

Moxon's Master

"Are you serious?—do you really believe that a machine thinks?"

I got no immediate reply; Moxon was apparently intent upon the coals in the grate, touching them deftly here and there with the fire-poker till they signified a sense of his attention by a brighter glow. For several weeks I had been observing in him a growing habit of delay in answering even the most trivial of commonplace questions. His air, however, was that of preoccupation rather than deliberation: one might have said that he had "something on his mind."

Presently he said:

"What is a 'machine'? The word has been variously defined. Here is one definition from a popular dictionary: 'Any instrument or organization by which power is applied and made effective, or a desired effect produced.' Well, then, is not a man a machine? And you will admit that he thinks—or thinks he thinks."

"If you do not wish to answer my question," I said, rather testily, "why not say so?—all that you say is mere evasion. You know well enough that when I say 'machine' I do not mean a man, but something that man has made and controls."

"When it does not control him," he said, rising abruptly and looking out of a window, whence nothing was visible in the blackness of a stormy night. A moment later he turned about and with a smile said: "I beg your pardon; I had no thought of evasion. I considered the dictionary man's unconscious testimony suggestive and worth something in the discussion. I can give your question a direct answer easily enough: I do believe that a machine thinks about the work that it is doing."

That was direct enough, certainly. It was not altogether pleasing, for it tended to confirm a sad suspicion that Moxon's devotion to study and work in his machine-shop had not been good for him. I knew, for one thing, that he suffered from insomnia, and that is no light affliction. Had it affected his mind? His reply to my question seemed to me then evidence that it had; perhaps I should think differently about it now. I was younger then, and among the blessings that are not denied to youth is ignorance. Incited by that great stimulant to controversy, I said:

"And what, pray, does it think with—in the absence of a brain?"

The reply, coming with less than his customary delay, took his favorite form of counter-interrogation:

"With what does a plant think—in the absence of a brain?"

"Ah, plants also belong to the philosopher class! I should be pleased to know some of their conclusions; you may omit the premises."

"Perhaps," he replied, apparently unaffected by my foolish irony, "you may be able to infer their convictions from their acts. I will spare you the familiar examples of the sensitive mimosa, the several insectivorous flowers and those whose stamens bend down and shake their pollen upon the entering bee in order that he may fertilize their distant mates. But observe this. In an open spot in my garden I planted a climbing vine. When it was barely above the surface I set a stake into the soil a yard away. The vine at once made for it, but as it was about to reach it after several days I removed it a few feet. The vine at once altered its course, making an acute angle, and again made for the stake. This manœuvre was repeated several times but finally, as if discouraged, the vine abandoned the pursuit and ignoring further attempts to divert it traveled to a small tree, further away, which it climbed.

"Roots of the eucalyptus will prolong themselves incredibly in search of moisture. A well-known horticulturist relates that one entered an old drain pipe and followed it until it came to a break, where a section of the pipe had been removed to make way for a stone wall that had been built across its course. The root left the drain and followed the wall until it found an opening where a stone had fallen out. It crept through and following the other side of the wall back to the drain, entered the unexplored part and resumed its journey."

"And all this?"

"Can you miss the significance of it? It shows the consciousness of plants. It proves that they think."

"Even if it did—what then? We were speaking, not of plants, but of machines. They may be composed partly of wood—wood that has no longer vitality—or wholly of metal. Is thought an attribute also of the mineral kingdom?"

"How else do you explain the phenomena, for example, of crystallization?"

"I do not explain them."

"Because you cannot without affirming what you wish to deny, namely, intelligent cooperation among the constituent elements of the crystals. When soldiers form lines, or hollow squares, you call it reason. When wild geese in flight take the form of a letter V you say instinct. When the homogeneous atoms of a mineral, moving freely in solution arrange themselves into shapes mathematically perfect, or particles of frozen moisture into the symmetrical and beautiful forms of snowflakes, you have nothing to say. You have not even invented a name to conceal your heroic unreason."

Moxon was speaking with unusual animation and earnestness. As he paused I heard in an adjoining room known to me as his "machine-shop," which no one but himself was permitted to enter, a singular thumping sound, as of some one pounding upon a table with an open hand. Moxon heard it at the same moment and, visibly agitated, rose and hurriedly passed into the room whence it came. I thought it odd that any one else should be in there, and my interest in my friend—with doubtless a touch of unwarrantable curiosity—led me to listen intently, though, I am happy to say, not at the key-hole. There were confused sounds, as of a struggle or scuffle; the floor shook. I distinctly heard hard breathing and a hoarse whisper which said "Damn you!" Then all was silent, and presently Moxon reappeared and said, with a rather sorry smile:

"Pardon me for leaving you so abruptly. I have a machine in there that lost its temper and cut up rough."

Fixing my eyes steadily upon his left cheek which was traversed by four parallel excoriations showing blood, I said:

"How would it do to trim its nails?"

I could have spared myself the jest; he gave it no attention, but seated himself in the chair that he had left and resumed the interrupted monologue as if nothing had occurred:

"Doubtless you do not hold with those (I need not name them to a man of your reading) who have taught that all matter is sentient, that every atom is a living, feeling, conscious being. *I* do. There is no such thing as dead, inert matter; it is all alive; all instinct with force, actual and potential; all sensitive to the same forces in its environment and susceptible to the contagion of higher and subtler ones residing in such superior organisms as it may be brought into relation with, as those of man when he is fashioning it into an in-

strument of his will. It absorbs something of his intelligence and purpose—more of them in proportion to the complexity of the resulting machine and that of its work.

"Do you happen to recall Herbert Spencer's definition of 'Life'?"⁴² I read it thirty years ago. He may have altered it afterward, for anything I know, but in all that time I have been unable to think of a single word that could profitably be changed or added or removed. It seems to me not only the best definition, but the only possible one.

"'Life,' he says, 'is a definite combination of heterogeneous changes, both simultaneous and successive, in correspondence with external coexistences and sequences.'"

"That defines the phenomenon," I said, "but gives no hint of its cause."

"That," he replied, is all that any definition can do. As Mill⁴³ points out, we know nothing of cause except as an antecedent—nothing of effect except as a consequent. Of certain phenomena, one never occurs without another, which is dissimilar: the first in point of time we call cause, the second, effect. One who had many times seen a rabbit pursued by a dog, and had never seen rabbits and dogs otherwise, would think the rabbit the cause of the dog.

"But I fear," he added, laughing naturally enough, "that my rabbit is leading me a long way from the track of my legitimate quarry: I'm indulging in the pleasure of the chase for its own sake. What I want you to observe is that in Herbert Spencer's definition of 'life' the activity of a machine is included—there is nothing in the definition that is not applicable to it. According to this sharpest of observers and deepest of thinkers, if a man during his period of activity is alive, so is a machine when in operation. As an inventor and constructor of machines I know that to be true."

Moxon was silent for a long time, gazing absently into the fire. It was growing late and I thought it time to be going, but somehow I did not like the notion of leaving him in that isolated house, all alone except for the presence of some person of whose nature my conjectures could go no further than that it was unfriendly, perhaps malign. Leaning toward him and looking earnestly into his eyes while making a motion with my hand through the door of his workshop, I said:

"Moxon, whom have you in there?"

Somewhat to my surprise he laughed lightly and answered without hesitation:

"Nobody; the incident that you have in mind was caused by my folly in leaving a machine in action with nothing to act upon, while I undertook the interminable task of enlightening your understanding. Do you happen to know that Consciousness is the creature of Rhythm?"

"O bother them both!" I replied, rising and laying hold of my overcoat. "I'm going to wish you good night; and I'll add the hope that the machine which you inadvertently left in action will have her gloves on the next time you think it needful to stop her."

Without waiting to observe the effect of my shot I left the house.

Rain was falling, and the darkness was intense. In the sky beyond the crest of a hill toward which I groped my way along precarious plank sidewalks and across miry, unpaved streets I could see the faint glow of the city's lights, but behind me nothing was visible but a single window of Moxon's house. It glowed with what seemed to me a mysterious and fateful meaning. I knew it was an uncurtained aperture in my friend's "machine-shop," and I had little doubt that he had resumed the studies interrupted by his duties as my instructor in mechanical consciousness and the fatherhood of Rhythm. Odd, and in some degree humorous, as his convictions seemed to me at that time, I could not wholly divest myself of the feeling that they had some tragic relation to his life and character—perhaps to his destiny—although I no longer entertained the notion that they were the vagaries of a disordered mind. Whatever might be thought of his views, his exposition of them was too logical for that. Over and over, his last words came back to me: "Consciousness is the creature of Rhythm." Bald and terse as the statement was, I now found it infinitely alluring. At each recurrence it broadened in meaning and deepened in suggestion. Why, here, (I thought) is something upon which to found a philosophy. If consciousness is the product of rhythm all things *are* conscious, for all have motion, and all motion is rhythmic. I wondered if Moxon knew the significance and breadth of his thought—the scope of this momentous generalization, or had he arrived at his philosophic faith by the tortuous and uncertain road of observation?

That faith was then new to me, and all Moxon's expounding had

failed to make me a convert; but now it seemed as if a great light shone about me, like that which fell upon Saul of Tarsus;⁴⁴ and out there in the storm and darkness and solitude I experienced what Lewes⁴⁵ calls "The endless variety and excitement of philosophic thought." I exulted in a new sense of knowledge, a new pride of reason. My feet seemed hardly to touch the earth; it was as if I were uplifted and borne through the air by invisible wings.

Yielding to an impulse to seek further light from him whom I now recognized as my master and guide, I had unconsciously turned about, and almost before I was aware of having done so found myself again at Moxon's door. I was drenched with rain, but felt no discomfort. Unable in my excitement to find the doorbell I instinctively tried the knob. It turned and, entering, I mounted the stairs to the room that I had so recently left. All was dark and silent; Moxon, as I had supposed, was in the adjoining room—the "machine-shop." Groping along the wall until I found the communicating door I knocked loudly several times, but got no response, which I attributed to the uproar outside, for the wind was blowing a gale and dashing the rain against the thin walls in sheets. The drumming upon the shingle roof spanning the unceiled room was loud and incessant.

I had never been invited into the machine-shop—had, indeed, been denied admittance, as had all others, with one exception, a skilled metal worker, of whom no one knew anything except that his name was Haley and his habit silence. But in my spiritual exaltation, discretion and civility were alike forgotten and I opened the door. What I saw took all philosophical speculation out of me in short order.

Moxon sat facing me at the farther side of a small table upon which a single candle made all the light that was in the room. Opposite him, his back toward me, sat another person. On the table between the two was a chess-board; the men were playing. I knew little of chess, but as only a few pieces were on the board it was obvious that the game was near its close. Moxon was intensely interested—not so much, it seemed to me, in the game as in his antagonist, upon whom he had fixed so intent a look that, standing though I did directly in the line of his vision, I was altogether unobserved. His face was ghastly white, and his eyes glittered like diamonds. Of his antagonist I had only a back view, but that was sufficient; I should not have cared to see his face.

He was apparently not more than five feet in height, with proportions suggesting those of a gorilla—a tremendous breadth of shoulders, thick, short neck and broad, squat head, which had a tangled growth of black hair and was topped with a crimson fez. A tunic of the same color, belted tightly to the waist, reached the seat—apparently a box—upon which he sat; his legs and feet were not seen. His left forearm appeared to rest in his lap; he moved his pieces with his right hand, which seemed disproportionately long.

I had shrunk back and now stood a little to one side of the doorway and in shadow. If Moxon had looked farther than the face of his opponent he could have observed nothing now, except that the door was open. Something forbade me either to enter or to retire, a feeling—I know not how it came—that I was in the presence of an imminent tragedy and might serve my friend by remaining. With a scarcely conscious rebellion against the indelicacy of the act I remained.

The play was rapid. Moxon hardly glanced at the board before making his moves, and to my unskilled eye seemed to move the piece most convenient to his hand, his motions in doing so being quick, nervous and lacking in precision. The response of his antagonist, while equally prompt in the inception, was made with a slow, uniform, mechanical and, I thought, somewhat theatrical movement of the arm, that was a sore trial to my patience. There was something unearthly about it all, and I caught myself shuddering. But I was wet and cold.

Two or three times after moving a piece the stranger slightly inclined his head, and each time I observed that Moxon shifted his king. All at once the thought came to me that the man was dumb. And then that he was a machine—an automaton chess-player! Then I remembered that Moxon had once spoken to me of having invented such a piece of mechanism, though I did not understand that it had actually been constructed. Was all his talk about the consciousness and intelligence of machines merely a prelude to eventual exhibition of this device—only a trick to intensify the effect of its mechanical action upon me in my ignorance of its secret?

A fine end, this, of all my intellectual transports—my “endless variety and excitement of philosophic thought!” I was about to retire in disgust when something occurred to hold my curiosity. I observed a shrug of the thing’s great shoulders, as if it were irritated: and so natural was this—so entirely human—that in my new view

of the matter it startled me. Nor was that all, for a moment later it struck the table sharply with its clenched hand. At that gesture Moxon seemed even more startled than I: he pushed his chair a little backward, as in alarm.

Presently Moxon, whose play it was, raised his hand high above the board, pounced upon one of his pieces like a sparrow-hawk and with the exclamation "checkmate!" rose quickly to his feet and stepped behind his chair. The automaton sat motionless.

The wind had now gone down, but I heard, at lessening intervals and progressively louder, the rumble and roll of thunder. In the pauses between I now became conscious of a low humming or buzzing which, like the thunder, grew momentarily louder and more distinct. It seemed to come from the body of the automaton, and was unmistakably a whirring of wheels. It gave me the impression of a disordered mechanism which had escaped the repressive and regulating action of some controlling part—an effect such as might be expected if a pawl⁴⁶ should be jostled from the teeth of a ratchet-wheel. But before I had time for much conjecture as to its nature my attention was taken by the strange motions of the automaton itself. A slight but continuous convulsion appeared to have possession of it. In body and head it shook like a man with palsy or an ague chill, and the motion augmented every moment until the entire figure was in violent agitation. Suddenly it sprang to its feet and with a movement almost too quick for the eye to follow shot forward across table and chair, with both arms thrust forth to their full length—the posture and lunge of a diver. Moxon tried to throw himself backward out of reach, but he was too late: I saw the horrible thing's hands close upon his throat, his own clutch its wrists. Then the table was overturned, the candle thrown to the floor and extinguished, and all was black dark. But the noise of the struggle was dreadfully distinct, and most terrible of all were the raucous, squawking sounds made by the strangled man's efforts to breathe. Guided by the infernal hubbub, I sprang to the rescue of my friend, but had hardly taken a stride in the darkness when the whole room blazed with a blinding white light that burned into my brain and heart and memory a vivid picture of the combatants on the floor, Moxon underneath, his throat still in the clutch of those iron hands, his head forced backward, his eyes protruding, his mouth wide open and his tongue thrust out; and—horrible contrast!—upon the painted face of his assassin an expression of tranquil and profound

thought, as in the solution of a problem in chess! This I observed, then all was blackness and silence.

Three days later I recovered consciousness in a hospital. As the memory of that tragic night slowly evolved in my ailing brain I recognized in my attendant Moxon's confidential workman, Haley. Responding to a look he approached, smiling.

"Tell me about it," I managed to say, faintly—"all about it."

"Certainly," he said; "you were carried unconscious from a burning house—Moxon's. Nobody knows how you came to be there. You may have to do a little explaining. The origin of the fire is a bit mysterious, too. My own notion is that the house was struck by lightning."

"And Moxon?"

"Buried yesterday—what was left of him."

Apparently this reticent person could unfold himself on occasion. When imparting shocking intelligence to the sick he was affable enough. After some moments of the keenest mental suffering I ventured to ask another question:

"Who rescued me?"

"Well, if that interests you—I did."

"Thank you, Mr. Haley, and may God bless you for it. Did you rescue, also, that charming product of your skill, the automaton chess-player that murdered its inventor?"

The man was silent a long time, looking away from me. Presently he turned and gravely said:

"Do you know that?"

"I do," I replied; "I saw it done."

That was many years ago. If asked to-day I should answer less confidently.