The practice of engineering and the idea of justice: concepts and challenges illustrated by the development of membrane desalination

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ABSTRACT

All engineering activities have the potential to profoundly affect the wellbeing of persons and the communities in which they live, both beneficially and deleteriously. Hence, in addition to technical challenges, professional engineers are presented with a major ethical challenge: can the great technical innovation of engineering be matched by a corresponding innovation in the expression and acceptance of ethical responsibility? This challenge is explored using key concepts provided in the work of two leading contemporary philosophers: the concept of a practice in the work of Alasdair MacIntyre and the concepts of the obligation of power and capabilities in the work of Amartya Sen. The application of these concepts is then illustrated by consideration of the engineering work of the desalination pioneer Sidney Loeb. The article concludes with a challenge to today’s practising engineers, giving particular reference to desalination and water treatment.

Keywords: Agency; Capability; Desalination; Engineer; Engineering; Loeb; MacIntyre; Practice; Sen; Membrane; Peace; Poverty; Wellbeing