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- DR 09012 -

Relational Capability: An Indicator of Collective Empowerment

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ABSTRACT:

We define a new index for the collective empowerment of populations based on the capability of actors to have relationships and to enter into networks. This index, called "relational capability" (RC), is dynamic in the sense that the weights of its various components vary across time according to how close the population is to some poverty threshold. It relies on a shift of anthropological viewpoint, putting human relationships at the forefront. RC, which can be formalized in gametheoretic terms of networks, paves the way towards the solution of a number of unsolved issues: Reconciling autonomy and interdependence; unifying the aggregation of individual characteristics with the collective level; questioning unjust institutions and political structures within Sen's and Nussbaum's framework of capabilities.

Key-Words:

- Empowerment
- Escaping Poverty Index
- Index
- Relational Capability

RESUME :

Nous définissons un nouvel indicateur de l'*empowerment* collectif des populations, basé sur la capacité des acteurs à entrer en relation et à participer à des réseaux. Cet indicateur de « capacité relationnelle » (RC) est dynamique au sens où les pondérations attribuées à ses composantes varient dans le temps selon la façon dont une population se rapproche d'un certain seuil de pauvreté. Elle se fonde sur un changement de perspective anthropologique, qui place les relations humaines au premier plan. La capacité relationnelle, qui peut être formalisée selon le modèle de la théorie des jeux appliquée aux réseaux, ouvre des perspectives de résolution de plusieurs problèmes : réconcilier l'autonomie et l'interdépendance ; unifier l'agrégation des caractéristiques individuelles avec le niveau collectif ; mettre en question les institutions et les structures politiques injustes, dans le cadre de l'approche des capacités définie par Sen et Nussbaum.

Mots-clés :

- Capacité relationnelle
- Empowerment
- Indicateur
- Indicateur de sortie de pauvreté

JEL classification : I30, I31, I32, I38

Relational Capability: An Indicator of Collective Empowerment *

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Keywords: Relational Capability, Index, Empowerment, Escaping Poverty Index.

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"Man is by nature a political animal.
And he who by nature and not by mere accident is without a state (*Polis*),
is either a bad man or above humanity."
Aristotle, *Politics*, I,2.

1 Introduction

In this paper, we seek to lay the foundations for the definition of an index capable of taking into account the quality of interpersonal relations in a given population as well as between groups within a region. It is intended to allow understanding the way that individuals and groups attain relational empowerment, which means proving to be more or less capable of entering into a relationship in the most dense and/or most numerous and/or most distant networks —depending upon each person's lifestyle. In this context, we suggest interpreting "human poverty" as the deprivation of people's capability of entering into flourishing human relationships. Such an index could thus serve both as a measure of development for the purpose of international comparisons and as a definition for defining a quantitative threshold of human poverty. Our starting point is the anthropological assumption that relationships —be they of positive or negative nature— constitute the most important part of our lives (and not, say, the consumption or production of commodities as it is implicitly assumed in the neo-classical approach of micro-economics). A person's "relational capability" (RC) then consists in one's ability and opportunity[1] to freely choose flourishing human relationships. The free choice of people with whom to enter into relation expresses at the same time one's autonomy *and* interdependence with others, more or less close, within a given family, village, and professional or political community.

1.1 Relational Capability and social capital

One specificity of the way we suggest formalizing RC is that it implicitlt assumes that a person is not only concerned with the quality of her relationships with her neighbors but also with the "neighbors of her neighbors". This has the consequence that, at the macro level, the (deterministic) collective relational capability can be simply defined as the sum of individual capabilities. (Things get slightly more intricate and much more interesting once uncertainty is introduced. More on this later.) It amounts to being a measure of the social connectedness less the cost of the direct links among individuals. As such, our approach is closely related to the traditional view of social capital as being the positive effect of social closure – i.e., the presence of cohesive ties – in promoting a normative environment that facilitates trust and cooperation between actors (Coleman (1988, 1990)). As stressed by Coleman (1988, p. 119), "a property shared by most forms of social capital that differentiates it from other forms of capital is its public good aspect: the actor or actors who generate social capital ordinarily capture only a small part of its benefits, a fact that leads to underinvestment in social capital". It is this public good aspect that we aim at capturing in the way we define the relational payoff of an actor as depending not only upon the number of her neighbors but also upon their respective connectedness.

[1]

Our formal approach is also close to Burt's (1997, p. 340) definition of social capital as the "information and control advantages of being the broker in relations between people otherwise disconnected in social structure". This structural hole argument is again reflected, here, in our definition of an actor's relational payoff inasmuch as this payoff increases together with the density of the various otherwise disconnected components of the social network that an actor is able to link together. However, we do not restrict social capital to brokerage opportunities: Doing so would lead an actor to overevaluate links with disconnected people while, here, an actor also benefits from the various relationships among her neighbors. The same could be said from Granovetter's (1985) understanding of social capital in terms of weak ties: If one interprets such "weak ties" as links among components that are otherwise poorly interconnected, then, again, this feature is captured by the RC, but reflects only one aspect of the richness of the relational payoff.

On the other hand, we do not share the Coleman's (1988) final pessimism over the underinvestment in social capital. On the contrary, our starting point consists in hypothesizing that most people's behavior can be understood as seeking to maximize something akin to their relational payoff (to be defined *infra*). Moreover, Coleman claims (1988, p.101), "the function identified by the concept of social capital is the value of these aspects of social structure to actors as resources that they can use to achieve their interests". Again, we do not agree with this instrumentalist point of view in the sense that, according to the position adopted in this paper, relationships are not considered by an actor as an auxiliary means to serve exogenous goals: Creating and maintaining relationships within a dense network of neighbors *is* the actor's goal, with respect to which everything else (commodities, money, power, etc.) should serve as an instrument.

1.2 Reconsidering the theory of value

This means, in particular, that producing and consuming goods and services should be viewed as means towards the maximization of people's relational capability. This is evident — and has been already acknowledged by economists— for "club commodities" (Ellickson et al. (1999, 2001)), i.e., for commodities whose value increases with the number of people connected to them (such as the phone, Internet, Wikipedia, Google, Facebook, Second life, etc.): If Robinson Crusoe is the only one on Earth who owns a phone, the phone is useless. If he can talk with 6 billion people, the value of his phone becomes almost infinite! In a sense, our approach amounts to saying that most commodities and services share the same fundamental property as club commodities: Their value arises from the quantity and the quality of relationships their consumption make possible, as well as from the richness of relationships that were necessary to produce them. Most people don't watch TV "because" TV programs are intrinsically interesting, but "because" it is a way to enter into relationships with people having watched the same program (hence, sharing the same information about the world, dreaming about the same "Californian way of life", etc.). Think about it: Would you even listen to Monteverdi, read Hegel or admire Turners' masterworks if you were absolutely sure that nobody cared about them and nobody ever would?[2] Of course, there are exceptions: Even before meet-

[2]

ing Vendredi, Robinson Crusoe needs some basic "goods" in order to survive on his island — non-polluted oxygen, drinkable water, vitamins, natural sun light, etc. Let us call these "basic goods". Our viewpoint is therefore that, apart from a few basic goods (whose list should be fixed and from which many people in the world are still deprived), all commodities and services are "club goods" (or "club bads").

Obviously, this implies completely rewriting the economic theory of value both at distance from the Classical labor theory of value (Smith, Ricardo, Mill, Marx) as well as from the neo-classical utility theory of value – as formalized, e.g., in Debreu (1959). Some examples —further developped in xxx (2009a,b)— may facilitate understanding this renewed approach: "Blood diamonds", whose production requires a war in Sierra Leone and the work of children, should have a negative value *regardless* of the subsequent use rich Northern households make of them. Conversely, "fair trade" can be viewed as a (still ambiguous) first step towards the integration of relational capability into the price of marketed commodities: I buy coffee not only "because" of its "intrinsic taste" (which, from our viewpoint, is closely related to the relationships entertained during the time spent, at breakfast for instance, when drinking coffee with family) but "because", by doing so, I learn the story of some Columbian producer of coffee whom I choose to sustain.[3] Numerous situations are quite ambivalent and need a close analysis: An activity such as tourism, for instance, indicates, at first glance, the triumph of relationships over the narcisstic pleasure of consuming commodities. On the other hand, however, sexual tourism, e.g., in South-East Asia, shows that "touristic relationships" may induce major deprivations. Obviously, this approach leads us far away from the libertarian *Weltanschauung* claiming that everything that receives a "free price" *ipso facto* becomes a legitimate market commodity.[4]

1.3 Collective Relational Capability, ethics and justice

In the debates concerning the possibility of defining collective capabilities, RC permits adopting a position that is different from methodological or ontological individualism: A person is shaped by her relation to others, starting at birth, depending on the human community where she develops her capabilities of doing and being. At the same time, she has a personal identity that is distinct from the identity of the various groups to which she belongs. From this viewpoint, our position joins the ethical individualism defined by Drèze and Sen (2002, p. 6) or Robeyns (2005, p. 108) : "A commitment to ethical individualism is not incompatible with an ontology that recognizes the connections between people, their social relations, and their social embedment". Nevertheless the idea of relational capability such as we defend leads to emphasizing the ethical and political conditions allowing the expansion of the autonomy of people within the same society. This assumes focusing on social structures and on a certain homogeneity of the social fabric, so as not to reinforce the structures of dependence and exclusion of certain people or certain groups (Ibrahim, 2006).

A criticism sometimes directed at the capability approach (see, e.g., Deneulin (2006)) argues that it is hardly able to address issues related to just institutions and

3

4

political structures. Here, we propose a formal as well as empirical definition of the collective relational capability index so as to take due account of the unequal distribution of individual capabilities. (See our discussion of the Rawlsian "maximin" criterion below.) A consequence is that political recommendations that can be drawn from a measure of human development in terms of our Collective Relational Capability (CRC) will affect the reorientation of public and development policies towards the most deprived part of the population (those who are less socialized), hence will automatically involve a concern in terms of social justice and institutions — since re-socializing excluded people cannot just be a matter of empathy or philanthropy.

1.4 The link with income-like indexes

Several studies have defended the advantage of the capabilities angle of attack over approaches in terms of material resources (income-based approach) (Nussbaum, 2000). Sen highlights how capabilities understood as freedoms have both intrinsic and instrumental values, as they help individuals achieve their life projects and give them the means to increase their well-being in terms of material conditions (Sen, 1999). Our approach defends the idea that starting from the moment where the access to certain conditions of a decent life is made possible, it's appropriate to insist on relational capability as the main element of an accomplished human life: The increase of relational capability is both an increase of freedom —this is understood as autonomy and interdependence – and an increase of well-being— while this is linked to the quality of interpersonal relations. Thus our aim is to propose an indicator of dynamic relational capability which takes into account the way individuals have access to a certain number of basic goods and services (infrastructures, education, health) insofar as these goods and services are indispensable to all relations, and which insists, over a certain threshold, on the quality of relations, social environment and inclusion of people and groups in their political community.

The same issue can be tackled from a different, more methodological viewpoint. Indeed, the empirical index for relational capability is composed of various distinct components. This raises the question of how much weight should be attributed to each component in order to aggregate them into one numerical index. This problem is by no means specific to our own indicator. For example, it will arise when calculating the Human Development Index (HDI), which aggregates three basic dimensions (life expectancy, education index and Gross Domestic Product index). Usually, an equal weighting scheme for the three sub-indexes is used in the definition of the HDI. However, one wonders whether it would not make sense to give more weight to one of these components. Anand and Sen (1997) agree that doing so is, to some degree, arbitrary, and recommend that any choice of weight be open "to questioning and debating in public discussion" (1997, p. 6). Moreover, Sen (2003, p. xi) remarked that "any aggregate index with constant weights over its diverse constituent elements would tend to oversimplify the evaluative exercise". Thus, at least in a long-term perspective, Sen foresees a shift in weights, at least with respect to the construction of the HDI. (For an axiomatic approach of these issues, see xxx (2009c).) We tackle this problem for our own index by suggesting a time-varying weighting scheme that depends upon the level of some auxiliary escaping poverty index (inspired by the work of Mohammed Yunus). The lower this latter index,

the more weight is given to dimensions of the relational capability index that are related to the access to basic resources needed for any decent relationship (access to infrastructures, education, health, etc.). Thus, our relational capability index changes over time in the weight of its composition, reflecting a change of importance of its elements. For instance, in more developed and democratic countries, the emphasis may shift towards dimensions related to the social climate, individual active involvement in political and social life, etc.

2 The formal model: An introduction

Formally, we define the "relational payoff" for actor i induced by some network as being a weighted sum of the number of walks that emanate from i within the graph of people to whom i is connected less the cost, for i, of maintaining direct relationships. Hence, our index slightly departs from Jackson and Wolinski's (1996) now classical formulation of actors' payoffs in the game-theoretic modeling of network formation inasmuch as we replace the number of (direct and indirect) neighbors of individual i by the number of paths (weighted according to their length). Roughly speaking, it turns out that paying attention to the number of paths implies that one is concerned with the density of the relationships among one's (direct and indirect) neighbors. This implies some kind of long-range concern regarding the relationships of one's neighbors. We consider this both realistic from a descriptive point of view and desirable from a normative standpoint. We then define the index of Individual Relational Capability of actor i as being a stochastic operator of her random relational payoff. Indeed, since we are interested in capabilities and not in realized functionings, we hypothesize that each individual relational capability should actually be defined as being statistics about the random realizations of her functionings, that is, of the various networks in which he or she can be embedded. Which operator should be used depends upon one's aversion towards the risk of being socially marginalized or excluded: For instance, if individual i is "risk neutral", her IRC will be defined as being the expectation of his relational payoff. If, on the contrary, he or she is infinitely risk averse, her IRC will be defined as the minimum over the random realizations of his relational payoff.

A thorough development of the mathematical approach to our theory of relational capability would fall beyond the scope of this paper. This section is therefore intended only as an introduction to the theoretical background underlying our approach –see xxx (2009a,b) for details.

2.1 Social networks as adjacency matrices

An oriented graph g is a finite set of nodes (interpreted as actors) $i = 1, ..., N$, together with a set of oriented arcs (or relationships) relating nodes among each others, hence $g \subset \{1, ..., N\} \times \{1, ..., N\}$. Equivalently, g can be described by means of an adjacency square matrix $M \in \mathcal{M}_{N\times N}([-1, +1])$ where, for every couple $i \neq j$, $M(i, j) \neq 0 \iff (i, j) \in \Gamma$, and with the convention, $M(i, i) = 0\ \forall i$.

The real number $M(i, j) \in [-1, +1]$ associated with the pair (i, j) measures the quality of the relationship between actors i and j. If $M(i, j) = 0$, there is no

relationship at all. If $M(i,j) > 0$, it means that, from i's viewpoint, her relationship with j is freely chosen and beneficial. The larger $M(i,j)$, the more intense is this relation. But if $M(i,j) < 0$, then this means that i would prefer to break up the link with j —which is far from meaning that i has the opportunity to delete this nonbeneficial relationship. Think of i being a slave (or a child, or a prostitute) working for j. Then presumably, $M(i,j) < 0$ while $M(j,i) > 0$. Thus, our paradigm enables us to capture assymetric relationships, oppression, or hierarchical power.

Since we want to capture the *capability* of each individual to socialize (as opposed to her realized relational "functionings"), we shall focus on *random matrices*, i.e., on random variables G, defined on a probability space $\big(\Omega, \mathcal{A}, P\big)$ taking values in the Borel space $\mathcal{M}_{N\times N}([-1,+1])$. In the sequel, the expectation operator $E\big[\cdot\big]$ will be understood with respect to the probability P.

In the functioning-capability approach, as pointed out by Pattanaik and Xu (2006), there are three related frameworks in which an actor's living standards can be assessed: living standard based on one's achieved functioning vector only; living standard based exclusively on one's capability set; and living standard based on the combination of the agent's achieved functioning vector and capability set from which the achieved functioning vector is chosen. Here, our probabilistic definition of an individual's relational capability follows the third framework. That is, an actor is more capable whenever the set of relations that she can maintain with a certain probability is larger, or whenever the probability of maintaining a given set of relationships is higher. As for the already achieved functionings, they can be taken into account by imposing that every value g taken with positive probability by one's random variable G be compatible with a given set of functionings.

2.2 Relational capability: a formal definition

Given some realization g of the random variable G, the 1-*neighborhood* of individual i is the subset of individuals to whom i is connected in the graph g:

$$V_g^1(i) := \{j \in \{1,...,N\} \ : \ M(i,j) \neq 0\}.$$

Individual i is connected to j *via* a path of length $k \geq 2$ whenever there exist $k-1$ agents $i_1,...,i_{k-1}$ such that its richness be non-zero, i.e.:

$$\chi(i_1,...,i_{k-1}) := \prod_{h=1}^{k-1} |M(i_h, i_{h+1})| \neq 0,$$

with $i_1 = i$ and $i_k = j$. Let $V_g^k(i)$ denote the subset of indirect neighbors to whom i is connected via a path of length $k \geq 1$. Given a graph g, $d_i(g)$ denotes the degree of i in g, that is the cardinal of i's 1-neighborhood. We distinguish between positive and negative walks: The first ones are such that $M(i_h, i_{h+1}) > 0$ along the path; the second ones are such that there exists at least one h such that $M(i_h, i_{h+1}) < 0$ along the path.

Following Katz (1953) we presume that the power of prestige or, more generally, her social well-being is a weighted sum of the walks that emanate from him/her. A walk of length d is worth δ^d. Of course, this scheme gives higher weights to walks

of shorter distance, as in the connection models *à la* Jackson. If we denote by $\gamma^g_{i\to+}$ (resp. $\gamma^g_{i\to-}$) a positive (resp. negative) path in g starting at i, $\ell(\gamma^g_{i\to})$ its length, and $\chi(\gamma^g_{i\to*})$ its richness (with $* = +, -$), then the payoff of player i becomes:

$$u_i(g) := \sum_{\gamma^g_i\to+} \delta^{\ell(\gamma^g_{i\to+})}\chi(\gamma^g_{i\to+}) - d_i(g)c - \sum_{\gamma^g_i\to-} \delta^{\ell(\gamma^g_{i\to-})}\chi(\gamma^g_{i\to-}). \tag{1}$$

As there are many ways to maximize (1), our definition is sufficiently broad to capture various "styles" of every-day living: Don Giovanni, for instance, will tend to maximize the number of his relationships $d_i(g)$ at the cost of neglecting their richness while Tristan typically optimizes the richness of his love to Isolde, perhaps at the cost of neglecting $d_i(g)$. In this sense, our approach stands halfway between a purely Kantian viewpoint (which would refuse to dictate everybody's lifestyle) and the more Aristotelian approach (which is not afraid of giving a substantive definition of the "common good"). Indeed, by imposing relationships as the major vehicule for people's "good", we do take an Aristotelian option, but we try to do so in a way that gives as much freedom as possible to people in the choice of their lifestyle.

A first definition of the relational capability of actor i is then given by the expectation of her payoff:

$$U_i(g) := E\big[u_i(g)\big]. \tag{2}$$

2.3 Bonding and bridging

Burt (1992) has challenged the widespread idea that societies belonging to a more dense network should experience a more rapid development: Think of a tribe of people, living on an isolated island, entirely disconnected from the rest of the world. Burt has thus suggested that "structural holes" should play a role in transmitting new ideas or new ways of life, so that their frequency should serve as a criterion of the ability of a group to experience development. Our opinion is that, behind this debate, there are two, partly contradictory, anthropological pictures: on the one hand, a rather "communitarian" viewpoint will tend to favor the density (and quality) of relationships within one's immediate neighborhood ; on the other hand, a more "libertarian" point of view will tend to put the accent on the competition among individuals, hence on the ability of an agent to grasp new information from various sources, with whom she does not aim at entertaining strong, intense relationships. According to this latter point of view, the greater the number of people to whom i is connected who do *not* belong to the "small world" of $V^1(i)$, the greater is i's capability for developing new ways of thinking, loving and living.

Our definition of the relational capablity suggests a way of reconciling both approaches. Indeed, adopting Burt's approach in a unilateral way that would neglect the density-quality of networks prompts the following criticism: What would be the potential economic richness for a businessman of the City of entertaining a weak relationship with an Afghan farmer living alone in the mountains, even though he clearly has no relationships with any member of this businessman's "small world" ? In other words, "structural holes" can be useful only if they enable to connect two, perhaps far distant but otherwise highly dense, small worlds. This is exaclty what the relational capablity, as defined in this paper, tries to capture: Indeed,

when considering the expected density of relations among people belonging to $V^k(i)$ (with k large), i no longer focuses on her immediate small world, but rather on the potential social richness of the small worlds to which she is indirectly related.

2.4 Expectation versus Maximin

Here, the random feature of (2) is captured by means of the expectation operator $E[\cdot]$. This amounts to assuming that people are risk-neutral with respect to the danger of poorly socializing. An alternative approach would consist in assuming that people are *strongly risk-adverse*: Instead of maximizing (a linear combination of) the expectation of the richness of their respective random neighborhoods, people seek to maximize the worst realization of these random neighborhoods. Given some real-valued random variable $\psi : \big(\Omega, \mathcal{A}, P\big) \to \mathbb{R}$, Let us write $\min[\cdot]$ for the operator:

$$\min[\psi] := \min_{\omega \in \Omega} \psi(\omega).$$

In a society where people feel strongly insecure about their possibility of being marginalized, one would define the relational capablity of i as:

$$U_i(g) := \min\big[u_i(g)\big]. \tag{3}$$

Our point of view is that certain populations favor the attitude encapsulated in the definition of the risk-neutral relational capability, while others value behaviors closer to the "maximin" attitude, captured through (3).

Incidentally, the question as to whether, from a normative viewpoint, the preference should be given to one of these two behaviors crosses the famous debate among "utilitarians" and "Rawlsian" social philosophers. Indeed, Rawls' main defence of the "difference principle" is that, behind the veil of ignorance, strongly risk-adverse citizens should rather choose a social contract that favors the worst social position. On the contrary, utilitarianism —see, e.g., Harsanyi (1975)— can be viewed as resulting from the assumption that citizens, being behind the veil of ignorance, are risk-neutral, hence tend to agree on the social contract that maximizes the average social position of each citizen. Rephrased in the context of network societies, these two political-philosophical approaches are can be formalized in our framework by means either of (2) or (3).

3 Indexes

At present, we will describe the guidelines which could be used to compare the empowerment of individuals and groups (where the double index of relational capability at the individual and collective levels comes from) and the standard of living. Of course, our goal is not to minimize the importance of programs that fight against poverty. This is why we have developed an index of escaping poverty, based on the model proposed by Mohammed Yunus of Bangladesh and which is used by the Grameen Bank to evaluate the way which microcredit programs allow individuals who benefit from them to escape poverty. This index says something about the level of economic underdevelopment in the concerned areas. But it doesn't say anything, by itself, about the cooperation between individuals, nor about their ability to make

choices and get involved in their political community. This is why the relational capability index completes this first index of escaping poverty. The idea is to direct the actions led by government institutions as well as by international institutions and private actors (companies, NGOs, etc.)

3.1 Escaping poverty index

Several types of indices allow measuring the standard of living of populations. The approach of these capabilities allows compensating for certain deficiencies of resource-based approaches focused on the revenue indexes. The HDI (Human Development Indicator) developed by the UNDP incorporates the data relative to the GDP per inhabitant, the life expectancy at birth, the rates of primary education and adult literacy. Thus, it measures at the same time a population's average level of wealth, access to health and access to education. In order to achieve a more perceptive measure of poverty in a given area, we will use certain criteria established by M. Yunus, which allow assessing if a person has escaped poverty. Yunus himself emphasizes that this list should be adapted according to the local context.

The following criteria are given by Yunus (2008) in order to appreciate the efficiency of programs fighting against poverty:

– a tin-roofed house (or a value equivalent to $370);
– access to drinkable water;
– clean toilets;
– grammar school education;
– three complete meals per day;
– sufficient clothes and protection (mosquito nets);
– possibility of having medical expenses paid for in case of illness;
– a savings account with at least $75;
– sources of additional income possible in case of difficulty.

Thus, the criteria proposed by Yunus takes up the three dimensions considered by the HDI (income, health, education) but elaborates them in terms of material life conditions and adding elements concerning the ability of people to save. Let's note that the quasi-totality of the variables considered concern effective functionings of individuals. Two criteria are relative to the capacities of people, concerning the means to face unforeseen difficulties or disease. Finally, the index doesn't address the social and political context in which such populations live, or their ability to take decisions, of their civil and political rights.

3.2 Individual Relational Capability (IRC)

Our relational anthropology states that personal identity is shaped in the relationship with the other and it enables defining as a key condition of human development the implementation of RC. We distinguish four components of this capability at the individual level:

1) to be integrated in networks;

2) to commit oneself to a project within a group, aimed at serving a common good, a social interest; to take part in decision-making in a political society;

3) to have specific attachments to others: friendship, love, etc.;

4) to try to value others' objectives, considering them as ends.

1) The integration in networks is the first component of the IRC. Network is defined very broadly as a set – open or closed – of relationships – horizontal and vertical – organized in a society. From the first network into which the newborn is integrated, her family, to the community that surrounds the deceased person, human life is spent in networks. At this stage, we consider imposed and inherited networks as well as chosen networks. Part of our identity is formed through given networks and part of it thanks to our voluntary commitment to others. The lack of freedom, which is the definition of prison, is a means of preventing people from belonging to networks that constitute social life. The characteristic of exclusion consists in the absence of participation in networks due to isolation and the inability to escape it (Boltanski & Chiapello, 1999). The lack of exercise of relational capability can be measured through this indicator of a weak participation in networks – whether institutional or not. When related to our formal definition of the IRC, an increase of this first component amounts to decreasing the cost c of direct relationships. For instance, being held in jail implies that c grows to infinity. On the contrary, having access to infrastructures, owning a car or a mobile phone, listening to radio or watching TV, all this certainly means that c decreases (at least for certain kinds of relationships). It is worth noting, however, that these "club commodities" which facilitate relationships do not necessarily entail individual private ownership: going to the cinema (or to a concert) might be a welfare-improvement in terms of people's relational capablity in comparison to watching TV (or listening to a CD) alone; temporarily borrowing a publicly owned bicycle might be also a welfare-improvement in comparison with privately owning a bicycle that remains unused most of the time. This opens the door for an economics of functionings –where private-public joint ventures would manage commodities that can be temporarily borrowed at low cost by citizens–, which still remains to be articulated.

2) The second component is related to the voluntary commitment with others for a specific project concerning a common good or a collective interest. It implies the participation in the decision-making process within a political community. We focus here on the chosen networks and, more specifically, on the personal commitment in society. This commitment can take different forms: Political, social, cultural, and associative. It is a way of participating in social development and it enables the development of this relational capability towards a social utility. Stressing the importance of any such commitment is closely related to the definition of a fair society as a society promoting a complex equality (Walzer, 1983) among citizens: it implies the assessment of the capability owned by anybody in a given community to be recognized in one or another sphere of his life, and this recognition is facilitated by the active and autonomous involvement in a social network. This perspective implies that measures be taken to avoid the pre-emption of a few over certain functions and their domination of different domains of social life: For example, when the richest

are also the ones who lead the political game, control the access to the best education for their children, etc. This commitment to different networks in a pluralist society can be measured by several indicators: Political vote, participation of the worst off in the decision-making process at a local level, voluntary commitment to a group or association within the community, etc.

Back to our construction of the ICR: This second component captures the fact that an individual is interested in the number of walks that emanate from her, and not only in the number of her neighbors. Indeed, the density of the neighborhoods to which an individual is connected is intrinsically related to the number of walks that cross these neighborhoods, hence to Katz's poverty index. And this density, in turn, is deeply related to the social quality of the community of which the individual under scrutiny is a member.

3) The third component of the relational capability concerns the feelings for the others in an interpersonal relation: developing friendship and love. Human growth is favored by the quality of love a human being receives and gives. This love may be more or less exclusive; it implies the relation between two free persons in the above-defined sense. Love is might be the highest expression of human freedom as autonomy and interdependence. And we know from Nussbaum (2009) and from Mozart's *Le Nozze di Figaro* that the political-democratic dimension is not absent from one's ability and opportunity to feel love towards somebody. Thus we can measure this by different indicators: By whom a person feels she is loved, the number of close friends, the number and the nature of the persons whom she could turn to in case of emergency (financial, professional problems, etc.) The third component, this time, captures the fact that an individual's ICR is an increasing function of the number of her neighbors.

4) The fourth component of the relational capability consists in valuing the other's goals, by considering her as an end: This attitude consists in extending the special care for somebody —through friendship and love— to any interpersonal relation, either direct or mediated by institutions. This is exactly what Paul Ricœur calls the logic of overabundance, concerning the implementation of the biblical Golden Rule in social networks (Ricœur (1990)). The negative definition of the Golden Rule ("Do not do to others what you do not want them to do to you") is close to a minimal and negative ethical principle ("do no harm") and expresses a logic of equivalence. But the Golden Rule in its positive side ("do unto others as you would have them do unto you") has a broader meaning: it is an invitation to contribute actively to the other's good, without any reciprocity. It opens the door to an excess: give according to your measure without expecting an equivalent gift in return. This attitude involves face-to-face encounters but it may be integrated into social, economic and political institutions: it enables the respect of the uniqueness of every person and expresses the objective of a social organization serving the dignity of each of its members. We can measure this component by the level of gifts given or received, by the time and energy freely given to community projects, and by the level of trust in a given community. This component may also be used to assess the quality of the relation between groups within a society and between societies.

The relation between this fourth component and our formal definition of the ICR is similar to that of the second component: By valuing the relationships between possibly distant neighbors, even though these relations do not reach her directly, an

actor shows her capability to value others' goals, and, in particular, the capacity of her neighbors to maintain relationships.

3.3 Towards a flourishing human life

This capability is close to several dimensions necessary to a flourishing human life in the list given by Martha Nussbaum (Nussbaum, 2000): emotions and affiliation —defined as follows.

> Emotions: *"Being able to have attachments to things and people outside ourselves; to love those who love and care for us, to grieve at their absence; in general, to love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted by overwhelming fear and anxiety, or by traumatic events of abuse or neglect. (Supporting this capability means supporting forms of human association that can be shown to be crucial in their development.)"*
>
> Affiliation: *"Being able to live with and toward others, to recognize and show concern for other human beings, to engage in various forms of social interaction; to be able to imagine the situation of another and to have compassion for that situation ; to have the capability for both justice and friendship.(Protecting this capability means protecting institutions that constitute and nourish such forms of affiliation, and also protecting the freedom of assembly and political speech.)"*

We agree, in particular, with two ideas advocated by Martha Nussbaum: Her invitation to focus public policy on the capabilities of individuals and not on the functionings. This is not about dictating to the members of a society their modes of socialization and affiliation, to make sure that they can choose to enter in relationships and to make free choices within their political community. Moreover, the insistence placed on the affiliation allows connecting the attention to others in terms of care to the political conditions of a struggle against exclusion in terms of social justice (Nussbaum, 2002, p. 134).

Our conception complements Nussbaum in three different ways. First, we give priority to this relational capability as being the core of a truly human life: in that sense we favor the priority given by Sen to the notion of freedom; but we understand this freedom differently, as autonomy and interdependence.[5] In that sense we agree with Martha Nussbaum when she stresses the fact that the capability approach for all implies limiting certain freedoms in order to diminish inequalities (Nussbaum, 2003, p.44).

Secondly, we link the personal dimension (the immediate relationship to others as fellow human beings) and the political dimension (the mediate relationship to others as "*socii*"). On the one hand, any human being is immediately embedded in a culture, in a political society and his relation to others is influenced by the ethos, by the norms, the system of values, and the form of the social bond in this particular society. On the other hand, the interpersonal relation may contribute to transform political relations through the diffusion of the logic of overabundance inside the collective rules.

[5]

Thirdly, we consider this capability within a group (bonding) and between groups (bridging). The first level deals with social inclusion and with the implementation of a complex equality between citizens of a same political community. The second level entails the consideration of the relational capability when applied to relations between different citizens or groups from different communities or states and between groups, between communities or between states, particularly in economic matters concerning distributive justice challenges.

3.4 The weighting issues

The four components of the individual relational capability is divided in two subgroups: (1,2) and (3,4). Our intuition, which will need to be confirmed by a more detailed analysis, is that the relative weight of (3,4) essentially depends on the social and cultural backgrounds under examination. (In our western societies, one witnesses an overdevelopment of the private sphere, component 3 — does it favor the human development of our societies? Conversely, many Southern societies do not know make such a clear-cut distinction between the private and the public spheres.) On the other hand, the relative weight of component 1 *vis-à-vis* component 2 should be the object of a true theoretical debate. The greater the weight given to component 1, the more the IRC index will approach the more classic indices of standard of living (IDH, World Bank, Yunus, etc.). On the contrary, the more component 2 is developed, the more the empowerment side of the relational capability will be taken into account. On the other hand, the weighting of component 2 should take into account the criticism mentioned *supra* in such a way as to not serve as an excuse for a disruption between material life conditions and sociability.

This discussion suggests redefining our IRC index in a dynamic fashion. One way to do it would be to let the weights of the four components depend upon the level of material poverty of the population, captured through the Escaping Poverty Index (EPI). For instance, one could adopt the following weights $(\mu_i)_{i=1,\dots,4}$:

$$\mu_1 := 1 - \frac{3}{4}EPI, \qquad \mu_2 = \mu_3 = \mu_4 := \frac{1}{4}EPI. \tag{4}$$

This would have the following consequence: The lower the Escaping Poverty Index, the higher the weight given to component 1.

We have applied this approach to a large survey conducted in the Spring of 2008 about 2,000 people in the Niger Delta (Nigeria) in order to evaluate the impact of oil companies on the social network of populations living in the neighborhood of plants (xxx (2009d)). Our poverty escaping index clearly suggests that the populations that are not directly linked with oil production areas are materially much poorer than those which benefited from company-run development programs. On the other hand, the IRC index, weighted according to (4), shows that social networks have been deeply damaged by the presence of oil companies, and even by their development programs (whose potentially positive impact has been partly hijacked by benefit captors), in a way that is not compensated by their improved material well-being.

Footnotes

1. Both *ability* and *opportunity* need to be emphasized: A political prisoner has the ability but not the opportunity to choose with whom she wants to live; a severily

handicapped person within a developed-democratic country has the opportunity but probably less ability to choose her neighborhood.

2. Experience in geriatric hospitals suggests, on the contrary, that many people once convinced that "nobody really cares" about their subjective life cease to read newspaper or watch TV, and even lose the ability to talk even though they may not suffer from any physiological handicap.

3. We place "because" in quotation marks in order to stress that our purpose is not to provide a causal explanation of human behavior, in the sense neo-classical economics claims to provide a "mechanics" of people's behavior, but rather to suggest an hermeneutic of the sense of people's attitude (in the Weberian sense of "*deutend Verständnis*", Cf. Weber (1922), p.1)).

4. Remember the front page of the highly reputable magazine *The Economist*, "Sex is their business" whose September 2nd 2004 issue provided an apology for prostitution in terms of "*laisser faire*" and "*laisser passer*".

5. Thus we place ourselves in the line of I. Kant's (and J. G. Fichte's) understanding of freedom (see, e.g., Kant (1785)).

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