

# Research finds patterns in dramatic drop in violence over the past millennium

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(Phys.org)—The evening news shows how dangerous a place the world can be. But Dr. Jacob Bock Axelsen of the Biomathematics Unit at Tel Aviv University's Department of Zoology says that individuals are markedly more peaceful now than throughout human history—and now he's got a mathematical model to show it. Originally designed to explain population densities of language groups, it's the first mathematical model to map the intensity of conflicts through the global demographic history of the past millennium.

Especially in the western world, casualties from wars have dropped dramatically and homicide rates are falling, Dr. Axelsen explains, noting that the more advanced and complex the society becomes, the more barriers against [violence](#) are put into place. He conducted the study with fellow researchers Susanna C. Manrubia of the Centro de Astrobiología in Madrid and Damian Zanette of Bariloche in Argentina.

## Fighting for growth

"If you plot the statistics on population sizes and areas against one another, the slope simultaneously reveals the violence levels that the groups have endured in that particular region, with a steeper slope indicating heavier violence," says Dr. Axelsen.

Finding that hunter-gatherer societies were the most violent per individual, the model revealed that historically the most violent areas of the world have been [Papua New Guinea](#), Africa, Europe, Asia, and South America, as determined by the strength of conflicts in the region. Hunter-gatherer societies experience the most violence because they are less able to prevent spontaneously occurring violence and retaliation, Dr. Axelsen says.

As a population grows, people need more space to live and work. Often this expansion only comes at the expense of their neighbors. This creates tension that often leads to violent confrontation, rewarding the victor with more land to accommodate its growing population. The stronger the fight is, the more land that is exchanged.

Typically, losing a war or experiencing population loss means the surrender of land. If the conflict strength is low this squeezes a society's population into a smaller space and a corresponding higher density, says Dr. Axelsen. This is why the hard-fighting hunter-gatherers tend to be more and more spread out than South American groups which have a much lower level of violence and thus peacefully accept a higher population density.

## The demise of diversity

Dr. Axelsen says that the model also proves that [population](#) growth and conflict have had a major impact on cultural and linguistic diversity. As cultural groups have grown to become mighty civilizations, they have often crushed smaller groups in their path. And at an average loss of one language group per month, cultural diversity across the globe is currently waning.

We are witnessing the extinction of various cultural and linguistic groups not unlike the demise of biodiversity in the animal kingdom, Dr. Axelsen adds. This extinction represents a loss of accumulated cultural knowledge and values. Now,

with rates of violence falling worldwide, the time is ripe to rediscover and preserve such nearly lost and overlooked cultures, he suggests.

Provided by Tel Aviv University

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