Supplementary Figures for
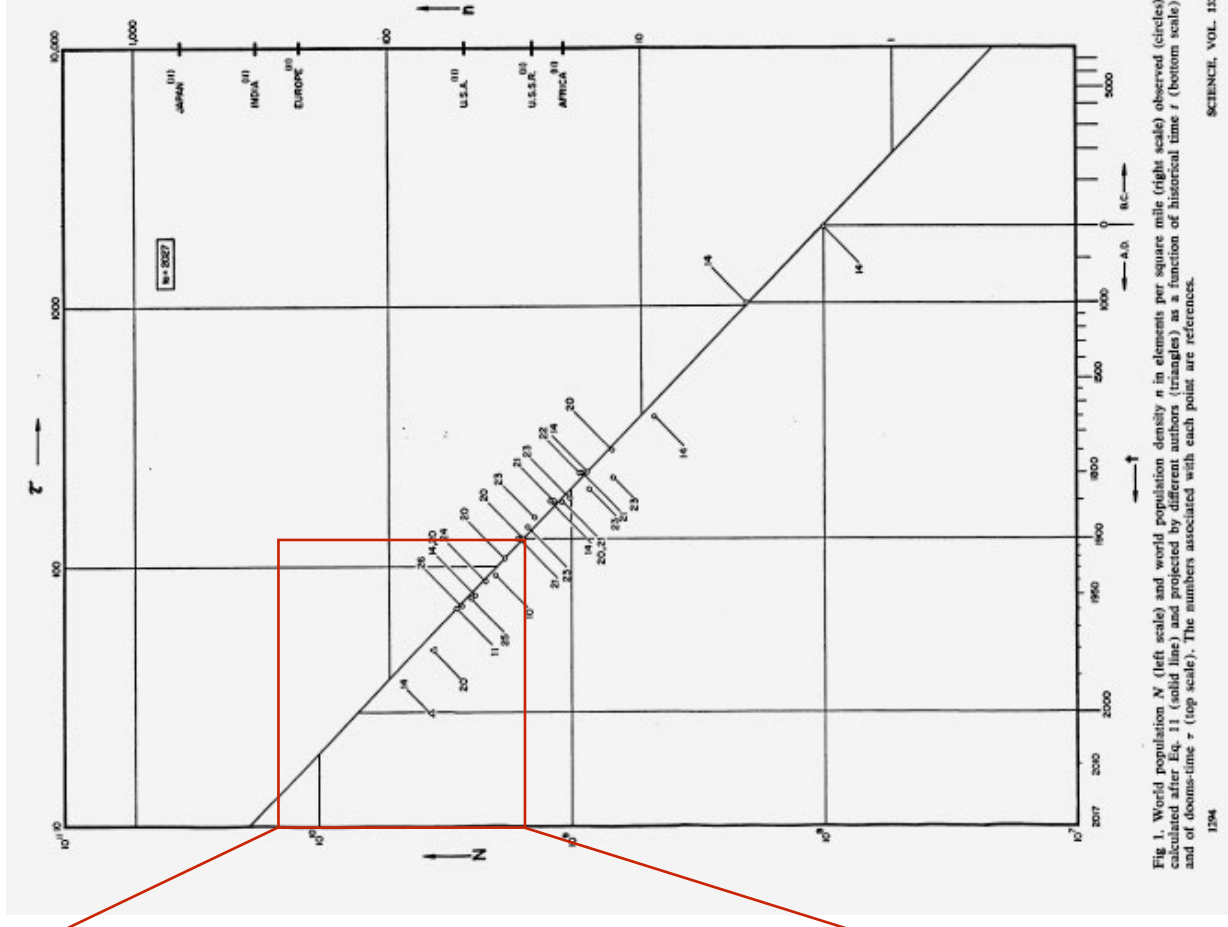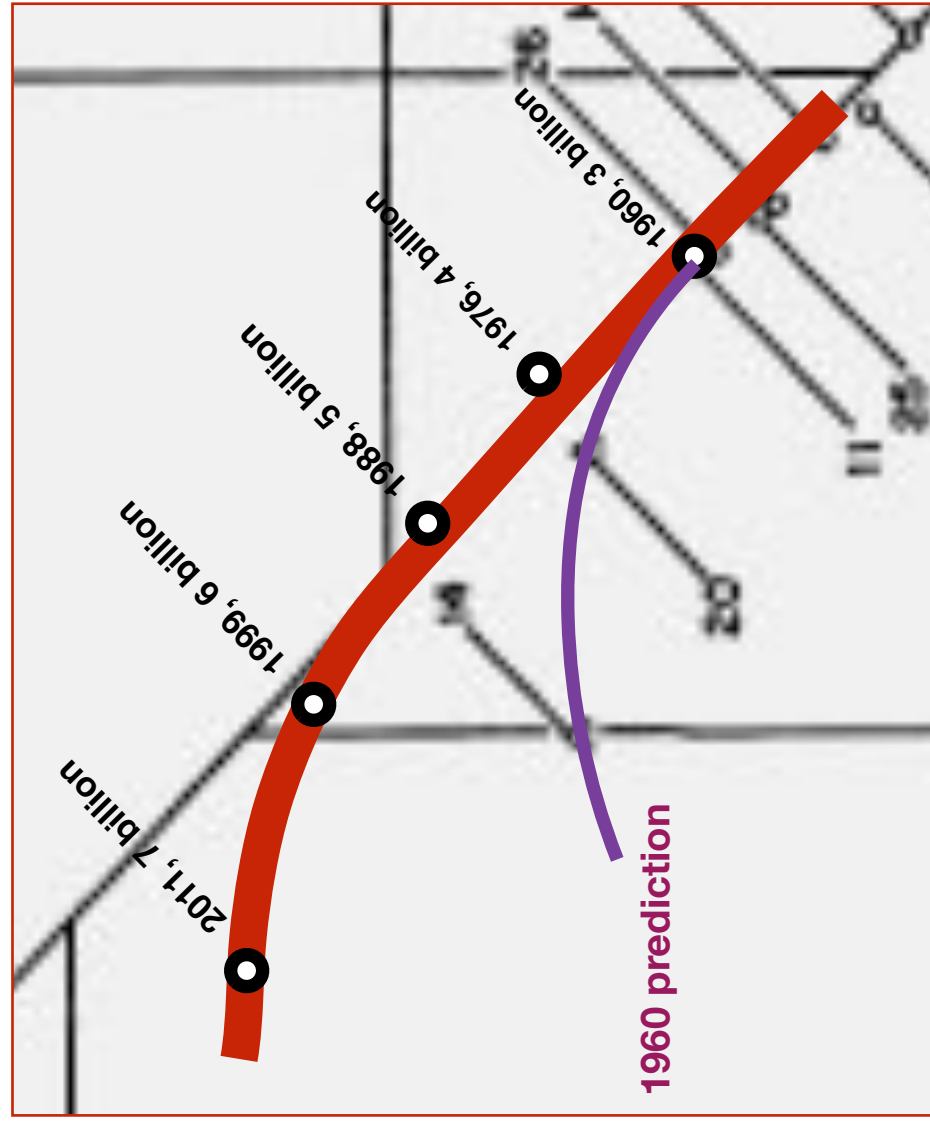# Technology versus Disease, Humans versus Nature.

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Supplementary Figure 1. Von Foerster's 1960 paper [4] showed this figure (right panel) with population plotted versus time on a log-log plot with time converted to "doomstime", the number of years before 2026, the date of the predicted hyperbolic explosion. The left panel show population milestones since 1960 plotted on a blow-up of the original figure. Note how the numbers match Von Foerster's prediction until around 1985. Von Foerster predicted that population would level off by 1985.
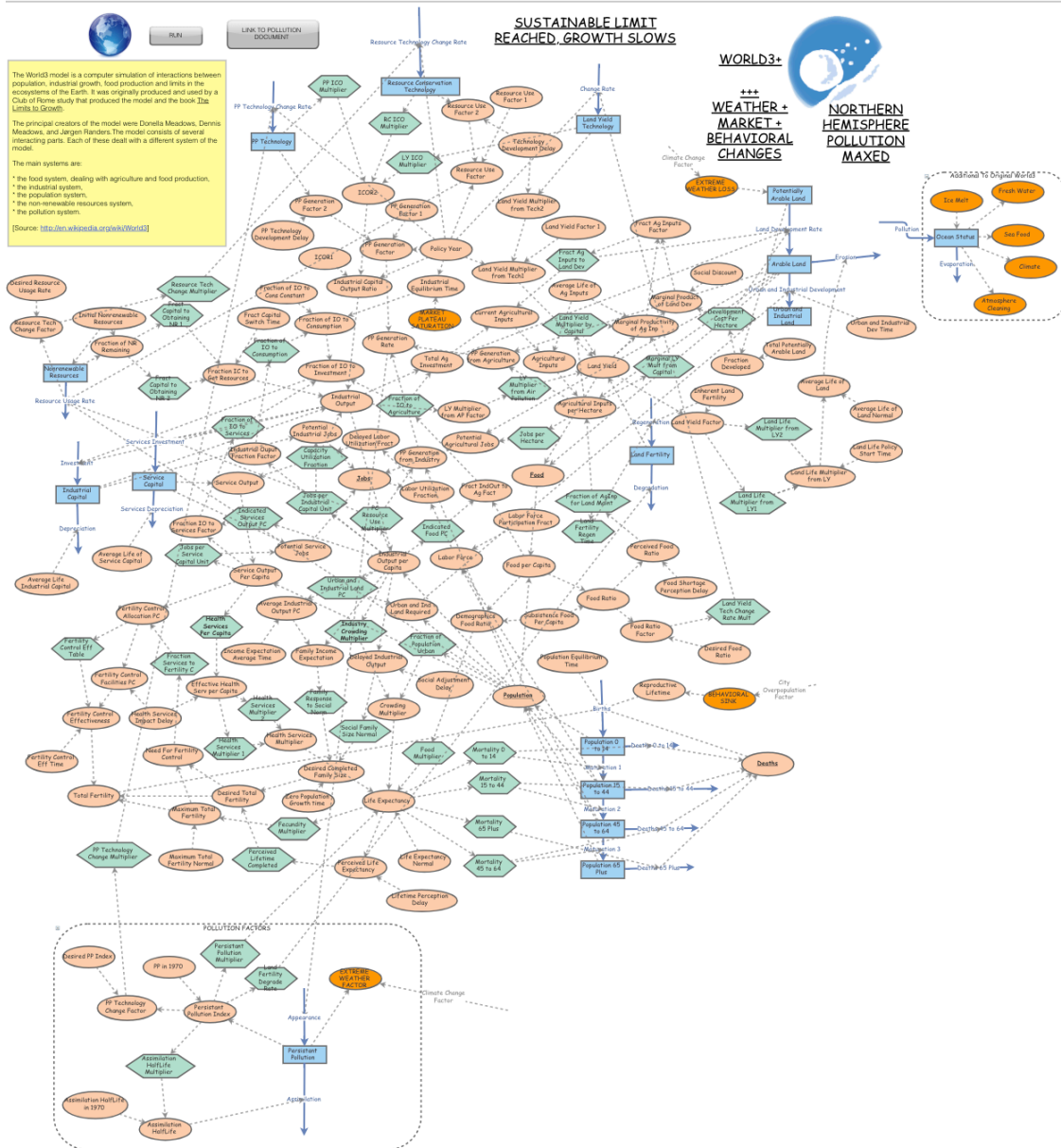
Supplementary Figure 2. World 3 model, described in Limits to Growth, the 30-year Update. [16].
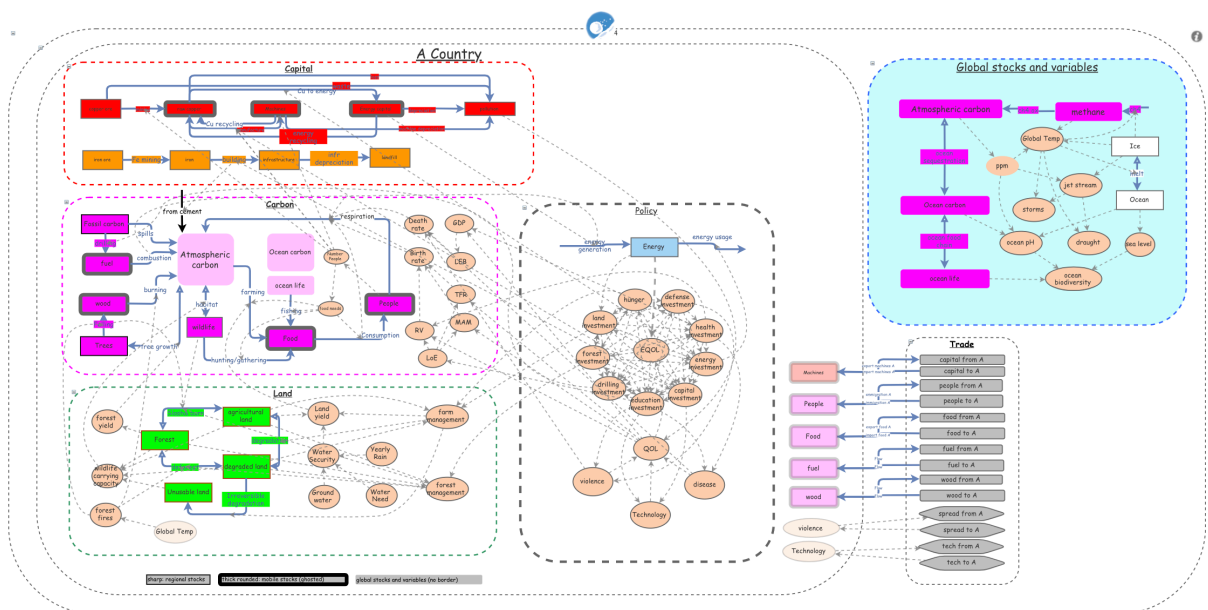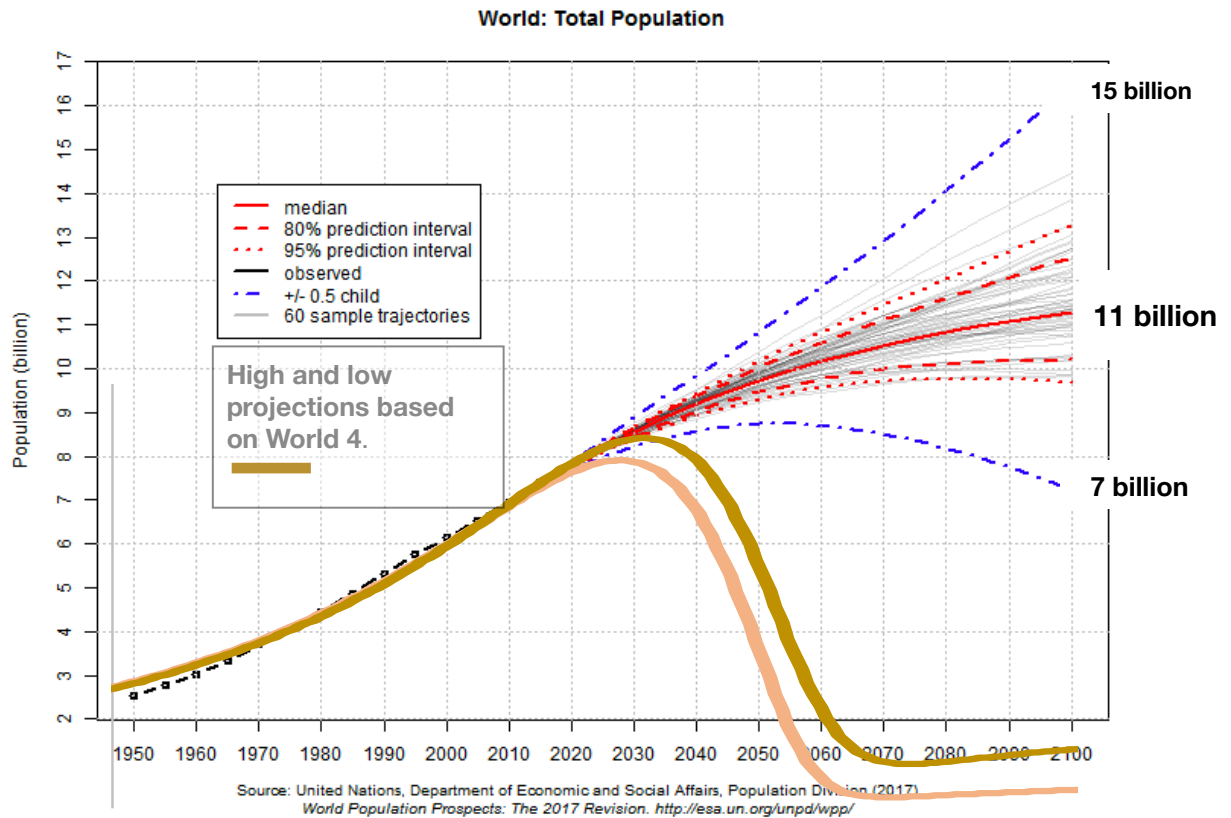
Supplementary Figure 3. World 4.1, showing one country module of a multi-country dynamic system.
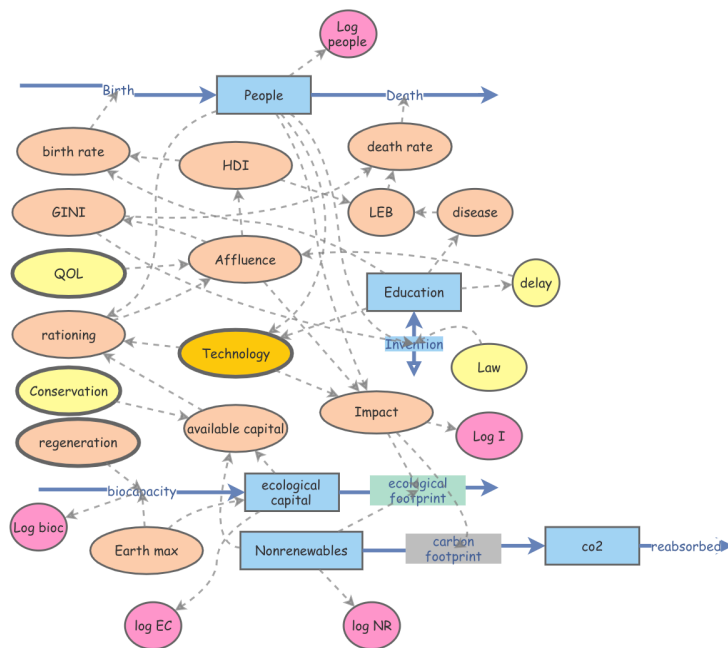
Supplementary Figure 4. World 4.2, with I=PAT (Impact), human development index (HDI), income inequality (GINI), a Technology model, and separate renewable and non-renewable resources. This model shows oscillating Lotka-Voltera-like behavior.
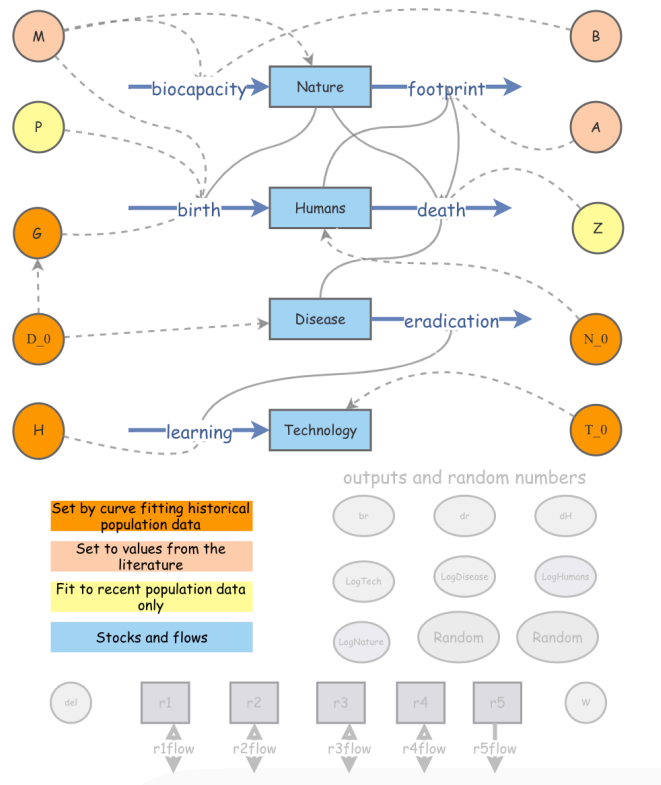
Supplementary Figure 5. World 4.3, where Technology is now defined as the ability to eradicate disease. This model reproduces hyperexponential growth, leading to a wide range of outcomes from collapse to oscillation, depending mostly on birth rate sensitivity on natural resources (P) and conservation of wild land (Z).

World: Total Population

15 billion

11 billion

7 billion

Source: United Nations, Department of Economic and Social Affairs, Population Division (2017)
World Population Prospects: The 2017 Revision. http://esa.un.org/unpd/wpp/

Supplementary Figure 6. The high and low projections for population based on World 4 are projected onto an infographic from the United Nations Department of Economic and Social Affairs, showing World 4 predictions falling below the chart.
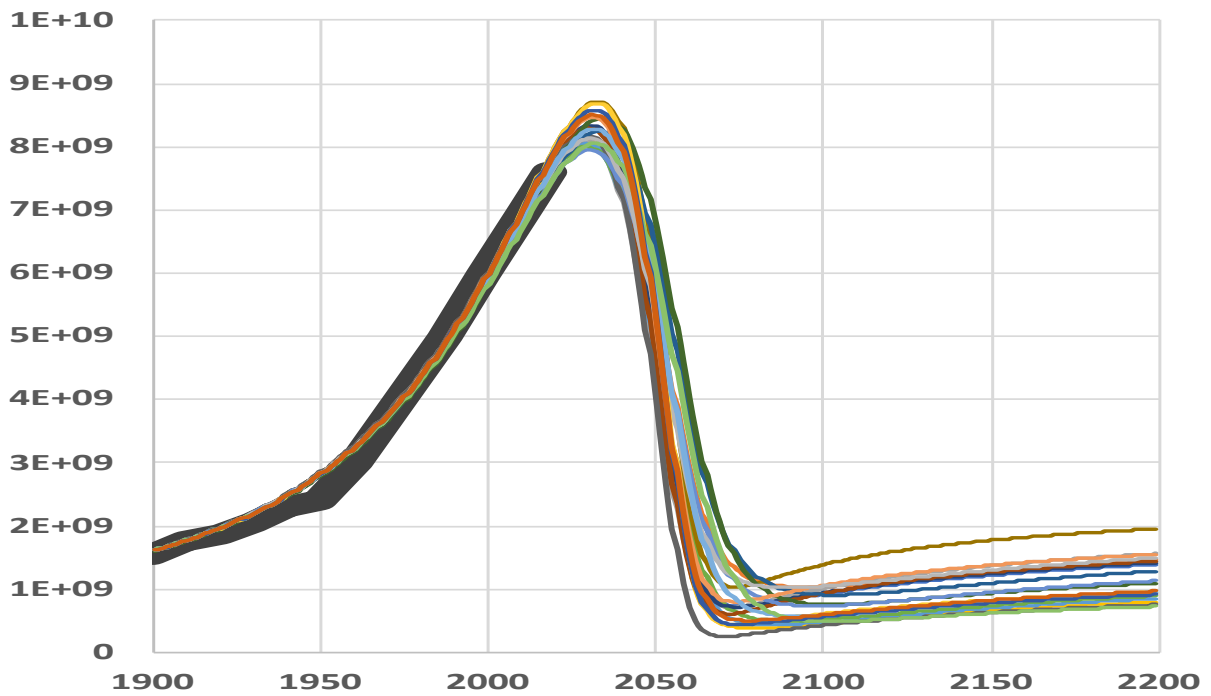
Supplementary Figure 7. Uncertainty in the projections is due to unknown values for the aggressiveness of extraction, for the robustness of technology to obsolescence, and for the critical point of ecosystem collapse.