

# Isodarco in China

It is a pleasure to be here again for the 13<sup>th</sup> PIIC Seminar on International Security and to meet again with so many old friends. I am very grateful and I have great admiration for all the people that have succeeded to continue this activity for so many years since our first seminar in April 1988.

One of the most interesting feature of these meetings has been the unexpected but fruitful mixing of people from the peace movement with people that have devoted most of their professional life to the study and construction of weapons, nuclear weapons in particular.

To contribute to a reflection on these phenomenon I will introduce a quote from a very famous Italian.

# Leonardo da Vinci



(Milan, Codex Atlanticus, f. 33r, 1504)

4) 我能制造一种易于搬运的大炮，可用来投射小石块，犹如下冰雹一般，可以给敌军造成重大损失和混乱。  
7) 在必要情况下，我能建造既美观又实用的大炮、迫击炮和其他轻便军械，与通常所使用的不同。  
8) 在不能使用大炮时，我能代之以弹弓、投石机、陷阱和其他效果显著的器械，与通常所使用的不同——总而言之，在必要时我能提供不胜枚举的进攻和防御器械。

4) I have kinds of mortars; most convenient and easy to carry; and with these can fling small stones almost resembling a storm; and with the smoke of these causing great terror to the enemy, to his great detriment and confusion.

7) In case of need I will make big guns, mortars and light ordnance of fine and useful forms, out of the common type.

8) Where the operation of bombardment should fail, I would contrive catapults, mangonels, trabocchi and other machines of marvelous efficacy and not in common use. And in short, according to the variety of cases, I can contrive various and endless means of offence and defense.

# Leonardo da Vinci



*(London, Code Arundell, fol. 1030, 1487)*

6) I will make covered chariots, safe and unassailable which, entering among the enemy with their artillery, there is no body of men so great but they would break them. And behind these, infantry could follow quite unhurt and without any hindrance.

6) 我可以制造装甲车，它可以依靠自己的火炮进入紧紧靠拢的敌人范围，并且没有任何一队士兵可以突破它，安全而无懈可击。步兵可以紧随其后快速前进而不受伤害。

[http://www.scudit.net/mdcurriculum\\_leo.htm](http://www.scudit.net/mdcurriculum_leo.htm)

<http://www.firenzecontemporanea.com/manifesto.html>

# Leonardo da Vinci

10) In time of peace I believe I can give perfect satisfaction and to the equal of any other in architecture and the composition of buildings public and private; and in guiding water from one place to another.

Item: I can carry out sculpture in marble, bronze or clay, and also in painting whatever may be done, and as well as any other, be he whom he may.

Again, the bronze horse may be taken in hand, which is to be to the immortal glory and eternal honor of the prince your father of happy memory, and of the illustrious house of Sforza.



10) 在和平年代，我能营造公共建筑和民用房屋，还能疏导水源，自信技术决不次于他人，而且包君满意。此外，我还善于用大理石、黄铜或陶土雕塑；在绘画方面，我也决不逊色于当今任何一位画家。我还愿意应承雕塑铜马的任务，它将为您已故的父亲和声名显赫的斯福乐尔扎家族增添不朽的光彩和永恒的荣誉。

# Leonardo da Vinci

And if any one of the above-named things seem to any one to be impossible or not feasible, I am most ready to make the experiment in your park, or in whatever place may please your Excellency - to whom I commend myself with the utmost humility.

如果有人认为上述任何一项办不到或不切实际的话，我愿随时在阁下的花园里或您指定的其他任何地点实地试验。谨此无限谦恭之忱，向阁下候安。

[http://www.scudit.net/mdcurriculum\\_leo.htm](http://www.scudit.net/mdcurriculum_leo.htm)

<http://www.firenzecontemporanea.com/manifesto.html>

# Leonardo da Vinci

In 1482 [Leonardo](#), thirty years old and an accomplished artist, left Florence and moved to Milan, at the court of Ludovico il Moro, Sforza. There he remained for 17 years until 1499.

Before moving, the artist had sent a letter to the Duke. A real job application. A kind of curriculum, in which he lists all of his abilities in ten points.

Leonardo several times has referred to war as very beastly madness (*pazzia bestialissima*) but his first nine points are used to illustrate how good he is devising lethal weapons and war machines and only one, the tenth, presents a summary of his qualities as an artist.

The draft of the letter is in the *Codex Atlanticus* (f. 1082) but the original has never been found. Moreover it is written from left to right, an exception for Leonardo. Many consider it apocryphal.

1482年，作为一名多才多艺的艺术家，30岁的莱昂纳多离开佛罗伦萨前往米兰，聘任于绰号“摩尔人”的米兰公爵卢多维科·斯福尔扎。他在那里生活了17年，直到1499年。

在迁往米兰之前，达芬奇给这位公爵写了一封求职信，列举了自己所具有的十项能力。尽管达芬奇数次称战争是非常野蛮的疯狂行为，但他所列的十项能力中前九项都是展示他在发明致命武器与战争机械方面的卓越才能，只有最后一项简要地介绍了他作为一名艺术家的素质。

这封信的草稿存于《大西洋古绘本》(The Codex Atlanticus)中，但是一直未找到原稿；此外这封信是从左到右书写的，与莱昂纳多的习惯相悖，因此许多人怀疑这封信是杜撰的。

# Changes in War Fighting



# Collateral Damage



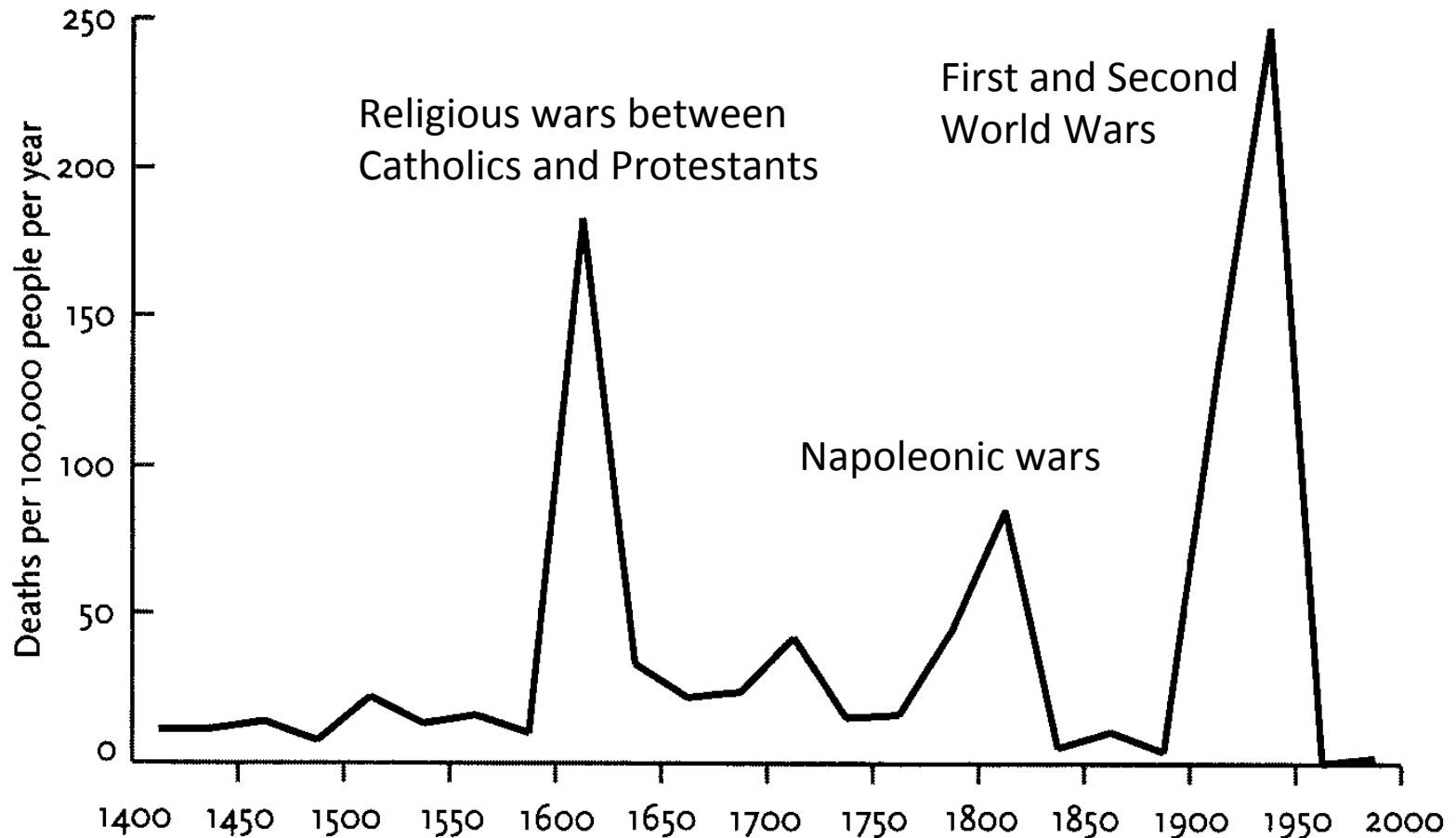
*"Oh, no. My wife's drone!"*



# From Competition to Cooperation

Recently several books and articles have been published trying to revise the paradigm of a humankind obliged to an endless fight for survival to the necessity of more cooperation and the empirical evidence of it. The question is not new and the various authors have found several historical precedents.

# European War Fatalities



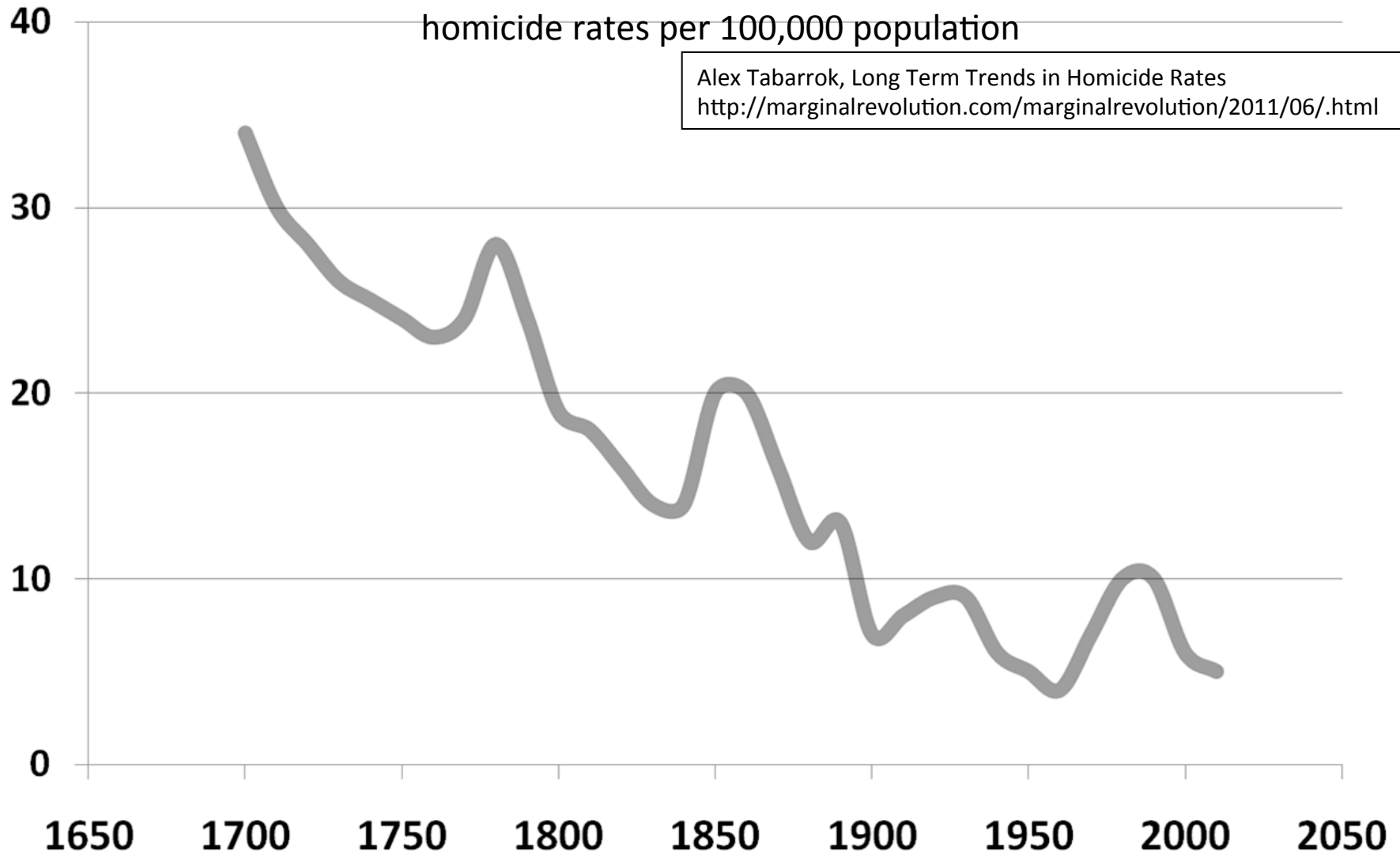
**FIGURE 5–18.** Rate of death in conflicts in greater Europe, 1400–2000

*Sources:* Conflict Catalog, Brecke, 1999; Long & Brecke, 2003. Figures are from the “Total Fatalities” column, aggregated over 25-year periods. Redundant entries were eliminated. Missing entries were filled in with the median for that quarter-century. Historical population estimates are from McEv-edy & Jones, 1978, taken at the end of the quarter-century. “Europe” is defined as in figure 5–17.

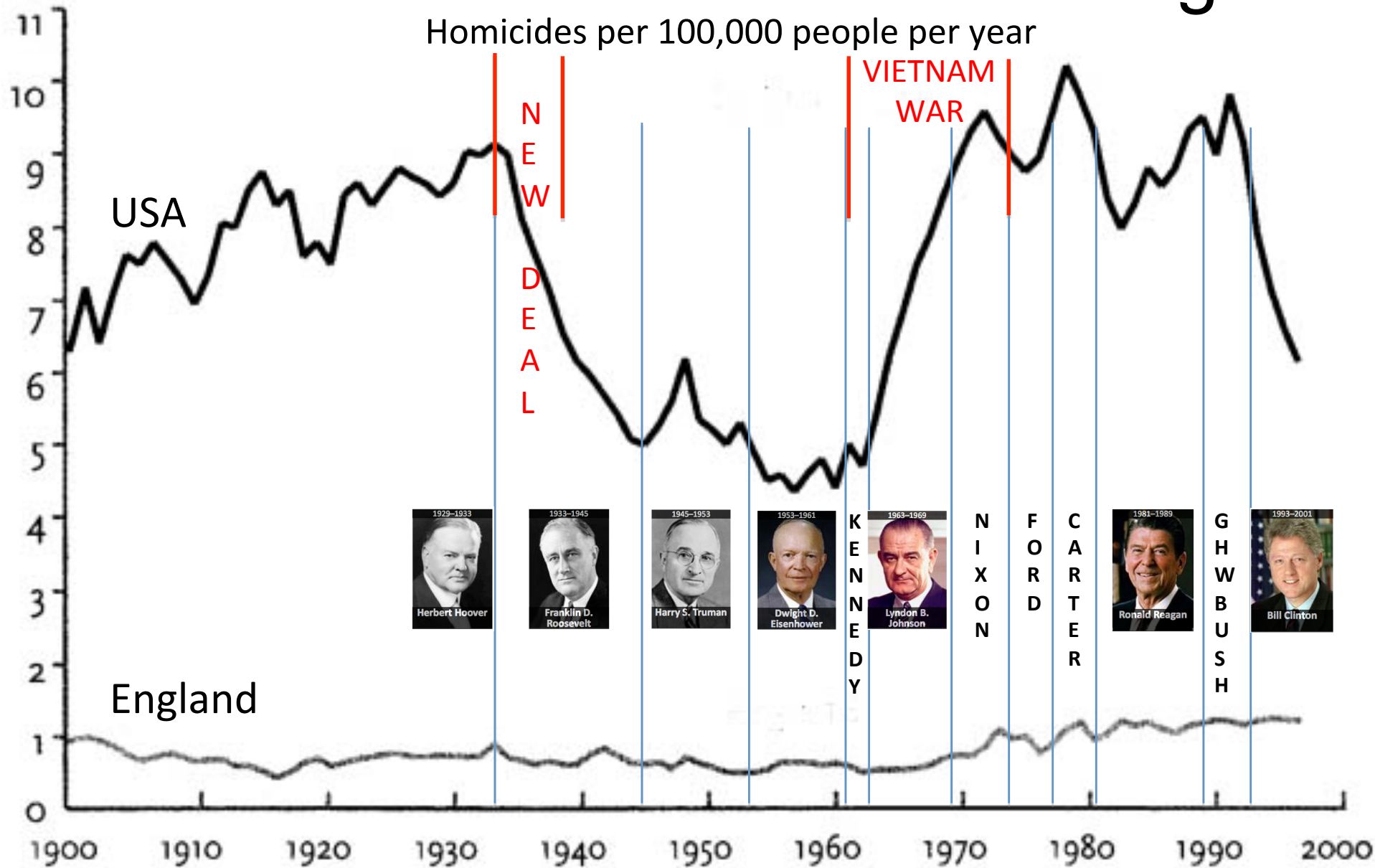
Steve Pinker, *The Better Angels of our Nature*, Vikings 2011

# Trend in American Homicide Rate

## ESTIMATED LONG-TERM TREND IN AMERICAN HOMICIDE RATE

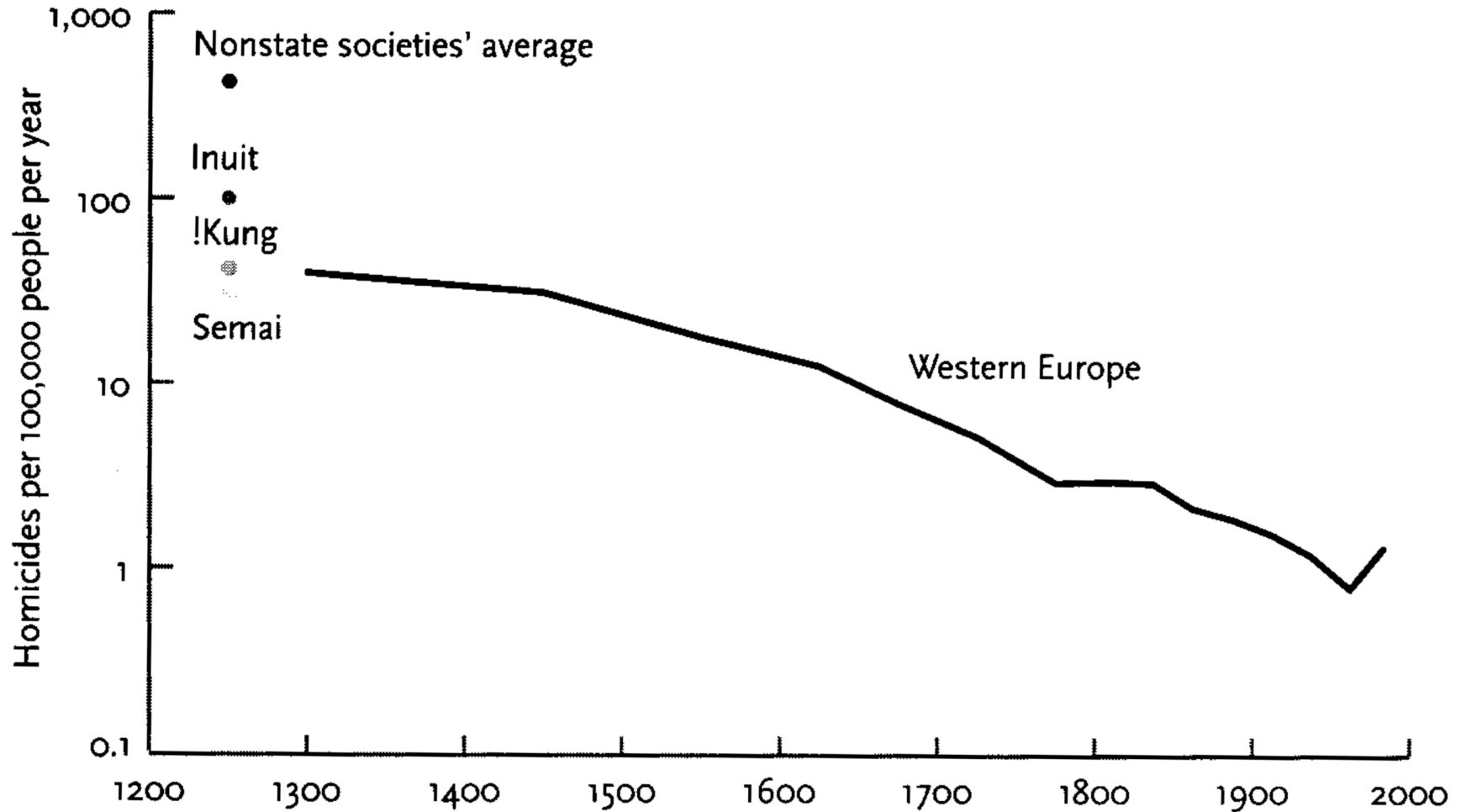


# Trend in Homicide Rate: US vs England



Steve Pinker, The Better Angels of our Nature, Vikings 2011

# Trend in European Homicide Rate

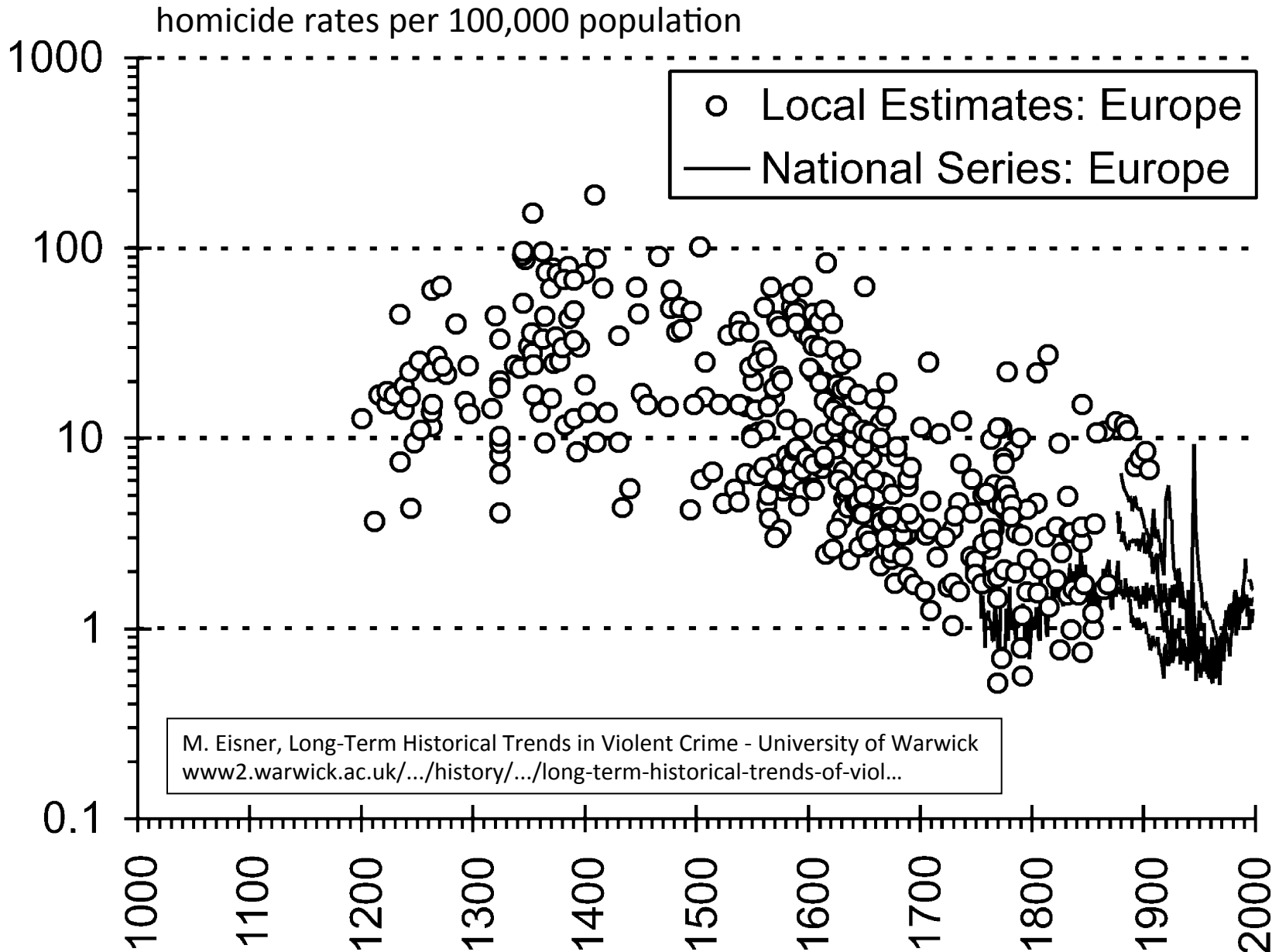


**FIGURE 3–4.** Homicide rates in Western Europe, 1300–2000, and in nonstate societies

*Sources:* Nonstate (geometric mean of 26 societies, not including Semai, Inuit, and !Kung): see figure 2–3. Europe: Eisner, 2003, table 1; geometric mean of five regions; missing data interpolated.

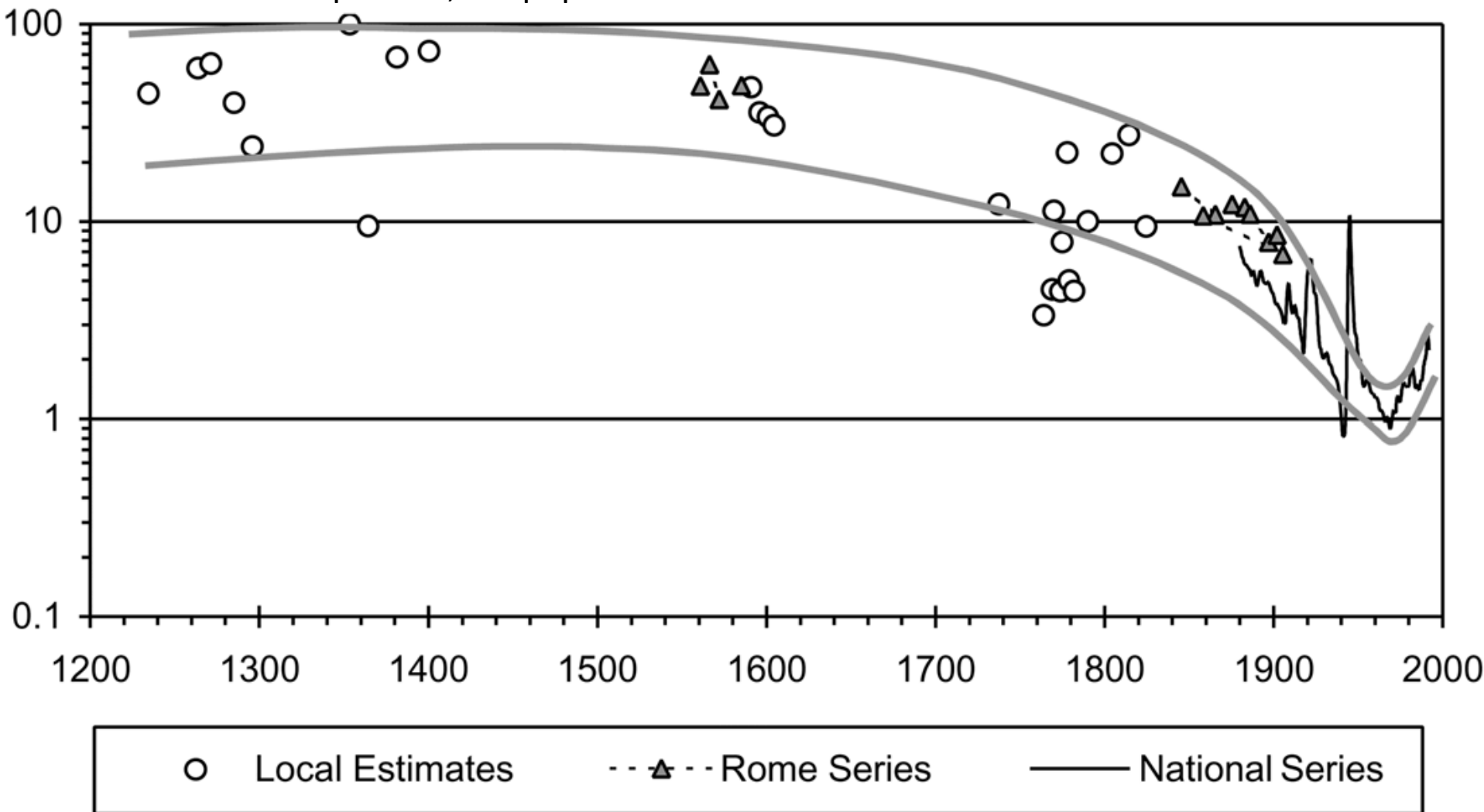
S. Pinker, *The Better Angels of our Nature*, Viking 2011

# Trend in European Homicide Rate



# Trend in Homicide Rate: Italy

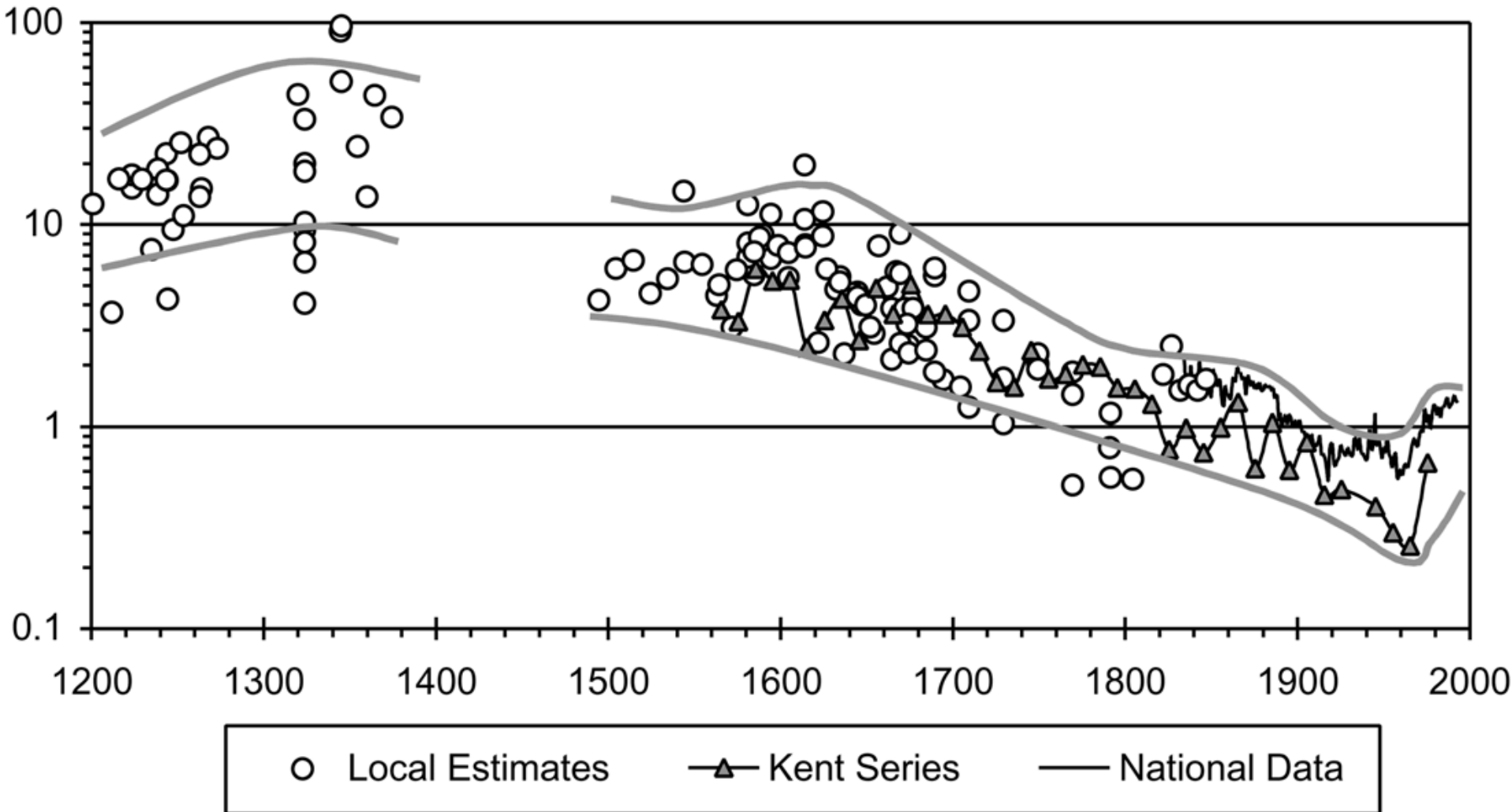
homicide rates per 100,000 population



M. Eisner, Long-Term Historical Trends in Violent Crime - University of Warwick  
[www2.warwick.ac.uk/.../history/.../long-term-historical-trends-of-viol...](http://www2.warwick.ac.uk/.../history/.../long-term-historical-trends-of-viol...)

# Trend in Homicide Rate: England

homicide rates per 100,000 population



M. Eisner, Long-Term Historical Trends in Violent Crime - University of Warwick  
[www2.warwick.ac.uk/.../history/.../long-term-historical-trends-of-viol...](http://www2.warwick.ac.uk/.../history/.../long-term-historical-trends-of-viol...)



# Human Cooperation

“The only thing that will redeem mankind is cooperation.”

Bertrand Russel

In stark contrast, I believe that our ability to cooperate goes hand in hand with succeeding in the struggle to survive, as surmised more than a century ago by Peter Kropotkin (1842- 1921), the Russian prince and anarchist communist who believed that a society freed from the shackles of government would thrive on communal enterprise. In *Mutual Aid* (1902), Kropotkin wrote: "Besides the law of Mutual Struggle there is in Nature the law of Mutual Aid, which, for the success of the struggle for life, and especially for the progressive evolution of the species, is far more important than the law of mutual contest. This suggestion ... was, in reality, nothing but a further development of the ideas expressed by Darwin himself."

Martin Nowack, Roger Highfield  
Supercooperators: The Mathematics of Evolution, Altruism and Human Behaviour,

# Human Cooperation

If strategies are chosen from the unit interval, where 0 corresponds to pure defection and 1 corresponds to the maximal contribution, the question is what is the characteristic level of individual investments to the common pool that emerges if the evolution is guided by different benefit functions. Here we consider the steepness and the threshold as two parameters defining an array of generalized benefit functions, and we show that in a structured population there exist intermediate values of both at which the collective contributions are maximal.

[Xiaojie Chen](#)<sup>1,\*</sup>, [Attila Szolnoki](#)<sup>2</sup>, [Matjaž Perc](#)<sup>3</sup>, and [Long Wang](#)<sup>4</sup>

Impact of generalized benefit functions on the evolution of cooperation in spatial public goods games with continuous strategies.

Phys. Rev. E 85, 066133 (2012)

# Violence Decrease

The statistics of human violence over the centuries shows a very irregular but generally decreasing trend.

The first major conceptual change with political result, came with the Age of Reason and the Enlightenment (18th Century). The intellectual elites of the time criticized traditionally accepted forms of violence like slavery, torture, sadistic punishments, witch hunting, absolutism in government, cruelty to animals, etc. . The American and French Revolutions and the values enshrined in their constitutions were the direct consequences of it.

During the 19<sup>th</sup> Century these concepts were extended by the liberal and utopian movements which included also socialists, communists and anarchists.

In the 20<sup>th</sup> Century, after the horrors of the two World Wars (sometimes called together the Last European Civil War) and the turmoil of decolonization, the “Long Peace” ensued. For more than half a century there has been no direct war among major powers. A confirmation of the empirical rule that Liberal Democracies do not wage war at each other.

The limited violence that followed the dissolution of the Soviet Empire might be an encouraging sign that also major political changes are now possible with non traumatic consequences.