Kinetic Sculpture 101

by G. W. Smith

A Lecture Presented as Part of the Chautauqua New Orleans 2014 Spring Program

The term "kinetic sculpture" means one thing – and one thing only – to the public: the suspended, wind-driven mobiles of Alexander Calder, which he began to create in the 1930s. In actual fact, however, kinetic sculpture had been born earlier in the century; and a study of its origins would suggest the emergence of something not at all like the mobile.

Those origins have much in common with the history of all of Western art, which has usually been closely associated with science and technology: the accurate anatomy of Greek sculpture; the engineering of the Gothic cathedrals; and the linear perspective and interest in the natural landscape of Renaissance painting.

Even Impressionism – which we commonly think of as a gauzy, insubstantial art – was heavily involved with science and technology, and, in particular, with the new theories of color vision; with the new technology of photography; and with the rapid industrialization of Europe.

From the dawn of Impressionism onward, however, the entity which has served as the chief symbol of science and technology is undoubtedly the *machine*: the steam engine; the locomotive; the turbine; the automobile; and – of course – the airplane. Hence we discover William Turner, in 1844, painting his impression of a speeding steam locomotive; this was followed by Monet's 1877 series at the Gare St. Lazare; and by the turn of the century the machine was deeply embedded in the artistic imagination:

> "Sated, bored and frightened as many of us are today by a scientific revolution that is almost, if not quite, out of control, it is perhaps difficult for us to appreciate the buoyant spirit of discovery which must have marked the first decade of this century when the space-bridging and time-contracting airplane, automobile and wireless telegraph burst upon the world." Ritchie, Andrew Carnduff, *Sculpture of the Twentieth Century*, New York: The Museum of Modern Art, 1952, p. 25.

Indeed, the machine had many attributes to recommend it as both artistic subject and medium:

First, the *energy* of the machine, as exemplified by Raymond Duchamp-Villon's famous *Horse* of 1914.

Second, the *organization* of the machine; for here was an opportunity to apply the ancient artistic dictate of bringing order out of chaos – or, in short, formalism.

But for sculptors, the aspect of the machine which most intrigued them was *motion*. They had long dealt with motion arrested; but it now seemed possible to them to invest sculpture with actual movement.

The reason, of course, was the quiet, compact, and smoothly-operating *electric motor*. Believe it or not, its first practical application was in the streetcar: those of Richmond, Virginia, in 1887, and to be followed by the permanent electrification of our own St. Charles line six years later, in 1893 – and which line remains today the world's oldest, continuously operating street railroad; and within a relatively short time thereafter, several of the most important and revolutionary sculptors of the early twentieth century had designed or created works incorporating the electric motor – and thus giving birth to the discipline of kinetic sculpture.

And here I would like to underline the two points that have just been made: first, that kinetic sculpture did not begin as some minor oddity; instead – as we shall see – it had attracted some of the biggest names in the business; and second, kinetic sculpture began not only as an art of motion, but also as an *art of the machine* – and what an intoxicating concept that was: the power and precision of the machine married to the imagination

and freedom of art.

Perhaps first to take the plunge was Constantin Brancusi: it is reported that he occasionally displayed some of his pieces being turned by hidden motors.

The era of the Russian Revolution unleashed some titanic personalities in the visual arts, and among whom are two of the founders of Constructivist sculpture: Vladimir Tatlin and Naum Gabo.

Tatlin created in 1919 a model of his famous *Monument to the Third Internationale*, whose internal elements were to be majestically rotated by motors – and a working version of that model was recently exhibited at the Museum Tinguely in Basel, Switzerland.

Gabo, on the other hand, created something far less spectacular, if no less insightful – but a work that was actually implemented, and thus perhaps the first actual kinetic sculpture: his *Standing Wave* of 1919, which consists of a vertical ribbon of metal turned rapidly by an electric motor to create a virtual figure.

Moving forward to 1926, the famous Marcel Duchamp created his series of "roto-reliefs", which combined mechanism and graphics.

And in 1930, Laszlo Moholy-Nagy – who had been a Bauhaus faculty member – completed his *Light Space Modulator* – perhaps the very first kinetic sculpture to make its way into an art museum.

The stage was now set for the artist who should have been the Monet of mechanical art: Alexander Calder. He had the perfect background – both his father and grandfather were sculptors, and he himself was a mechanical engineering graduate of the Stevens Institute of Technology.

And in fact, shortly after 1930, Calder began to experiment in a rather serious way with motor-driven sculpture.

The rest of the story we know – but nearly a century later do not yet comprehend: the early and seemingly quite exciting experiments at combining art and the machine led nowhere, the children of their marriage stillborn. Gabo, for example, had planned a quite ambitious electro-mechanical work – his *Monument for the Institute of Physics and Mathematics* – but even the model pictured here was lost; Moholy-Nagy's *Light Space Modulator* remained for some years as a museum orphan; and Calder himself turned away from his experiments with the motor to focus on the wind-driven mobile.

Calder's reasons for turning his back on the machine were probably the same as those of his contemporaries – and which reasons we shall discuss in some detail; but our task at the present is to understand the enormity of the change in direction.

As we have seen, the dream of early twentieth century art was to forge a mighty partnership with the machine – but the mobile, with its loose connections and random, wind-driven motion, had little in common with it. Indeed, it drew upon none of that century's technological accomplishments.

The mobile, of course, is a fabulous kind of art, and in a sense impossible to argue with; but I may be among to the first to suggest – along with Philip Palmedo, the author of Lin Emery's monograph – that Calder's substitiution of the gaudy mobile for the pursuit of a more substantive art of the machine has had grave consequences for Western culture.

To understand why, we must turn back to the Greek example. The pre-eminent technology of that era was stone working – but the early Greek attempts to create art thereby yielded paltry results. The Greeks persisted, however, and within a few centuries had made so much progress that we might claim that this technology had been placed entirely in the service of the human spirit.

We must do the same with the machine, and its more sophisticated offspring the computer; but I think it is fair to say that, even today, our fine arts have not yet assimilated the machine in its purest form.

And what has been the result?

> Although it is absurd, and even grossly unfair, to think that things might have been different had Calder succeeded in 1931 in creating a true art of the machine, the fact remains that the machine continued as the near exclusive property of the industrialists and the generals – and so began the steady march to World War II, Stalin's "war of motors". If artists did not know what to do with the machine, the generals did! Smith, G. W., *Aesthetic Wilderness: A Brief Personal History of the Meeting Between Art and the Machine*, *1844-2005*, New Orleans: Birds-of-the-Air-Press, 2011, p. 13.

So much for the economic and political arenas; but what has been the effect within the cultural arena itself? Can we not connect Calder's retreat from technology, and his embrace of the mobile, to the wasteland of trivia which modern art has become – this exemplified by a recent exhibit sponsored by the Musueum of Modern art which consists of suspended balls of stuffed animals?

I seem here to have been dismissive of Calder and his contemporaries – but of course they did not abandon their dream of the coming together of art and the machine without good cause. And what was that cause?

The machine can be a thing of passion; it can be charming; and it can even represent heroism and nobility as the precise and splendid instrument of human aspiration. But once the machine has been placed on permanent display in an art gallery or museum, it is difficult to avoid its repetitive, deterministic aspect.

This, of course, is quite the opposite of the sense of freedom and possibility which art must suggest – and here we have a ready answer for Calder's steering kinetic sculpture in the direction of the random, playful mobile:

> Perhaps in years to come Calder's stunning success with the mobile, coupled with a dearth of research by younger artists into the possibilities of mechanical motion, will appear as some curious breach in the plastic evolution of this century . . . Calder's early overwhelming success with quasi-random motion convinced almost all observers that attempts to produce a machine-driven *deterministic* art would be clumsy by comparison . . . Burnham, Jack, *Beyond Modern Sculpture: The Effects of Science and Technology on the Sculpture of This Century*, New York: George Braziller, 1968, p. 234. [italics mine]

But! Is this not the great question of life itself – how meaning and free will can emerge from a deterministic universe? And is this not the point of *all* art – to animate the lifeless; to infuse substance with spirit; to "forge out of the sluggish matter of the earth a new soaring, impalpable imperishable being"?

Not to mention that the allure of the machine was such that art could not long ignore it!

We thus discover, among the younger artists after Calder, two important kinetic sculptors who did *not* break away from Calder's reliance on wind currents, but who nonetheless restored some of the precision and presence of the machine, which they accomplished by their use of precision bearings and metal-bodied visual elements. The two kinetic sculptors in question are, first, George Rickey; and second, Lin Emery. That Lin is a long-time resident of New Orleans is, of course, well known; not so well known is the fact that Rickey as well has a connection with the city, as the chairman of Newcomb's art department during the late 1950s. Also not so well know is the fact that Lin's influence extends far beyond New Orleans and Louisiana; indeed, she has been awarded some three dozen major architectural commissions in the United States and Asia, and on this basis must be currently regarded as the world's foremost kinetic sculptor. Lin has also been recently honored with a full

length monograph by noted techno-art writer Philip Palmedo – who, not by the way, is also a PhD physicist. In addition, yours truly has had the opportunity of publishing a review of this monograph, and which review has been republished on the web site of the Arthur Roger gallery.

So a continued reliance on random wind currents, by way of softening the machine's determinism, has allowed the re-introduction of a machine-like *appearance* in kinetic sculpture – and a similar reliance on the random has allowed the re-introduction of the *motor*. I refer here, in particular, to the famous Swiss-French kinetic sculptor Jean Tinguely. Virtually all of his works were motorized, and unquestionably mechanical; but by constructing them from worn and discarded parts, the random emerges in a quite natural and poignant manner.

This, of course, is not the machine which we know and have come to depend on in our everyday lives – the compact electric pump, for example, which lifts water out of the earth; nor is it the machine of legend – the famous *City of New Orleans*, for example, which, by virtue of its dependability (or, we might say, by virtue of its *determinism*!) will have carried us five hundred miles when the day is done; and until art has assimilated *these* machines, there will remain a discontinuity in our culture – and which discontinuity will only grow larger as the machine takes an ever bigger part in our lives.

To further illustrate the role which I am here calling upon art to play, let us return one final time to the famous Kritios Boy.

If you think about it, the stone of Greek technology was no less deterministic than our own machine; but without violating its compact nature and density, Kritios not only created a beautiful work of art – he made stone into a vehicle for the human spirit:

> . . . the same relaxed pose which worked so effectively at the level of aesthetics also served to make the work a spiritual dynamo; for was it not the first sculpture to express that attitude which has become the hallmark of the Greek legacy: a sense of man's confidence regarding his place in the universe? Smith, p. 22.

And here's the bottom line: Greek confidence sprang directly out of the ability of their art to assimilate all which came before it.

We have our own reasons for hope.

For the first time in history, Youtube and the Internet have provided kinetic sculptors with a practical means of sharing videos and animations of their work. This has apparently led to quite a flowering of the discipline: a Youtube search for "kinetic sculpture" yields 72,000 relevant videos, and some of which depict motorized works which are totally deterministic and yet still somehow "alive".

Indeed, kinetic sculpture may finally be on the threshold of its golden age – and which triumph may correspond with the golden age of the electric motor itself, as it replaces the primitive and deadly internal combustion engine in hundreds of millions of automobiles.

And for myself personally, the time lapse videos of Saturn's moons sent back by the Cassini mission are a profound testimony to the nobility of a purely deterministic motion. The epigraph, by the way, is from Ovid: "Whereas other animals look groveling at the groud, to man he gave an upturned aspect, and ordered him to look at the sky, and to raise his face to the stars."

I conclude with a most deterministic and pre-programmed sequence – and yet one which is utterly transcendental: the docking scene from *2001: A Space Odyssey*.