

Simulation models, a way to bridge the gap between the theory and practice

Analysis of a case: The health policy of Rosario city

Regular Abstract

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Much has been said about the cultural impact and ideological components involved in the process known as “globalization”.

The aim of this work is not to continue a theoretic framework that has already been developed. The final objective of this paper is to continue the work introduced at Corfú: to try to provide specific answers to specific problems usually found in our daily work as sociologists. In other words, to bridge the gap between theory and practice.

I introduced a professional work specially aimed at a government organization in Corfu (4th International Conference of Sociocybernetics). However, the focus was to explain the use of simulation models as decision support systems and the need to consider qualitative variables in these models, rather than to analyze the mathematical model.

In accordance with the topic of this conference, I would like to show, the effects of the impact of globalization on a concrete area: health policies using a simulation model.

A SOCIOLOGIST'S POINT OF VIEW

Policies decisions mean to choose one between some possibilities.

In that decision process, an essential component is ideology. So the choice will be different depending for example, if we are neo-liberal or socialist.

On the other hand, which tools can use public organizations to support their decisions? Generally they use projects. These projects were previously evaluated for economists who take account only financial aspects of those projects: the investment required, the financial profits, the current value of long term cash flow (money in / out).

What can the sociologists add? If somebody of the government ask for our opinion about which alternative is better to choose, what tools can we use?

The economists can show inputs and outputs, a cash flow. What can the sociologists show? Only ideas expressed by words? How can we make explicit our mental models? How can we be sure that the others understand exactly what we want to explain?

As I said in Corfú, using simulations models we can represent the behavior of a social system and their changes when a policy is modify. So, we can add to the economist's point of view, taking into account:

- the system as a whole
- the causal-effects relationships

- the feedback
- the autopoiesis of the system
- the qualitative aspects (not only the financial variables)
- the effects of the relationships in a long term, not only the short
- the possibility to probe our hypothesis without changing the real system

HEALTH POLICIES SIMULATION MODEL:

This simulation model, tries to introduce and show the interrelationships among the components of the system, and to measure the possible effects when we implement specific health policies. This case takes place in a poor area of the city of Rosario (Argentina).

The work of the government of this city on public health policy was very important. At the end of 2003 it was awarded a prize by the United Nations Program for Development (O.U.N.): this city was selected among a lot of cities of Latin America as a MODEL CITY.

The interesting point of this presentation lies on the fact that the model can shows us its particular structure when we include the effects of globalization, and we can measure with it the effects on the social subsystem under analysis.(See Graph)

As we know the process called “globalization” affects some essential aspects of the community, for example:

- individualism
- rules of the market
- state nonintervention policy
- privatization areas previously developed by government

However, if a community is implementing a health policy model with a social base, in a place like the city of Rosario where results are known:

which will be the effect on this population if we change this model for another that includes the principles of globalization? Are there any tools to analyze, measure and decide if it is more convenient to continue with the current model or to change it for another with the concepts of globalization?

In my opinion, as I said in Corfú, this tool exists: the simulation models of Dynamic Systems provide us an insight on the behavior of the social system under analysis in particular conditions.

In this conference I will introduce a health policy model applied in Rosario (awarded a prize by the O.U.N.) and I will include some changes that we need in order to adjust it to the neoliberal proposal that supports globalization, measuring and evaluating the effects of both models applied to a same population, and analyzing their differences taking into account long term results.

SIMULATION MODEL:

1. The model was made by an interdisciplinary group: physicians, statisticians, sociologists.
2. The Causal graph shows relationships among the elements of the system.
3. These relationships of causality were used to make the mathematical model of the system.

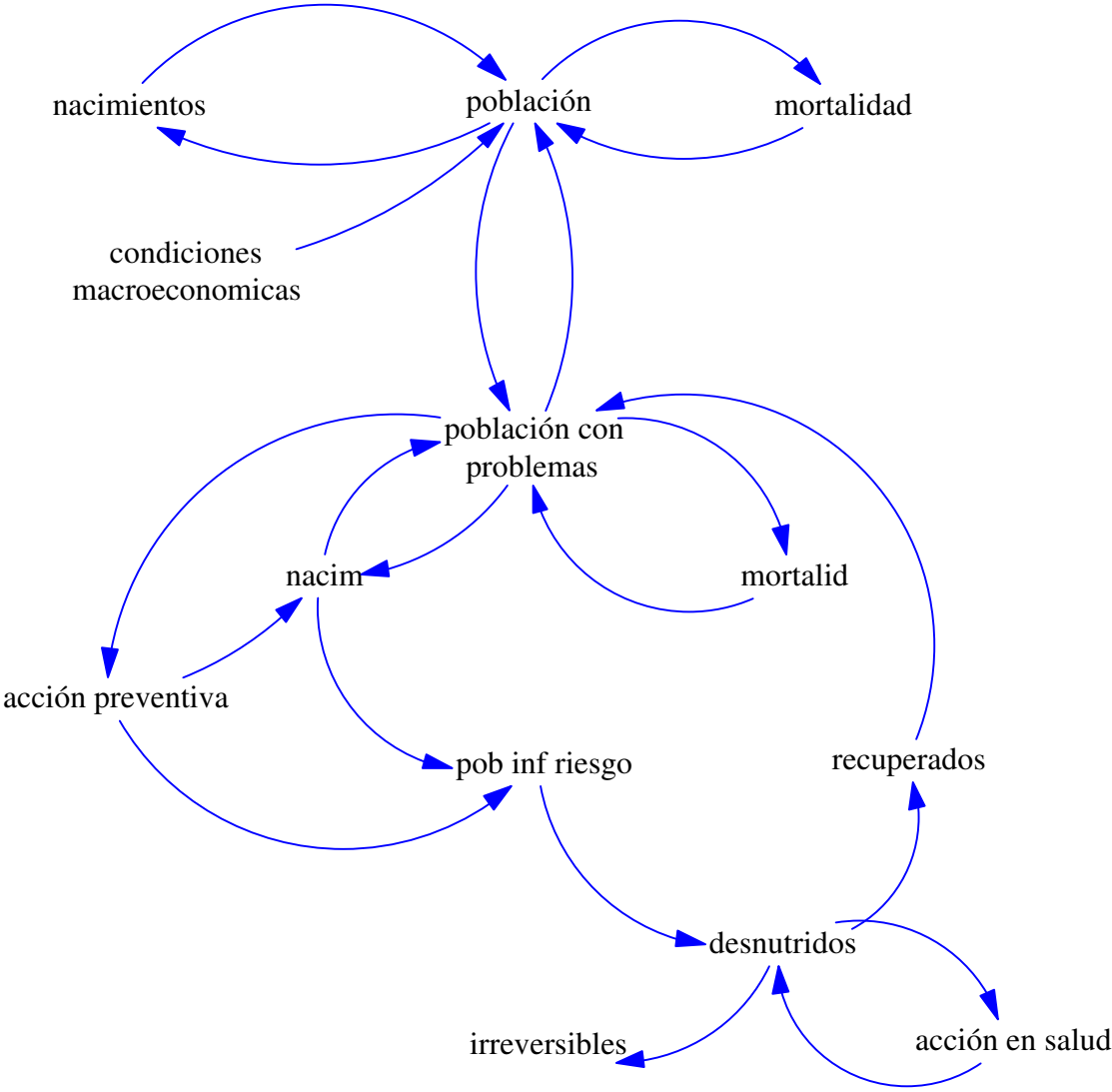
CALIBRATION OF THE MODEL:

Calibration of the model means to adjust parameters in order to obtain the

expected results. First ,a model was prepared to represent a period of time already passed. Then , results were compared to real data known by statistics .After adjusting some parameters, a model was calibrated. Results from this model were very close to real data.

If this model could represent the different states of the system of a previous period, thus, it could also show what will happen in the future, and what will happen if some parameters or policies of the structure are changed.

Causal-Effect graph



neoliberal proposal that supports globalization, measuring, evaluating and comparing the effects of both models applied to a same population, and analysing their differences taking into account long term results.

For example, we can consider what professors of the Public Health Department of the Alicante University said about the health public effects of globalization:

- a) the international Public Health Organizations cut down their budget in health
- b) day after day health is becoming a private matter rather than something run by the government
- c) to cope with humans needs not only money is necessary. We also have to take into account learning knowledge about family strategies, how to behave in specific social situations, and how to express their opinions.

So, to include globalization concepts, perhaps we must to change some parameters or to delete some elements of our model:

-the health government actions

-The preventive public actions

The health public budget

Supposing: What will happen if the health public budget decrease for example, 30 % ?

During the Conference, I will analyse this and other changes in the parameters of our model, showing the new states of the principals variables for the period 2002 – 2015.

We can see that there are two parameters where the model is very sensitive: the unemployment rate and the health public budget.

Unemployment rate depends of the macroeconomics conditions. To change this rate is not easy, and the effects are very slow.

The health public budget can be increases giving priority to health policies instead another expenses. The results can be perceive immediately.

We will see that the model is more sensitive to the budget changes than the unemployment rate.

As you will see, we can represent a graph of all variables for each policies changes.

AS A CONCLUSION:

I consider that now we can answer the question at the beginning of this paper: **If somebody of the government ask for our opinion about which alternative is better to choose in a concrete situation, what tool can the sociologists use? We can use Dynamics Systems and Simulation Models.**

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