

Do the Benefits of Science Outweigh the Risks?

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To give an answer, one must first understand the question. What are benefits? What are risks? What is it to outweigh? And most importantly, what is science?

'Benefit' comes from the Latin word 'bene' meaning 'well'. It basically means a profit or advantage of some sort. A 'risk' is a danger or hazard. To 'outweigh' something is to be more important, or to compensate or balance something.

I have therefore interpreted the question as asking whether we profit enough from science to compensate for the dangers presented by it. But...what is science?

According to the *Collins Gem English Dictionary* science is the study of 'observed material facts'. That just means patterns, measurements, observations.

What risks do they pose? How can simply wondering and analysing cause any harm? Perhaps science is not, after all, the cause of any hazards; just the first step towards them. After all, how can seeking knowledge present any dangers? I believe that it is not the science in itself that is in question, but how we use the knowledge gained by it.

The people who decide how we use scientific knowledge are in governments and businesses. They are the ones who have control over the top scientists, as David Bodanis gives examples of in his book, $E=mc^2$. They are the ones who have the money, resources and power to create things from the science done, whether or not they are wise. This is called 'technology'. That is from where the dangers lie.

The only risk we are taking when we do science is the risk of the resulting technological development will become a threat. For example, the last thing Albert Einstein, a pacifist, wanted his equation, $E=mc^2$ to be used for was warfare. But the fruits of his quest for knowledge and understanding were used to make the world's deadliest weapon; the atomic bomb.

Just after the Second World War two atomic bombs, which depended on Einstein's equation, were dropped on Japan by the United States. Containing only 15 kilograms of uranium, they produced an explosion equivalent to 10,000 tonnes of TNT. Thousands

of innocent people – children walking hand in hand with their mothers to school, people going about their daily business - were killed in Hiroshima alone. The bomb destroyed many kilometers of the city. The newer hydrogen bomb is even more deadly.

The destruction that the bomb is intended to create, and the innocent lives it was made to end, may not be the only things the bomb will affect. Albert Einstein himself warned the American government of the many dangers and uncertainties surrounding the hydrogen bomb, including the radioactivity damaging the atmosphere.

Perhaps our natural curiosity of the world we live in will kill us all in the end. Perhaps there is one great risk that has gone unaccounted for in all humanities years of existence. Can any profits, big or small, be more important than, or enable us to overlook, one terrible danger, still unknown to us?

If we continue to repeatedly misuse the privilege that is science, surely we will massacre ourselves out of our stupidity and selfishness! Surely it would be worth giving up innocent science and our wondering and measuring and predicting as the cost of the entire human race, the sentient creatures of the Earth and, perhaps, the Universe! It would, perhaps, be better to live without science, and therefore without any technology. There would be no need for compensation if there were no dangers.

But isn't the ability to measure, wonder, and predict called intelligence? And isn't intelligence the essence of human-kind? Wouldn't losing that be the greatest risk of all? If we did live in primitiveness without questioning anything, true, there would be no deadly consequences of our toil threatening us with extinction, and the threat of destroying our race through physical means would be gone. But if we were to completely ignore the part of our minds where science forms, it would shut off completely; turning us into nothing more than un-intelligent beasts, and humanity would be lost.

Science ought not to be blamed for the tom-foolery of those who have power over technology. Those who care for humanity will embrace science, not blame it. Science is the essence of humanity.