Chapter 6
Projectile Weapons

ABSTRACT
The author shows some examples in order to see how justifications can be constructed, and defeated. Projectile weapons belong to many different types or categories, and in this chapter, the author considers examples of artillery and infantry weapons. He includes among the former torsion artillery developed by the Greeks over two millennia ago. This interesting example shows that weapons design has a long history. He considers the development of the modern rifle, which had its genesis in the nineteenth century, and the modern assault rifle. In all of these cases, the weapons were produced at one time and place, in one context, and came to be used in future times and places which the weapons designers could not have known about. To mention one example here, the standard German infantry rifle of both world wars first came into production in 1898 as a result of work started 25 years before. This weapon was used to murder millions of civilians, including Jews, in the Soviet Union from 1941 to 1945.

INTRODUCTION
UT states that the effects of weapons design are unknowable in advance, although what is known is that if a weapons design project does have future effects – if it is not abandoned or fails in its aim of producing a new or improved weapon – these will involve harms. Harming is the primary purpose of weapons, so all the anticipated effects of weapons research have...
to do with harming. It is consistent with UT that weapons research down the ages produced greater and greater benefits, in terms of harms prevented, avoided or minimised – human history could have been unrecognisably different from the way it has actually been – and that may have encouraged P to take up weapons design as her profession. What has actually happened is that weapons design has produced weapons that have made wars more deadly and not less frequent, with higher causality rates from the weapons themselves as opposed to disease and privation, and with the potential to make war totally devastating. It is important to substantiate this claim and there are many examples of weapons design that could be given to support it and thereby illustrate UT. In this chapter I will give six examples. All of these are of projectile weapons. In the next chapter I discuss nuclear weapons.

Projectile weapons ‘harm at a distance’ and as such do not require the soldier to make physical contact with his enemy. This means that strength is less important than skill, and it means that good design is more important that sheer numbers. From the middle of the fourth century BCE, the ancient battlefield had three basic kinds of unit: soldiers, some of whom were archers and slingers, cavalry, and some artillery in the form of catapults. The latter were not common, but became more prevalent with the standardisation of the Roman Legion under Augustus. When gunpowder field artillery came into its own in the late eighteen century, the same three basic units figured in the ‘modern’ battlefield, with archers and slingers replaced by musketeer and riflemen, and the catapults replaced by cannon. The cavalry disappeared in the late nineteenth century, but the other units remained.¹ Weapons research has led to improvements and innovation in artillery and in infantry weapons, and of the six examples to be discussed in this chapter, three are from each of these two military formations. Of the many examples that could be chosen, it seems appropriate to make these choices, given the historical importance of the artillery and the infantry. In essence, improvement is made here when means are produced by which it is easier to kill and destroy - contemporary weapons systems are very efficient in this sense. Two developments, one in the eighteenth century involving artillery and the other in the nineteenth concerning the rifleman’s bullet, marked the start to the modern revolutions in weapons development and an almost continuous increase in the lethality of weapons.
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