

Isaiah, Engineering and History

Yakov Ben-Haim¹

Professor Emeritus and Former Yitzhak Moda'i Chair in
Technology and Economics (2001-2021)
Faculty of Mechanical Engineering
Technion – Israel Institute of Technology

The prophet Isaiah laid great demands on the people of Israel. One of his most ambitious expectations for this tiny people tucked in between enormous empires, is expressed by the metaphor of a light to all the nations of the world.

The image of Israel as a light unto the nations appears three times in the Bible, all in the book of Isaiah (42:6, 49:6, and 60:3). We read (49:6):²

“It is too small a thing for you to be my servant, to restore the tribes of Jacob, and bring back those of Israel I have kept. I will also make you a light for the Gentiles, that my salvation may reach to the ends of the earth.”

It is easy for the Lord to make Israel his servant, and to create the tribes of Jacob, and even to return the remnants of Israel to their land. But the Lord imposes an obligation on Israel: to be “...a light unto the nations, [the instrument of] my salvation to the end of the earth.”

This message is relevant to people everywhere, and to us here at the Technion – Israel Institute of Technology. We are in Israel not only in the geographical sense, like MIT is geographically located in Massachusetts. We are in Israel in the historical, cultural, value-loaded sense. I blush to think that we are instruments of the Lord’s “salvation to the end of the earth”. But we cannot – or should not – ignore our global moral responsibility. We are not just another institute of technology. We are the *Israel* Institute of Technology. We can be proud of Isaiah’s demanding vision, but that visionary ideal is also a weighty obligation that we cannot shirk or ignore.

Let me rephrase what I have said. Engineers design and build *things*: micro-robots, autonomous milling machines, artificial hands, helicopters, and much more. These things change our lives, sometimes enormously. In other words, engineers design and build the future. As such, engineers are very much responsible for the past, because today’s past was yesterday’s future. Engineers, in short, make – that is, design and build – history. Israel’s engineers must do that in the tradition of Isaiah: with forethought and responsibility.

Let me rephrase this again. Human history is different from natural history in two important ways. First, natural history unfolds as a result of physical and biological laws of nature. In contrast, human history can be directed towards deliberate goals, chosen by men and women. Engineers can and do

¹ \papers\aaaDoodles\doodle037engr-hist.docx 14.12.2020. Derived from doodle036engr-hist.docx

² וְיִאמְרָן נִקְלָל מְהֵימָתְךָ לִי עֲבֹד לְהַקִּימֹת אֶת־שִׁבְטִי יַעֲקֹב וְנִצִּירִי [וְנִצְוִירִי] יִשְׂרָאֵל לְהַשִּׁיב וּנְתַתִּיךָ לְאֹר גּוֹיִם לְהֵיוֹת יְשׁוּעָתִי עַד־קֶצֶה הָאָרֶץ:

influence the course of human development. While many forces act, and the world is a big place, engineers have a loud voice that is heard through their inventions: autonomous actuators, airplanes, atomic bombs, and much more. Derived from this, the second way that human history is unique is that the design and construction of history can – and should – be motivated by values, by judgments of what is good and bad. The knowledge of good and bad goes back to Adam and Eve (Genesis, 3:22), and is unique to humans among all creation. This moral awareness must accompany engineers in pursuit of their profession.

Morality is not only a negative obligation: don't do this, don't do that. One cannot just avoid evil. One cannot be ethically neutral. One must do good, and not doing good is evil. In the Psalms (34: 15) we read:³ "Turn from evil and do good." Turning from evil is not the same as doing good. One must deliberately do good. That which is good is not simply the absence of that which is bad.

The engineer must have a sense of historical time, of how discovery and invention alter the course of human history, and of how the future is our responsibility today. All engineers for whom Isaiah is a source of wisdom must contribute their share of the wattage that glows for the perpetual good of all humanity. That is the relation between Isaiah, engineering, and history.

³ סור מַרְע, וְעָשָׂה-טוֹב.