Engineering Ethics Studies: From the Perspective of Practical Effectiveness

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Abstract

Until the late 20th century, engineering ethics was developed along with the professional ethics approach. It has made great contribution in promoting engineering professionalism, enhancing the responsible awareness of engineers, and evoking the consciousness of professional autonomy. However, this approach also encounters certain challenges. For instance, within the socio-technical contexts, will the given ethical principles continue to be effective and are still able to afford an open, appropriate, and effective interpretations to the engineering ethics issues? Will the existing system of ethical ideas still well keep their effective influences on engineering practice? These questions inevitably make the development trajectory of engineering ethics tend towards the pursuit of practical effectiveness, and such a pursuit attaches great importance to exert the social impacts of engineering ethics.

So, by systematically analyzing and reflecting the dilemma facing the previous professional approach to engineering ethics, and referring to the resources from the fields of western philosophy of technology and STS, this paper proposes a practical-effective model in engineering ethics studies. Logically speaking, a practically effective engineering ethics should firstly provide a comprehensive interpretation on ethical issues in specific contexts to help us to know why it is that case and what we shall do next in this situation; then, on the basis of interpretation, it should consider how the ethical norms could be effectively exerted in specific engineering practices; Last but not least, neither the 'interpretation' nor the 'operation' could be a 'monologic' activity, and both of them are required to be conducted in the effective 'dialogue'.

More specifically, 'interpretation' in engineering ethics is a process to relate ethical principles to particular situations in engineering practice. Previous efforts in the professional ethics approach insists on a 'top-down' interpretive model. In contrast, a 'bottom-up' model is brought forward by empirical ethics that more concerns about how to adapt the emerging situations in engineering practice and it is apt to neglect the sound parts in traditional intellectual resources. Through the dialectic analyses of

the 'top-down' and the 'bottom-up' models, this paper proposes a 'middle-path' interpretive model. 'operation' in engineering ethics is to connect moral norms with the particular operations in engineering practice. By using the 'stream metaphor' to conduct social dynamic research on engineering practice, this paper points out that, the 'midstream stage (R&D process is the crucial operation section which has become a necessary road to construct the operational effectiveness in engineering ethics. 'dialogue' in engineering ethics evolves the effective dialogues between engineers, ethicists, and the public, and its aim is to deepen the understandings each other, improve the accuracies of interpretation and operation, and coordinate the beneficial interests. Dialogue can help to overcome the information asymmetry and deal with the interests conflicts in the justice way.

As a new approach of engineering ethics, the perspective of practical effectiveness places the context of engineering practice in the center of our thinking, trying to make the ethical dimensionality the intrinsic element of engineering practice. Such an approach is pretty valuable on both theoretical and practical aspects. It 1)transforms engineering ethics into a kind of practical ethics improving the operability of engineering ethics; 2)elevates engineering ethics form microscopic perspective to the unification of micro perspective and macroscopic perspective; 3) provides a practical framework for engineering ethics, opening the way to the reflection on the practical system of engineering ethics; 4)offers a "dialogue model" for the communication between engineers and other social community, especially the ethicists.