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Systemic Design for food sustainability: Interpretation of real cases and reflection on theories
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Silvia Barbero, PhD

SYSTEMIC DESIGN FOR FOOD SUSTAINABILITY

interpretation of real cases and reflection on theories
WHO I am

\ researcher in **systemic design** at Politecnico di Torino

\ author of scientific articles and books on international spread as **ecodesign** (HF Ullmann, 2009) and **systemic energy networks** (Lulu Enterprises, 2012)

\ adjunct professor in **environmental requirements of industrial products** at Design and Visual communication graduation course

\ responsible for the **design university curriculum counseling**

\ co-founder of no-profit association **plug**
INDEX

\ Motivations & challenges
\ Background & methodology
\ Experiment design
\ Results
\ Conclusion
\ Q&A
MOTIVATION & challenges

food

- everyone have daily experience on it
- individual low level of awareness
- geo-political unbalance
- “index” for the sustainability of a community
MOTIVATION & challenges
MOTIVATION & challenges
MOTIVATION & challenges
MOTIVATION & challenges

**production**
- intensive farming
- use of pesticides and chemicals
- food security
- genetically modified organisms (GMOs)
**MOTIVATION & challenges**

- long-lasting meals
- sanitation
- sophistication and food fraud
- loss of food culture
- food losses
MOTIVATION & challenges

production

transformation

distribution

- global scale
- vertical distribution system
- cold chain
- loss of seasonal food
MOTIVATION & challenges

production

transformation

distribution

consumption

\loss of culinary traditions
\demand for low-cost food
\unawareness
\obesity vs malnutrition
MOTIVATION & challenges

production

transformation

distribution

consumption

disposal

overproduction

food waste
MOTIVATION & challenges

how systems and complex theories applied to food sector can contribute to wellbeing for all?
INDEX

Motivations & challenges

Background & methodology

Experiment design

Results

Conclusion

Q&A
BACKGROUND & methodology

**complexity theories**

- Living systems continually draw upon external sources of energy and maintain a stable state of low entropy (Schrödinger, 1946)
- General systems theory (von Bertalanffy, 1968)
- Artificial systems can imitate the natural ones (Pisek & Wilson, 2001)
- Cluster theory (Porter, 1990)
- Industrial ecology (Frosh & Gallopoulos, 1989)
- Industrial symbiosis (Chertow, 2000)
BACKGROUND & methodology

complexity theories HELP THE MANAGEMENT OF THE ENTIRELY FOOD SYSTEM
BACKGROUND & methodology

complexity theories HELP THE MANAGEMENT OF THE ENTIRELY FOOD SYSTEM

the lenses to analyse different complex situations of the presented case studies
BACKGROUND & methodology

\textit{design approaches}\
\textbackslash creative reconfiguration of a design concept on a situation with systemic integration (Buchanan, 1992)\
\textbackslash inter- and trans-disciplinarity (Chertow, Ashton, & Kuppali, 2004)
BACKGROUND & methodology

design approaches HELP THE PLANNING OF DIFFERENT DIVERGENT ELEMENTS
BACKGROUND & methodology

design approaches
HELP THE PLANNING OF DIFFERENT DIVERGENT ELEMENTS

the ways to formulate the new projects presented
BACKGROUND & methodology

complexity theories ➔ design approaches

MANAGEMENT ➔ PLANNING

Systemic Design
SYSTEMIC DESIGN theory

Balanced involvement of all stakeholders

Local networks

Wastes are resources
MODEL innovation

LINEAR PRODUCTION MODEL vs SYSTEMIC PRODUCTION MODEL

Competition vs Collaboration

evolution
INDEX

\ Motivations & challenges

\ Background & methodology

\ Experiment design

\ Results

\ Conclusion

\ Q&A
EXPERIMENT design

Last ten years of research projects:

- EN.FA.SI. (2012-2014)
- Lavazza (2006-2014)
- Poult (2014-2018)
- Fa bene. (2012-2015)
- Dégust’Alp (2013-2014)
- Val Sangone, Italy (2012-2014)
- Ahuacuotzingo, Mexico (2013-2016)
- Lea Artibai, Spain (2015-2016)
- Saftica, Romania (2010)
EXPERIMENT design

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map of problems/OPPORTUNITIES
faced directly in the design and implementation phases
EXPERIMENT design

near resources from the territory

products for local needs

community

territorial context

natural system

company

product

tend to Zero Emissions

\ EN.FA.SI. (2012-2014)
\ Agrindustria (2007-2015)
\ Lavazza (2007-2014)
\ Poult (2014-2018)
EXPERIMENT design

problems/OPPORTUNITIES
\ many partners equally important (different priorities and timing)
\ small companies without R&D department are strictly focus on economic feasibility in short terms
\ big companies with strong core business and long history are reluctant to change
\ the interest of the system overcomes the single interests of partners
\ many disciplines to coordinate and to push together
\ long process of implementation

near resources from the territory
company
products for local needs
community
territorial context
natural system
company
product
natural system
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EXPERIMENT design

near resources from the territory

company

products for local needs

community

natural system

territorial context

product

tend to Zero Emissions

company

dégust’alp (2013-2014)

fa bene. (2012-2015)
EXPERIMENT design

**Problems/Opportunities**

- Many partners equally important (different priorities and timing)
- Shift from subsidiarity to fair profit
- Many legislations to take into account
- Long process of implementation

**Fa bene.** (2012-2015)
**Hospital Food Waste** (2014-2017)
**Dégust’Alp** (2013-2014)

**Near resources from the territory**

- Company
- Community
- Natural system
- Product

Tend to Zero Emissions

Systemic Design for Food Sustainability | Silvia Barbero
EXPERIMENT design

near resources from the territory

company

products for local needs

community

teritorial context

natural system

product

company

natural system

company

tend to Zero Emissions

Val Sangone, Italy  (2012-2014)
Ahuacuotzingo, Mexico  (2013-2016)
Lea Artibai, Spain  (2015-2016)
Saftica, Romania  (2010)
EXPERIMENT design

problems/OPPORTUNITIES

\many partners equally important (different priorities and timing)
\primary interest and involvement of public administration
\many legislations to take into account
\long distance to coordinate the long process of the implementation phase
\many disciplines to coordinate and to push together

\Val Sangone, Italy (2012-2014)
\Ahuacuotzingo, Mexico (2013-2016)
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INDEX

\Motivations & challenges
\Background & methodology
\Experiment design
\Results
\Conclusion
\Q&A
RESULTS

Keystone players

\(\text{\textbullet\ many partners equally important}\)

\(\text{\textbullet\ big companies reluctant to change}\)

\(\text{\textbullet\ primary interest of PA}\)
RESULTS

**keystone players**
- many partners equally important
- big companies reluctant to change
- primary interest of PA

**design & implementation**
- many disciplines to coordinate
- long process of implementation
- long distance to coordinate the implementation phase
RESULTS

**keystone players**
- primary interest of PA
- big companies reluctant to change
- many disciplines to coordinate
- many partners equally important

**design & implementation**
- long process of implementation
- long distance to coordinate the implementation phase

**economic feasibility**
- small companies focused on short-time economic feasibility
- shift from subsidiarity to fair profit
- many legislations to take into account

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SYSTEMIC DESIGN FOR FOOD SUSTAINABILITY | Silvia Barbero
RESULTS

**Keystone players**
- many partners equally important
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- primary interest of PA
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**Design & implementation**
- shift from subsidiarity to fair profit
- long process of implementation
- long distance to coordinate the implementation phase
- economic feasibility

**Systemic Design for Food Sustainability**

-Silvia Barbero
RESULTS

keystone players

design & implementation

economic feasibility
RESULTS

keystone players

many small diversified balanced

economic feasibility

design & implementation
RESULTS

keystone players

design & implementation

many small diversified balanced

economic feasibility

continuous local dialogic
RESULTS

keystone players

many small diversified balanced

design & implementation

continuous local dialogic

economic feasibility

medium term shared profit

medium term shared profit
INDEX

\\ Motivations & challenges
\\ Background & methodology
\\ Experiment design
\\ Results
\\ Conclusion
\\ Q&A
CONCLUSION

- food local networks
- shared responsibilities
- increased relationships
- conscious behaviours of all players
- new food system can promote social and environmental development
“Uniformity and diversity are not just patterns of land use, they are ways of thinking and ways of living.”

Vandana Shiva, 1995
Silvia Barbero, PhD
Assistant Professor

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