can you tell us the three most important ones that we, as w/holiparts, need to know to be transformation leaders? Of course, provided you first tell me which three parts of a car you would choose if you want to go for a drive!

Or this slide?





