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Kuyper Scholars Program

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### Engineering as a Mode of Acknowledging Worth: A Response to Wolterstorff's Kuyper Prize Lecture

Almost a year ago, I was sitting in the Miller Chapel listening to the Kuyper Prize Lecture presented by Nicholas Wolterstorff at the Princeton Theological Seminary. While I listened to his presentation about the affinities between Art, Justice, and Liturgy, I could not avoid being amazed by the beauty of that small chapel, a historic structure built in 1834 that remains standing. My ears followed Wolterstorff's words, but my eyes glanced at every detail: the big white organ standing in the back of the altar, the pair of spherical and square columns on the sides, the chandeliers hanging from the ceiling, and the big rectangular windows allowing the light of the sunset to shine over the pews.

But suddenly one of Wolterstorff's remark drew my attention. He declared, ". . . art, liturgy and justice can all be seen, and should be seen, as dimensions of human flourishing [or shalom]" (5). After hearing his statement, I thought another topic should be included in his list. As a committed servant in my vocation, I had to bring the discussion into my own professional context. I concluded that, alongside art, liturgy and justice, engineering was also a dimension of human flourishing. Early in his lecture Wolterstorff stated his thesis: "Paying absorbed attention to some works of the arts, doing and seeking justice, and participating in enactment of liturgy . . . [are] modes of acknowledging goodness" (6). As I stared at the antique structure and technology surrounding me in the Miller Chapel, I concluded that indeed engineering and innovation share this affinity with liturgy, justice, and art. In the same way that Wolterstorff took the "discussion beyond where Kuyper left," (3) this paper has the purpose of continuing this discussion, considering the affinity that engineering, has with art, liturgy, and justice – or

more precisely, the affinity that the practice of scientific innovation and design has with “the actions of paying absorbed attention to some work of the arts, of doing and seeking justice and of enacting the liturgy” (1).

Before I defend how engineering constitutes a mode of acknowledging good, let me summarize Wolterstorff’s lecture of how art, liturgy, and justice accomplish this same task of recognizing worth. Wolterstorff’s presentation on art stated that art has an intrinsic value. This goodness is determined by the intrinsic criteria for excellence that comes with each art genre. If a work of art follows these criteria, then as a response, the audience “revels in its excellence” (11). The spectator, therefore, recognizes the worth of the art piece by observing with absorbed attention. Reading, listening, or observing an art piece with absorbed attention is, for Wolterstorff, “a way of acknowledging its excellence” (11).

Wolterstorff continued his discussion on the topic of justice by first giving a brief distinction between two kinds of rights: “permission rights” and “claim rights” (12). For Wolterstorff, these rights are distinctive in the object of their action. A permission right regulates what someone can do, and a claim right regulates what can be “done to someone” (12). He then stated that these claim rights are rights about being treated in a “good” manner and that these “rights are grounded in one’s worth, one’s excellence, one’s dignity” (14). He believes that an individual’s excellence is mainly “intrinsic” and non-instrumental. Humans bear God’s image, and therefore our value lies in our existence itself. Following this argument, Wolterstorff concluded that treating someone justly is a mode of acknowledging this intrinsic and non-instrumental worth.

In his reflections about Liturgy, Wolterstorff presented the idea that worship is an “intrinsically good activity” (16), practiced not for the utilitarian purpose of pleasing God to eventually receive his favor but for the purpose of paying “respect for his worthiness.” However, worship is different than justice in its orientation. Worship is oriented towards God, not man (17). For Wolterstorff, worship

requires an attitudinal stance of adoration that includes awe for God's glory, reverence for His holiness, and gratitude for His love. Through this attitudinal stance we recognize the worth, excellence, and "unsurpassable greatness" (19) of God.

Finally, Wolterstorff concluded his lecture by bringing into the discussion his own vocational context and presenting the idea of philosophy as another mode of acknowledging worth. He believes that philosophy, when rightly practiced, aims to attain understanding. For him, this understanding is a "substantial good", and it is by practicing philosophy— by spending time thinking and developing ideas— that one recognizes the worth of understanding.

Following the same model of Wolterstorff's presentation, I continue the discussion about modes of acknowledging excellence by bringing engineering into the picture. If the purpose of this paper were to merely demonstrate the ways engineering is intertwined with arts, liturgy, justice, and even philosophy, it would constitute a relatively easy task. We could conclude that aesthetic excellence is a fundamental condition for a good engineering design. We could also state that a way of evaluating the technology is to ask whether the social implications of it bring justice or not. With regards to liturgy, we could even bring Wolterstorff's conditions for adoration and state that practicing engineering can become a form of worship if it brings the engineer to an attitudinal stance of awe, reverence, and gratefulness (17).

However, the purpose of this paper implies a harder task since it recognizes the practice of engineering as a mode of acknowledging good independently of art, justice, and liturgy. Or stated more clearly, engineering recognizes excellence for more than its aesthetical, judicial, ethical or liturgical aspects. I believe that in the same way that each of these dimensions has its own object –art recognizing the excellence of creation, justice recognizing the excellence of man and liturgy recognizing the excellence of God— engineering also has its own object by which it recognizes its worth.

However, before we clearly define this object, it is necessary to state some facts about the engineering vocation. When we practice engineering, we indulge in creating something different, something new. Through this action it is tacitly implied that things can be better; we are able to change things, modify them, and fulfill a certain need or reach an improved state. If that were not the case, if we did not believe that things could be improved and changed for the better, then there would be no value in studying science, designing, and doing engineering. If practicing engineering would always lead us to a worst state than the one we were in before, then it would have no meaning.

Through these statements, it is clear that engineering is a dimension of human flourishing, it is part of this continuous process of change, and it allows us to use our talents and gifts. Not only is engineering a component of this process, but it is also a testament of the existence of the process. The practice of engineering, therefore, recognizes that reality has a direction; it contains a course of actions that lead us to what some people define as progress or development. For Wolterstorff, "Philosophy is impelled by the desire for a certain state of the self, namely, understanding." I believe that in its own context, engineering is impelled by the desire for a certain state of creation: a state of constant change and renovation. I believe that this inherent driving force that leads us to innovate and create is distinct from shalom.

Before I continue to describe this inherent force towards change, it is important to reflect on some definitions. Shalom is a Hebrew term that derives from the word "shalem," and it means completeness, soundness, welfare, and peace (The Lockman Foundation). According to Dr. Aviezer Ravitzky, Chair of Jewish philosophy and of the Department of Jewish Thought at Hebrew University, "shalom signifies a state of prosperity, of blessed harmony, on several levels, physical and spiritual" (Ravitzky). Shalom, therefore refers to a state of goodness and perfection. I believe shalom is not a

utopian, an unattainable ideal. I believe it was manifested in creation before the fall of humanity in Genesis. I also think it is a noun that can be used to describe the will of God for Creation.

I consider the object of engineering to be a status of constant change. This is an inherent character of creation that is distinct from shalom. If we conceive the idea that creation was made good, but with an inherent goal or, with an inner drive towards development and change, engineering can be seen as an activity that is born at the same time that creation appears. I am not trying to pledge in favor of theistic evolution since neither do I believe that the different parts of creation aim to become something different than what they are nor that changes require the extinction of what existed before. Instead, I believe that within their creational identity every aspect aims for changes, variations and diversity. The author John Dyer explains the significance of technology within the biblical narrative and the implications of practicing engineering and using technology in a fallen world. He writes:

At one end of this story is a pristine garden prepared by God for humankind to develop and transform. At the other end is a glorious, heavenly city full of human creations, art, and technology... In the time between the garden and the city, between Christ's first and second coming (when he will complete his work of redemption and restoration), we must work diligently to understand how to live faithfully in this technology-saturated world. (29)

Holding to these assumptions allows us to see engineering as a task that could exist in a non-fallen world. Since this God given-direction towards change and development was gifted to humanity before the fall, engineering is still relevant in the midst of shalom. But it is important to draw a distinction between shalom and this inherent creational direction towards diversity. Creation dwelt in shalom before the fall. Creation was good in all aspects (Genesis 1:31); there was peace and harmony among all beings and everything was infused with the constant presence of God. However, we still see in

Revelation 21 that at the end we do not return to this same place, the garden, but to a holy city that also dwells in shalom. Shalom is present in both; therefore, we cannot attribute this to be the cause for the difference in the context of these places. Creation would develop from the garden to the city without the fall. This was the purpose that God had for creation. When God made us in his image, He gave us the ability to be creative and innovative like Him; He gave us wisdom, discernment, and the possibility to make theoretical connections that can be applied to influence our tangible reality. This inherent drive that exists in creation to walk towards development is independent from shalom.

Engineering can be seen then not as a tool or a step towards shalom but as the manifestation of the belief that things can be changed and improved. Apart from its craving for shalom, creation has an inherent, dynamic character of moving, changing, and flourishing. This inherent desire became even more significant after the fall. By being destitute of our creational state of shalom, we were separated from the source of excellence, and rather than just wanting to move towards a new and different state, we also started to aim at fulfilling our necessities. This inherent need for change was now tied to the need for shalom, for harmony and peace among all of creation.

However, all of these assumptions show us something about our current fallen context. They indicate the limits of our actions—creativity and innovation are not meant to lead us to this higher status called shalom. We cannot create a world of peace, perfection, and eternity with our own efforts. We can continue to walk towards a direction of change, but that does not bring us back to our original status. We are away from God. We can try to attain something better, but we have the constraints of a fallen world. Sin is still a barrier. Sin has distorted the positive dynamic nature of change and innovation so that they result in negative outcomes. Our actions have negative effects in the environment, in our relationships with others, and even in our relationship with our Creator.

Therefore, there have to be some conditions for change to be perceived as excellent. In Romans 12:2, Paul states “Do not conform to the pattern of this world, but be transformed by the renewing of your mind. Then you will be able to test and approve what God’s will is—his good, pleasing and perfect will.” If we try to understand this verse in a general sense, we can see that God’s will does not come from a static behavior but from a dynamic process: the constant renewing of our mind. However, Paul also makes it clear that God’s will has the characteristics of being good, pleasing and perfect. He is basically stating that God’s will is shalom. Positive change only occurs if it aims at this state of peace and harmony among all the aspects of creation. In the book “Responsible Technology: A Christian Perspective” by the fellows of the Calvin Center for Christian Scholarship, it is mentioned that “The starting point for valuing in technology is not human thinking and speculation but the will of God” (58). We can reconcile the fact that changes are not always good and can lead us to a worst state when they do not occur under God’s will. In order to succeed as positive change makers in technology, we have to return to the definition of shalom. The current problem is that by not dwelling in a shalom-status our efforts in science and engineering are thwarted by sin. We need to reflect on this idea of completeness, perfection, and peace that does not come from human rationality but from God’s commandments. We need to find ways of creating changes that will bring as much harmony and peace as possible. We need to find ways of assimilating our reality to one of shalom. We need to decode what God’s will is in the midst of a fallen world. We need to recognize that changes are possible without shalom but that positive changes can only occur if they aim at shalom. Changes are not evil, the dynamic character of creation is something intrinsically good, but in our current context we have to recognize that sin has depraved every part of this process. On the other side, we should also be able to recognize our limits—real superb changes will only exist with the reestablishment of shalom.

Returning to context of Wolterstorff’s lecture, I believe that what made of that chapel beautiful was not the singularity of each technology, but how within their diversity they harmonized with each



other—the way the lights, the design of the columns, the organ and the windows complemented each other and made of that place a resemblance of shalom. The dynamic character of technology—the fact that we no longer build a chapel with that design— made this chapel even more special, distinctive, different from contemporary church structures. The visual recognition of this form of goodness, a goodness founded in change and diversity, draws me to realize that engineering is a practice that is constantly recognizing excellence in change.

I believe that the dynamic and transformational character of engineering makes of this field an appropriate testifier of the inherent creational characteristic of aiming for change and development. When we analyze history in these terms, we see our culture changing daily in the spheres of technology and engineering, while it takes more time to bring changes in other spheres of life. This does not give engineering a higher status than any other professional field, but it makes us see that the practice of scientific innovation and engineering focuses in recognizing the creational direction of constant renovation as something good, as something excellent. Thus, I conclude, using Woltestorff's lexicon, that engineering shares the same status with art, justice, liturgy, and philosophy as a mode of acknowledging goodness.

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