Living and banking systems comparison. Prisoners' dilemma "win-win" is not the solution.

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***Abstract*— To survive that is *'to eat and not to be eaten'* so as to live on. Whatever its spatial and temporal level of organization, to survive and live on, every living system owns 7 invariant qualitative degrees of freedom. Any living system is formed by embedments and juxtapositions of pre-existing systems. The same goes for man banking systems! How are the local quantitative laws of the spatial-temporal structuring and functioning of banking systems associated with the basic law of survival of living systems? How do the local actors become mutually integrated into their global whole? And reversely (systemic constructal law), why and how is the global whole reciprocally integrating the local parceners? Is victory a strategic success? What are the roots of interdependence, conflicts and strategic order challenges? How is emerging a new power balance? Can banking systems survive as parasitic systems? Like a "food chain" is a *"money chain"* a way of violence escalade? The evolution of living systems is often seen as a "cooperative evolution" resulting from altruist behaviours. It could be modelled and simulated using games such as *the prisoners' dilemma game*, a canonical example of a game that shows why 2 individuals might not cooperate, even though it appears to be in their best interests to do so. Is the "prisoners' dilemma" game justifying extortion? What can we learn from Reinforcement Learning Dynamics in Social Dilemmas? In reality, humans display a systematic bias towards cooperative behaviour, much more so than predicted by models of "rational" self-interested action. Models based on different kinds of payoffs and driving forces (where people forecast how the game would be played if they formed coalitions to maximize their forecasts) are shown to make better predictions which resemble reality.**

Key words: agoantagonism, *"Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages"* (ARMSADA http://armsada.eu), commensalism, ecology, economy, inputs, money chain, Nash equilibrium, outputs, parasitism, Pareto equilibrium, Ponzi pyramid, prisoners' dilemma, toxic products, "win-win"

INTRODUCTION

For living systems to survive that is *first 'to eat and not to be eaten'* [3]. In a predator-prey relationship to survive the predator must eat preys but not too much. The predator's survival is limited by its prey's limitations of survival [5]. ***Soon or late the preys are to be eaten***. But sometimes preys can win and even eat predators. That is the case of bacterial preys which eat predator amoebas, mycobacteria or cancer cells which destroy their predator immune cells. Whatever its level of organization, to live on, any living system has ***'to be lucky'*** so as *'to be at the right place at the right time'* [9]. Whatever is its spatial and temporal level of organization, to survive and live on it owns 7 invariant qualitative characteristics [3]: **figure 1**. To survive every living system is a particular place for mobilization of matter and energy. Entering flows (INPUTS) are used to make products and wastes which are then used, stored (THROUGHPUTS) or excreted (OUTPUTS): figure 1. If the OUTPUTS/INPUTS balance allows an internal accumulation of matter and energy, the system may grow in mass. Growth (quantitative increase) is not a goal in itself but it is always a prerequisite phase for development (acquisition of new qualitative capabilities) and reproduction (figure 1). Formed by embedments and juxtapositions of pre-existing systems in a new Whole (*endophysiotope*), a living system is always part of a food chain; it eats and is eaten, within an *ecoexotope* of survival it shares with other living systems (figure 1). *'Soon or late it is impossible not to be eaten.'* Man is not an exception [5, 8, 10].

Man species is a champion for enhancing growth of domestic plants and animals but for its own growth [7, 8, 10]! Man species is ensuring its survival through the increase of the hosting capacity of its ecoexotope of survival (figure 1). The same goes for Man societies which are often guided by quantitative economic considerations such as "saving more and more money" [11, 12] rather than by qualitative ethic considerations: "enough food for everyone everywhere" [8].

Living systems are food producing systems. We do know how they work [4, 10]. The modularity of living systems allows both a partial location and a global recycling of matter and energy [3]. The pleiotropy of the structures and functions, allowing *'to kill two birds with one stone'*, is a mechanism of exaptation. Within any ecoexotope, the ***agoantagonistic relations balance*** soon or late ends in the disappearance of predators and a reduction of biodiversity [7]. Only the merging into Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages (ARMSADA) allows the emergence of a new biodiversity [6, 7]. Banking systems are money producing systems. We do know how they work [18]. Can their comparison with living systems permit to understand the origin of the current economic and living crises? And thus suggest adequate solutions [8, 20]?

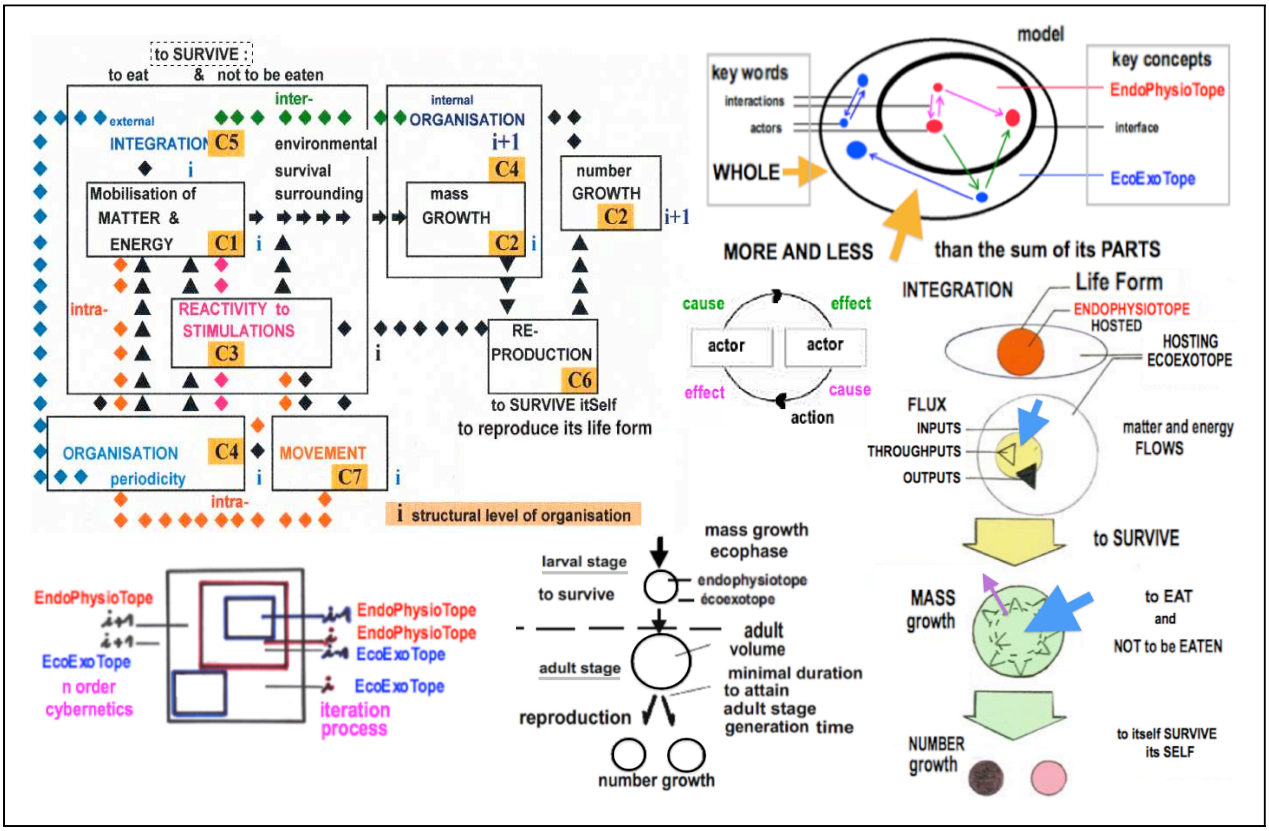


Figure 1. Living systems structuring and functioning: *"interaction is construction, construction is interaction."* [3, 6, 7]

Whatever its spatial and temporal level of organisation, to live on, any living system,owns 7 invariant qualitative Capabilities (top left scheme): C1 mobilisation of matter and energy flows ,C2 growth (=accumulation), C3 reaction to stimulations, C4 organisation into space and through time, C5 ***integration*** (from integer: "to make one") into an ***ecoexotope*** (exo: external, tope: space-time, eco: of inhabitation) of survival, shared with other forms of life, C6 re-production of its self, and C7 movement. These 7 capacities allow its ***endophysiotope*** (endo: internal, tope: space-time, physio: of functioning) to be hosted by an ecoexotope which furnishes the endophysiotope a hosting capacity, but only if the endophysiotope owns an adapted capacity to be hosted in it (integration). A system is always made of 3 kinds of entities: actors, interactions and the whole (top right model). It is always more and less than the sum of its parts. But whatever the system, actors are interacting and each action is a cause of an effect which may also be a cause (feedback) [16]: interaction is construction and construction is interaction (systemic constructal law). A living system is always a system of systems (down left scheme) made by embedments and juxtapositions of previous systems. An endophysiotope at a ***i*** level is an ecoexotope of survival for a ***i-1*** level endophysiotope. It is an iteration process (a "Matryoshka race"). Formed by embedments and juxtapositions of pre-existing systems in a new Whole (endophysiotope), a living system is always a part of a food chain -it eats and is eaten, within an ecoexotope of survival shared with other living systems-. Growth (quantitative mass increase) is not a goal in itself but it is always a prerequisite phase (larval stage) before the endophysiotope development (acquisition of new qualitative capacities) and its reproduction (number growth). During the mass growth eco-phase, a mass threshold must be passed to reach the minimum volume so as to acquire the adult stage."The capacity of reproduction has a cost paid by growth." But a minimum duration (generation time) is required in order to gain it. To survive every living system is a particular place for mobilisation of matter and energy (down right scheme). Entering flows (INPUTS) are used to make products and wastes which are then used, stored (THROUGHPUTS) or excreted (OUTPUTS). If the OUTPUTS/INPUTS balance allows an internal accumulation of matter and energy, the system's mass may grow [3, 4].

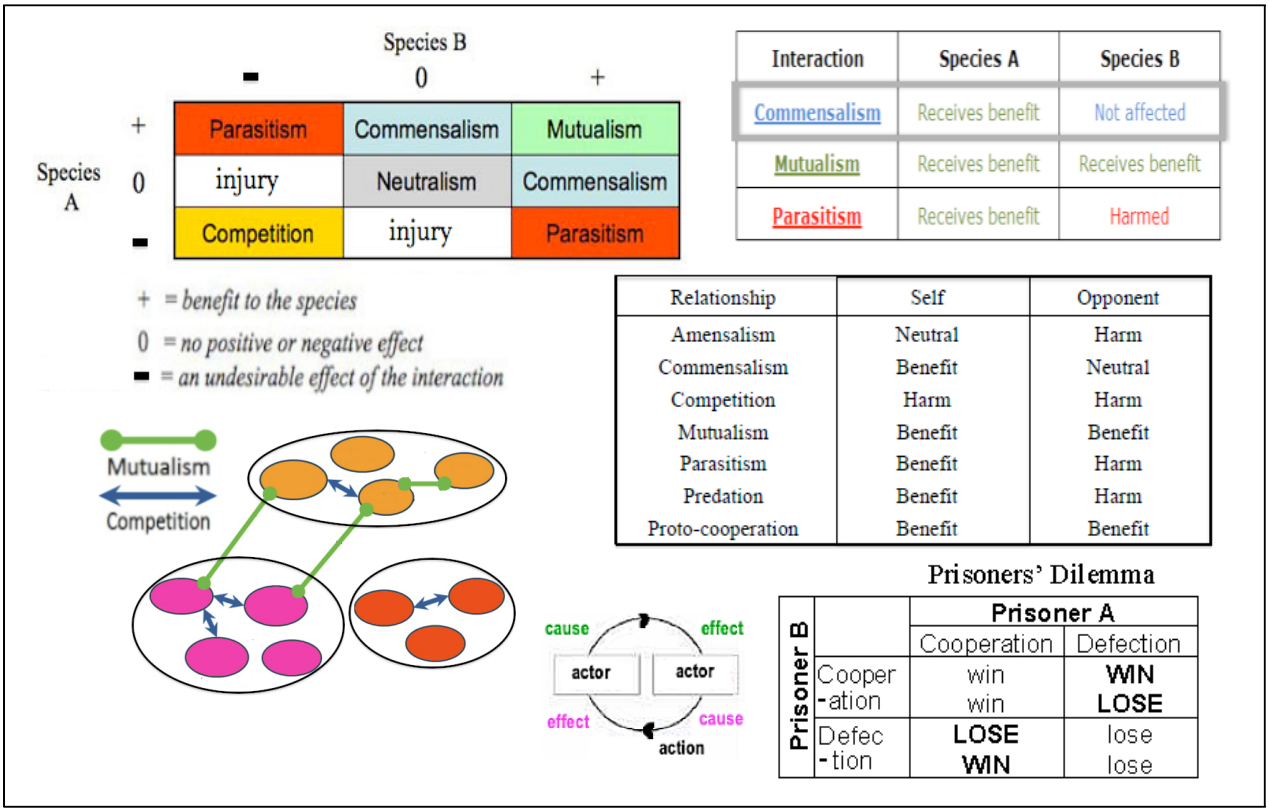
1. Money Flows Modelling

Workers exchange their labour against money [11]. This money INPUT allows a person to buy food (to survive that is first to eat) and goods (in order not to be eaten by infectious diseases or to enhance her/his capacity of reproduction): **figure 2**. The two goals for our society to make money are health and beauty! If money inputs are exceeding their needs working consumers (or consuming workers) may put their money into a bank (or not). Money flows can be analysed in terms of interactions, but biologically sounding! In food chains, into an ecosystem, in a commensalism situation only one partner receives benefits. The same goes in a parasitic situation but here the other partner is harmed! Only a mutualistic situation allows both partners to have some benefits: **table I**. If the bank takes your money and if you can get it back as you want, when you want and freely (without charge), it is a commensalism situation. You and the bank are "eating" the same money at the same table [11]. But, without your money, the bank has no money and cannot make money with your money. What does that mean in terms of advantages and disadvantages? If the bank has enough money -because a lot of people are storing their money in it- the bank can lend you some money. It is an advantage for you. You can buy something you could not otherwise. But there are never advantages without disadvantages. You must pay off your loan with interests. It is a disadvantage for you but an advantage for the bank. All that is an advantage for you is a disadvantage for the bank and reciprocally. How is that situation balanced? If enough deposits the bank has enough money to make loans, to give consumers credits that allow the bank to make money with your money: **figure 3**.

It is a STORE-TAKE-MAKE situation (figures 2 & 3) [7, 10, 11].

To increase cash-flow [13], to have more money to loan, a bank can give you interests for the money you will put in its stock for a while. Obviously, the interest you will earn will be less than the money the bank will store with its loans interests. It is a mutualistic situation. You are at the same table, in the same food chain (the same money chain). You are nourishing the bank and the bank is nourishing you. Of course the bank is eating more than you are. Of course you can earn money only if other people in the same bank (the same food chain) have not enough money and if you have too much (figure 2). With increasing money stocks, the bank can keep on making more money and is growing. Depending on the situation you are, either your money is growing too (if you are loaning money to the bank) or your debt is if you are a borrowing money from the bank. Only those associated with the bank growth see their money increase too [13].

TABLE I. AGO-ANTAGONISTIC INTERACTIONS BETWEEN 2 **LOCALLY ISOLATED** SPECIES.



Interaction	Species A	Species B
Commensalism	Receives benefit	Not affected
Mutualism	Receives benefit	Receives benefit
Parasitism	Receives benefit	Harmed

Relationship	Self	Opponent
Amensalism	Neutral	Harm
Commensalism	Benefit	Neutral
Competition	Harm	Harm
Mutualism	Benefit	Benefit
Parasitism	Benefit	Harm
Predation	Benefit	Harm
Proto-cooperation	Benefit	Benefit

Prisoners' Dilemma

Prisoner B		Prisoner A: Cooperation	Prisoner A: Defection
	Cooper-ation	win win	**WIN** **LOSE**
	Defec-tion	**LOSE** **WIN**	lose lose

There are **different kinds of description of interactions between living systems**. Wether a species/a partner (species A or species B) receives (or not) benefits from another one, we usually distinguish 3 patterns of interactions: commensalism (e.g. "to eat at the same table", but unequally!), mutualism (e.g. "to share benefits", though maybe unequally in quality or quantity), parasitism (e.g. "to eat another system" which is harmed). Depending on the kinds of interactions (+ benefit, - no benefit but harmed effects, 0 no positive or negative effect) we can add up neutralism, competition or injury situations. Some people even add up the notions of amensalism or proto-cooperation [1]. These interactions build up a network (which can be graphed) between the different actors of a system of systems (figure 1). Yet whatever the interaction (for example here: mutualism or competition, each actor's action among every couple of actors is both a cause and an effect: systemic constructal law. Usually, and particularly in economic models, only a simplified point of view is taken into account with 2 actors (Prisoners' dilemma "game"), which results in 3 situations: "win-win" (The 2 actors cooperate.), "lose-lose" (The 2 actors defect.), "lose-win" or "win-lose" (One cooperates and loses, the other one defects and wins) [12]. Of course, due to feed-backs [16, 18], reality is far more complex [19]!

2. THE CURRENT CRISIS SITUATION

Today in France, after the 2009 economic crisis (which was due to a lack of growth from States and banks), by the law, you must put your money in banks. You can use cash only for small payments. You cannot be paid with cash. Your salary must be deposited into a bank. You must use credit cards, checks or money orders. You must pay for all of that!

When you trust banks with your money you pay a bank service management to be able to use your money or to give your money back. You will never get back all the money you shall deposit! And when you get your money back you have to pay again some money to the bank. The bank is always making money with every money deposit. You get no advantage in putting your money into the bank. The bank always has advantages when you put your money into the bank. The bank takes a part of your money for you to use your money. And the bank freely uses your money to make loans and to make money. Services banks were freely giving to you a century ago in exchange for them to use your money you must now pay for! It is a parasitic situation. ***The bank is eating your money!*** In less than a century, we ran from a synergetic situation to a parasitic one (table I). Every day you are gaining and using money, the bank grows and you have less money. The body (money mass) of the bank grows allowing the bank to have more and more money and to create new shelters... in order to store more money... just like parasitic living systems are laying more and more eggs! More money entering the bank, more growth for the bank (figure 2) and increased lifetime for the bank [11].

That is exactly what we see in ***a Ponzi scheme*** (figure 3), and that is exactly how modern States are growing and extending their area of growth and lifetime. Looking back to 2007, the 2009 and 2012 crises were crises for consumers not for banks. For banks, it was an extraordinary growth increase [13]. Their cash-flow is now bigger than ever... with a 3 fold increase in 5 years. *"You cannot eat the pie and have the pie"* but banks can! Not only banks but also States are growing, adding more and more "layers" to ***a Ponzi pyramid*** [11, 12]. But, soon or late, and faster and faster, a limit comes up! And the limitation for restoring growth is harder and harder to break. Crises were exploding when the U.S.A. local growth stopped and the U.S.A. government had to extend its market outside, and worldwide, to a more and more global world market. China did the same but better. The European Union did the same but with less efficiency [13].

In a Ponzi pyramid the higher you are the more money you get. And the lower you are the less you get. It is a Pareto situation: 20% people get 80% of money or goods (and power), the remaining 80% get only 20%. You take money from the poorest to make money for the richest. It is typically a prisoners' dilemma game situation [11, 12, 17].

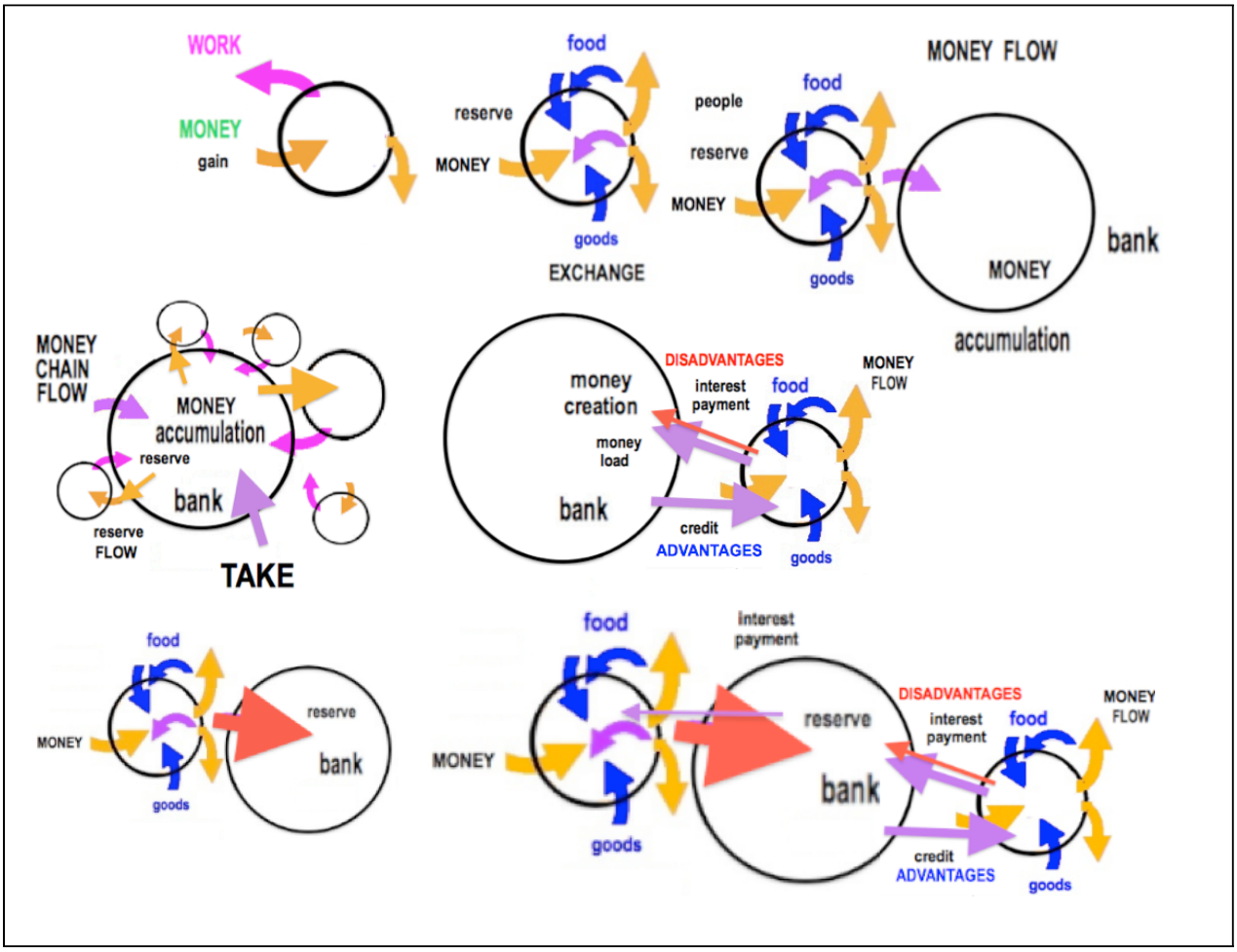


Figure 2. Banking systems structuring and functioning: from synergism to commensalism and mutualism. [11]

(-from top left to down right-) Works people do allow them **to gain money** they use **to buy foods and goods** (economic EXCHANGE). If some money is not spent it can be stored (**accumulation**) through bank deposit (or not!). Storing more money allows banks to have enough **money flow control** (TAKE) and thus to **loan money** to people who need it to buy foods or goods. But the bank takes "guarantees" to ensure that the money returns and with **interests**. Money flow is always balanced in favour of the bank (**money creation**), but without any cost for other people (local commensalism). To have a credit is an ADVANTAGE for people if they can pay the interests and give the money back. Money is neither their property nor that of the bank but the deposits/property of other people (global synergism). To have more money deposits, bigger amounts and for longer durations, banks can give (or not...) money interests paid by the bank to "money-sharers" ("*I can put your money to work for you. Don't ask me how. Just let me show you*"). But the interests paid by banks are always smaller that the interests the banks earn through money loans. There are never advantages without DISADVANTAGES. For consumers, disadvantages are greater than advantages. But for banks, advantages are greater than disadvantages. Of course banks have taxes and salaries to pay, but they do so with money they make from debts and with money they get from people who do not have debts but "stored" money (Pareto situation [19]: figure 4). Nowadays money is virtual. Only banks know how much money there is!

3. Is Crisis a Problem or a Solution?

Ecosystems are often graphed as a pyramid. And just like in a Ponzi pyramid the survival of the highest level depends on the survival of the largest down one [6, 10]. But in a food chain, the living pyramid is built from the bottom up. The Ponzi one is built from top to bottom. Indeed, food chains are not pyramids but mixed networks: "all eggs are not in the same basket", "diversity is the rule", "reciprocal exchanges are the law". Only reciprocal rewards can stabilize cooperation [14, 15] and, soon or late, allow the merging of all the actors into an ARMSADA [4, 7, 10].

That situation of reciprocal and mutual sharing of advantages and disadvantages can be modeled: **figure 5**.

Economic systems are neither machineries nor mechanistic linear systems but complex non-linear dynamic systems of systems as are ecosystems. Thus, quality (rather than quantity), development (rather than) growth, creation and variety (rather than accumulation) are the keys. Sharing limited resources could be equally done but parts amounts are decreasing with number in an hyperbolic way (**figure 4**) and "you cannot eat the pie and have the pie" [8, 12]. The 2009 crisis is the cause (or the effect?) of a double increase of households debts [13]. In the loads of interests, commissions, financial services and administrative costs are voluntarily and artificially excluded, resulting in a false double reduction of these interests. Through debt negotiation loans durations could be twice as long resulting in at least a double increase of loans costs, and interests are paid first! More debts are more money [11, 12]!

Recession periods intervals (figure 3) are shorter and shorter: 1993-2002 (9 years), 2003-2009 (6 years), 2009-2012 (3 years), and each year now? That is the same sign of extension as for a pandemic infectious disease like flu! Flu intervals were shorter and shorter: 1918-1957 (39 years), 1957-1968 (11 years), 1968-1977 (9 years), before -as in a Ponzi pyramid- a new host was invaded (as a new food chain basis for the pyramid) [11]! And, as in a Ponzi pyramid, regrowth resulted in a "calm" of 20 years (1977-1997). But then, flu crisis intervals bursted again shorter and shorter: 1997-2003 (6 years), 2003- 2005 (2 years); in 2014, 4 different influenza viruses simultaneously were at the origin of epidemics in the Popular Republic of China. The first upturn was an advantage for Asia and Latin America, but there was no second upturn. After each break, when the upturns came, only countries from the O.P.E.C. (Organization of Petroleum Exporting Countries) still had the same growth they had before. In Europa, from the first to the second relative upturn, in 6 years unemployment doubled and no job was created. Using a Ponzi pyramid process at the world scale, only the U.S.A. stabilized their re-growth, but that was an advantage only for U.S.A. and a disadvantage for all the other countries. Only Japan enters into a "no-inflation" new developmental stage [11, 13].

Hyperbolic causes and consequences correlations are common laws in living systems (figure 4), as it is for example with the metabolic rate of the Nitrogen/Phosphorus ratio (N/P)[1]. Just like in economic supply/demand models, hyperbolic graphs can be linearized, by changing the variables or the representation used (logarithmic scale), but the dilemma remains the same... growth or development? Quantity or quality? An hyperbolic graph typically is the mark of a Pareto phenomenon (20% of actors having 80% of rewards, the remaining 80% getting only 20%), but is this an optimum or an equilibrium [21, 22, 24]? In a Pareto optimum [19], in the case of the prisoners' dilemma game [22], gamers/prisoners may cooperate and have equal rewards. In this case any other outcome gives a worse outcome for at least one player. One is rewarded: the bank, the other is threatened: the consumer. And the reward is the biggest banking systems can have. In a Nash equilibrium, each player's strategy is the best response to all other players' strategies. But it has a cost: rewards or outcomes are lesser and equally shared! That is never the case... except in the benevolent voluntary and united sector of Social and Solidarity Economy [12]![2] ARMSADAs are emerging from such processes [8, 10]: the maximum value of the whole is superior to the sum of the maximum and minimum values for an individual actor [22].

But just like in a predator-prey relationship, banks or States tell us only what they want us to hear! It is a sort of take-make-waste phenomenon like there is in dying living systems.[3] The hosting capacity, of any market or ecoexotope, is limited because of a supply and production interaction between the hosting capacity (of an ecoexotope) and the capacity to be hosted (of an endophysiotope). For living systems, growth is durable only if it is sustainable and sustained by each partner, for a benefit for their whole, as is it for an ARMSADA. For a partner to survive all the partners must survive first (and their whole too). That is not the case in hidden banking networks.[4] The loss of resources among a trophic chain causes big and small animals to be less common and less productive higher up in the food chain. But medium ones are preserved with an increase in biodiversity. In Ponzi pyramids the opposite happens. Biggest ones will be bigger, poorest ones poorer and medium ones will disappear... the Pareto 20%-80% situation!

Only reciprocal rewards may stabilise a system of systems, particularly in ecoexotopes of hard survival. Capitalism must be redefined in terms of an ecosystem. Growth (quantitative increase) is only a prerequisite and a tool for development (qualitative acquisition). Development is quality creation, step by step, using growth [3, 7, 10].

"Quantity or growth is the problem" and "Quality or development is the solution" [8].

Modelling with biological concepts [1, 4, 19] supports input-output-recycling processes [7, 8, 22, 23, 24].

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1 N is a limiting factor for both protein synthesis and nucleic acid synthesis.
Protein synthesis limits both mass and number growths [3]. Nucleic acid synthesis limits reproduction [3]. -figure 1-
P is a limiting factor for both nucleic acid synthesis and energy storage. Energy storage limits both growth and development.
For living systems, development x growth = constant, **quality x quantity = constant**. What about economic systems? -figure 4-

2 SSE in English, ESS in French.

3 If a living system does not stop its functioning because the concentration threshold of a toxic waste is under that of substrates for minimal activity, its growth shall stop quickly. The low hosting capacity of its ecoexotope lowers its endophysiotope growth. But if its endophysiotope has a high capacity to be hosted because of a low threshold of demand, its growth can be durable, even in presence of toxic wastes (figure 5).

4 In the U.S.A., in 1950, a unit of tax paid for 1 social security recipient was supported by 16.5 workers but only by 3.0 in 2009, e.g. a load increase of 5.5 fold in 60 years, a duration which equals the time before retirement, and with an increase of payment durations of 10 years (from the age of 68 to 78!). This is a hidden Ponzi pyramid "sponsored" by banks, insurances and States (Source: ***Social Security Administration, The 2010 Annual Report of The Board of Trustees, CDC, US Life Tables***). If you are 55 today, current law will pay you 75 cents on the dollar: you paid 100 at 45 and will get 75 at 65 (Source: ***The US Social Security Trust Fund, May 2011 Report to the Congress. Payable benefits as percent of scheduled benefits***). Where are the missing 25?

In a food chain *"You cannot eat the pie and have the pie!"* In a money chain banks can (figure 3).

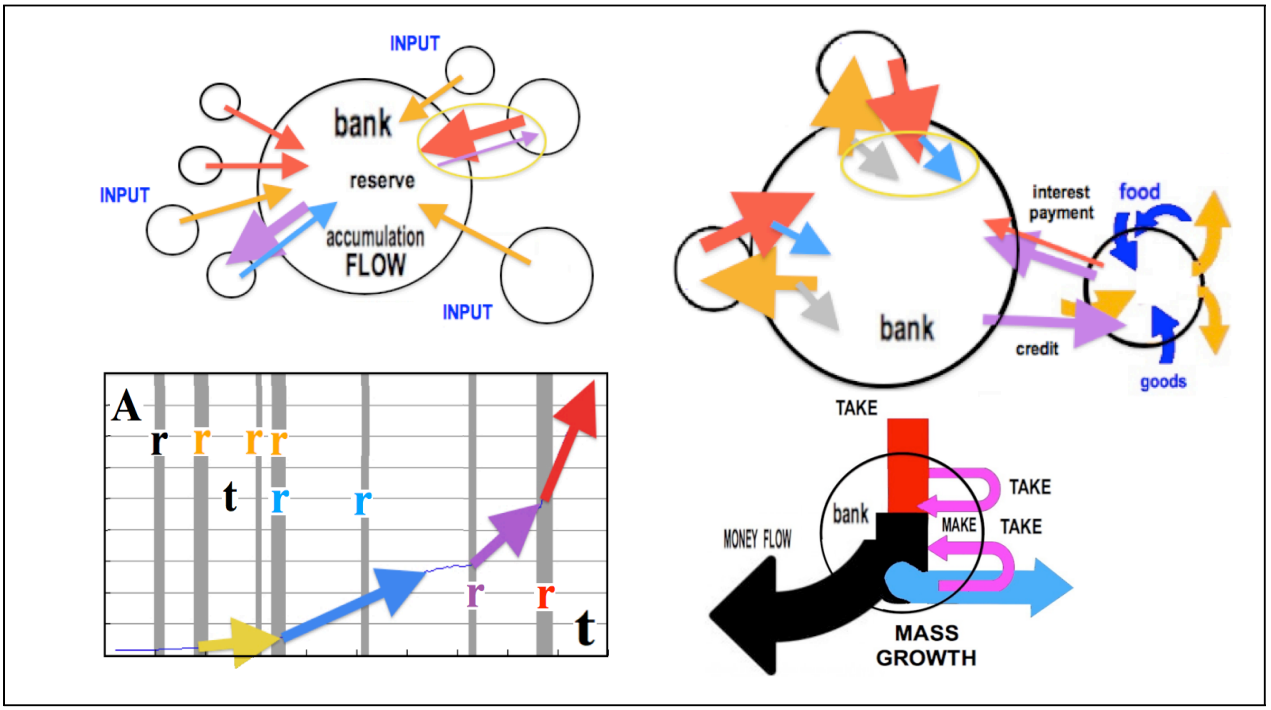

Figure 3. Banking systems structuring and functioning as parasites. [7, 11]

INPUTS (money deposits) are always greater than OUTPUTS (TAKE: figure 2) because the interests paid by banks are always smaller that the interests the banks earn through money loans (**accumulation flow**). But if you must always pay a fee to put your money into a bank and pay again to get your money back from the bank, you will never have the "availability" of your money... ***the bank is eating your money!*** It is a parasitic situation! And when States say "you must put all your money into a bank", banks can easily make money with your money and take the percentage they want from your money, when they want! It is a **TAKE-MAKE** situation (figure 1) in favour of banks. For each money flow a part is "rapt" by the bank, banks are growing but not your money! If we model this situation, **with t time, with A money amount** of a bank, or debt of a consumer (debt makes money), we typically have a Ponzi pyramid graph. Crisis situations, **r** (shaded areas), are promoting the slope increase of money accumulation and crises are nearer and nearer [13]. This graph is exactly that of the evolution of the US federal debt (as published by the US Department of Treasury Financial Management Service, from 1965 to 2013, with debt increasing from a factor 1 to 20, in 50 years -from research.stlouisfed.org-). More debts make more money only for banks: *"Banks can eat the pie and have the pie."*

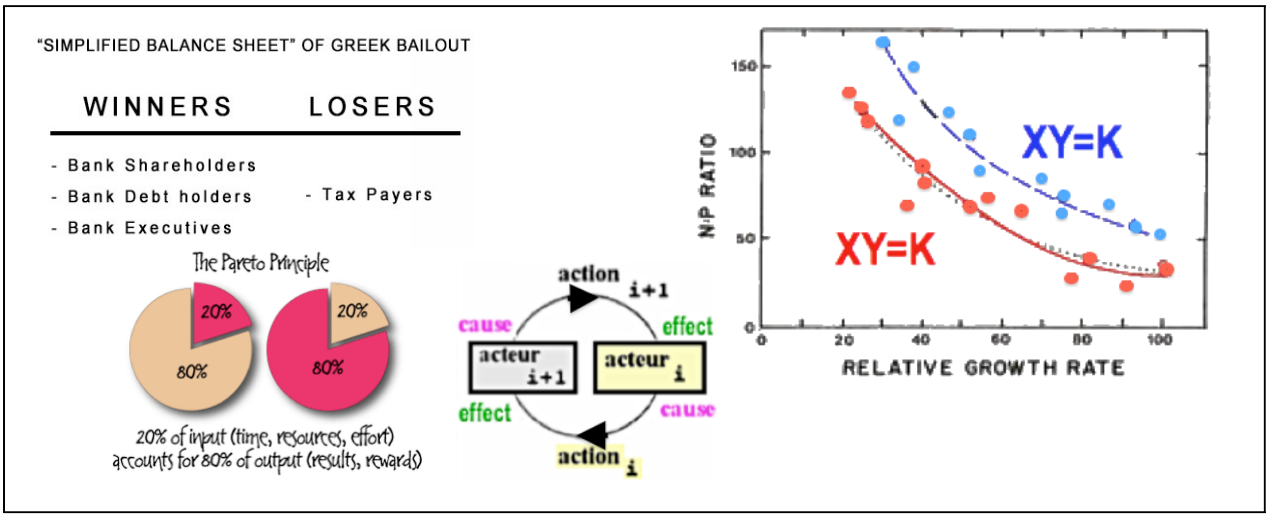

Figure 4. Banking/Living systems structuring and functioning: *limits and limitations.* [4, 7, 11]

-left- The winners-losers prisoners' dilemma game (table I) as a Pareto equilibrium example [19]: simplified example of the Greek bailout.
-right- Example of biological hyperbolic laws **XY=K** of growth for 2 different Legumes species, with Y=N/P (where N is a limiting factor for both protein and nucleic acid syntheses, with protein synthesis limiting both mass and number growths, and P a limiting factor for both nucleic acid synthesis and energy storage, with energy storage limiting both growth and development) and X=relative growth rate. For living systems, development x growth = constant, **quality x quantity = constant** [7, 8, 10]. The higher the growth X, the smaller the developmental step [8].
-middle- ***The Systemic Constructal Law***: ***"interaction is construction, construction is interaction"***. Actors from adjacent levels of organisation are interacting, causes getting effects and effects being new causes getting other effects and so on. Growth is a prerequisite for development [4].

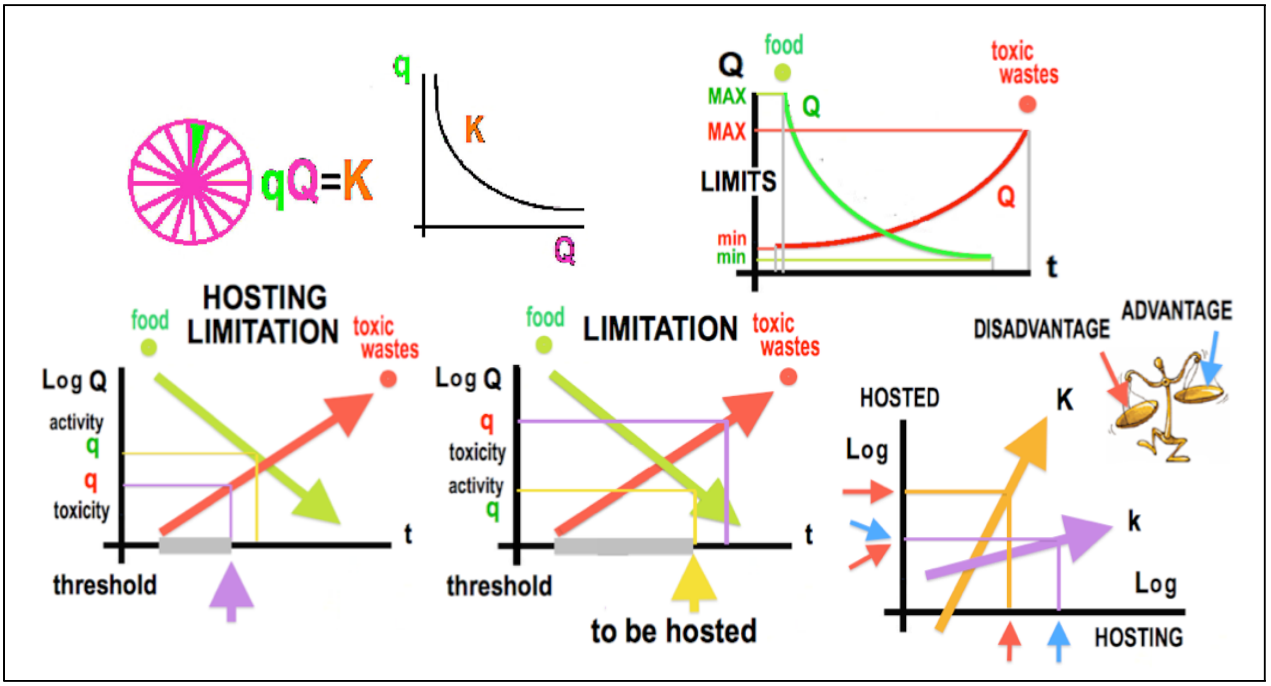

Figure 5. Living systems structuring and functioning: *"interaction is construction, construction is interaction."* [3, 7, 8, 11]

-top, from left to right- Hyperbolic law **qO=K** [8]: the higher the number of parts q, the smaller the equal amount of each Q (not a Pareto situation here), just like in an economic situation (with the demand and production relationship); in an ecological situation the bigger the amount of food consumed, the bigger the wastes. But food is limited, under a minimal food threshold or above a maximal supported wastes threshold growth stops. -down, from left to right- Ecoexotope Hosting Capacity Limitation and Endophysiotope Capacity to be Hosted [7]. If a living system does not stop its functioning due to a concentration threshold of toxic waste (q toxicity) being lower than the concentration threshold of substrates for its minimal activity (q activity), its growth will stop very rapidly and eventually it shall die (down left). The low hosting capacity of its ecoexotope lowers the duration of its endophysiotope growth (figure 1). But if its endophysiotope has a high capacity to be hosted, "thanks for" a low threshold of demand (q activity is low) the system growth can last, even in presence of toxic wastes (q toxicity above q activity) [8]. ARMSADA emergence, as a whole, results (down right) from complementing effects of the different **local capacities to be hosted** of the various partners (K and k). Globally they share the same ecoexotope of survival but using different local parts of its **global hosting capacity** [4, 7]. Depending on the local mutual changes of the hosting capacity all that is an advantage for a partner is a disadvantage for another one and reciprocally [10].

DISCUSSION-CONCLUSION

For banking systems to grow and survive that is *'to eat money and have their money not to be eaten' just like* for living systems it is to eat food and not to be eaten [3]. But with living systems we know that in a predator-prey relationship to survive the predator must eat the matter of preys but not too much [5, 8]. The survival of the predator is limited by the limitations of survival of its preys! Isn't the same ecologic law valuable for economic systems [11]? In a century, banking systems have gone from a mutualistic functioning to a parasitic one [11]. INPUTS are used only for banks profits, to make products that earn money for people having money. Waste products, that is to say all that has a cost for banks, are paid by consumers (figure 3). Services are servitudes now! The OUTPUTS/INPUTS balance allows an internal accumulation of money but only for bank shareholders. Banking systems are growing and reproducing! And growth (quantitative increase) is their goal! Is this functioning a cooperative one [1, 23, 24] or an extortive one [12]? With living systems we know that growth is only, and always, a prerequisite phase for acquisition of new qualitative capabilities (development) [3, 4]. We also know that growth, development and survival are durable only if they are sustainable for and sustained by all the partners [3, 16]. Banking system has to learn that to survive all the consumers must survive first! That is not the case nowadays... If banking systems evolution obeys the same law living systems evolution does, only systems with a high capacity to be hosted -because of a low threshold of demand (no cost of services, no extra fees)- will last, particularly in crisis and even in presence of toxic products such as "toxic" sub-primes.[5] If "win-win" situations may exist locally[6], through globalization no win-win situation can persist at a global scale. You can never always be a winner, soon or late you will be a loser. Only ARMSADAs are lasting! Like ecology, economy obeys a cyclic organization of life [19], with growth and differentiation phases, with entrepreneurial and managerial behavior phases that are replacing one another all the time. Each phase change is an emergency situation, as is metamorphosis for living systems [4]. Macroeconomic disasters fit a power-law model [2] as fit living systems evolutionary changes due to ecological disasters [6, 8, 11]. You can never have too much money! It is only by coupling insights from ecology and economy [24] that we can begin to model and understand the complex dynamics which underlie the generation of poverty [20] and bank profits [12, 13], through growth but not for development [8]!

5 http://en.wikipedia.org/wiki/Subprime_mortgage_crisis, http://en.wikipedia.org/wiki/Toxic_asset

6 Chinese growth was 8.1% in 2011 but 7.5% in 2012 and is decreasing, Taiwan growth was 3.6% in 2013 (Xinhua, On Line). 2.4% is expected for Great-Britain in 2014, but UK is playing "his local game" not the european global one!

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