New Orleans JAZZED about Engineering Education

Furthering Continental Philosophers in the Engineering Domain

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Abstract

Given the recent influx of attempts at forming a more coherent and aligned philosophy of engineering education, an opportunity to apply traditional continental methods has appeared. Even the definition of the field itself is available for scrutiny, and within that framework, a number of interesting paradigms can be challenged. This paper intends to expand upon previous attempts at integrating Heidegger's, Husserl's, and Jaspers' works on epistemologies, and forward them in a more integrated way accessible to both the philosopher of technology and the engineering educator interested in a more grounded application of philosophical constructs.

We start with previous work addressing Husserl's *Logical Investigations* to help lay the groundwork for a classical understanding of consciousness and its intents. Then, we discuss Heidegger's constructs of *false thinking* and *Bodenständigkeit* or autochthony – sometimes called *groundedness*. This work and its related *thoughtlessness* in continental philosophy has rarely been applied to engineering and even less frequently (if at all) been applied within the modern engineering education framework. While this may be a novel treatment, it does not go far enough in addressing Heidegger's critics and contemporaries – something we will attempt through using a lens borrowed from Jaspers' work – that of his interpretation of existence and meaning. In order to further ground this philosophical treatment, we will bring into play key arguments of Husserl's metaphysics, which contain constructs still relevant to a modern engineering philosophy. Finally, we hope to integrate the three in a manner relevant colleagues within engineering education and beyond.

Whereas recently I reflected upon the developments in engineering philosophy brought about by a few colleagues with reference to core constructs present within Heidegger's *Discourse on Thinking*,[1] this work aims to further that reflection with an introduction to another few differences between continental philosophers in the same vein. I had hoped to work with a Cartesian framework, but the works of the modern continental philosophers is more than adequate for this short digression.

Previous to Heidegger – A Brief Note on Husserl's Phenomenology

Husserl's *Logical Investigations* may be the least relevant within this current treatise, so I will touch upon them lightly and expand at a later time. Within this work, he outlines his approach to consciousness and intentionality. Here we find a divergence from what we may be accustomed to within engineering education – a classical use of the word *phenomenology*. Whereas within our subfield of engineering, authors toss around *phenomenology* and, of course, *phenomenography*, as research paradigms primarily influencing coding frameworks, within classical philosophy, the two words have radically different meanings and understanding them can help tease out novel tools and uses for them. To Husserl, phenomenology is the study of consciousness divorced from the existence of the objects involved. In other words, consciousness in Husserl's philosophy is directed at an object. This of course presents an interesting threat to our field's current understanding of phenomenology as a research paradigm – imagine how silly

it would be for a qualitative research coding interviews to write in the margins, "I cannot place this statement into a category because I cannot divorce its essence from its causes or the physical reality of the object involved" ? The main thesis here isn't a potential battle within the world of coding, it is the formulation of *intent*, *consciousness,* and given recent works in the field of engineering education, *essence*.

Revisiting Heidegger

In Heidegger's *Discourse*, what we see is a divergence from other continental philosophies.[2] Not only does he must on the notion of *false thinking*, but that of *Bodenständigkeit* or autochthony. As a brief historical note, Heidegger's concept of *Gelassenheit*, nearly universally known as "releasement," is paired with autochthony, but perhaps infinitely more studied in treatments of continental philosophy and can be found in many texts. For Heidegger, the divide between *lacking thought* and *not thinking* are vast and he goes to great lengths throughout his later works to describe the two. For our discussion here, the main points on active thought have to do with Heidegger's assertion that *capacity of thought* goes beyond *reflection* and *thinking*. In fact, he believes that in reference to false thinking, too often in education or in other endeavours, have we mistaken *reflection* as being present in active participation when we should not. An example of this would be in coding of design-in-process experiments. Certainly, understanding what one spends time doing within these experiments is important, but Heidegger is quick to rebuke us for assuming that these activities are truly *reflection* and more so, that these may not be indicators of an individual's *capacity of thought*.

Another construct endemic to Heidegger's construction of *capacity of thought* and plays into the framework of false thinking is the notion of *distraction* and *commemoration. Commemoriation* is a construct for a placeholder for consciousness. It can also be considered a standard bearer. Commemoration is the submitting of our rational thought or consciousness to a lesser form of thinking. This can take place within routine life, rituals, or even subconsciously, but when a human being allows commemoration to guide his thought, he has ceased to expand (or augment) his rational thought. *Distraction* on the other hand, tend to be more general than commemoration, and refers to any action that allows human beings to actively think (or even passively think) while substituting for actually thinking.

Why Jaspers and what is His Significance?

Karl Jaspers' work cannot be overstated in an engineering framework. While I have at length discussed a potential model given a more design-inspired framework,[3, 4] I have not discussed his *Philosophy of Existence*.[5] Jaspers gives us a number of interesting interpretations of how the world is created and things are brought about from the *transcendent* to the *immanent*, which, for an engineer, should be exciting because that is entirely the purpose of the mind's eye for the engineer. Bringing that which is beyond our immediate corporeal grasp into the world is the subject of many philosophers from Aristotle with his *daemons* to Descartes and the notion of

transcendentalism. Jaspers lays out a few of these ideas within his meditation on existence in what he defines as the *basic philosophical operation*.

Not only does Jaspers believe that *being*, in the existential sense (or even *Dasein* – I think we are safe to say that he shows proper deference to Heidegger in his writings) can be separated from *knowledge,* he begins his description of the basic philosophical operation by explicitly separating the two. Furthermore, he provides a template for interpreting this decision. Jaspers divides thought into *determinate* and *indeterminate* domains. Unlike the division between meta- and base analysis, (or sometimes in education theory referred to as Krippendorf's construct of first- and second-order analysis), determinate and indeterminate thinking has to do with the envisioning in the mind's eye of the subject of contemplation. His view of the all-encompassing world of thought that exists beyond that of the immanent is defined as the *encompassing*. The encompassing is not the horizon of knowledge, but the *source* we envision in the mind's eye when directing our consciousness from the immanent to the transcendent.

Jaspers' manages to further this mode of thought by providing a way of envisioning this divide in thinking. He postulates that the way from the transcendant to the immanent in thought – from the incorporeal to the corporeal, so to speak – is best served by increasing one's lucidity or awareness of being. In other words, Jaspers postulates that not only is the existential concept of bringing the being into form possible, but it is maximized through a meditation on being. Furthermore, he steps further by suggesting that the realm of the immanent can have an overburdening influence on our mind's ability to separate determinate from indeterminate thought.

The modes of encompassing are a series of meditations Jaspers uses to help flesh out this meditation on determinate thought. It is here that we see he again addresses *knowledge* starting with the Kantian divide between what we *know* is part of the immanent – or to quote Jaspers – "what we know is the world." The logical fallacy he repeats from Kant is that it has been a long standing issue with continental philosophy to believe that because we can imagine the world in its entirety does not mean we can *know* the world in its entirety. Certainly, this was a minor battle for all of the existentialists, but it is important within our field as well. We could summon the ghosts of many educational philosophers here, but I would refer the interested reader to peruse the works of Eco on semantics or perhaps Bruner for a larger discussion on the limits of knowledge.

Assembling the Encompassing

So now that we have this tool that takes us not really *from* the immanent to the transcendent, but allows us to envision *knowledge* in a way that is determinate or indeterminate, we need to flesh out what Jaspers can tell us about the relationship between knowledge and his vision of the encompassing. Adding to the complexities of continental existentialism, Jaspers adds a layer to the mixture in the divide between encompassing and consciousness.

Consciousness, in his view, has two forms in this piece: the traditional being the form of the world; and the encompassing that is inhabited by human beings. The first I have elaborated upon at length in a previous piece, but the second is one I have not focused on in Jaspers' work. The idea that there is an encompassing of thought that exists for any single or group of humans – we're assuming that humans are conscious entities in this realm – is not new. Certainly, we could argue that Descartes touched upon this in some of his works; however, the framework of the threshold of one's (or a group's) ability to use consciousness to claim knowledge (or perhaps envelop or define in this case) is novel.

He believes that the severance of *knowledge* from *being* is more powerful than Heidegger and Husserl's arguments on separating *intentionality* from *consciousness*. This categorical split may go unnoticed to the casual observer, but has an extreme consequence in modern philosophy – especially when using Jaspers as a tool in engineering thought. This new treatment of knowledge is not without consequence. What does the philosopher attempting at rectifying Heidegger and Jaspers' split do when discussing how consciousness is directed? Heidegger makes things relatively simple by declaring consciousness as being directed and giving us the construct of *Dasein* whereby a human being is object and subject. Jaspers, in a convoluted way, has taken the construct of *Dasein*, and declared that the world and the encompassing of it is some sort of neo-Cartesian view of awareness both of the self relative to the world and the world relative to itself.

Although Jaspers does leave us one giant tool in his works to clarify this idea of encompassment relative to Heidegger – that of the threshold of the immanent or encompassing being knowledge. This alone is comforting in the sense that the statement *I am* within Jaspers' framework is a declaration of both intent and consciousness, as is the announcement of *we are*. Moving to a design treatment of knowledge and encompassment, we would like to know in the engineering education world about the *negative* space or delimitations in this theory. How does Jaspers view the idea of a conscious entity negating the existence of knowledge? Simply, Jaspers requires that all consciousness be grounded (in the Heideggerian sense) and does not require that the immanence of self or group encompassment be self-sufficient. This is to say that encompassment being the threshold of knowledge both in the singular treatment and plural includes a consciousness of the antithesis thereof. In other words, in a Jaspers framework, while one meditates and accrues knowledge, he or she is able to traverse the negative space the knowledge has filled.

Where we see Jaspers shine is perhaps in one of the same domains we see Husserl and Heidegger shine – their mutual attack of Kant. Of course, Kant being one of the fathers of modern continental philosophy (especially the German school, if Heidegger can be considered the "high" German school,) gave us many constructs relevant to engineering philosophy: the first and foremost being the *categorical imperative;* and the second and equally as important, the declaration of subjectivity. Obviously, existential philosophers do not generally agree with the notion of the categorical imperative, that is to say, overarching themes of action that are mostly

inescapable for a conscious human being. This has to do with the existential constructs and treatments within consciousness, and specifically how humans focus their consciousness. Where Jaspers, Husserl, and Heidegger more fundamentally disagree with Kant throughout their works is the notion of *subjectivity*. Husserl believes that the conscious being is left to his own devices when constructing his reality, thus that construction is *objective*. Heidegger, of course, uses the construct of *there being* or *Dasein* to expand the notion of the human being (the conscious individual) as both object and subject (or the *nexus* as sometimes it is called). Jaspers, on the other hand, takes ideas from both Husserl and Heidegger concerning the direction (or *intentionality* of consciousness) and he addresses subjectivity through his calculus of *encompassing*.

Conclusion

This work is still quite the introduction to a small slice of modern continental philosophy that encompasses a wider body of literature. While the need to operationalize Husserl, Heidegger, and Jaspers within an engineering education framework is still evident, without pushing forward and exposing our community to their core ideas, it will never be accomplished. The constructs of not only *thoughtlessness* but *false thinking* are powerful for our field, but they must be coupled with those of contemporary philosophers for a more complete understanding of what existentialism can bring to the table. Future work in this vein should be focused at bringing more important philosophical constructs into the realm of engineering education, while helping broadly define how the enterprise of knowledge creation and discovery occurs from a philosophical standpoint.

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