STS.464 Technology and the Literary Imagination
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Industrialization: a Trans-Atlantic Debate

Perfect Slaves

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June, 1829. In his heartfelt rebuttal of Thomas Carlyle's *Sign of the Times*, T. Walker contends that "Machines are to perform all the drudgery of man, while he is to look on in self-complacent ease"(p.123). He asserts that once the corporeal necessities of man are satisfied "without the intervention of human labor, there would be nothing to hinder all mankind from becoming *philosophers, poets, and votaries of art[1]."*

May, 1966. Stephen A. Coons, a MIT mechanical engineer and early promoter of numerically controlled machinery as creative aides, described digital fabrication devices to an audience of artists and designers as "perfect slaves" that are to perform the dirty work of dealing with materials while the artist or designer is free to "concentrate fully in the creative act" (Coons 1966[2]).

The ideologies behind these technologies, however relatively distant in time, are surprisingly consistent: T. Walker believes, with Coons, that the manipulation of physical materials is a stage that should be hidden as an unnecessary and undesired part of the human existence. The technologies they both describe are different, the first one speaks

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[1] Emphasis added.

[2] Coons, Stephen 1966 Computer, Art & Architecture. Art Education, Vol. 19, No.5 (May,1966), 9-11

of textile factories and steam engines, an ode to the promises of an early industrial age, and the second one speaks of computer numerically controlled devices (CNC), to which he ambiguously refers as "compliant partners", "appropriate kind of slaves" and as "magic instruments of creative liberation", an ode in turn to the promise of the number-crunching abilities of digital computers and their potential for manufacturing. It becomes apparent, however, that the underlying premises of their discourses have a common root. They both dismiss the physical, the material, as something dirty and abject.

> "We maintain, that the more work we can compel inert matter to do for us, the better will be for our minds, because the more time shall we have to attend to them. (…) Men have animal wants, which must and will be gratified at all events; and their demands upon time are imperious and peremptory. A certain portion of labor, then, must be performed, expressly for the support of our bodies. But at the same time, as we have a higher and nobler nature, which must also be cared for, the necessary labor spent upon our bodies should be as much abridged as possible, in order to give us leisure for the concerns of this better nature." (T. Walker p. 124).

This "higher and noble nature" is consistent with what Coons' means when he says "creativity", and can be thought of as the process of or the ability to operate freely in a clean world of ideas and symbols. I have mentioned this because it is in accordance with one of my academic interests to explore this correspondence as a way to delve into the culture and assumptions that underlie the digital tools that we use for designing today.

As it becomes clear with T. Walker's *Defense of Mechanical Philosophy's* constant references to the nobility of pure intellectual contemplation, and with Coons'[3] view of CAD/CAM as a "perfect slave", the division between the physical and the mental present in both discourses is part of a long philosophical tradition of separating the mind from the body and design from construction; it could be argued (though I won't do it here) that this view of computers is still prevalent in contemporary digital culture.

In *Signs of the Times*, Thomas Carlyle abides as well with a dualistic view of human nature; his use of this dualism is, however, different from Walker's, and has as a goal to cast a shadow of doubt in the faith in the Mechanism. He articulates his dualism on the

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[3] And by extension a good deal of the early computer culture.

basis of a distinction between the science of *Dynamics*, that deals with issues such as Love, Fear, Wonder, Religion and Poetry (described as having infinite character), and the science of *Mechanics* that deals with the measurable (the finite). For him, the increasingly dominant mechanistic culture was a signal of alarm of a decaying society.

> "But though Mechanism, wisely contrived, has done much for man, in a social and moral point of view, we cannot be persuaded that it has ever been the chief source of his worth or happiness." (Carlyle p.449)

And later

> "To define the limits of these two departments of man's activity, which work into one another, and by means of one another, so intricately and inseparably, were by its nature an impossible attempt." (Carlyle p.452)

Walker in turn would dismiss these ideas as 'Mysticism', but at the same time bases all of his argument in the potential of machinery to afford us time to devote to all sorts of purely mental activities that do not differ significantly from those of Carlyle's; the difference between Walker's contemplation and Carlyle's is thus never sufficiently clarified. At best, Walker avoids the problem with an inconclusive and contradictory position; for him the possibility of resolving the dualism is "beyond the capabilities of human mind. Reason affords no clue to guide those who plunge into the labyrinths of mystic speculation."

Walker's defense of the mechanical is, to a certain extent, blind. It disregards the evident risks and challenges that the introduction of serialized means of production was already posing for society, and the complex network of social relationships and roles that was emerging from it. These challenges are mentioned as a "temporary inconvenience" mainly derived from "big numbers being thrown suddenly out of employment while unprepared to do anything else" (p.125). A cynical reader could ask at this point "Well, what about Poetry, or Philosophy?

Yet more reasons for suspicion are put forward by Judith A. McGaw's *Gender and Papermaking*, where some aspects of the cultural construction of skill in the paper industry between 1827 and 1885 are examined, and it is shown how these helped render

invisible some aspects of production, specifically those in which mechanization did not take active part, and that were performed by women.

> "From the mill owner's perspective the work was justly designated 'unskilled' because it required little mill training and no formal education. Yet the evidence that machines could not replicate women's work and that mill owners benefited from the relatively low wages such work commanded should caution us not to accept at face value mill owner's assessment if their female employees' skills."

As is pointed out in The *Political Economy of Pacing,* "Skill, so the argument was, was being 'built-into' machines". Merrit Roe-Smith's offers a skilled description of the process of emergence of new social roles in textile factories in early industrial America, uncovering some of the subtleties of this time, such as the ones present in the relationship between employee and employer, and between slave and master, from the perspective of the influence of precision machinery. In the case of the latter, Smith points at the latter relationship as a complex interplay rather than as mere dominance.

> "Their skill represented the source of their power. Knowing the 'secrets' of a trade gave them a certain degree of leverage with employers (…) Any shift in technique -managerial or technical- constituted not only a shift in knowledge but also a shift in shop-floor power. The installation of a new machine or the reorganization of a job changed the character of production and almost always meant that adjustments in the deployment and pay of labor would follow. The process of negotiating these adjustments and coming to terms with employers on the shop floor provided one of the great ongoing dramas of 19th century industrialization". (p. 183)

Though with opposing views, both Walker and Carlyle use machines as 'objects to think with'[4]. They used them to speculate and describe their society, and to put forward ideas for its future. In this line of reasoning, they both enforce a dualistic stance towards human nature that presumably springs from Cartesian philosophy's clear division between body and soul. Some key problems of Walker's and Carlyle's views become apparent when other aspects of the same period are laid out in their subtleties by history of technology works such as Smith's and McGaw's. These works render some aspects of

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[4] See Second Self (Turkle p.23).

the discussion between Carlyle and Walker as simplistic and incomplete to our contemporary eyes, and their dualism as an intellectual game that both thinkers fail to resolve. However, as pointed out in the first pages of this document, a good deal of the technologies that we still use today are infused with the essence of this dualism, defining to a large extent our relationship with machines, and possibly obscuring some of their subtle social and cultural implications.

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