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Systemic design in food security and resilience: Building a holon

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Systemic Design in Food Security and Resilience: Building A Holon

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Introduction

- The situation of concern in this paper is that of Food Security. In a previous paper [Darzentas, 2017], the I Know Food (IKF) project and its composition and objectives were introduced.

- As its name suggests, an overall aim is to integrate knowledge about food systems.

- The project examines these systems in the light of food system **resilience**.

- food system resilience defined as "the ability to learn, adapt and transform to cope with external and internal stresses and shocks in order to maintain stable levels of nutritious food supply"

Food Systems

Food research literature recognises the interconnectivity of various elements and talks about "the food system"
But still much research deals with parts of systems independently e.g. the food producer, retail, consumer

More recently food researchers trying to find ways to study food systems more holistically, e.g.:
- drawing in many sources of multiple interactions, to identify key processes, drivers, multiple feedbacks and outcomes, (Ericksen, 2008)
- including interconnections and the many different factors not apparently influencing food security, such as over-consumption of 'bad' food and obesity, are studied along with more traditional foci (Horton, 2017).

Against this background, the IKF project
- has a main objective to integrate knowledge about food, in order to better understand and produce new knowledge
- an awareness of systems thinking but no brief to use it

Systemic Design

Our intervention is to initially bring researchers together to develop understandings of the IKF objectives :
- moving from the 'given' system definitions (e.g. supply chain system, healthcare system, as well as 'stock' definitions of actors and roles (e.g. farmer produces food)
- to try to develop fresh understandings, and reveal emergent properties.

Although these researchers are just one group amongst the real world stakeholders, each of them in the IKF project work with main stakeholder groups (producers, retailers, consumers)

These richer understandings emerge in the building of a Holon
- found differentiated emphases from the more commonly accepted 'food systems' actors
- leading to possible re-orientations.

The common goal is that these findings and re-orientations can help develop more nuanced understandings of what resilience means for overall and subsets of systems.

A few words about Resilience

Know Food proposes the use of the lens of resilience to examine food security. 3 interlinked points can be made here

1. Resilience has been conceptualised in at least three ways; as **absorbing shocks**, as **preventing shocks**, or as **adapting to shocks** and more than one of these forms of resilience are apparent (Bene et al 2016)

    *   e.g. an aid agency may provide first aid to help **absorb the shock** from an emergency, but also try to put in place **preventive measures** to resist unwanted changes, or even a development project to **transform the food production/consumption** processes so they are not vulnerable in the future to such types of emergency

2. In today's discourse, resilience is generally considered, as a 'good thing'. However resistance to change can be negative (e.g. resistance to changing known 'bad' dietary habits)

3. To whom the resilience is applied:
    *   e.g. one subsystem's resilience e.g. growing a new crop that is drought resistant, may affect another subsystem adversely, for instance, the distribution subsystem can no function as it used to.

However, resilience as a concept is useful to mobilise integrative efforts and deepen understanding. This is important, although it is recognised that it may not lead directly to changes yet in food security challenges (Bene et al, 2016).
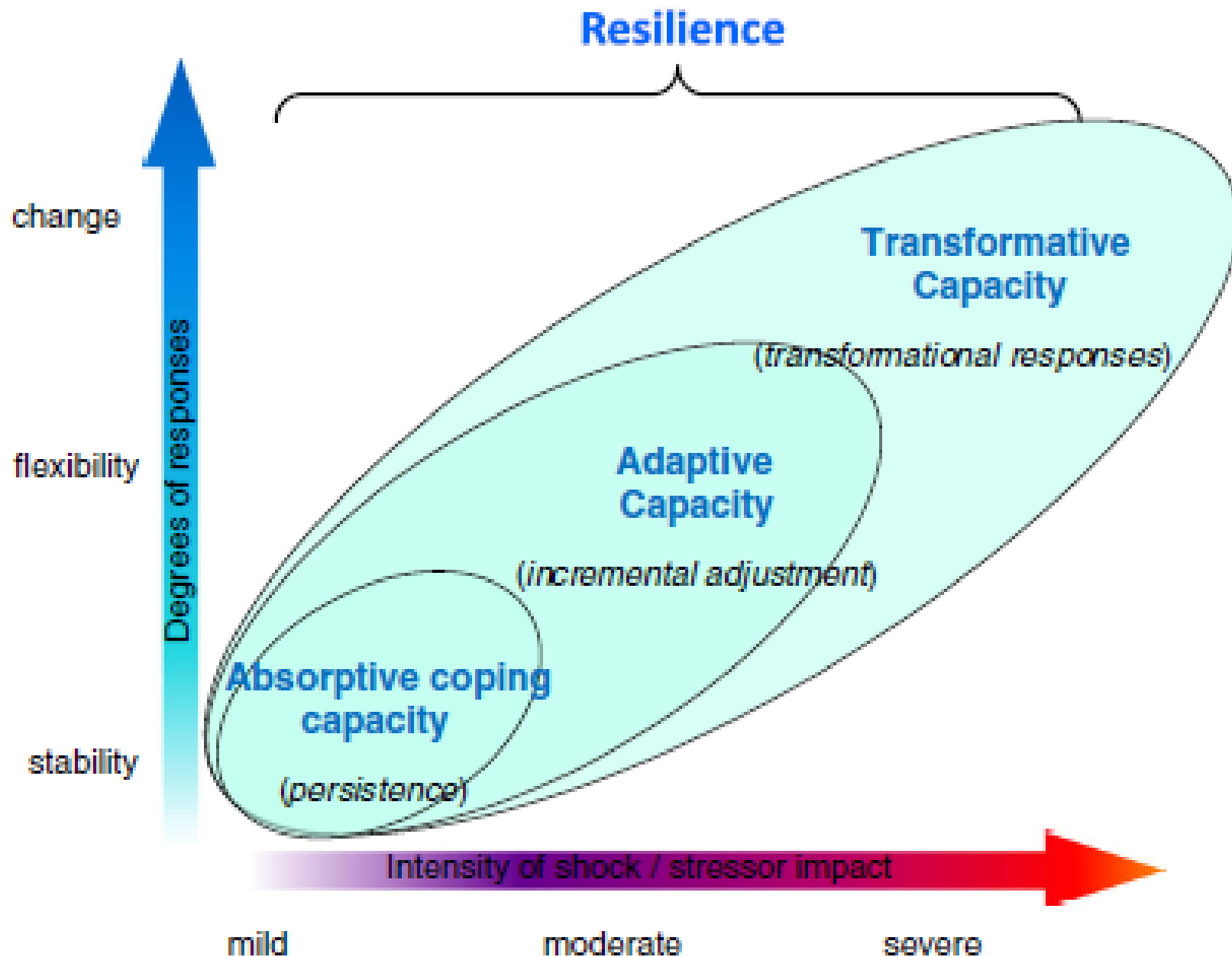
Source: Derived from Béné et al. (2012)

Complex problem spaces

- In IKF, as in all very complex problem spaces, we are actually 'talking' about **capturing, learning, and understanding** it.

- Also we don't provide solutions but **interventions.**

An understanding:

A situation to do something about (**what**) by means of (**how**) in order to contribute to achieving (**why**)

(**what** is done, **how** is it done, **why** is it done)

Complex problem spaces

- Interconnectedness implies complexity and is a major property/characteristic in Systems Thinking.

- Acquiring views of the connections amongst parts/subsystems of a systemic view of a Holon then we acquire a view of the system's dependence on its parts being prodded.

- In terms of the system's resilience all parts will be affected, some more some less.

Complex problem spaces

- A systemic expression of Holon gives a useful picture of the interconnectedness and a study/capture of the importance of each part.

- Hence a main assumption here is that governing and redesigning the most vulnerable parts/subsystems will move towards improving the system's resilience.

A Holon

FOOD SECURITY
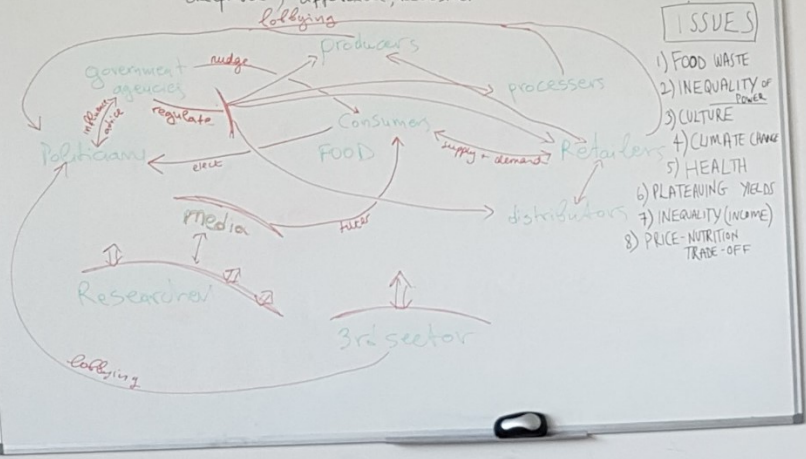
IknowFood project

Enviromental
Climate change
water, soil acidity
fertiliser, fosil fuel
depletion of resources

Waste

Packaging
Waste
Health & Safety
H2O additives,
Staple food
(limited no)

Ecological
mono culture
Biodiversity
habitats
H2O

Food Producers

food miles → Food Processing

food miles

Health and Safety
Logistics
Transport
Waste
retailers

food miles → Food distributors

live stock
Health & Safety
animal diseases
intensive farming
massive water depletion

food miles

food miles

Food Consumers

food miles

3rd Sector

Nutricional concerns
preparation, preservation
Waste
Habit & $ power
Health & Safety
Obesity

Public Health
(NHS ...)

Designers

INTEGRATION
for Resilience in
food security

Policy makers
governance
regulation
Research
& Funding

A Holon

Enabling people to have the means, agency & knowledge to access nutritious food that is culturally acceptable, affordable, accessible, environmentally

lobbying

government agencies — nudge → Producers
influence — regulate → processers
Politicians — Consumers — FOOD — Retailers ← supply + demand
elect
media — filter → distributors
Researchers
3rd sector
lobbying

ISSUES
1) FOOD WASTE
2) INEQUALITY of power
3) CULTURE
4) CLIMATE CHANGE
5) HEALTH
6) PLATEAUING YIELDS
7) INEQUALITY (income)
8) PRICE-NUTRITION TRADE-OFF
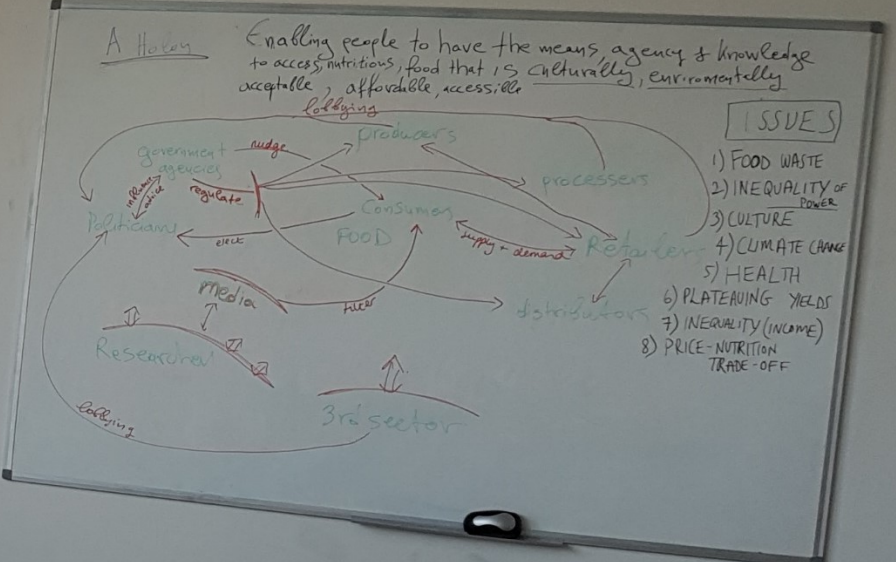
This is YOUR SPACE
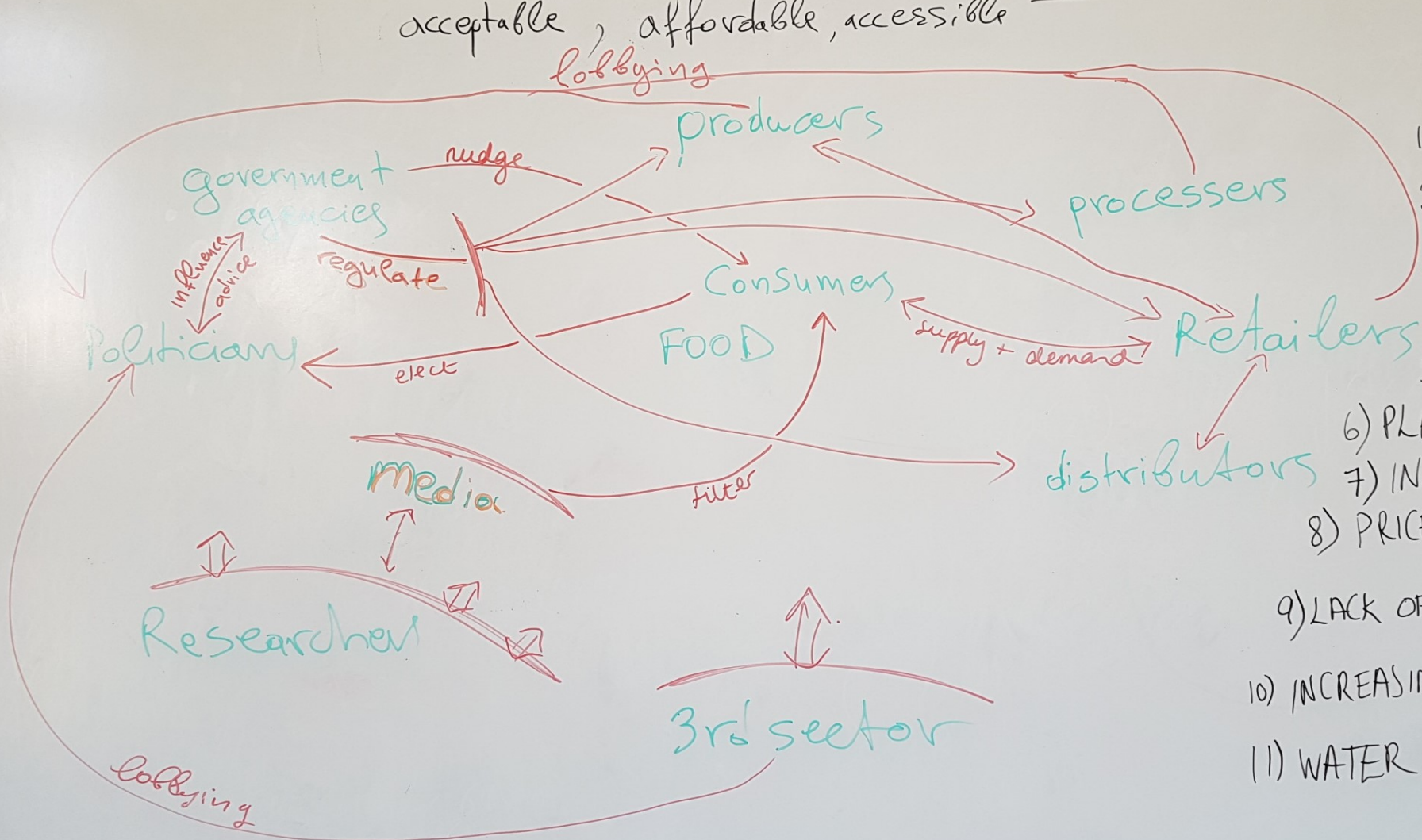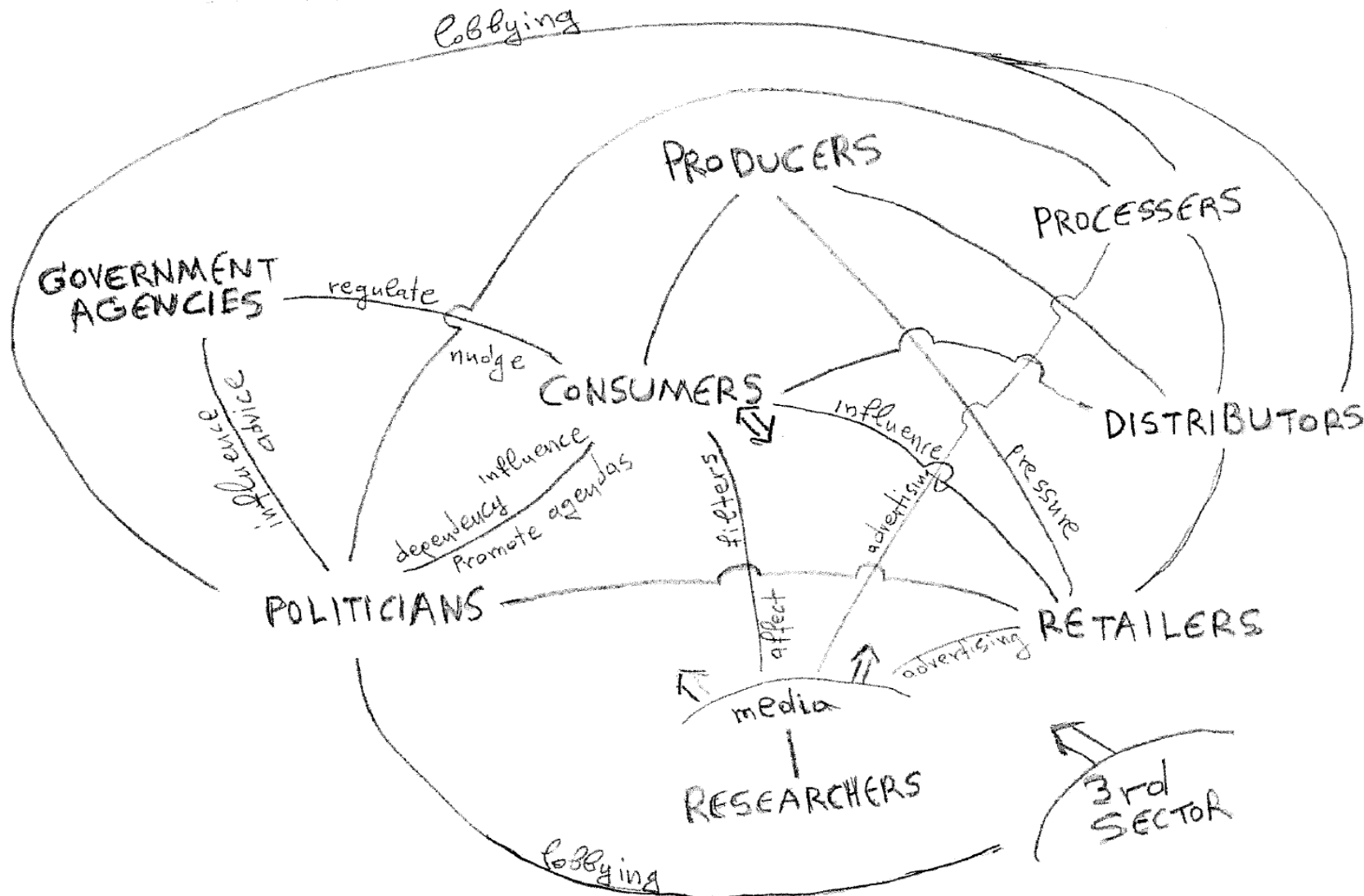
A Holoy

Enabling people to have the means, agency & knowledge to access, nutritious, food that is culturally, environmentally acceptable, affordable, accessible

ISSUES

1) FOOD WASTE
2) INEQUALITY OF POWER
3) CULTURE
4) CLIMATE CHANGE
5) HEALTH
6) PLATEAUING YIELDS
7) INEQUALITY (INCOME)
8) PRICE-NUTRITION TRADE-OFF
9) LACK OF KNOWLEDGE
10) INCREASING DEMAND.
11) WATER SCARCITY

lobbying

producers

processers

government agencies

nudge

regulate

influence advice

Consumers

FOOD

supply + demand

Retailers

Politicians

elect

distributors

media

filter

Researchers

3rd sector

lobbying

Enabling people to have the means, agency & knowledge to access ethical adequate nutritious, affordable, sustainable accessible, culturally & environmentally acceptable food
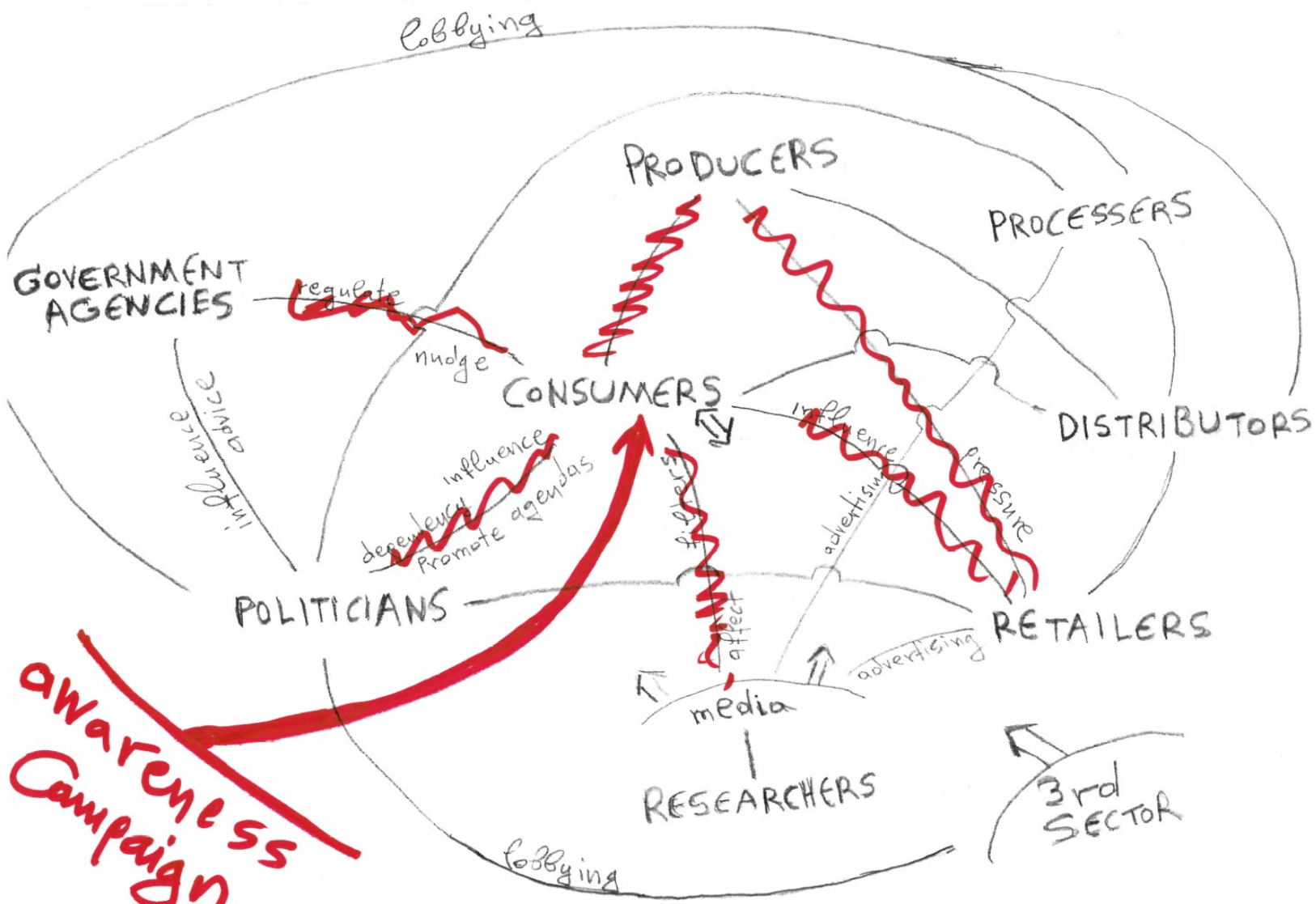

ISSUES
- food miles
- monoculture
- obesity
- Food Waste
- Inequality of power
- Culture
- Climate Change
- Health
- Plateauing Yields
- Inequality (Income)
- Price-Nutrition trade-off
- Lack of knowledge
- Increasing Demand
- Water Scarcity
- Fair Trade

PRODUCERS
PROCESSERS
GOVERNMENT AGENCIES
regulate
nudge
CONSUMERS
influence
DISTRIBUTORS
influence advice
influence
dependency
promote agendas
filters
advertising
pressure
POLITICIANS
affect
advertising
RETAILERS
media
RESEARCHERS
3rd SECTOR
lobbying
lobbying

A Holon: Enabling people to have the means, agency & knowledge to access ethical adequate nutritious, affordable, sustainable accessible, culturally & environmentally acceptable food

ISSUES
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lobbying

PRODUCERS

PROCESSERS

GOVERNMENT AGENCIES

regulate

nudge

CONSUMERS

DISTRIBUTORS

influence

influence

advice

influence

decency

Promote agendas

advertising

pressure

POLITICIANS

RETAILERS

advertising

awareness Campaign

media

RESEARCHERS

3rd SECTOR

lobbying

The figures show a Holon created by the group of the relevant researchers in 3 workshop sessions.

Amongst promising preliminary observations there were already hints to the usefulness of the systemic design approach, for the grounding of resilience in IKF:

- the **cultural acceptability** of food (not part of formal definitions by food agencies)

- **role of the communicators** (food journalists, etc.). within the literature they do not seem to feature as an important stakeholder group despite acknowledged influence their communications wield

- the nature of the **potential of stakeholders**. Despite inequalities between stakeholder groups, each stakeholder appears to have some mechanisms, to influence, affect, change, or even disrupt flows of material and of information within the Holon

- the **role of the 3rd Sector**: those with 'on-the-ground' knowledge, are those engaged in activating and implementing resilience (first aid trying to absorb shocks, others trying to build resistance or transform).

- A very important benefit of the Systems Thinking approach is that, because of the way the 'paths' to emerging subsystems are generated, the stakeholders involved in each one of those, can 'meet' again, when necessary, back at the System (translated Holon), or even at the Holon itself.

- That may be necessary because of the iterative nature of the evolving understanding and learning, as well as the dynamic nature of Systems characteristics such as borders and environment which change continuously.

- In other words, stakeholders and designers have a common platform of reference when needed to clarify and redefine evolving issues.
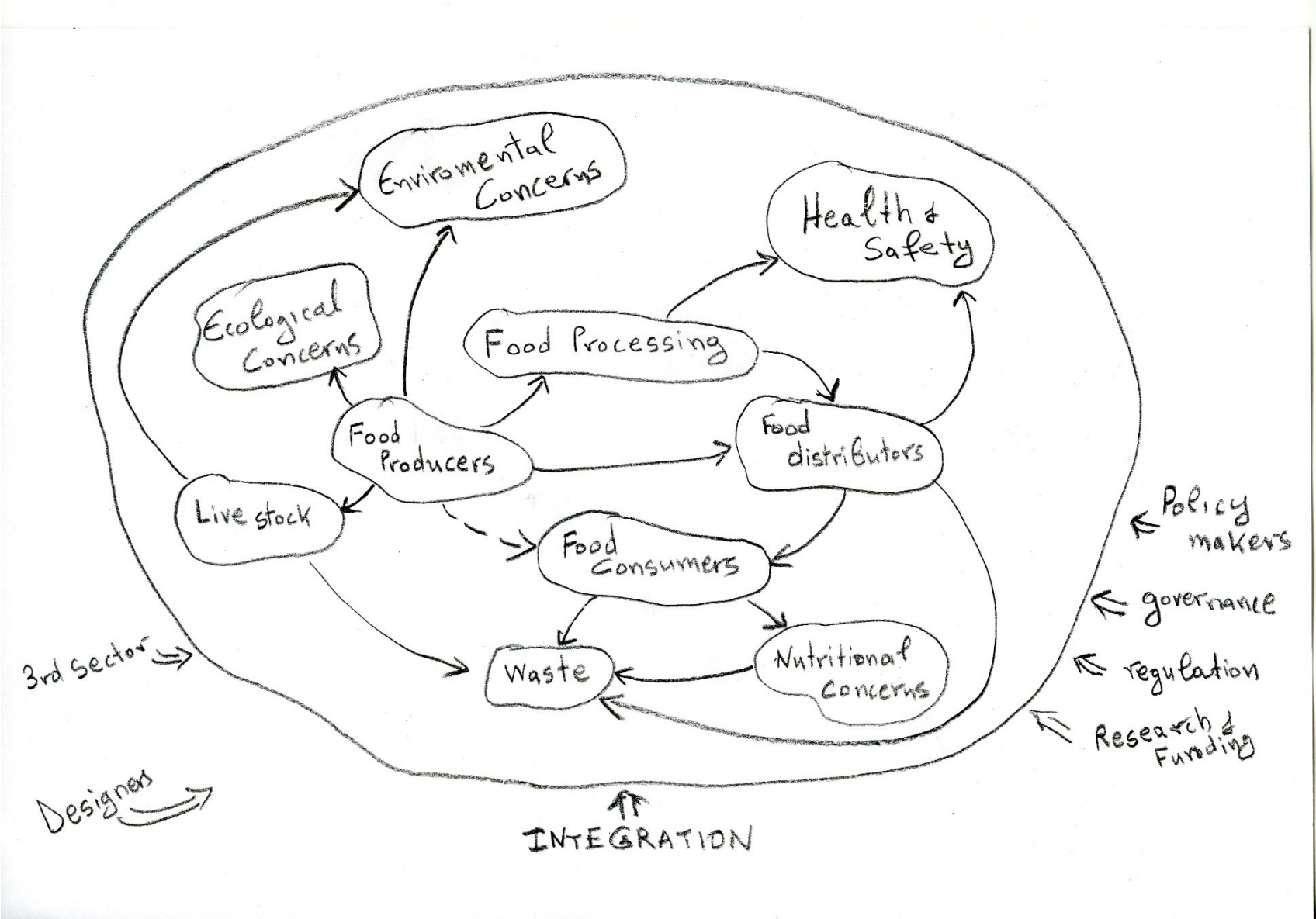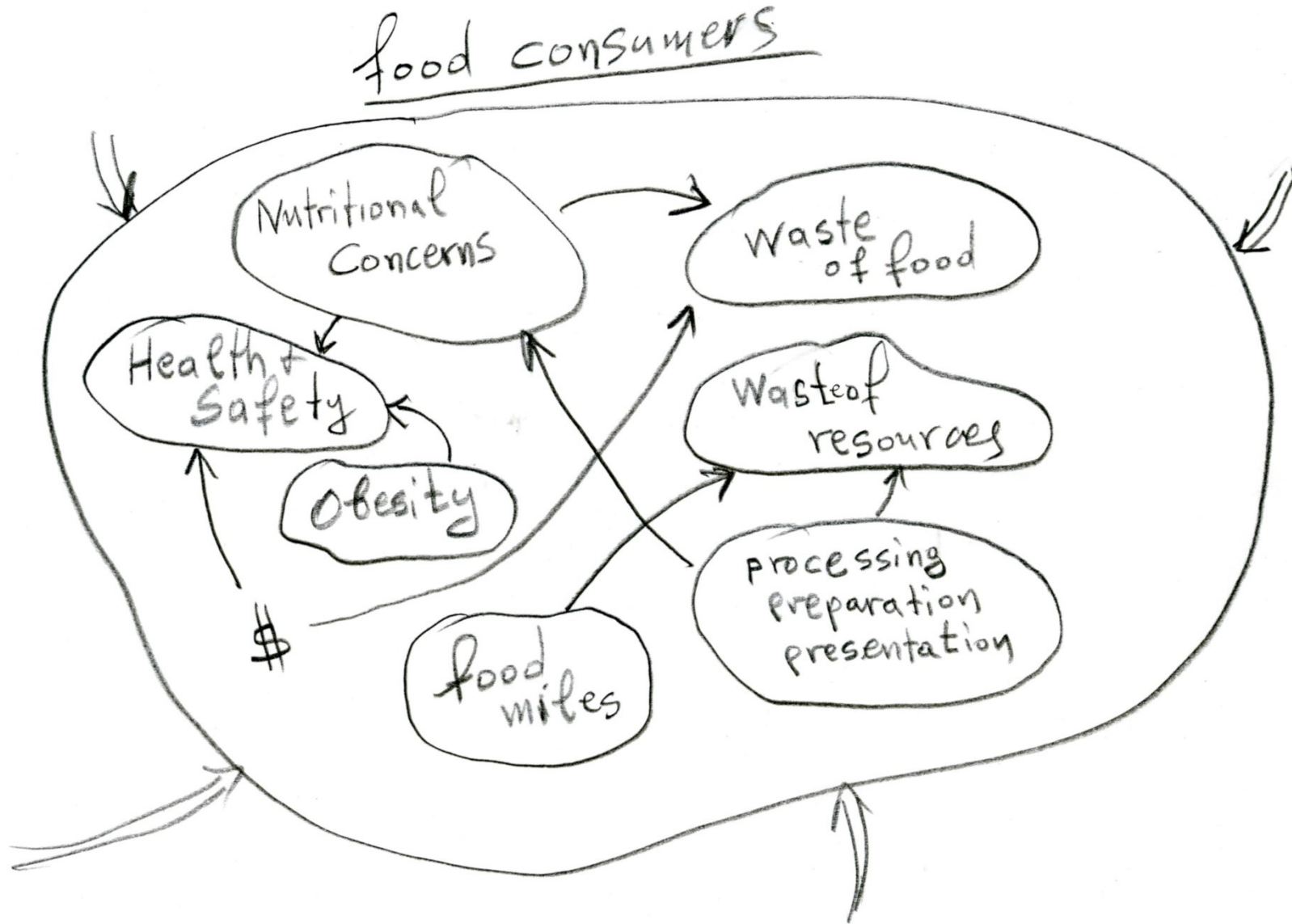
Using the Holons

- Holons need to be 'translated' into 'Systems Language' to be able to utilise the learning and understanding of the complex problem space and move towards interventions
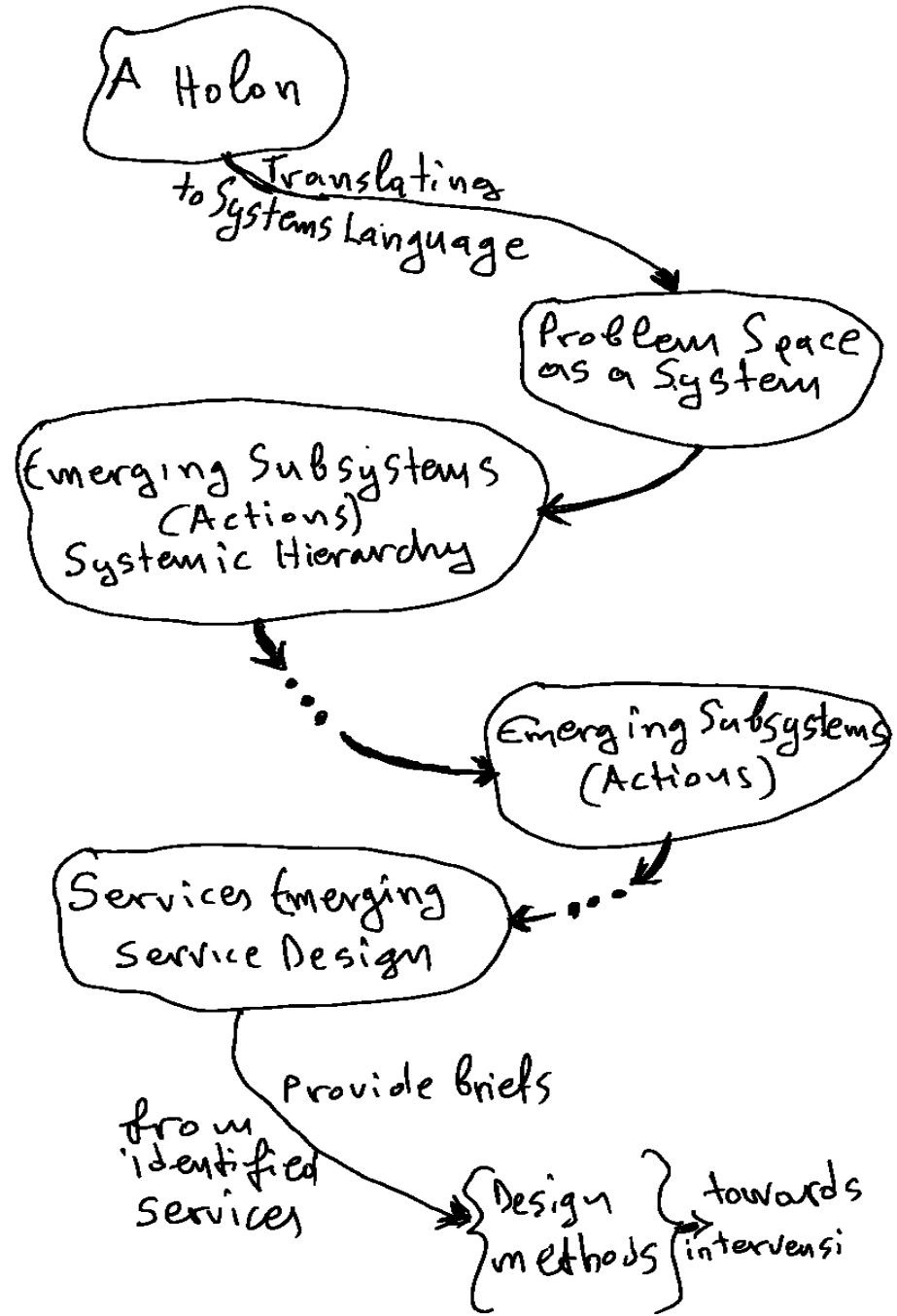
Translation of the Holon into Systems Language

Consumers Subsystem

Thank you