The Impact of Globalization on the Miskito People, 1960 - 1985

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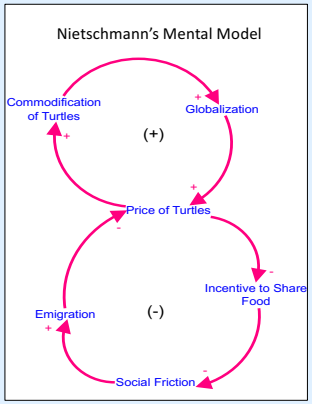
Problem and Purpose

- **Context**:
  - Geographer Bernard Nietschmann's (1979) article "Change, Inflation, and Migration in the Far Western Caribbean" describes the economic and social impact of globalization on the indigenous Miskito people located in Nicaragua.
  - The thesis of Nietschmann's article is that positive feedback loops surrounding the hunting of green turtles led to the Miskito losing the ability to sustain themselves.
- **Aims:**
  - Determine if Nietschmann's hypothesis is replicable in a systems dynamics model.
  - If so, can the increased hunting of green turtles have such a substantial impact on a society within twenty years?

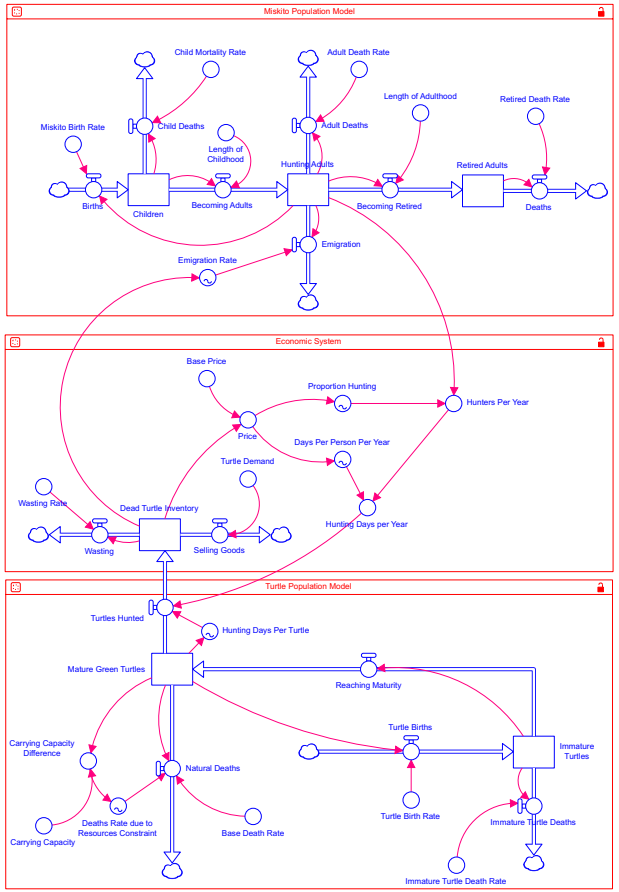


The Model

- Implemented Nietschmann's mental model into Stella
- Supplemented Nietschmann's paper with modern data on green turtle reproduction and population dynamics
- "Turtle Demand" is the key lever that determines how the economic and social systems react

Key Model Components

- Miskito Population dynamics
- Economic System
- Green turtle population dynamics



Progression of Tests

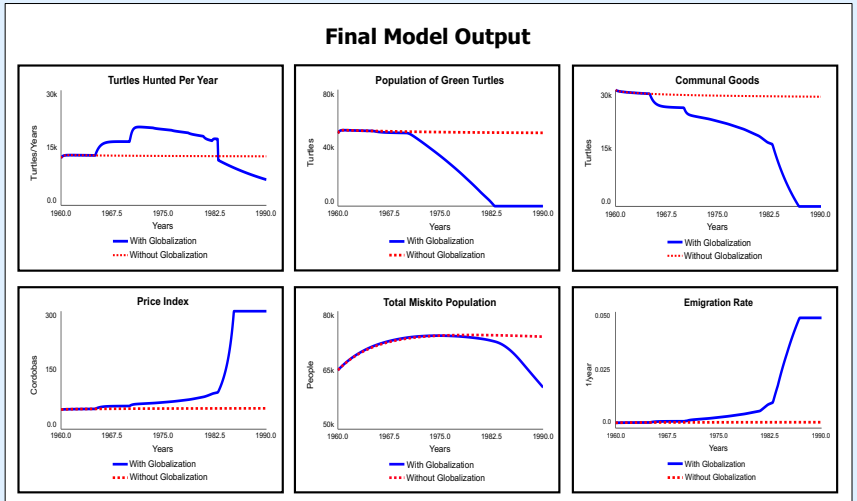
Design Process

- Iterative design process – consisted of developing twelve distinct models over the course of the term.
- A single model was developed that has the ability to represent the Miskito society with and without the impact of increased turtle hunting due to globalization-caused demand.
- In the graphs to the right, all variables are the same between the red and blue lines, except for the number of turtles demanded by the outside world, which increases from 1,500 per year to 11,500 per year.

Key Insights

- Price index enters into positive feedback loop when society can no longer maintain the necessary level of communal goods.
- When the communal goods dips down, emigration rate goes up, due to decreased social cohesion.
- The population of green turtles near the Nicaraguan coast is hunted into near extinction.

Final Model Output



"With Globalization" – maximum number of turtles demanded per year = 11500
"Without Globalization" – maximum number of turtles demanded per year = 1500

Conclusions and Implications

- Nietschmann's mental model seems to be internally consistent, and able to be implemented in Stella with accurate data on green turtle population dynamics.
- There are several policy levers that could have avoided this overshoot and collapse dynamic, such as:
  - Limiting the proportion of people hunting turtles each year.
  - Limiting the number of turtles sold to outside companies each year.
- The model predicts that if the Miskito people limited their green turtle exports to only 2,500 turtles per year, the population of green turtles could be maintained, and communal goods could remain constant.

Nicaragua – Location of Miskito People

References and Acknowledgements

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