Creativity in the fourth dimension

The grammar of movement according to Jean Tinguely

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Introduction

In ‘The semiotics of kinetic design’ (Van Leeuwen & Caldas-Coulthard, 2004), Caldas-Coulthard and I described how toys and/or their parts can be made to move, and how such movements can be made to have meaning. The work was part of a research project titled *Toys as Communication* in which we investigated the learning potential afforded by toys and other objects. We had observed that display dolls such as Barbie and Action Man communicate discourses of gender not only visually, through Action Man’s muscles and square jaw, and Barbie’s wasp waist and impossibly long legs, but also through their materiality and their kinetic design. Display dolls are articulated. Their heads and their limbs can be moved, and the way in which they can be moved follows semiotic, rather than anatomical, rules. Comparing the kinetic design of a Sindy doll and an Action Man in the same price class, we found, for instance, that Action Man’s head could only move sideways, and not up and down, while Sindy’s head could move in every direction, creating the coy ‘head cants’ on which Goffman (1979: 47) had commented in his study of gendered poses. Again, Action Man’s legs could be spread, allowing him to sit in the way in which many men sit, with legs spread wide, but Sindy’s legs could not. On the other hand, Sindy could bend her knees (in fact, she had three degrees of knee bend), so she could adopt the ‘body cants’ and ‘bashful knee bends’ also described by Goffman (1979: 45–6), while Action Man could not. But Action Man could be made to stand on his feet, while Sindy could not, and Action Man’s hands could hold objects, while Sindy’s could not. In short, kinetic design conveyed the same gendered meanings that Goffman had so strikingly analysed more than twenty years earlier: women are represented as unable to support themselves, literally and figuratively, and as tending to make themselves small and childlike, which can then ‘be read as an acceptance of subordination, and expression of ingratiation, submissiveness and appeasement’ (Goffman, 1979: 46), while men are represented as seeking to occupy the maximum amount of space, and as standing erect, ready for action, and in no need of support. Having discovered this, we investigated other dolls and other toys – baby toys, toy telephones, toy clocks, toy computers, toy cars, toy locomotives, toy guns, and more – so as to construct a ‘grammar of kinetic design’. I will summarise our findings in the next section.
At the end of our article, we added two afterthoughts. First, we noted that many formerly inert objects, such as chairs and light fittings, are today also designed kinetically. Desk chairs have wheels, they can swivel, their height can be adjusted, and their backs are flexible, and so on. Light fittings, such as the Anglepoise light on my desk, can be tilted up and down, or panned sideways, and their shades can be swivelled in any direction. Even text has become movable – thanks to Microsoft Word, I can lift words, or clauses, or whole paragraphs and deposit them elsewhere at the click of my mouse, and in film titles, television commercials, and websites, bits of text are constantly on the move (compare Van Leeuwen & Djonov, 2014).

The other thing that we noted was that kinetic design has not only been studied academically, but also by modernist artists such as Calder and Tinguely – very thoroughly and well before academics began to take note. Focusing on Tinguely, we wrote that his oeuvre can be understood as having developed a grammar of kinetic design through the production of sculptures, rather than through writing academic papers (Van Leeuwen & Caldas-Coulthard, 2004: 379):

Every type of movement we discovered in exploring toys and other objects has been used in [Tinguely’s] work in complex and multiple ways, in a wide range of combinations, and in objects which have no use value of any kind and may therefore appear absurd or humorous, but nevertheless form a systematic exploration of the semiotics of kinetic design.

At the time, this was little more than an assertion. In this chapter, I want to put that assertion to the test and describe that grammar. As such, the chapter fits in with another strand in my work: interpreting the work of selected modernist artists as semiotic research (compare Van Leeuwen, 2006, 2011; Van Leeuwen, Djonov, & O’Halloran, 2013). In what follows, I will first summarise the main findings of the 2004 study, then analyse the grammar of movement implicit in Tinguely’s work, and finally draw some conclusions about creativity in art and semiotics.

The kinetic design of toys

In our 2004 article, Carmen Caldas-Coulthard and I sought to describe the ‘mathetic potential’ (potential for learning) afforded by the kinetic design of toys. To do so, we identified a number of types of movement, as shown in Figure 21.1. I will discuss each below.

Mobility and movability

**Mobility** is the potential for displacement of an object, as realised, for example, by wheels. **Movability** is the potential for movement of all, or part, of an object that does not involve the displacement of the object as a whole, as realised, for example, by the articulated limbs of Sindy and Action Man. The two types of movement can, of course, be combined in a single object: a toy car can have wheels as well as opening doors, for instance.

In the world of toys, not only cars, but also many other kinds of objects are mobile: toy telephones, for instance, and toy computers. There are even books for very young children with wheels. In such cases, mobility becomes a metaphor and a major cultural lesson. It teaches that telephones, computers, and books ‘get you somewhere’, help you to ‘move on’, and that mobility is a good thing. And, as we have already seen, this is not restricted to toys; everyday designed objects may also become mobile.
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Mobility and movability not only communicate meanings and values, but also facilitate and constrain the user’s actions by creating subject positions. The mobile desk chair defines its user as agile, ‘busy’ – moving from one activity to another. The same is not true for the driver’s seat in a car: here, a single-minded focus on the road ahead is encouraged. Until recently, this also applied to students’ seats in lecture theatres, but in some new lecture theatres in my university, the seats can now swivel, so that students can engage in group activities, rather than only listen to the lecturer. In the case of toys, such subject positions become imaginary. If, in a toy car, only the driver’s door and the steering wheel are movable, the user is positioned as an imaginary driver. If the bonnet can also open, revealing an engine, the user becomes an imaginary mechanic as well. Thus toys encourage and facilitate some interests, yet create obstacles for exploring and developing others. And an important part of their learning potential consists precisely in encountering and noting such obstacles and their implicit messages.

**Articulation and flexibility**

There are two types of ‘movability’: *articulation* by means of joints or hinges, as with the limbs of Sindy and Action Man; and *flexibility*, or the ability of an object, or part of it, to be bent or moulded into different positions or shapes, as with Sindy’s hair, which can be combed and styled in different ways, in contrast to Action Man’s hair, which takes the form of a rigid plastic cap. It should be added that flexibility is a matter of degree. Sindy’s face is also flexible, made of relatively soft plastic, whereas her body is made of hard plastic. But this does not make her face as flexible as the face of a ragdoll or a soft glove puppet.
Here is another example of the way in which movability (articulation, in this case) can create meaning. In a plastic baby ‘pram rattle’, a number of objects could rotate around a plastic pipe: a kind of paddle wheel; something resembling a heavily profiled tyre; and, in the centre, a yellow plastic dog. The ‘technical’ objects, the paddlewheel and the tyre, rotated easily, without friction. The dog, on the other hand, rotated stiffly, by means of a noisy ratchet mechanism. An abstract quality of the objects and an ideologically tinted message, well suited for the coming age of robots, is revealed here: technology is more easily controlled and offers less resistance than living creatures.

The difference between articulation and flexibility is important. Articulation determines what will and what will not be movable and how, as with the movements of Sindy and Action Man. Flexibility not only provides users with more tactile satisfaction, because it always involves a degree of softness, but it also allows more freedom of action. Soft toys such as rag dolls and teddy bears, for instance, not only have affective value because they can be cuddled, but also have a more open-ended kinetic potential. The ways in which they can be bent and moulded is not ‘built-in’, but derives from the flexibility of the material. But the transformations that flexibility allows will often be transitory, because the materials will bounce back in their original shape as soon as the user withdraws his or her hands. This teaches another lesson: tactile, affective, and creative experiences are fleeting and transitory. They leave no traces. There are, of course, flexible materials that do allow more permanent transformation, such as rubber, but interestingly their use in toys has remained relatively marginal.

**Deconstructability**

Deconstructability provides a ‘hands-on’ lesson in what things are made of and how they fit together. Even when toys are not designed for deconstruction, children want to take them apart – not from some kind of destructive urge, but out of curiosity, because of a desire to learn. Deconstructability teaches analysis.

Any object can be analysed in different ways and according to different principles. In the past, and to a degree still today, construction toys such as Meccano or Lego taught children that the world is built up out of a small number of, in themselves, meaningless items (‘atoms’ or ‘molecules’, you might say, or ‘phonemes’, if you want a linguistic example). Larger, meaningful items could be constructed from these basic items, and this required careful calculation of the proportion of different basic units required. The basic units themselves connoted construction methods prevailing at the time of their invention: steel girders, in the case of Meccano; building blocks in modernist colours, in the case of Lego. Here, the user became an imaginary engineer or builder. More recently, construction toys are marketed in do-it-yourself (DIY) construction kits that provide just the right amount of blocks for one and only one larger item – a helicopter or Star Wars spacecraft, for instance – or as ready-made, already-meaningful items for assembly. This positions users as consumers, rather than as builders or engineers, and withholds a whole dimension of analysis and construction from them. In Lego, it has also facilitated a quite extreme and, in my view, deplorable differentiation between toys for boys and toys for girls.

**Forms of control: Hand-driven or power-driven**

Mobility and articulation can be manually driven or powered by some form of artificial energy: a clockwork mechanism, for instance, or an electromotor. Often, this is an either/or choice.
Many artificially powered objects are not easily moved by hand and thereby demonstrate our dependence on artificial energy. Toys may also be driven by natural power: wind, water, or gravity. Few contemporary toys make use of this, so that especially urban-resident children may not get enough opportunities to learn how to work with these forms of power, despite the fact that many traditional toys, such as kites and spinning tops, owe their enduring fascination precisely to the way in which they allow the exploration of, and interaction with, natural forces.

**Forms of control: Instigatory and continuous**

In the case of *instigatory control*, the user sets the object in motion, or exposes it to a natural energy source, but does not control its movement throughout the duration of that movement, as is the case with clockwork cars or paper aeroplanes. In the case of *continuous control*, control is exercised throughout the duration of the movement.

Hand-driven instigatory control may require skill and coordination, especially when the effects of natural forces are to be predicted and inculcated in the movement. The instigatory control of artificially powered movement is mostly a matter of pressing a button or flicking a switch, although touch control has introduced a small element of skill here. The continuous control of power-driven movement (‘human–machine interaction’) also requires some skill, and has been an area of continuous experiment and innovation – from joysticks and drawing pads to control through speech or gesture.

Many of these types of movement allow for further more ‘delicate’ choices: degrees and types of flexibility, degrees and types of friction in the articulation of objects, and so on. All allow for syntax – for combinatory meaning-making following the principles of transitivity (compare Halliday, 1994) – with kinetically designed objects as ‘participants’ and the movements that they allow as ‘processes’. These participants and processes then combine into intransitive representations, such as ‘Sindy’s knees bend’ or transitive representations such as ‘Action Man’s hand grasps a plastic gun’, with either the user and/or the source of power as a causative agent, for example ‘the child makes Sindy’s knees bend’ or ‘the child makes Action Man’s hand grasp the plastic gun’, and ‘the wind makes the paper aeroplane fly’ or ‘the child causes the wind to make the paper aeroplane fly’.

Specific kinetically designed objects or types of object will have a built-in lexicon of possible ‘processes’, a built-in ‘movement potential’. It is therefore possible to specify the movement potential of toys in general, or, for instance, the movement potential of Microsoft PowerPoint, which includes movements such as ‘fly in’, ‘float in’, ‘swivel’, ‘bounce’, ‘pulse’, ‘split’, ‘grow’, and so on. In short, there is something like a ‘language of kinetic design’, with syntagmatic structures of the kind just described – rules that specify which kinds of objects or parts of objects can go with which movements – with paradigmatic structures of the kind mapped in Figure 21.1, and with registers that specify what can be ‘meant’ with kinetic design in a given sociocultural context.

**The grammar of kinetic design according to Tinguely**

Although this chapter will focus on only one aspect of Tinguely’s work – the grammar of movement implicit in his work – I should stress that his work is thoroughly multimodal. He experimented with colour throughout his career, from his early work, which borrowed colour schemes from Kandinsky, Malevich, and other abstract artists, to later monochrome work and work using the colours of the found objects of which it was made, which ranged
from rusty bicycle and pram wheels, to plastic toys and devotional objects. He also experimented with light and lighting, using spotlights to create moving shadows and incorporating rows of flickering lights into his machine-like sculptures.

Sound played a crucial role throughout, most often by making the moving parts of his sculptures hit resonant objects such as cans, pots, pans, and percussion instruments, and by the squeaky, grinding, and thumping sounds of the rusty gears, cams, cranks, and levers that Tinguely used to make the sculptures. *Mengele* (1986), a large sculpture made from the charred remains of a farm that had burnt down close to Tinguely’s home, has been described as emanating ‘grating, sighing, creaking, murmuring sounds mixed in a discordant requiem’ (Violand-Hobi, 1995: 145). These sounds can be heard on a video of the sculpture (see https://www.youtube.com/watch?v=DKdTF77RoxU). The fountain-sculptures that Tinguely created with Niki de Saint Phalle, near the Pompidou Centre in Paris (*Stravinsky Fountain*, 1983), orchestrate the dripping, sprinkling, spattering, and splashing of water in rhythmical patterns reminiscent of the work of Stravinsky, after whom the fountain was named.

Tinguely was also interested in smell. *Mengele* (1986), for instance, emanated the smell of burnt wood, and *Homage to New York* (1960), a 7m long and 8m high sculpture with eighty bicycle, tricycle, and pram wheels driven by fifteen motors, contained bottles with chemicals that produced foul smells and smoke.

Two further aspects of his work are worth mentioning. First, many of Tinguely’s sculptures are ‘co-authored’, most famously with his second wife, Niki de Saint Phalle, but also with many other artists. *The Fantastic Paradise* (1966–7) consisted of six works in which Tinguely’s black metal mechanical creatures interacted with de Saint Phalle’s colourful and amply proportioned polyester women: Tinguely’s *Madwoman*, for instance, caressed de Saint Phalle’s *Tree-Nana* with fork-like tentacles, while wiggling a large mechanical tail (see https://www.youtube.com/watch?v=9Z8C7hMZcwo). Secondly, Tinguely consistently sought to embed his work in events and practices, to create both ‘texts’ and ‘contexts’, so to speak, one-off theatrical shows, and events such as the destruction of *Homage to New York*, which went up in flames in front of hundreds of viewers in the sculpture garden of the Museum of Modern Art in New York. As always, Tinguely was interested here in transience and transient media: the work ‘had to pass by, make people dream and talk’ for a moment and ‘be gone the next day’ (Tinguely, quoted in Hulten, 1987: 350).

In discussing the types of movement that Tinguely developed in his work, I will use the terminology that Caldas-Coulthard and I developed in our work on toys, introducing additional terms where necessary. The discussion is based on the extensive illustrations and descriptions in Violand-Hobi (1995), together with Hulten (1975, 1987) – the most detailed source of information on Tinguely’s work – and works that I have seen in the Stedelijk Museum in Amsterdam and the Louisiana Museum in Humlebæk, Denmark, and on videos of Tinguely’s work, especially those produced by the Tinguely Museum in Basel.

**Articulation and flexibility**

The majority of the movements in Tinguely’s work are ‘articulated’. Tinguely used electro-motors (initially often 78 rpm gramophone motors), and later also petrol engines, to drive the gears, cams, cranks, and levers that produced the movements. Many of these articulated movements are repetitive, and such repetition is then either regular or irregular: Tinguely devised many techniques for producing irregularity and unpredictability – differently sized wheels, elastic rubber belts, the use of several motors, etc.
Repetition was used to create meaning in many different ways. In *Chariot 8* (1964), a large crescent-shaped object repetitively pokes a kind of clockwork – a ‘mechanism that makes love’, as Tinguely explained in an interview (quoted in Violand-Hobi, 1995: 60). In *Inferno* (1984), a metal beam repeatedly tries to lift itself into an upright position, but never manages to do so, in endless, Sisyphus-like toil, while other, smaller parts of the same sculpture energetically repeat the same pointless movements – intransitive actions all, without any impact on anything: movement for the sake of movement. When the actions of Tinguely’s machines are transitive, they often have a destructive effect. In *Rotozaza II* (1967), a hammer mechanically and repetitively smashes beer bottles (see http://www.youtube.com/watch?v=QLVOTM5rKrc). *Rotozaza III* (1969) similarly smashed plates and was exhibited in a shop window. Again, the context was part of the meaning of the work as a statement about consumerism and its wastefulness: Tinguely had wanted the machine to smash Swiss watches and other symbols of conspicuous wealth, but that turned out to be too expensive (compare Violand-Hobi, 1995: 77).

Irregularity is another source of meaning in Tinguely’s work. *Jealousy I* (1960) represents jealousy by means of the nervous jiggling of strings of wooden beads suspended from a moving metal bar. In *Transmission of Death* (1986), animal skulls move to and fro on a conveyor belt, and are mounted on springs, so that they tremble anxiously as they are carried along. (Grammatically, this could be seen as a case of embedding – a linguistic ‘translation’ might be ‘the conveyor belt conveys trembling skulls’ – or perhaps as a complex ‘sentence’, translatable as ‘the conveyor belt conveys skulls which tremble’.) In *Selfportrait* (1988), an animal skull with rags hanging off it and a falcon on the ‘shoulder’ (the costume that Tinguely had worn in a Carnival parade) dangles on chains and is pulled now to the left, now to the right, by chains connected to a large and heavy wheel (see http://www.youtube.com/watch?v=GMPLRm56_ZI).

In most of Tinguely’s sculptures, there is little flexibility, which says something about the machine-like universe that he created. But feathers and other flexible materials, such as dusters, rags, and clothing, gradually began to appear in his work; it was, apparently, Niki de Saint Phalle who first suggested that he should use feathers in his work. In *Fairy Tale Relief* (1978), a ‘happy duck’ has its backside tickled by a fluffy duster, and in *The Furious Feather* (1986), a large feather and a kitsch sculpture of a fox devouring its prey, bought at a flea market, are mounted on a rotating wheel, performing a kind of dance that creates a contrast between the freely moving feather and the rigidity of the animal sculpture. Flexibility was also used in *Maramar* (1961), a hanging sculpture described by Hulten (1975: 204) as follows:

Nine levers hung from camshafts which were hidden by an intermediate ceiling. When the machine was switched on, the levers tore at a tangled heap of junk and rags, a dirty nightdress, an artificial leg wearing a red sock, a washing-up bowl, coffee-tins and lengths of film. After the machine had been running for a certain time, this collection of jumble suddenly exploded into violent, spastic jerks.

**Mobility**

Although many of Tinguely’s sculptures are immobile in the sense in which I have defined that term above, he used mobility almost from the beginning, mostly by putting his sculptures on wheels, but also by using rails, conveyor belts, and so on. *Auto-Mobile* (1954), a small sculpture looking somewhat like a fragile Calder mobile, can move through the
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room driven by a small electromotor. Metamatic (1959) and Gismo (1960) are larger sculptures that move in a similar way. In Klamauk (1979), Tinguely used a tractor to support a contraption made of cogwheels, the motions of which activate hammers and metal sticks banging on bells and cymbals in a happy fairground cacophony (see http://www.youtube.com/watch?v=si0UitSaUhg). Sculptures such as Hannibal II (1967) and Cenotaph for a Kamikaze (1969) run on rails, and consist of a large cart covered by a kind of turtle shell pushing and pulling a smaller cart, while chains rattle and what looks like a large gun barrel moves rhythmically backwards and forwards (see http://www.youtube.com/watch?v=GmrDEX4P518). As Violand-Hobi (1995: 78) describes it:

Animal-like, the sculpture crouches on a low podium ferociously extending and contracting its members. The deep rumbling clatter and scraping noises add to the impression of brutal aggression and stubborn fanaticism . . . Such works seem to incarnate the machinery of war that tramples dreams of freedom.

Powering

While many of Tinguely’s sculptures are driven by motors, he also explored manually and naturally powered motion. His Prayer Mills (1954) are wire sculptures with interlocking wheels – some vertical, some horizontal – which the viewer can move with a crank handle. Cyclograveur (1960) is a stationary bicycle with a saddle for the viewer to sit on, and pedals to activate a rusty and complex set of interlocking cogwheels, which ultimately drive a mechanical arm creating a drawing – and which also drive a drum, a cymbal, and a rusty toy car. The handlebar is a lectern allowing the viewer to read a book while pedalling. Cenodoxus (1972) was created as the set of a religious play written in 1602 by a Jesuit monk. A kind of seesaw, mounted high up on a slanted pole, represents heaven, seating God on the one side and a group of angels on the other. God’s throne can be lowered, so as to allow God to become Man – a theological concept realised through kinetic design. Hell is a Ferris wheel, with actresses playing prostitutes presided over by the Devil.

Instigatory control

In many of Tinguely’s sculptures, viewers can manually (or with their feet) instigate the movement, as in Prayer Mills and Cyclograveur. In other cases, they can switch on the motor, as in Machine Bar (1960–85), in which small moving sculptures can be activated by push buttons on the floor: a witch then climbs in and out of a metal box, a toy gets crushed by a big hammer, and so on. In Drawing Machine (1959), viewers can attach a piece of paper (pre-signed by Tinguely) and a coloured pencil or crayon to the machine, then insert a coin in a slot to make its mechanic arm create a drawing, with highly complex, erratic movements (see http://www.youtube.com/watch?v=FZpEYLa9PGs). In many works, the viewer’s role as causative agent becomes part of the meaning. In Rotazaza I (1967), viewers throw balls into a kind of chute; the machine then throws the balls back to the viewer, so that the viewer’s actions merge with those of the machine (see http://www.youtube.com/watch?v=f80SLYonPO4). In Dissecting Machine (1965), the viewer activates drills and saws that attack the dismembered parts of a life-like window dummy, so diminishing, as one reviewer put it, the ‘gap between the vicarious enjoyment of cruelty and the act itself’ (Herald Tribune, 28 May 1971).
In other cases, however, the movement is auto-kinetic: no causation is visible to the viewer, and the machine appears to have a life of its own. The duration of this ‘life’ may then be varied, as can be seen in works that are deliberately short-lived, such as Homage to New York (1960).

**Velocity**

The speed of movement is another source of meaning in Tinguely’s work. Animal skulls rock gently, and discs rotate furiously, expressing anger and frustration. *Chaos I* (1973–4) was programmed to move at different rates during the day:

It will start very slowly in the morning, like the city getting up, and begin moving faster and faster until it reaches a crescendo at noon. Then it will quiet down for an afternoon rest and build up the same way again until 6, when everybody is going home and the city is at its busiest. It will quiet down again for dinner, then keep getting busier until 10 pm.

*(Tinguely, quoted in Violand-Hobi, 1995: 86)*

The system that underlies Tinguely’s work therefore not only defines specific movement-processes, but also the manner in which these processes can be modified – a form of ‘circumstantial’ meaning in terms of Halliday’s (1994) systemic-functional grammar. A linguistic ‘translation’ of the movement processes would have to introduce adverbs or prepositional phrases, for example ‘the animal skulls wiggle irregularly’, ‘the discs rotate in a furious way’. The two key forms of ‘manner’ that Tinguely developed were, as we have seen, *(ir)regularity* (jerkiness, rhythmic unpredictability, and so on) and *velocity*.

The network in Figure 21.2 represents these options. The principal difference from the toy network in Figure 21.1 lies in the contrast between repetitiveness and singularity, and in the modifications of movement (regularity and velocity) that Tinguely developed. Instigation also acquires another dimension, because it involves not only the contrast between instigatory control and continuous control (the latter occurs, for instance, when the viewer activates a sculpture by ‘cranking’, as in the *Prayer Mill*), but also the contrast between causativity and auto-kinesis – that is, (apparent) ‘self-driven-ness’. On the other hand, despite Tinguely’s interest in destruction, deconstructability does not play a role in his work: the artist remains the creator of the work (the ‘text’), rather than the creator of resources for others to create works with, despite the tentative moves in this direction represented by the drawing machines.

I should add that the system in Figure 21.2 is based on the material, technical resources – the tools that *articulate* meaning – which Tinguely developed, rather than on the movements that they can create. In a paper entitled ‘The morphology of movement’, Rickey (1965) formulated nine kinds of movement based on directionality – a system that, of course, could also apply to other forms of kinetic art, such as animation, and even to static designs and, in fact, for Rickey kinetic art also included artworks suggesting movement or creating apparent movement, as in ‘op art’:

Western music has twelve tones. Kinetic art has scarcely more . . . A bald summary of possible movements in kinetic art would be: linear movement along the three axes, rotations around them, and rotations around centers lying outside the object, nine in all.

*(Rickey, 1965: 106)*
In the same paper, Rickey (1965: 112) listed eight as-yet-unexplored possibilities of kinetic art:

1. Water-driven sculpture tied as naturally to moving water as Calder’s is to moving air.
2. Motion supplied by, with bodies supported in, magnetic fluxes.
3. Bodies supported by jets of water or of air, freeing the machine from the mechanical shackles that bearings become.
4. Movement of stretched membranes by pressure from behind as a form of kinetic drawing, painting . . . , or relief sculpture.
5. The movement of forms and the changes of colour developing in the passage of polarized light through media of varying densities or subject to varying stresses . . .
6. Non-visual kinetic sculptures – kinetic “feelies” which need not be seen . . .
7. Greater use of chance as a component . . .
8. Kinetic work on a huge scale . . .

We have seen that, between the time when this was written and his death in 1991, Tinguely explored at least three of these in detail: water-driven sculpture; the use of chance as a component (his interest in irregularity); and kinetic work on a huge scale (Head is a 22.4m high sculpture built in the middle of Milly-la-Forêt forest, near Paris, between 1971 and 1978).

Two types of creativity

In his Technical Manifesto of Futurist Sculpture of 1912, the sculptor and writer Umberto Boccioni described machine movement as a potential new form of artistic expression:

We cannot forget that the tick-tock and the moving hands of a clock, the in-and-out of a piston in a cylinder, the opening and closing of two cogwheels with the continual appearance and disappearance of their square cogs, the fury of a flywheel or the turbine of a propeller, are all plastic and pictorial elements of which a Futurist work in sculpture should take account.

(Boccioni, 1912, quoted in Kepes, 1965: 81)

In 1920, the brothers Naum Gabo and Antoine Pevsner, in their Realist Manifesto, introduced the term ‘kinetic art’:

We renounce the thousand year old delusion in art that held that static rhythms are the only elements of the plastic and pictorial arts. We affirm in these arts a new element, the kinetic rhythms, as the basic forms of our perception of real time.

(Gabo & Pevsner, 1920, quoted in Kepes, 1965: 81)

Earlier, in 1913, Marcel Duchamp had mounted a bicycle wheel on a stool and called it Mobile. Everywhere, movement was heralded as a new semiotic mode, in ways that were clearly connected to new technologies, whether technology was used as a new motif, a new subject matter for art (as in the work of Léger), or as a new medium and a new language (avant-garde artists of the 1920s also eagerly embraced the new medium of film) (compare Popper, 1968).

None of this was entirely new. For several hundreds of years, people had used clockworks to create animated chess players, walking dolls, dolls playing a miniature piano or writing a few words, and so on, and all through the nineteenth century people had been fascinated by the forerunners of the cinema, from flip charts to more complex ‘kinetoscopes’, ‘praxinoscopes’, etc., which were used as toys, as well as tools for the study of movement by Muybridge and others. But it was only in the early twentieth century that these developments began to find a place in the mainstream of cultural, social, and economic life, in a process that is still continuing as movement is increasingly integrated in the design of toys, everyday objects, and even texts (see Simanowski, Chapter 24). In 1961, after watching an animation
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film by Norman McLaren projected onto the gigantic Animated Electric Screen in Times Square, New York, the historian of typography Beatrice Warde was as impressed by the novelty of introducing movement into the formerly static mode of typography as Gabo and Pevsner had been forty years earlier in relation to sculpture, even though artists such as Len Lye and Norman McLaren had been animating letterforms for some time:

I saw two Egyptian A’s walking off arm in arm with the unmistakable swagger of a music-hall comedy team. I saw base serifs pulled together as if by ballet shoes, so that the letters tripped off literally sur les pointes. I saw words changing their mind about how they should look even more swiftly than a woman before her milliner’s mirror. After forty centuries of the necessarily static alphabet, I saw what its members could do in the fourth dimension of time, ‘flux’ movement.

(Warde, 1961, quoted in Bellantoni & Woolman, 2000: 5)

And, today, moving dolls are finally leaving the sphere of toys and scientific curiosities:

Nao, a 58-centimetre-tall humanoid developed by the French company Aldebaran Robotics . . . will begin work on a trial basis at one or two branches of Mitsubishi UFJ Financial Group from April. Equipped with a camera on his forehead, Nao is programmed to speak 19 languages. He analyses customers’ emotions from their facial expressions and tone of voice, enabling him to greet customers and ask which services they need.

(The Guardian Weekly, 13 February 2015)

Lewis Mumford (1939) has described the long incubation periods of the inventions that change our lives as a period of ‘cultural preparation’, in which they already exist as ideas that powerfully attract philosophers, scientists, and artists, even though they may not always fully understand why, or as apparently trivial playthings and crazes that nevertheless exert a strong fascination on people, or in seemingly marginal applications that nevertheless herald changes to come. Mumford described this process in relation to the clock. Long before it began to regulate and control every aspect of social life, the clock had existed in monasteries to regulate the daily prayer routine, and it had fascinated people as an object of curiosity displayed in in public places, as with the huge clock in the Piazza di San Marco in Venice with, among other things, its two large bronze figures hitting a bell every hour and its three Magi, led by an angel with a trumpet, appearing from a door behind the number 6 on 6 January. But only later, driven by an economic need for order and regularity in the factories, and subsequently in other institutions, did the clock come to play the crucial role in social, cultural, and economic life that it plays today, which then led to many other inventions in which the clock became embedded in other technologies, such as today’s computers.

All of this suggests two kinds of creativity: the creativity of the pioneers, who create new technologies and new forms of expression – new languages in which to formulate the issues of a new age; and the creativity of the next generation, who embed the technology in new applications and genres – and in further technologies, as is the case with kinetic typography, which, fifty years after Beatrice Warde marvelled about it, is now available to all in software such as Microsoft PowerPoint and Adobe AfterEffects.

In Tinguely’s work, all of these phases can be observed. In his early ‘Meta-mechanical reliefs’, he created abstract paintings, inspired by Malevich, Kandinsky, and others,
the forms of which could move by means of pulleys of different sizes linked by a rubber belt that were hidden behind the work, as can be seen in his Meta-Malevich ‘Point Rouge’ (©Jean Tinguely/billedkunst.dk, 1956) (see Figure 21.3). Perhaps he was inspired by the story that Alexander Calder, when visiting Mondrian in his studio in 1930, suggested that the coloured squares that Mondrian had tacked to the wall should be made to move.

But, after that, Tinguely systematically began to investigate machine motion itself, developing the resources that I have described in the previous section, and exploring their meaning potential primarily in relation to the machine itself and in relation to human–machine interaction – the machine’s mindless repetition, its wastefulness (as in the machine that endlessly smashes bottles), the way in which it can make people subservient to its purposes (as in the Dissecting Machine), and so on – but often lightening his critique of the machine with humour. Here, creativity lies in developing a new language for artistic expression with the resources of mechanical technology and at the same time using it to critically reflect on that technology, in a kind of love–hate relationship. In Chariot M.K. IV (1966), for instance, a crescent-shaped blade endlessly moves forwards and backwards, poking against a constellation of interlocking wheels, while at the same time projecting a macabre shadow on the wall behind (see Aguiar, 2014; see also Figure 21.4): ‘I wanted people to be shocked by the machine itself, to make big monsters, scorpions, bizarre things – and I came to make mechanisms that make love’ (Tinguely, quoted in Violand-Hobi, 1995: 60).

In later work, this language had developed far enough to take the next step. Now, Tinguely broadened his vocabulary, using not only machine parts, but also plastic toys, feathers, animal skulls, and so on, to investigate the use of the new language in an increasingly wide range of genres and contexts, from altar pieces and portraits, to children’s playgrounds and theatrical sets. In his Self Portrait (©Jean Tinguely/billedkunst.dk, 1988) (see Figure 21.5), he was able to use movement to portray himself as a kind of carnavalesque, but also mortal (the
skull), ragdoll, chained to, and pulled and pushed by, a large, heavy wheel, which therefore literally and figuratively ‘had a hold over him’.

In his article on the ‘morphology of movement’, Rickey (1965: 114) wrote:

If kinetic art is to have a characteristic form, it will be determined by two things: first by what range of moving constructions it is technically possible to devise; then by the way talented artists adopt and adapt these constructions as a vehicle for their ideas.

I hope that this chapter has brought out Tinguely’s contribution to both these things.

**The artist as semiotician**

In the same article, Rickey (1965: 11) also listed the skills and talents needed by the kinetic artist – a list that I would like to quote in full:

1. Patient craftsman with knowledge of common machine and hand tools and a high degree of manual dexterity.
2. Theorist with understanding of balance, moments, friction, power transmission, gravitational forces, stability.
3. Conceptual thinker who can adapt a visual idea to a mechanical device and give it human relevance and “artistic truth”.
4. Designer able to conceive directly in four dimensions.
5. Long range thinker who can keep an abstract idea alive during long hours, days, even months of tedious construction and adjustment.
6. Organizer with capacity to bring a complex structure to a single conclusion, without loose ends or confusing afterthoughts.
7. Sensitive, poetic observer of his environment and the human condition.

Somewhat more recently, I made a somewhat similar list of ‘what semioticians do’ (Van Leeuwen, 2005: 3) which I will quote in full too:
Creativity in the fourth dimension

1. Collect, document and systematically catalogue semiotic resources – including their history
2. Investigate how these resources are used in specific historical, cultural and institutional contexts, and how people talk about them in these contexts – plan them, teach them, justify them, critique them, etc.
3. Contribute to the discovery and development of new semiotic resources and new uses of existing semiotic resources

Clearly, there are differences between the two lists. But there are also overlaps: the kinetic artist, working in a developing field, needs to be a conceptual thinker and theorist, just as much as the semiotician; and the semiotician needs to engage just as much as the artist with the discovery and development of new semiotic resources, and new uses of existing semiotic resources. There is commonality here. Both the artist and the semiotician are engaged in changing the semiotic landscape – in developing, and seeking recognition and understanding for, new semiotic modes. They are in the same business of ‘cultural preparation’, of showing what can be done – and this, at all times, with a social critical eye.

But the differences between the two lists should also be noted. The semiotician can learn from the artist. If we are to revalue the intellectual aspect of the artist’s work, we should equally revalue the intuitive aspects of the semiotician’s work: the need for semioticians to engage, just as much as artists, with the material, technical basis of semiotic modes, and with the ‘relevance’ and ‘truth’ of their work; and the need for semioticians to remember the fundamental role that ‘sensitive, poetic observation of the environment and the human condition’ should have in the arts and humanities.

Truly pioneering artists perform creative intellectual work in exploring the means of expression, as well as in expanding their use in new areas. We need case studies to argue this point in detail. I hope that this study has done so for the work of Tinguely, in the same way as I have tried, in earlier work, to understand Barnett Newman as a theorist of colour (Van Leeuwen, 2006, 2011), and to understand and appreciate David Byrne’s innovative use of Microsoft PowerPoint as an art medium (Van Leeuwen, Djonov, & O’Halloran, 2013).

Related topics
creativity and digital text; language and music; literature and multimodality; silence and creativity

Further reading

This edited book includes papers on multimodality and creativity by Charles Forceville, Sigrid Norris, and Theo Van Leeuwen.


Often using children’s drawings as examples, Kress’ work stresses sign-makers’ creative use of the affordances of the semiotic resources available to them.


The second chapter of this book deals with semiotic change, the creation of new semiotic modes, and new uses of existing semiotic modes.

The entry on ‘creativity’ is as good an introduction to the problems attached to the term ‘creativity’ as any – although perhaps in need of updating, now that ‘creativity’ has become such a keyword in contemporary global corporate culture.

References


