Happiness and Human Relations: The Role of Materialistic Values. An ABM Illustration

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***Abstract* — This paper argues that a person's happiness must be understood as a phenomenon that emerges not only from her individual condition but also from her place in society. Understanding that a person is socially immersed implies giving a greater role to social interactions and social structure. The paper presents a simple model to take into consideration the role of human relations. An agent-based model (ABM) is used to illustrate the implementation of the model in understanding people's happiness.**

***Keywords* — Happiness, social interactions, agent-based models, relational values, materialistic values.**

I. Introduction

As John Donne's poem states, *No man is an island, Entire of itself, Every man is a piece of the continent, A part of the main*, the individualistic paradigm is incorrect to understand social phenomena. It is important to distinguish between individuals and persons. Individuals are always portrait out of context; they seem to be standing up nowhere. On the contrary, persons are socially immersed, they are in society; as Ortega y Gasset used to say, they are in their circumstance.

The study of happiness requires taking into consideration that it is a living experience that happens to persons and not to individuals. Happiness is experienced by persons who are in society and who are living in their circumstance. Thus, the understanding of happiness requires from incorporating a person's context, which implies for the need on incorporating how people interact with others.

It is well-known that a person's happiness emerges from her personal characteristics as well as from her society's characteristics: the social structure and the social networks that exist.

This paper wants to emphasize the role that social interactions play in generating happiness within different value contexts. In specific, the paper studies how materialistic values influence the way rational agents end up following to pursue happiness. However, rather than following an individualistic approach, this paper recognizes that human relations do play an important role in the generation of happiness; in consequence, it is necessary to incorporate people's interactions into a model to understanding happiness. A simple model is presented which assumes that happiness emerges from the consumption of both economic and relational goods; the model recognizes that it takes two –or more- agents to generate gratifying economic goods. Thus, people do interact in the generation of relational goods and their happiness does not depend on their isolated decisions but also on what their fellows do.

An agent-based model is constructed to study how people's procurement of happiness within a social-interaction context ends up generating solutions to the allocation of time between the working (the generation of income to buy economic goods) and relating (consuming relational goods.

The paper is structured as follows: Section II presents the state of the art, discussing the importance of human relations in explaining people's happiness, and showing that social interactions do emerge as a consequence of these human relations. Section III presents a model to understand a person's happiness as a consequence of her social structure and her social interactions. The model explains how rational people end up allocating their limited endowment of time between working and relating; the model also assumes that people are statically rational while they are dynamically bounded-rational. Section IV presents an illustration of the model by using an ABM model. A final comment is made in section V.

II. State Of The Art. Happiness And Human Relations

A. The importance of human relations

Happiness research has shown that human relations are crucial for people's well-being. There are many kinds of relationships which emerge from the social organization people live in.

The social-capital literature stresses the instrumental relevance of human relations. It states that by fostering trust among people economic transactions are promoted and markets expand; a process that raises people's income [1]. Human relations, however, are important by themselves; they do not only contribute to raising people's income, they do also contribute to wellbeing through many channels [2], [3], [4]. For example, the Self-Determination-Theory school states that the satisfaction of some psychological needs may be as

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important as the satisfaction of material needs. [5] view relatedness as a basic psychological need and mention that people's wellbeing declines when it is not appropriately satisfied.

Rojas [6] has shown that human relations play an important role in explaining the relatively high levels of happiness in Mexico. [7] shows the importance of the family and friendship domains of life in explaining people's satisfaction with life. People are socially immersed and, in consequence, their relation to others is crucial. The importance of human relations is such that William James argued in his Principles of Psychology that the worst punishment for somebody is not physical torture but to go by life being completely unnoticed by everyone else. As a matter of fact, many economists have recognized the importance of human relations, pointing towards some of their benefits, such as: the correspondence of sentiments [8], nurturing [9], moral support [10], and so on.

Fowler and Christakis [11] have shown that happiness is contagious. They use longitudinal data from New England to study the dynamic spread of happiness in a large social network, finding out that happy people tend to spread happiness through their social network, even beyond their first-level network. As a matter of fact, according to their results, there is likelihood for a happy person to positively impact on the happiness of friends, of friends of friends, and even of friends of friends of friends. Of course, unhappy people do also tend to spread unhappiness. As a consequence of this phenomenon, happiness and unhappiness tend to show up in clusters within a social network rather than showing a random distribution. In other words, social networks show an arrangement where happy people tend to move together while unhappy people do also tend to move closer to each other.

B. Relational goods

Some economists have started using the term relational goods to refer to those human relations that directly contribute to people's well-being [12], [13], [14], [15], [16], [17], [2], [3], [4]. They are referring to gratifying relations that satisfy some psychological and economic needs, such as: competence and self-esteem, autonomy and sense of being appreciated, and relatedness

The nature of relational goods is such that their contribution to well-being substantially declines if they are traded in markets. In other words, a larger contribution to people's well-being is made by genuine -rather than commercialized- relationships. In consequence, it can be stated that relational goods have intrinsic value because they do contribute to people's well-being. However, because relational goods are not traded in markets their value does not show up in market prices. Any attempt to commercialize relational goods would automatically diminish their value.

The production of relational goods is time intensive because building genuine and strong positive human relations usually requires time. It is for this reason that the production of relational goods competes with the production of economic goods (working to generate income in order to buy economic goods) in the allocation of a limited endowment of time. Of course, some overlapping between the production of relational and economic goods may exists, such as when good human relations do emerge in the place of work.

Standard economic theory makes no consideration of relational goods as arguments in the utility function; it assumes that utility depends on economic goods alone. However, relational goods have proven to be relevant for well-being, as well as for human motivation. Income is an irrelevant proxy for access to relational goods because it is in the nature of these goods that they cannot be purchased. Income is also an irrelevant proxy for the production of relational goods because their production is time intensive; thus, having more income does not mean that people can enjoy more relational goods, in special if greater income is attained through more hours at work. When relational goods are taken into consideration it becomes clear that income is not the only relevant input for well-being, that it is not a good proxy for utility, and that it does not fully capture a person's contribution to society.

C. Many kinds of human relations

There are many kinds of human relations. For example, the family is an ancient institution which performs many roles [18] and where many human relations emerge and evolve: with spouse or partner, with parents, which children, and with other family members. Relationships within the family are characterized by their strength, solidarity, and support, and, in general, they are expected to make an important contribution to the well-being of all family members. The importance of the family for well-being has been pointed out by [19: 393] who states that "In the case of the labour market the distribution of resources is based on competition and individual performance. The welfare states' redistribution is focused at solidarity between citizens. In the case of the family the principle is reciprocity and an informal contract between family members concerning responsibilities for the welfare of family members. There is a contract between spouses, between parents and their children, between adults and their elderly parents, and between adults and further relatives." Of course, family relationships emerge from other important kinds of relationships, like dating, courtship, and engagement relations. Relationships within the family evolve in complex manners, depending on many factors such as congeniality, occupations, economic situation, job opportunities, studies, children moving abroad or getting married, and so on.

At the social level there are many kinds of relationships, from relations with colleagues at work to relations with neighbors in the community and classmates at school. Friendship constitutes a general term which emphasizes relations which in general is considered to be positive for people's well-being; it refers to a special kind of close and warm relationship where people care to each other and where people interact, spend time together, and share some common interests. There are also sporadic but positive relationships, like those that emerge in a stadium or when using the public-transport system. Not all human relations are positive to well-

being, the term 'enemy' refers to an extreme case of relation, from which well-being is not expected to emerge.

D.Social structure and social interactions.

Persons are socially immersed and they interact with each other within a social structure and given their own social skills and resources. Thus, human relations do not emerge out of nothingness, they emerge from a given specific social structure which may promote, deter, or modify human relations.

The literature on social structures is relatively old [20], [21], [22]. However, research on the relationship between social structure, human interactions, and happiness is relatively new [23]. Even though happiness is an experience of the person, its understanding requires a perspective that moves beyond individualistic characteristics to also incorporate those characteristics of the social structure the person is immersed in. Most researchers have focused on how some social-structure characteristics correlate to people's happiness. For example, [24] study the correlation of some characteristics such as work participation, income distribution, and sociocultural integration on happiness. Other studies focus on social interactions in a specific place, such as at work [25]. These studies are inherently static and do not capture the nature of human interactions that lead to people enjoying greater or lower happiness. [26: 117] states that "The demographic and social structure of the community/society provide the basis for interactions that lead to satisfactions, subjective well being and the quality of life"

Udy [21] approaches a social structure on the basis of the following components: the individual, the group, the physical arrangement, the system, and cultural norms, values, and beliefs. It is within this structure that human interactions (relational goods) as well as the production of economic goods emerge. Different social structures may lead to different human relations and may affect people's well-being.

To study the role that the social structure plays in human behavior [27] proposes an 'embeddedness approach' which recognizes that people's actions are embedded into social relations. This approach leads to the development of interactions-based models of individual behavior. Some of these models follow a rational approach while others bend towards bounded-rationality behavior [28], [29], [30].

Social interactions do imply that a person's well-being does not only depend on her actions but also on the actions other persons make. Thus, it is impossible to understand a person's situation without a closer look at the system from which interactions emerge and in which interactions are shaped [31].

Social-interaction models provide many advantages with respect to standard economic models; for example: they characterize the feedbacks that exist within persons in a population, they allow for considering different behavioral rules beyond rational behavior, and they can even incorporate heterogeneity across personas [32], [33], [34].

E. Agent Based Models

Agent-based models (ABM) study social behavior on the basis of computational agents which can be modeled as homogeneous or heterogeneous, and which can interact among them and with their surrounding environmental conditions [35].

ABM models are inspired on Complexity theory [36], and they are deeply rooted on General Systems theory. In consequence, ABM models deal with adaptable complex systems where heterogeneous or homogeneous agents interact on the basis of non-linear specifications [37]. Many characteristics are incorporated into adaptable complex systems, such as time-dependence, self-organization, difficulty in anticipating equilibriums and emergence of aggregate qualities which cannot be foresee from individual behavior [38], [39], [40].

There are some similitudes between ABM and games, such as: the existence of players (agents), players's moves described in terms of decisions and strategies, a set of behavioral rules, and a pay-off schedule. However, ABM introduce new relevant characteristics, such as: very large numbers of players, many dimensions for modeling heterogeneity across players, an idea of space (geography) which is relevant for people's actions, learning and evolutionary processes, non-optimizing behavioral rules, and clear specification for time..

III. Model Features

A simple theoretical model is developed to study how people interact within a social network and how people's happiness emerges out of these social interactions in s given social structure. The goal is to understand people's allocation of time between working and relating in a model where people act motivated by the procurement of greater happiness.

F. Model sketch.

1. Persons derive happiness (H) on the basis of two domains of life: economic and relational. The economic domain of life refers to the satisfaction which can be attained by purchasing economic goods; income (Y) is the relevant variable reflecting a person's purchasing power. Time is required to generate income. The relational domain refers to the satisfaction which can be attained by interacting with other persons such as spouse or partner, children, friends, colleagues, neighbors and so on. Attaining gratifying human relations does require allocating time to interact to people.
2. A Cobb-Douglas specification is used to model the relationship between satisfaction in the economic and relational domains and H. The parameters of the Cobb-Douglas specification reflect the relative importance of the economic and relational domains in generating happiness. The Cobb-Douglas specification does imply a given elasticity of substitution between the economic and the relational domains of life.

3. Persons have limited endowment of time which they must allocate between the production of relational goods (generating gratifying human relations) and the generation of income (which will allow them to enjoy economic goods). Because the endowment of time is limited, people do face a trade off in the allocation of time between relational and economic goods.
4. The generation of relational goods is not a matter of each person alone, since it is required for other persons to also allocate their time to generate relational goods. The simultaneous willingness of at least two persons is required to generate gratifying relational goods. Allocating time to relational goods may be a waste of resources if nobody else in the near social circle is willing to do it. On the other hand, this may be a highly-rewarding strategy if other people are also willing to do it.
5. Finding good partners and friends is not an easy task, and not everything is under control in this venture. Random effects may play an important role in this regard. A geographical space representing the degree of closeness between persons –in their willingness for social interaction- can be imagined. Due to random factors some persons may begin their trajectory being closed to each other –and in a better position to generate gratifying relational goods- while other persons may begin far away from others and, as a consequence, face a greater cost in generating gratifying relational goods.
6. Of course, people do also take actions to move closer to other persons, in special to those persons they seem to like or be attracted to. However, trying to build gratifying human relations does require allocating time to this activity, which implies an opportunity cost in terms of the time that could be allocated to generate economic goods. Thus, actions people take to move closer to others –in the geographical/relational space- do imply an 'investment' (sacrifice of present consumption of economic goods) with an uncertain return (the reward does also depend on what other people do)
7. People's decisions are motivated by their expected happiness; however, it would be presumptuous –and probably unrealistic- to assume people act rationally. Basic heuristics can be assumed, such as evaluating only a few options at a time.

G.A Simple Model.

Persons derive happiness (H) on the basis of consumption of two goods: economic goods (E) and relational goods (R):

$$H = f(E,R) \qquad (1)$$

A Cobb-Douglas specification is assumed to generate H.

$$H = E^{\alpha} R^{1-\alpha} \qquad 0 \le \alpha \le 1 \qquad (2)$$

The importance of each domain is given by the parameter α. This parameter reflects the culturally-dependent values in the community. A simple model assumes that α is similar for everybody (a homogeneous population) The parameter α can be considered as a parameter reflecting the importance of materialistic values; as α moves closer to 1 economic goods become more important -and relational goods become less important- in generating happiness. In consequence, the value of α becomes important in studying how happiness emerges in materialistic and relational societies.

Persons have a limited endowment of time (T) which can be distributed between the two domains at a given substitution rate (e.g.: working to generate income leads to more E, while having more time to relate with people leads to more R). In consequence, there is a time constraint given by T as well as production functions which transform the time allocated to generate income (T_Y) into E, as well as the time allocated to generate relations (T_R) into R.

$$T = T_Y + T_R \qquad T_Y, T_R \ge 0 \qquad (3)$$

The time allocated to generate income generates economic satisfaction, while time allocated to generate relational goods generates relational satisfaction. For simplicity, it is assumed that:

$E=T_Y$

$R=T_R$

Thus, from equations (2) and (3) we get:

$$H = (T - T_R)^{\alpha} (T_R)^{1-\alpha} \qquad 0 \le \alpha \le 1 \qquad (4)$$

T_R becomes the only control variable in the equation; a person must decide its value on the basis of maximizing *H*. It is assumed that the person is rational in choosing T_R; in other words, the person chooses the time allocated to relational goods in order to maximize her happiness. The parameter α is assumed to be exogenous and given by cultural factors.

H.A geographical-relational map.

The geographical space is conceived as a squared map with m*m cells. Distance in this map is conceived as a relational distance, people who are close to each other in this map can develop a good relationship; however, good relationships will not emerge with people who are located farther away in this geographical space.

A person seeded in a specific cell will have a neighborhood given by the cells directly surrounding her (a Von Neumann neighborhood is assumed). In an m*m-cells map most people will have a neighborhood with 8 surrounding cells; those people placed in the border will have a neighborhood with 5 surrounding cells, and those placed in the corners will have a 3-cells neighborhood

I. Introducing social interaction: The production of relational goods

People can decide how much time to allocate to the production of relational goods; however, the quality of these goods does not only depend on the time they allocate to human relations but also on the existence of other people who are also willing to share time with them. The transformation of relational goods into happiness depends on other people's decisions. This implies for happiness being contingent on

social interactions which are not completely under any person's control.

Thus, the happiness attained by allocating time to relational goods does also depend on how many people 'are around in the neighborhood'; the greater the number of people in 'the neighborhood' the greater the happiness that can be attained by allocating time to relational goods. Thus, the following modification to the model in equation (2) is introduced in order to capture this important characteristic in the generation of gratifying relational goods:

$$H = E^{\alpha/n+1} R^{1-\alpha/n+1} \quad (5)$$

Where n refers to the number of other agents in the neighborhood, $0 \leq n \leq 8$

Once the time constraint expressed in equation (3) is taken into consideration, equation (5) becomes:

$$H = (1-T_R)^{\alpha/n+1} (T_R)^{1-\alpha/n+1} \quad (6)$$

In words, equation (6) implies that the greater the number of neighbors (people who are close to and from which good relations emerge) the greater the happiness a person can get by allocating time to human relations. In this simple model this also implies that having neighbors (nearby persons to generate high-quality relational goods with) implies a decline in the relative marginal contribution of economic goods to happiness.

J. Point of departure

At time t=1, N agents are randomly seeded in the m*m-cells map. For each agent (Ai) seeded in a specific cell c in the m*m-cells map there is an initial condition where the agent must choose TR in order to maximize her happiness. The maximization procedure is based on equation (6), given the parameter α and the value of n. Notice that because agents are randomly seeded in the map then the specific value of n for agent Ai (ni) is also random within a range from 0 to 8. The agent acts in a rational way when choosing TR, it will be that value that that maximizes her happiness

K. Decision Rule

The model introduces a decision rule where at each period t each agent Ai acts looking to pursue greater happiness. However, this is not a rational behavior because the agent does not evaluate an unlimited set of options; as a matter of fact the agent will act by looking at only one option at a time rather than by looking at multiple options in a simultaneous way. This assumption reflects bounded rationality and constitutes a heuristic (thumb rule).

First, at time t, agent Ai evaluates her current situation, which depends on the value of the parameter α and the value of ni (how many neighbors the agent has); the agent maximizes her happiness by choosing the optimal TR.

Second, agent Ai randomly chooses an empty cell in the neighborhood and then evaluates what her happiness would be at that cell. This evaluation is done by the agent under the assumption that everything else would remain constant. This is: the agent assumes that other agents will not move when she moves to the selected cell. If happiness is greater in the selected cell then the agent moves, if not then the agent remains in the same cell. If all cells in the neighborhood are occupied then the agent does not move.

Notice that an agent may decide to move in procurement of greater happiness but may end up with lower happiness. This may happen because a person's decision is based on the assumption that everything else remains constant; in other words, the agent cannot foresee nor incorporate when taking her decision what the other agents will do. In Kahneman's terminology, greater expected utility does not imply greater experienced utility because happiness also depends on what others do and this is not contemplated by the agent. This heuristic implies for agents' actions to be motivated by procuring greater happiness in a bounded-rationality way (in a dynamic process), while maximizing happiness in a rational way (in a static process at time t).

It is assumed that all agents follow this decision rule at time t and this sets the conditions for the situation at time t+1. Some agents decide to move to another cell from t to t+1 in procurement of greater happiness; while other agents do not move due to already having a full neighborhood (all cells in the neighborhood are occupied) or because the selected cell does not imply greater happiness). If two or more agents decide to move to the same cell then the program randomly selects one of the agents to move while the others remain in their cell.

At time t+1 the whole process is repeated. At t+1 all agents will choose that level TR that maximizes their happiness, and they will then decide whether it is convenient to move or not. This creates the conditions for t+2. The process can go on for many periods.

IV. Illustration. The Impact Of Relational Values

L. Changes in the degree of materialism

The parameter α reflects the predominant values in the society; a value of α closer to 1 indicates a materialistic culture where economic goods have a greater importance in people's happiness, while a value of α closer to 0 reflects the predominance of a relational culture where human relations have a greater importance in people's happiness. The following illustration studies the impact of changes in materialistic values on people's allocation of time. It is studied how people allocate their time between working and relating as materialistic values (the value of the parameter α) change. Hence, the illustration studies whether people end up looking for happiness through the consumption of economic goods or through the consumption of relational goods in a society where social interactions take place through human relations.

M. Working vs. relating. The allocation of time

The main variables to keep track of are TR (the time allocated to relational goods) and TY (the time allocated to generating income in order to consume economic goods). The values for TR and TY emerge from an optimizing process (of equation (6)), given the value of the parameter α, and the value

of n. The value of n is agent-specific, it is determined in a random way at time t=1, and then (for time t>1) it is determined by the decisions taken simultaneously by the N agents which aim for greater happiness in a bounded-rationality way.

There are different stochastic processes playing in the model; first, the initial seeding of the N agents in the m*m-cells map; second, the selection on a specific cell to be evaluated by each agent; third, the selection of a specific agent in those cases where two or more agents decide to move to the same cell.

N. The initial situation. Point of departure

At t=1 the following values are assumed:

T = 16 (Time available to be allocated between relating and working)

T_R = 8 (Time initially allocated to relational goods)

T_Y = 8 (Time initially allocated to generate income)

N = 100 (number of agents)

m =33 (geographical/relational space of *m***m*-cells map)

Other relevant information:

A_i: agent i, i = 1, . . . 100.

n_i (number of neighbors to an agent i; n_i is in between 0 and 8, it is a random variable at t=1, and it is the result of all agents decisions for t>1)

t = 1, . . . , 200 (number of periods under consideration)

$$H_{ti} = (1 - T_{R\_ti})^{\alpha / n_{ti}+1} (T_{R\_ti})^{1-\alpha / n_{ti}+1}$$

(happiness function to be optimized at any time t by any agent i)

O. Results

Netlogo is used to run the model. The parameter α is gradually changed from 0.01 to 0.99 by increments of 0.01. Thus, 99 different scenarios for materialistic values are constructed. Each scenario is run 100 times for 200 periods. Averages for TR and TY are computed at t = 200 across the 100 runs for each value of the parameter α. These averages are denoted as: MTR_200(α) and MTY_200(α). Table I shows the values for these averages for different values of the parameter α. Figures 1 and 2 show the behavior of these averages as the parameter α increases, this is, as society becomes more materialistic (and less relational).

TABLE 1
ALLOCATION OF TIME BETWEEN WORKING AND RELATING FOR DIFFERENT DEGREES OF MATERIALISTIC VALUES

Degree of materialistic values (α)	Average time allocated to relating $MT_{R\_200}(\alpha)$	Average time allocated to working $MT_{Y\_200}(\alpha)$
0.01	15.97	0.03
0.10	15.74	0.26
0.20	15.48	0.52
0.30	15.22	0.78
0.40	14.95	1.05
0.50	14.66	1.34
0.51	14.63	1.37
0.52	13.56	2.44
0.53	13.42	2.58
0.54	11.49	4.51
0.55	13.39	2.61
0.56	7.05	8.95
0.57	6.89	9.11
0.58	6.73	9.27
0.59	6.57	9.43
0.60	6.41	9.59
0.70	4.81	11.19
0.80	3.21	12.79
0.90	1.61	14.39
0.99	0.17	15.83

The results shown in Table I and in Figures 1 and 2 are not surprising, but there are some interesting issues to remark:

First, as expected, people tend to work more and to relate less as they become more materialistic. As people tend to obtain more happiness from consuming economic goods rather than from relating to other people it is reasonable for them to spend more time working in order to have enough income to buy the economic goods; this implies that less time is available to produce relational goods.

Second, the relationship between materialistic values and hours allocated to working/relating is not lineal. There seems to be a threshold value for the parameter α (at about 0.55) that implies substantial changes in the decisions agents end up taking. In societies with strong relational values people do optimize spending a few hours working and a lot of time in human relations (generating relational goods). Beginning from a highly relational society (values of the parameter α close to 0), as the society becomes more materialistic there are only small changes in people's optimal decisions in the allocation of time. People tend to spend most of its available time relating and just a few hours working. However, when the value of the parameter α reaches 0.56 substantial changes do occur in this society; an abrupt reduction in the time allocated to human relations occurs and people start working much more hours. It seems that when relational goods are not highly regarded (high value of parameter α) then social interactions do not promote the emergence of relational goods and the whole society gets into a different path towards happiness; emphasizing consumption rather than human relations

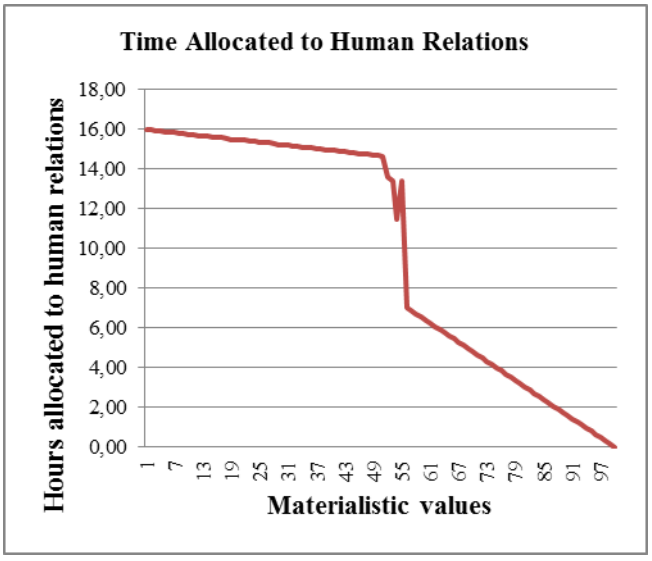

Fig. 1. Average time allocated to human relations as materialistic values become more important in a society. Average value for 100 runs of the time allocated to human relations after 200 periods.

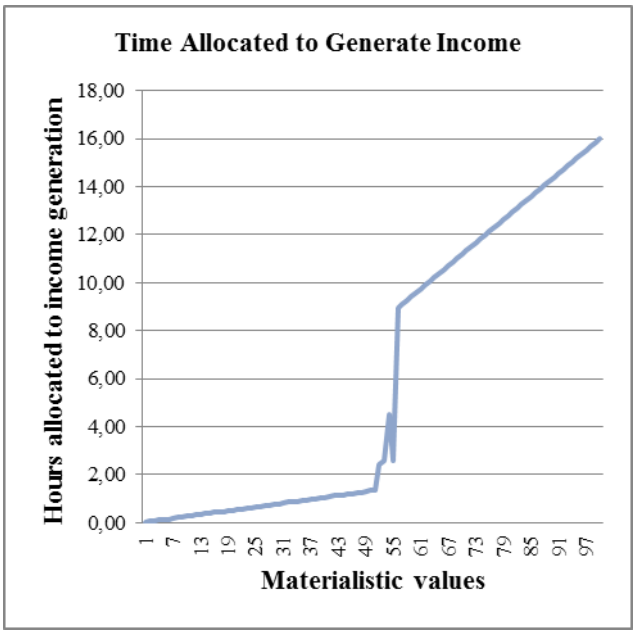

Fig. 2. Average time allocated to working (generating income) as materialistic values become more important in a society. Average value for 100 runs of the time allocated to human relations after 200 periods.

People's decisions on the allocation of time do also have important implications for the way progress is measured in societies. A materialistic society will end up producing a large quantity of economic goods but having little time to relate, while a relational society has a different way to attain happiness, where human relations are strengthened by social interactions and the society ends up with little production of material goods and a lot of time to enjoy gratifying human relations. It is clear that this behavioral strategy reflects in the indicators of production; under equal conditions, the Gross Domestic Product (GDP) tends to be higher in materialistic than in relational societies; however, it would be a big mistake to associate a greater GDP to greater happiness. In fact, a greater GDP is the result of a society becoming more materialistic, which leads to a different way of attaining happiness. In a similar way, it would be a big mistake to associate a lower GDP to lower happiness, since this may result from a society which finds optimal to attain happiness through the production of relational goods. As a matter of fact, what these findings suggest is that social progress should not be measured on the basis of GDP alone; relational goods should also be taken into account in order to understand people's happiness.

V. Final Comment

This paper has presented a simple model to illustrate the importance of social interactions in explaining people's happiness and in explaining how people pursue their happiness. Agent-based models can be used to understand complex situations where agents' decisions are contingent on other agents' actions. In these circumstances the general results for the society cannot be derived on the basis of studying individual behavior and do require a different perspective, where it is understood that persons are socially immersed.

Further research will sophisticate the model in order to get a richer understanding of how people's happiness emerges in a society.

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