

A MULTIDISCIPLINARY APPROACH OF THE HEALTHCARE SYSTEM¹

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ABSTRACT

The subjects of the field of methodology of societal complexity are real life problems: the everyday problems of the front page of the quality newspapers. The healthcare system is part of society. Often the 'solution' of a healthcare problem of a patient cannot be found within the healthcare system, but only outside the healthcare system on the level of society. Concerning the healthcare system one can distinguish several chains. In a horizontal chain the healthcare system is connected to other disciplines and where in the vertical chain the healthcare system is connected to hierarchy in the medical field. Realizing this can be the start of improvement of the healthcare system.

In the healthcare system there are many actors with different power involved. Changes in the healthcare system need a thorough analysis of the situation based on a methodology of the field of societal complexity: the **Compram methodology**. After certain decisions for intervention are taken, the reactions of the field can be anticipated by gaming and simulation.

1 THE HEALTHCARE SYSTEM IS PART OF SOCIETY

One can consider the healthcare system as a complex societal system. Healthcare is part of society. Healthcare is not an isolated independent field. The ideal of supporting the patient with all the care that is possible, given the level of knowledge in the world, soon reaches the boundaries of reality. In the Western World doctors are

1 This article contains parts of former publications by the author.

persuaded to prescribe expensive medicines by the pharmacy industry; medicines not always well tested (thalidomide), or due to possible law claims perform more high technical interventions than would be advisable, such as is done in the USA. In developing countries there is often no money enough for healthcare centers, medicines or even for transportation of the patients to these centers for large groups of the population.

Many illnesses have a societal cause. A patient with lung cancer due to long time smoking is a victim of the capitalist tobacco industry, a child overrun on a bad protected highway is a victim of traffic policy or parental care, a worker getting cancer working in a polluted area, like the mines, is a victim of industrial provoked pollution. Here the medical world can provide some relief but it is actually too late. The harm is already done. Here prevention is better than curing.

2 THE HEALTHCARE CHAINS

In the healthcare system many chains can be distinguished. We will address some. The healthcare system is a part of the horizontal healthcare chain, a multi-disciplinary field, and a vertical healthcare chain, the mono-disciplinary medical system. The vertical chain is the family doctor, specialist, hospital.

In the horizontal healthcare chain, the healthcare system is connected with society, local organizations and the individual; on macro, meso and micro level. On each level a multidisciplinary approach seems to be more fruitful than a mono-disciplinary approach.

Many diseases cannot be prevented at the level of healthcare alone; they should be handled at the level of society. Improving the healthcare system can be done along the lines of the connected chains.

Healthcare threats such as smoking is successfully mitigated by restrictions on the level of society; traffic accidents are mitigated by speed limitations, drinking, supported by lobby of the alcohol industry is miti-

gated by age limitation. These kinds of healthcare threats can only be successfully handled on societal level. Healthcare threats by industrial pollution and by nuclear power plants can only be handled by national or global (trade) restrictions.

The horizontal healthcare chain on the level of family doctor is the social worker, employer, dentist, family members and insurance companies, medical professionals and non medical professionals on micro, meso and macro level. The horizontal multi-disciplinary healthcare chain indicates that the medical world is imbedded in the society and has connections with aspects of law, psychology, and sociology, policy on local, state and international level.

The doctor-patient relation is not a one to one relation; it is a moment in a chain of relations. The healthcare system includes many aspects like prevention, curing and controlling.

The patient is imbedded in a societal relation as daughter, mother, grandmother, employee and citizen. The doctor is imbedded in a vertical chain of professional assistance, such as social work, pharmacy, medical specialism, hospital, medical research medical industry, Assurance Company. The chain of patient safety starts with prenatal baby care and is closely related to social policy to prevent healthcare threats such as pollution and food production.

The relation between a person (patient), the family doctor, the pharmacist, the psychologist, the physiotherapist, the dentist, the pharmacy industry, the government and insurance company can be unwillingly demanding. In rich countries, the family doctor who is stimulated by the pharmacy industry by fancy conferences and presents to subscribe certain medicines which do not necessarily have to be optimal. Insurance companies who demand certain ways of working which lead to enormous amounts of administrative bureaucracy. There is the government who is influenced by powerful lobbies of the industrial companies.

What family doctors already realized in the 19th century looking at the tuberculosis patients in the slums of London still counts, much of the healthcare problems of a person can and should be handled on a higher

level than the medical level: on the level of society. It should be handled as a complex societal problem with a healthcare component.

An example of a multidisciplinary approach on the level of society on a former only 'medical' problem can be found in the epidemic of HIV/Aids (DeTombe, 1994). Till about the mid nineties HIV/Aids was seen as a medical disease that needed a medical answer: pills, care for cure, or prevention by vaccination. However, looking at the way the disease spreads by unprotected sexual contacts and how the virus copies itself, by a sloppy, changing copying, it was clear from the beginning that the medical field could not find a fruitful answer soon enough to prevent the contagious disease from spreading fast. This means that other ways should be found to prevent an epidemic. Redefining the problem as a complex societal problem is a solution by slowing down the spreading of the disease by making women financially independent, so they do not have to sell their body, by education, using condoms, by taking care of the orphans, taking care of the agriculture etc.

At the level of the individual, the situation can be improved by a multidisciplinary cooperation: combining the hospital appointment treatments of a person, rescheduling everything around the person. So his/her personal live is not totally blocked.

Another way of multidisciplinary cooperation can be that the person in need of care of the several specialists, would be more fruitful handled in a cooperative way where all doctors together discuss a whole person.

The knowledge of the healthcare field can be used more fruitful when a multidisciplinary approach is combined with the knowledge from other disciplines, depending on the level one looks at it.

Until now most of the healthcare support is by one individual, the doctor, family doctor or specialist to one individual: the patient. Educated mostly mono disciplinary in healthcare from the family doctor primary healthcare in general to the specialist, working multidisciplinary can be threatening and unwelcome in the beginning. However, the benefits seen on the level of society and the individual are prosperous enough to work out this new approach.

The human body is a very complicated intertwined combined biological subject: body and mind together a person. Medical specialists are welcome, needed and necessary. However humans are not a heart and lung, but a person with desires, education, family and certain financial circumstances.

Here the medical world can give feedback to the society of the diseases they encounter. Improving patient safety is improving people safety. Specialization and division in tasks is fruitful. However, a patient is more than a hip or a leg, the patient is a human being and a member of the society.

Therefore some of the healthcare problems should not be handled mono-disciplinary, but should be approached as a complex societal problem using methods and tools of the field of societal complexity.

Handling in a multi disciplinary way is not easy. This needs a learning and training process. Learning at the level of university: healthcare multidisciplinary approach and training the healthcare persons in daily practice. The healthcare system is a part of a world/national power process with many actors; imbedded in vertical and horizontal chains. Changing something within the healthcare system needs cooperation of many actors. This can be performed along the guidelines of the Compram methodology (DeTombe, 1994).

3 THE COMPRAM METHODOLOGY

Often complex societal problems are handled as mono-disciplinary problems by handling the problem for instance by a mono-disciplinary department of the government. However more and more politicians are aware of the limitations of their department and the boundaries of their disciplines. When one decides to handle the complex societal problem one should look at the field of methodology of societal complexity for a methodology to guide the problem handling process. After becoming aware of a complex societal prob-

lem, wanting to change something the problem should be placed on the political agenda of the problem owner. The problem owner must have credibility to handle this problem.

In order to create a safer society one needs to know where the danger comes from and what causes the threat. Each threat has different causes and different effects on different elements in society. Therefore one has to carefully analyze the situation, make a distinction between causes and effects, to see what the elements are and how they are related, see which power groups are involved and to find out which package of sustainable changes can have the desired effects.

To find out what we know about the problem, who is affected by it, which parties are involved, who benefits and who suffers, what emotions and political vulnerability are going on, one has to analyze the problem. This needs an interdisciplinary approach. An interdisciplinary group of knowledge experts should analyze the situation and discuss possible changes. Then the actors should discuss the issue and give their opinion on the situation. Together the experts and actors should find some fruitful changes. The interventions should be carefully implemented and evaluated on their desired effect on the problem. Each complex societal problem has a knowledge, a power and an emotional element. One can consider the healthcare system as a complex societal system. The healthcare system includes many aspects like prevention, curing and controlling.

How to approach an issue in a multidisciplinary way is carefully describes by the Compram methodology (DeTombe, 1994). This methodology combines communication on the level of experts with an emotional and power approach on the level of society. The Compram methodology, developed by DeTombe (1994-2013; DeTombe, 1994, 1999, 2001, 2008a, 2008b, 2010).

Methodology of societal complexity looks like a relatively new branch in Operational Research but is in essence a field of Operational Research in the way the founders of Operational Research wanted to look at the

world and wanted to help the problems in the world (Ackoff, 1974, 1977). The Compram methodology is the next step after Soft Systems Methodology (Checkland, 1982) and System Dynamics (MIT). It combines aspects of different approaches into a structured interactive approach for policy making in collaboration with experts and actors in order to find possible transitions of the situation that can be mutually accepted and implemented into real life.

The Compram methodology is based on the idea that societal problems must be handled multidisciplinary and cooperatively with experts and actors together. These difficult and complicated group processes are guided and structured by a facilitator in a six step approach. Multidisciplinary experts, actors and policymakers discuss the content and possible solutions based on a cooperative (simulation) model of the problem. The methodology emphasizes facilitating the exchange of knowledge, and understanding and communication among the experts and actors.

Knowledge, power and emotions are the basic elements in handling complex societal problems. The Compram methodology is a prescriptive framework method to which all kind of sub-methods can be applied. The Compram methodology has been used as a theoretical basis for handling over sixty real life cases in the field of societal policy making and in real life complex societal problems in several countries of all continents.

4 HOW DOES THE COMPRAM METHODOLOGY WORK?

The Compram methodology is based on the idea that complex societal problems contain three basic elements: knowledge, power and emotion.

Knowledge includes lack of knowledge, data with an uncertain status, missing data, contradictory data, white spots and blind spots. Knowledge includes knowledge of the disciplines involved, field knowledge and knowledge about the actors and the phenomena.

The way Compram methodology deals explicitly with knowledge is to start analyzing the problem with an expert team. Complex societal

problems involve many disciplines, many fields, many phenomena and many actors. The knowledge needed to analyze and handle this is too much for one person to possess. Therefore a team of people must analyze the problem and find interventions. The team of experts has knowledge of the disciplines involved, knowledge about the fields, knowledge about the actors, and knowledge about the phenomena. The experts have the ability to interpret the knowledge from other areas and determine the knowledge for consequences in their own field of expertise. The knowledge experts are, in contrast to the actors, neutral towards the outcome of the problem handling process.

Complex societal problems involve actors. The actors have direct interest in a certain kind of outcome of the problem. Power plays an important role in coming to an agreement between actors. Power is the second basic element in handling complex societal problems. Each actor has particular interests, goals and ideas toward which direction the problem should change. Each actor or group of actors has their own steering instruments to support, change or prevent changes.

The problem owner is a special actor who initiates the problem handling process. The problem owner must have legal or social rights to handle the problem; otherwise the other actors will not cooperate or will ignore the outcome of the problem handling process

The problem owner alone cannot handle complex societal problems. Other actors involved in the problem are needed for handling the problem. These actors need to be included in the problem handling process, because without them the problem cannot be changed. Each actor has a specific relation to the other actors. Some relations between the actors are based on common interests, others on law. Law institutionalizes some rules between actors. Law specifies the rights, duties, and procedures to be followed. Here law specifies the power, however, there is a large area in which rights are not specified. Here the actors should come to an agreement with each other.

The Compram methodology deals, at several moments in the problem handling process, explicitly with power. The Compram methodology deals

with power differences by starting the problem handling process with a neutral knowledge expert team. This is step one of the problem handling process. Use of such a team prevents certain solutions being stimulated while others are neglected at an early stage of the problem handling process. Working this way important issues are not overlooked. The expert team analyzes the power and steering instruments of the actors.

The Compram methodology includes the power of the actors by inviting them to join the problem handling process (step two of the problem handling process). The actors define the problem and their handling space, each with their own team.

The Compram methodology deals with societal power by reflecting on the selected interventions before implementing the interventions carefully (step four of the problem handling process). The Compram methodology neutralizes, where needed, the personal or domain dominance of a person in the problem handling team by giving the team members the opportunity to brainstorm anonymously.

Complex societal problems are handled by teams of people, therefore emotion is the third basic component in handling complex societal problems. Where people are involved emotions are involved. Emotions can stimulate or block certain changes. Emotions play a role or become visible when one's personal interests are attacked or one feels that one's personal interests are being attacked. Emotions play a role in reaching a certain goal or being included or excluded in a problem handling process, or in like and dislike of certain persons in the team or of certain actors. Emotions are also involved in different views on society and prioritizing certain changes.

The Compram methodology deals with emotion by prescribing that the process is led by a well skilled facilitator trained in handling group processes in order to avoid group conflicts. Negative emotions can be provoked by excluding persons or actors from the problem handling process. Including the involved organized and non organized actors at an early stage in the problem handling process can prevent avoidable obstruction.

5 THE SIX STEPS OF COMPRAM METHODOLOGY

Compram methodology distinguishes six steps which are not to be confused with phases in the problem handling process (see figure 1). In the first step, the problem is analyzed and described by a team of neutral content experts. In the second step, the different actors analyze and define the problem. The third step is where the experts and actors try to find interventions that are mutually acceptable. In the fourth step, the societal reactions of the selected interventions are anticipated. In the fifth step, the interventions are implemented. And finally, the changes are evaluated from both the original perspective and the perspective of the problem as it changed during the process.

step 1	analysis and description of the problem by a team of neutral content experts
step 2	analysis and description of the problem by different teams of actors
step 3	identification of interventions by experts and actors
step 4	anticipation of the societal reactions
step 5	implementation of the interventions
step 6	evaluation of the changes

Figure 1: The six steps of the Compram methodology

Many complex societal problems are a threat to people, the economy and the stability of the state, but most of all the quality of life. In order to create a safer society one needs to know where the danger comes from and what causes the threat. Each threat has different causes and different effects on different elements in society. Therefore one has to carefully analyze the situation, make a distinction between causes and effects, to see what the elements are and how they are related, see which power groups are involved and to find out which package of sustainable changes can have the desired effects.

To find out what we know about the problem, who is effected by it, which parties are involved, who benefits and who suffers, what emotions and political vulnerability are going on, one has to analyze the problem. This needs an interdisciplinary approach. An interdisciplinary group of knowledge experts should analyze the situation and discuss possible changes. Then actors should discuss the issue and give their opinion on the situation. Together the experts and actors should find some fruitful changes. The interventions should be carefully implemented and evaluated on their desired effect on the problem. Each complex societal problem has a knowledge, a power and an emotional element.

Most political problems are handled directly in relation with powerful groups involved in the problem, who by way of lobby influence the decisions of the political interventions.

However this directs the definition of the problem and therefore the solution of the problem directly to the definition of the most powerful groups in the problem handling process neglecting the more powerless groups. In order to give the powerless group also a chance and in order to be able to really see how the problem looks like a team of so-called neutral experts should first define the problem before the problem is handled.

These neutral experts are selected based on their knowledge of a part of the field of which the problem is.

The Compram methodology starts when the problem owner invites a facilitator to guide the problem handling process according to the Compram methodology. The facilitator therefore selects a group of neutral experts, neutral toward a certain definition and a certain solution to the problem and invited them to make a definition of the problem. In several meeting the experts each coming from a different discipline defines the problem.

They do this guided by the facilitator with the support of a seven layer communication model (DeTombe, 1994) in which they first describe the problem in words, then define the concepts, then identify the knowledge. Is what the experts say based on theory, assumption

or experience? Then base on the description of the problem they make together a simulation model. The relations of the phenomena and their effect on each other can then be carefully described and simulated. In the conceptual model next to the phenomena the power groups and their emotions are identified and described. This conceptual model can then after agreeing on the content be altered in an empirical model.

After the empirical model the handling space will be discussed. How much space is there for the problem owner to change the problem? Should this be here and now concerning a country, a continent or the world? Then, based on several scenarios the group of experts can suggest several intervention and intervention strategies.

The Compram methodology consists of six steps of interventions of a complex societal problem (see figure 1). The second step is inviting the power groups. Both power groups with much influence and less influential power groups. Both groups of actors who benefit from the problem and groups of actors who suffer from the problem. The facilitator invites each group separately and stimulates them to undergo the same process of problem handling described above to define their own view of the problem, their own definition and to describe the interventions they want to do and their intervention strategies.

Based on these outcomes mutual meetings of neutral experts and actors groups are then invited to look at the problem and find mutual accepted interventions. Then groups are formed to formulate implementation strategies for changing the problem and to guide and later on evaluate implementations for changing the problem.

6 THE USE OF THE METHODOLOGIES OF THE FIELD OF SOCIETAL COMPLEXITY IN REAL LIFE.

The Compram methodology is recognized by the OECD for handling global safety. The Compram methodology is advised by the OECD (July 2006) to handle complex societal issues. The ‘Final consensus report’

from the OECD Global Science Forum Workshop held in Tokyo, Japan, on December 5-6, 2005 organized by the JST-RISTEX¹.

That means that in order to develop and combine the knowledge, the methods and tools for handling societal complexity problems, special multidisciplinary knowledge institutes should be created that can become aware of future and now-a-days dangers and threats. These institutes perform multidisciplinary research and advice policy makers how to handle global safety issues in an integrated multidisciplinary, multi actor approach. In order to accomplice this, each country should establish multidisciplinary centers for research on societal complexity. These institutes should focus on their own specific local complex societal problems in cooperation with the already existing local institutes on safety. International they should cooperate with same kind of institutes on global threats.

These centers should be closely connected to the university. Inside the university a department for societal complexity may be established. In order to give some ideas this department can start with a team of scientists mainly interested or educated in methodology, coming from alpha, beta and gamma sciences.

Although we have the conviction and with us many other researchers in this field that complex societal problems should be handled according to the direction of the field of methodology of societal complexity only now and then complex societal problems are handled in this way, mostly stimulated by researchers of our field. There are several reasons for the reluctance of the politicians to handle complex societal problems.

First of all most of the politicians are not aware or unfamiliar by the methodology. This could be met by a more structured approach to teach managers, future politician and university students in their basic study in the field of for instance agriculture, healthcare, economy and transport. The main concepts and ideas of the field of societal complexity in their

1 Research Institute for Science and Technology for Society, Japan Science and Technology Agency, see Report on the Workshop on Science and Technology for a Safer Society 20-Jul-2006 <http://www.oecd.org/dataoecd/29/2/37163745.pdf>

basis education on the university, so that they are, later on in their professional life at least aware of a more fruitful and sustainable approach towards a complex societal problems.

A second point is that politicians want to jump to conclusions and do not want to spend too much time in defining the problem. They want directly to deal with the powerful actors to find mutual accepted solutions. They like to start directly with problem decision making instead of addressing all the phases of the problem handling process (DeTombe, 1994).

Another point is the transparency of for instance the Compram¹ methodology. This methodology is based on a democratic decision making process and transparent by prescribing that all the activities in each step should be open reported afterwards including the result, who was involved in the decision process and what has been discussed in this process. Not all politicians want this openness.

Another point is the structure of most of the government departments. These departments are separated from each other and it is very hard due to competition and power fights and budgets to work together on a mutual problem (DeTombe, 1999; 2001; 2008a; 2008b; 2010).

7 SIMULATION AND GAMING, STEP FOUR OF THE COMPRAM METHODOLOGY

Step four of the Compram methodology is about the societal reactions before interventions are implemented. Simulation and gaming is a fruitful way to anticipate societal and organizational reactions. When the situation of the healthcare system is discussed based on the Compram methodology in step one, two and three by the experts and actors, like indicated in the paragraphs two and three of this article, one can anticipate the reactions of the field can by gaming and simulation of the

1 See for more information about the methodology Compram <http://www.complexitycourse.org/doriendetombe.html>

presumed interventions This is step 4 of the Compram methodology. Alternations in the workplace are difficult to make and demanded changes often provoke much stress. By way of a game, like role playing one can simulate the new work situation and get a notion what is changing and how this feels. The experiences from these games by evaluation can help to improve the interventions.

რეზიუმე

პროფ. დორიენ დე ტომბი

ჯანდაცვის სისტემისადმი მულტიდისციპლინარული მიდგომა

ჯანდაცვის სისტემა მეტად რთული სისტემაა, არა მხოლოდ სოციალური თვალსაზრისით, არამედ მას მრავალმხრივი მიდგომა სჭირდება. იგი საზოგადოების შემადგენელ ნაწილად წარმოგვიდგება. პროფ. ავტორის აზრით ჯანდაცვის სიტემას შეიძლება მივუდგეთ ე.წ. კომპრამ მეთოდით - Compram methodology, რომელიც ეფუძნება: ცოდნას, ძალაუფლებას და ემოციას. მნიშვნელოვანია ყოველდღიური მულტიდისციპლინური მიდგომა პაციენტებისადმი, ასევე იმ ექიმების მიმართ, რომლებიც სიახლეებისადმი ადაპტირების ძლიერი უნარით არ გამოირჩევიან. მაგრამ ასევე საჭიროა გაიზარდოს პაციენტების მხრიდან მომთხოვნელობა ექიმების მიმართ უფრო მეტი კომპეტენტურობის, კვალიფიკაციასა და პროფესიონალიზმის გამოვლენისადმი. თუმცა ყველა ქვეყანაში ეს განისაზღვრება ინდივიდუალური მიდგომით.