

Introduction to the Anthro-System Theory

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Abstract— My research aims at understanding society. Just like Pichod-Viale and Frontier, who applied the systemic approach to nature, resulting in the concept of ecosystem, we want to apply the systemic analysis to society. In this research, we will attempt to redefine and improve the concept of Anthro-system. Understanding the global functioning of society will provide us with a better use of eco-systemic services. Analysis of society structure through its four basic components: namely transport; settlement; information and man (his health and education) will be conducted. Then, it will analyze also its functioning: the anthropic flows linking those four components and the natural flows used by men, and without forgetting managers and maintenance agents of system. It will study the evolution of society as well, as far as its modes of resilience in the face of internal and external disruptions. Lastly, it will analyze both the dangerous relations existing between the anthro-system and the ecosystem and the solutions provided for a sustainable development. Studying complex society, I found the Anthro-System Theory Axioms:

- Four elementary components;
- Managers and maintenance agents;
- Natural and anthropic flows;
- Interactions between Man and Nature;
- Sustainable development solutions;
- Modes of resilience;
- All of this being regulated by natural and anthropic laws.

The completion of this research will provide us with a truly global and complex diagnosis of society. This Anthro-Systemic Assessment could be helpful in the decision-making process regarding territorial management.

Keywords— Anthro-system, ecosystem, ASA: Anthro-Systemic Assessment, ASTA: Anthro-System Theory Axioms, complexity, resilience, decision-making

I. INTRODUCTION : THE THEORETICAL EVOLUTION OF GEOGRAPHY

Today, with a phenomenon of increased globalisation, the world is considerably more complex[1] [2]. Interactions between countries, societies, and individuals are increasingly important and the concept of interdependence in political, economics[3], social[4], environment becomes ubiquitous. This complex world challenges the same way of doing science, scientific analysis of the territories must reinvent itself. It is for this purpose, I will present the anthro-system theory.

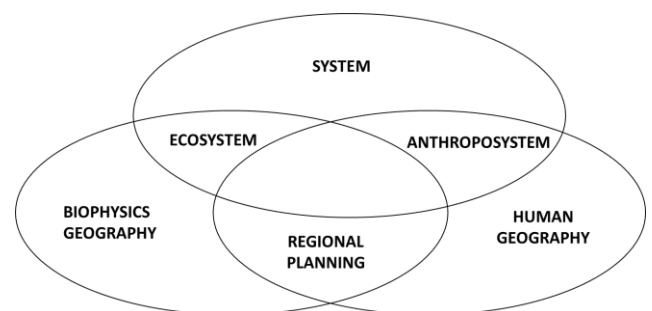


Fig. 1. Systemic analysis to Geography (SOURCE : L.M. HIREP, 2016)

Before seeing how systemic analysis has changed the way of practising research in geography, let's study meta-fields of study in this discipline (e.g. Fig. 1). We used to separate geography in two. On the one hand, biophysics geography[5], the four basic components of nature were analysed separately : water, air, soil and biosphere[6] [7]. And on the other hand human geography[8], especially studied demographics, territorial coverage, economy and social processes. As these two meta-fields were not closely related, particularly in regional planning[9-10]. Today there is concern about increasing the natural environment where man operates or may operate. Then appear notions of risk for people [11] and environmental

protection[12] [13]. These two concepts using new computer technology to perform diagnosis and modelling of the territory to help decision-making [14].

However, the revolution geographical approaches do not stop there. It reaches extreme degrees of complexity when it apply systemic approaches [15]. Let's mention include Pichod-Viale and Frontier, who by applying the systemic approach to biophysics geography have led to a more sophisticated concept of the ecosystem [16]. The ecosystem disintegrates the barriers of disciplinary fields to give a more comprehensive and complex of ecology. It creates the link between the four basic components of nature, updates many more organized natural processes than might be believed and above all it shows us that nature is more unstable than it seems that it has evolved constantly responding to disturbances resiliency modes. It would be interesting to do for human geography what Pichod-Viale and Frontier have achieved in biophysics geography. Applying systems thinking to societies could significantly expand our field of vision and it might even lead us to an improved anthroposystem concept. Systemic analysis of society will be an opportunity to flush out the Anthro-System Theory Axioms. This research work will provide a more global and complex vision of society.

II. METHODS : A.S.A.: ANTHROPO-SYSTEMIC ASSESSMENT

To win over this complexity, I created a new method of analysis : the ASA, the Anthro-Systemic Assessment (e.g. Fig. 2). The Anthro-Systemic Assessment is a global analysis of society.

The first step begins with the observation of the landscape which will enable to prepare the surveys, the training courses, the interviews and will provide the systemic pattern structure. As for surveys, training courses and interviews, they also help out with the systemic pattern realization. You can notice that the purpose of the first part is the systemic pattern realization.

This goal being achieved, we can then focus on the research work. On the one hand, we will make an economic balance of four components of society

(settlement, transport, information and man (his health and education)), on the other hand, we will use the data of the city council to collect information about four components of society, managers, maintenance agents, modes of resilience in the face of internal and external disruptions, and cultural, structural and economic changes. The next step is the study of the anthroposystem structure by analysing the four components of society. After that we will study the functioning of anthroposystem by analysing the management and maintenance of the anthropic system and the anthropic flows at stake within that system and also the natural flows supplying that system. Lastly we will examine the evolution of anthroposystem by analysing the modes of resilience in the face of internal and external disruptions, and cultural, structural and economic changes. The outcome of the second part of the research is therefore the materialization of anthroposystem thanks to the study of its structure and of its functioning and of its evolution.

Anthroposystem being defined, we can now observe the dangerous relationships it has with its ecosystem in part three. At first, we will measure the ecological footprint of society with the biosphere data, the air data and the water data. Afterwards, we will measure the impact of a polluted nature with the health data. To complete the research work we will study the advances (overhangs) in sustainable development thanks to the development data of society.

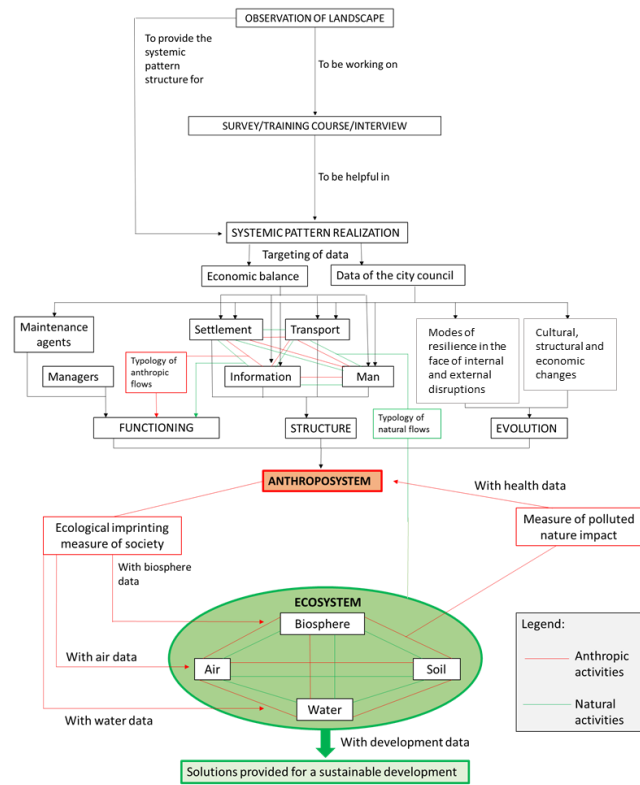


Fig. 2 : A.S.A. : Anthro-Systemic Assessment (SOURCE : L.M. HIREP, 2016)

The ASA, the Anthro-Systemic Assessment so clarified, let us look now at the results we could obtain.

III. RESULTS & DISCUSSION : SOCIETY PERCEIVED IN ALL ITS COMPLEXITY

At first let me present you the societal cell (e.g. Fig. 3) with its nucleus its city hall, one of the administrators as closely as possible to the local population. Indeed this decision-making level is more reactive than the others and can answer more actively the disturbances and the daily changes of society by resorting to sound armed with white blood cells, of cleaning operatives of the system (policemen, fire brigades, municipal officers, etc.).

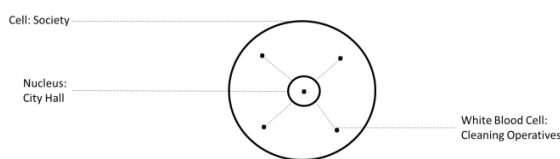


Fig. 3 : Societal Cell (SOURCE : L.M. HIREP, 2016)

This cell like any other inscribed in it a societal DNA (e.g. Fig. 4) consisting of two membranes each carrying a genetic code on one side natural laws[17] (the human being like any other animal also has natural survival needs) and on the other side of anthropic laws (National and Trading Bloc positive rights) [18] [19]. It is really important to understand that man from birth to death, in all his actions cannot evade this societal DNA.

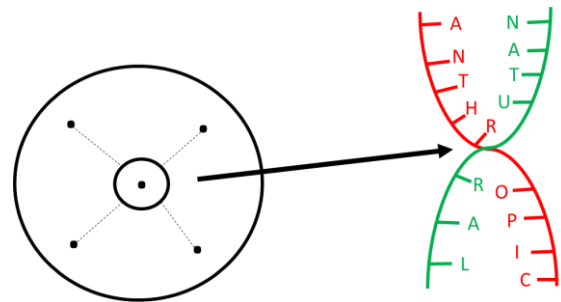


Fig. 4 : Societal D.N.A. (SOURCE : L.M. HIREP, 2016)

However, the societal cell has even some leeway. In fact, in compliance with National and Trading Bloc positive rights, it sets up the process of resilience[20] to internal and external disturbances (e.g. Fig 5). This is called self-regulation, a faculty present in each system.

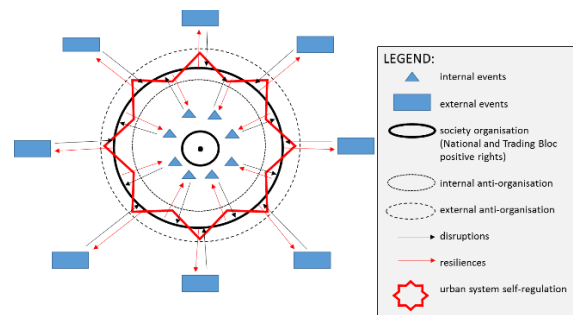


Fig. 5 : Societal Cell Self-Regulation (SOURCE : L.M.HIREP, 2016)

The societal cell (e.g. Fig. 6) is also made up of four basic components : settlement, transport, information and finally man (his health and education). These components are interconnected by anthropic flows :
 - capital flows [21],
 - goods flows[22],

- people flows[23] [24], and
 - information flows [25].
- But all societal cells cannot survive without the external supply of natural flows :
- water flows[26],
 - air flows[27],
 - organic material flows[28] [29],
 - mineral matter flows [30], and
 - natural energy flows[31].

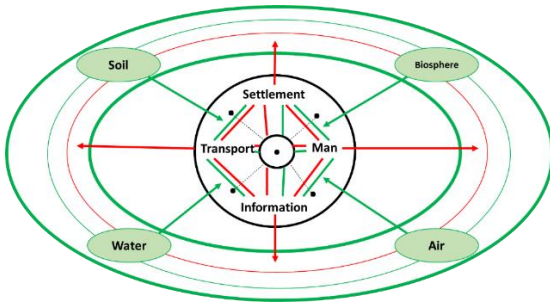


Fig. 6 : Anthropic and Natural Flows
(SOURCE : L.M. HIREP, 2016)

However, these natural resources could not have existed without the heat of Sun (in photosynthesis [32] and air mass movements[33]) and the gravity of the Moon (in the tides)[34] [35]. Space components involve indirectly in proper functioning of the societal cell (e.g. Fig. 7). But there are also man-made space components created by man, satellites [36] [37] that intervene directly in the information of societal cell.

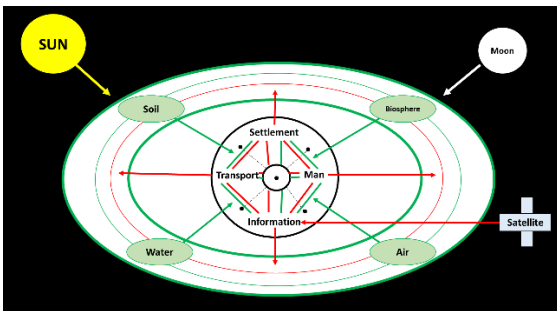


Fig. 7 : Intervention of space components in societal cell (SOURCE : L.M. HIREP, 2016)

The societal cell also undergoes many natural and anthropic aggressions. In response to this, the societal cell sets up real self-defense mechanisms with its maintenance agents (policemen, firemen, municipal

officials) under the leadership of its managers (townhall, prefecture (council)). We first have cyclical natural disturbances such as cyclones [38] and floods[39] and their associated hazards such as cyclonic swells[40] and landslides[41] (e.g. Fig. 8). Facing them, we develop RRP, Risk Prevention Plans. In the cyclone, it is a level of vigilance that increases with the approach of this latter. For floods, ULP, Urbanism Local Plan means risk areas and plans for houses in flood zones to be on stage and surrounded by a wall, the living space is upstairs.

We also have occasional natural disturbances such as earthquakes [42-43] (e.g. Fig. 9). There besides plans for prevention and intervention include information campaigns on seismic risks and how to act and react. The public concerned is large : communities, businesses, citizens and especially the school so that society has a culture of risk.

And finally there are continual anthropic disturbances with a boomerang effect (e.g. Fig. 10). Man pollutes nature using its resources. But the polluted nature poisons man when he reuses natural resources. Anyway, People/Nature relationships are in a closed circuit and that is the man to decide whether he maintains a vicious circle of pollution which he undeniably suffers the consequences or it reinvents itself in a circle with virtuous sustainable development [44-45]. Some beginnings of sustainable development goes also up locally : selective sorting, HEQ (High Environmental Quality), the renewal of the fleet with less polluting cars, reducing the volume of paper through internet and setting instead of cleaner energies[46-50].

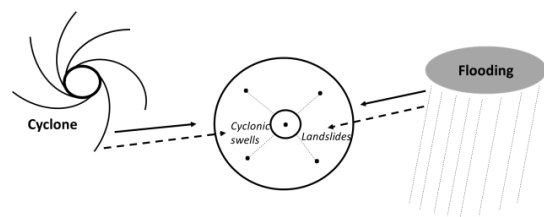


Fig. 8 : Cyclical Natural Disruptions
(Associated Hazards)
(SOURCE : L.M. HIREP, 2016)

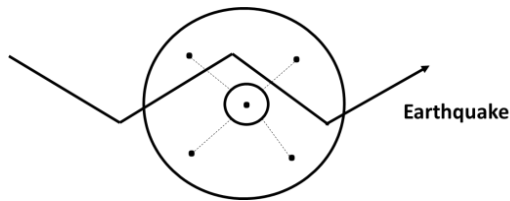


Fig. 9. Punctual Natural Disruption (SOURCE : L.M. HIREP, 2016)

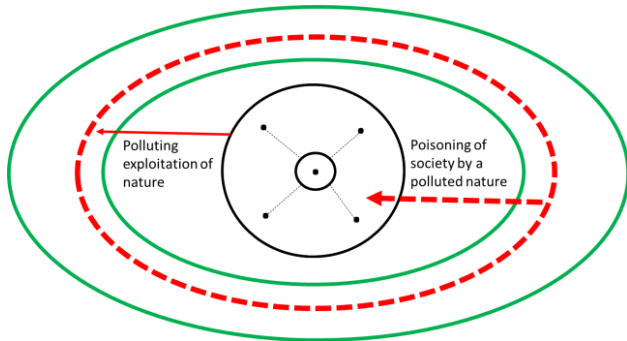


Fig. 10 : Perpetual Anthropogenic Disruption (SOURCE : L.M. HIREP, 2016)

IV. CONCLUSION: A.S.T.A.: ANTHROPO-SYSTEM THEORY AXIOMS

From these results, we can identify the Anthro-System Theory Axioms, the ASTA (e.g. Fig. 11). First of all, the four basic components of society which are settlement, transport, information, and man (his health and education). Those are then interconnected by the natural and anthropic flows. As for managers and maintenance agents they make sure that the balance in the societal cell is maintained. By elaborating the modes of resilience in the face of internal and external disturbances and cultural, structural and economic changes. We have also seen that the Human/Nature interactions are damaged by a constant pollution : it is the snake biting its tail. Even if some sustainable development solutions are taken locally. Finally, we can notice that all this is framed by natural laws (rules of survival of the human species) and anthropic (National and Trading Bloc positive rights).

The purpose of my present and future research will be to improve this theory by applying it to different cities.

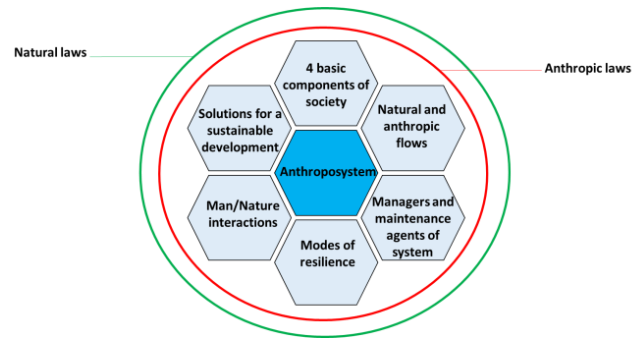


Fig. 11 : A.S.T.A. : Anthro-System Theory Axioms (SOURCE : L.M. HIREP, 2016)

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