

MACHINE

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INTRODUCTION

Machines were mice and
Men were lions once-upon-a-time;
But, now that it's the opposite,
It's twice-upon-a-time.

Moondog
Symphonique #3 (Ode to Venus)

One would be hard pressed not to acknowledge the effect the machine has had on our lives. From transporting to manufacturing, from power plants providing energy to silicon based units providing memory storage—our “form of life” has been forever changed by the machine and mechanization. Machines have taken the place of laborers and machines have taken our hearts. We line up to see the space shuttle blast off and we go online to order the latest time saving device. Where we once marveled at the stroke of a paintbrush and the fingering of a piano key, we now sit glued-to-the-tube and mesmerized by the latest synth-pop tune and randomly generated pixilated image.

But where there's an affinity, a hope—machines will solve our problems—there's also a fear, a distance. Will machines take over, making us obsolete? Will we eventually be enslaved by the “new” consciousness? Did we cheer when Gary Kasparov lost to Deep Blue or did we see ourselves doomed to the approaching power of the binary code? “But machines are just tools,” you say. “And as long as they serve their function—to work and to not sit ‘idle’—we have nothing to fear.”

Mr. Ludwig Wittgenstein, in his *Philosophical Investigations*, does not directly address these questions or fears but he does use the example of the machine and of mechanization to delve into a completely different realm—the world of man and his “form of life,” his language. I will explore several passages from the *Investigations* where the machine is introduced and through my own investigations, I will shed light on what Mr. Wittgenstein is driving at in this seminal treatise.

MACHINE

In the “Preface” of the *Philosophical Investigations*, Mr. Wittgenstein admits that the most he could accomplish was to write “philosophical remarks” and that any attempt to bring his results into a cohesive whole would never succeed. Yet, there is a common theme grounding this disparate work. “The same or almost the same points,” writes Mr. Wittgenstein, “were always being approached afresh from different directions. . . .” What are the same or almost the same points? Before diving into the bulk of my investigations, let’s look into Mr. Wittgenstein’s first mention of mechanization.

“I set the brake up by connecting up rod and lever”—Yes, given the whole rest of the mechanism. Only in conjunction with that is it a brake-lever, and separated from its support it is not even a lever; it may be anything, or nothing. (6)

Immediately, we are introduced to a new way of understanding our world—a world expressed through the activity of speaking and a world painted by our “picture of language.” Mr. Wittgenstein, through the use of this passage, throws into question a long held view of how we come to learn the meanings of words—the view held by St. Augustine. According to St. Augustine words correspond to objects and by learning words, we come to understand the meaning of those words. Hence, a word, the object signified, and the word’s meaning have a 1:1:1 relationship. This seems to be a plausible explanation but “Augustine does not speak of there being any difference between kinds of words,” writes Mr. Wittgenstein. “If you describe the learning of language in this way you are, I believe, thinking primarily of nouns... and only secondarily of the names of certain actions and properties.”(1) To help see the import of

this comment and to also show how Mr. Wittgenstein further erodes this “picture of language,” let’s return to our brake-level example.

I present to a student an object—a rod and lever—and as I point to it (assuming the student knows that by me pointing to the object, I’m referring to the object) I say: “This object is a rod and lever.” Because I’m unsure of whether the student understood the exercise, I perform a simple test. I display an assortment of objects—all painted the same color to visually distinguish the shape from the color of the objects—and in this assortment is a rod and lever. I ask the student to pick up the rod and lever and he does so. I am now left with another question: How can I be sure that the student understands and draws a connection between the name of the object and the object itself? Well, I conduct the test a second time and the student again picks up the rod and lever. However, this could still be an anomaly. Maybe the student guessed correctly twice but if tested a third time, the student would choose a different object. At what point, after how many tests, will I be certain that the student understands? Well, for the sake of argument, let’s assume that our student knows that when he hears the words “rod and lever,” a picture corresponding to the object comes before his mind. Here, we have a very fitting example of St. Augustine’s “picture of language.” Now, let’s take this example a step further.

I now ask the student: “What is the meaning of rod and lever?” The student, appearing as though he understood the question, walks over to the assortment of objects and picks up the rod and lever. I congratulate him for selecting the correct object but I also admonish him for misunderstanding me. “How could he have misunderstood?” You ask. Well, I asked for a meaning of the word and the student handed me the object. Isn’t the meaning of the word “rod and lever” the object “rod and lever”? And if not, then what is meaning? To answer this question, let’s return to our student. I invite him to look into the cabin of a locomotive. Presented with objects resembling rods and levers,

he excitedly says: “Look at all these rods and levers.” “Yes,” I say, “and this one, to the right of the console, is the brake-lever.” A brake-lever, I explain, is a rod and lever that functions as a brake handle for the locomotive. The word “rod and lever” now has meaning—it serves as a brake-lever in the context, the “language game” of describing the function of a particular lever in the locomotive. The student now realizes that the meaning of the word is not inherent in the object that word represents but is derived from something else. That something else is the “rest of the mechanism.” Again, Mr. Wittgenstein writes: “Only in conjunction with that is it a brake-lever, and separated from its support it is not even a lever, it may be anything, or nothing.”(6) Through this example, we have discovered one of the major points Mr. Wittgenstein makes throughout his *Investigations*. Now we must dive in, head first, to reveal other points.

When we conjure up images, thoughts, pictures of machines, we may think of the whole (i.e. a locomotive) composed of parts (i.e. rod and levers, pistons, gears etc.) and that these parts work together to fulfill a particular function. Unless something drastically goes wrong with this machine (i.e., the parts malfunction), we feel confident that the machine will perform the task it was built for. We are lured by the machine’s predictability, its reliability. But there is something else alluring. Machines represent, in their purest form, a deterministic system. What do I mean by a “deterministic system”? To help answer this question and to further our investigation, let’s return to Mr. Wittgenstein. I have chosen a lengthy passage (193) to assist us. Due to its length, I have decided to address it one paragraph at a time.

Mr. Wittgenstein writes:

The machine as symbolizing its action: the action of a machine—I might say at first—seems to be there in it from the start.

What does that mean?—If we know the machine, everything else, that is its movement, seems to be already determined.

Immediately, Mr. Wittgenstein presents us with a picture of a machine that is in keeping with its allure—its determinability. Because a machine is built to perform a particular function, its function must be built into its structure. So, “If we know the machine,” its movement will be determined. To help explain this, let’s return to our locomotive. A locomotive is composed of parts and each of these parts performs a particular, even special function. Because we know these parts and their functions, we can determine the outcome of when these parts are put into action—the locomotive moves. In other words, if we know what is happening on the inside, we can predict what will occur on the outside.

We talk as if these parts could only move in this way, as if they could not do anything else. How is this—do we forget the possibility of their bending, breaking off, melting, and so on? Yes; in many cases we don’t think of that at all.

The determined motion of our machine is now under attack. Mr. Wittgenstein rightly asks: What if these parts malfunction? Is our machine still determined? Certainly not but when conjuring up pictures of machines, we tend to see them as determined. It’s as if the picture of the machine is more objectively real than the machine itself. Or to put it differently, our concept of a machine (or whatever it may be), sitting “idle,” is more significant than a machine at work, performing a function.

We use a machine, or the drawing of a machine, to symbolize a particular action of the machine. For instance, we give someone such a drawing and assume that he will derive the movement of the parts from it.

(Just as we can give someone a number by telling him that it is the twenty-fifth in the series 1, 4, 9, 16,...)

Now that we acknowledge that our machine, as a real object in the world, may not be determined, how do we rescue determinism?—By not looking at the real world of objects but by relying on the conceptual world of pictures. Because parts are known to malfunction, through toil and wear, we must not rely on our real machine to demonstrate determinism.

So, where we started this discussion with a machine-as-object, we are now left with a machine-as-picture. As for knowing how to read this picture correctly and hence derive predictability from it, we must assume that such a feat is possible. In other words, the person reading the picture must not misinterpret it; for how can a picture, a symbol of a machine show predictability if that picture is misread?

“The machine’s action seems to be in it from the start” means: we are inclined to compare the future movements of the machine in their definiteness to objects which are already lying in a drawer and which we then take out.

For a machine to be determined its movements must be predictable as well as predicted. Each movement is definite. It’s as if one could plot out the movement over time on a graph. For example: Piston A moved to Position 1 after one second and that same piston moved to Position 2 a second later. In other words, a piston’s predictability

is like a series of graphic points or pictures—each definite like objects “already lying in a drawer.” We only need to pull out these pictures, one at a time.

But we do not say this kind of thing when we are concerned with the predicting the actual behavior of a machine. Then we do not in general forget the possibility of a distortion of parts and so on.

When referring to our machine-as-picture, we can feel pretty confident that the movement of the machine is determined. Because the machine-as-picture will not malfunction, every movement can be plotted and hence every future movement can be predicted. But this isn't how we discuss the predictability of a machine-as-object. In theory, “The machine's action seems to be in it from the start” but in actuality, we must take into consideration the possibility of something going wrong, i.e., “the distortion of the parts.” What happens when we must grant this consideration? Well, where we once had predictability, we now have probability.

We *do* talk like that, however, when we are wondering at the way we can use a machine to symbolize a given way of moving—since it can also move in quite *different* ways.

Mr. Wittgenstein, in this passage, is emphasizing the following point: When we talk about the machine-as-symbol, we have a determined system. But when we talk about the machine-as-object, we grant the possibility that the machine can move in ways not predictable. Hence, a gulf has been created between our concept of the object and the object itself. How can we bridge this gap? Is it through a closer look at the inner

workings of the machine-as-object? And how closely must we look at these inner workings to regain the predictability we once granted and held in such high esteem?

We might say that a machine, or the picture of it, is the first of a series of pictures which we have learnt to derive from this one.

Again, the reference here is to a determinate system as illustrated through pictures. Take for example a drawing of a cam—a rotating cylinder attached to a revolving shaft resulting in a reciprocating motion. Through a series of drawings, I can demonstrate the predicted movement over time. In other words, the first picture will foreshadow the second picture as if the motion was determined by the first. This logically follows. Because we know what a cam is and know how each part functions in relation to the whole, one picture of the cam in Position A will predict the second picture of the cam in Position B.

But when we reflect that the machine could also have moved differently it may look as if the way it moves must be contained in the machine-as-symbol far more determinately than in the actual machine. As if it were not enough for the movements in question to be empirically determined in advance, but they had to be really—in a mysterious sense—already *present*.

Thus far, we have accepted that the machine, as an object, may in fact not be determined. Because the parts could malfunction, the machine-as-a-whole would malfunction and hence lose its predictability. Still searching for a determinate system, Mr. Wittgenstein proposes that we should look to the drawing of the machine. Again, knowing the function of the parts and the motion that these parts will take, the drawing of

the machine in Position A at Time 1 will determine the next drawing, and hence the position of the machine at Time 2. So, the predictability of the machine-as-symbol is inherent in the drawing itself. Just looking at the picture, without having empirical evidence, will determine the motion of the machine-as-symbol. In other words, the predictability will be inherent regardless of the picture's interpretation.

But shouldn't our drawing of the "machine-as-symbol" also contain alternate movements? And if we can account for these so-called anomalies in our "machine-as-symbol," haven't we further demonstrated that our drawing, our symbol is more determined than our machine-as-object?

And it is quite true: the movement of the machine-as-symbol is predetermined in a different sense from that in which the movement of any given actual machine is determined.

In this passage, Mr. Wittgenstein sums up what he has been saying all along—that our concept of a machine; i.e., its movement, is not only determined but it is also predetermined. The predictability of the machine-as-symbol is inherent in the concept itself—the machine-as-symbol can move in one and only one way and that motion is self-evident. The machine-as-object, on the other hand, is "determined." Because, the real machine can malfunction, its predictability is at best a high probability. When looking at the inner workings of this machine, we could not be certain of how these parts will function tomorrow. The most we can say is that motion of the machine-as-object is determined until the machine breaks down.

CONCLUSION

Now that we have analyzed passage (193), what conclusions can be drawn, what points surmised? As I have stated earlier, machines have a particular allure. When we think of a machine, we think of a mechanism composed of parts and these parts working together in unison, in a determinate way. Because we think of a machine in this light, it has won our hearts. Machines are, for the most part, predictable and hence reliable. We also believe that the more we understand the inner workings of a machine and hence where it may go wrong, the more reliable we can make it. In other words, the closer we bring the machine-as-object to the machine-as-symbol, the more determined it would be. Can such a method be applied to Man? If we have a picture, a symbol of Man, would his actions, his motions be determined? Because the motion of the machine-as-symbol is predetermined, can we conclude that the inner working of man-as-symbol is also predetermined? To shed light on this question, let's return to what we have said before.

Machines tend to break down, parts of the machine tend to malfunction and the result is that we no longer have what we used to think was a determined system. How do we rescue our concept of determinism from this bucket of bolts? Mr. Wittgenstein proposes that we must now look to the machine-as-symbol to find a determined system. Unfortunately, in our everyday life, we do not have the machine-as-symbol working for us. The machine-as-symbol, although determined (even predetermined), predictable and ultra-reliable, sits "idle," doing no work and is, in a sense, useless.

This machine-as-symbol is analogous to concepts in our language. "The confusion which occupy us," writes Mr. Wittgenstein, "arise when language is like an engine idling, not when it is doing work."(132) As I have stated earlier, a word has

meaning and a meaning that is conveyable and sensical when the word is used in a particular “language-game.” Outside of this context, meaning breaks down. To help emphasize this point, let’s return to our rod and lever example. After learning to associate the word “rod and lever” with the object, I asked the student what the word meant. As we recall, the student misunderstood the question. So, is it possible to understand the name of an object without knowing what the object, or the word means? In other words, can the rod and lever, as an object, become a word imbued with meaning when the object (and hence the word) is not a part of its use in the real world; i.e., the locomotive or the “language game”? Certainly not—for this to be the true, the same word would have a fixed meaning in every situation. And we know, from our every day use of language, that this is not the case.

Let’s now look at the machine-as-symbol. As stated earlier, this symbol is a drawing and it has been suggested that by looking at this drawing, the motion of the machine will be revealed to be determined. But like the word and the object, this machine-as-symbol, this drawing, this picture in our head can be interpreted differently. What happens to the stated determinism when the same drawing is placed in a different context? It vanishes. Mr. Wittgenstein, to illustrate this point, uses the following example:

You could imagine the illustration appearing in several places in a book, a textbook for instance. In the relevant text something different is in question every time: here a glass cube, there an inverted box, there a wire frame of that shape, there three boards forming a solid angle. Each time the text supplies the interpretation of the illustration.

But we can also see the illustration now as one thing now as another. – So we interpret it, and see it as we *interpret* it.”

(XI, *Philosophical Investigations* II).

So, our machine-as-symbol can now be interpreted differently. Not only can it be a drawing of a machine at idle, it can also be a drawing of a machine at work, when and only when, this picture is part of a larger picture, a context. This now being the case, what happens to the machine-as-symbol's predictive power? As a drawing, its motion may be determined when we consider it in a particular context but that is as far as we can go. Place that same drawing in a different setting and its meaning changes. From this, we can see how this same conclusion can be applied to the question concerning man-as-symbol. Of course, this presupposes that we can derive a symbol for man to begin with.

To conclude these investigations, let's take one last look at our brake-lever example. After discussing the function of a brake-lever with the student, I removed from a display case a drawing of the object. The student looked at the drawing carefully and concluded: "Ah, a brake-lever."

"Yes, how did you know?" I asked.

"Well," responded the student, "the drawing looks like the object you showed me in the cabin of the locomotive."

"And would you say that the drawing of the brake-lever is like your mental image of the brake-lever?" I asked.

The student looked at the drawing again and nodded, "Yeah."

I later went over the drawing with the student and showed him the motion of the brake-lever. When the lever is pulled down, a wire, connected to the brake pads, is also

pulled, causing the pads to close in around the brake drum, and in turn, forcing the wheels of the locomotive to come to a stop. Again, we have an obvious example of a machine-as-symbol. Now, let's take a look at what happens when the context changes. I present the same drawing of the "brake-lever" to a landscape architect, telling him that I would like to have my garden arranged according to the drawing. After reviewing the "plan," the architect looks at me, nods "Yeah," and says, "No problem."

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