# A Misuse of Time and Energy

Nikolas Blackburn

A thesis submitted to Auckland University of Technology
in partial fulfilment of the requirements for the degree of
Master of Art and Design (MA&D)

**2013**

School of Art and Design
Primary Supervisor: Paul Cullen

# Contents

# Authenticity of Authorship

I herby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgments), nor material which to a substantial extent has been submitted for the award of an other degree or diploma of a university or any other institution of higher learning.

Nikolas Blackburn

# Acknowledgements

This project would not have been possible without the support of many people. I would especially like to acknowledge the hard work and dedication provided by my supervisors: Chris Braddock and Paul Cullen. Thank you for putting up with all my faults and for never giving up on me, with out your knowledge, support, laughs and friendship this project could not have been completed. Special thanks go out to my parents, Phillip and Elizabeth, for always believing in me and providing ample love and encouragement. Finally, thank you to my partner Amy, for standing by me in darker times and offering the motivation I needed.

# Abstract

In this exegesis, *A Misuse of Time and Energy*, I set out a contextual framework for my practice-based sculptural project. I consider two flawed and unsuccessful projects undertaken by the American inventor Thomas Edison, the rise, popularisation and promotion of technological DIY by Popular Mechanics Magazine and the comical treatments of objects, space and time in the cartoon inventions of Rube Goldberg. Invention and improvisation link these three strands of enquiry in my text. Each of the three presents a different perspective on my project: Edison the flawed and doomed to fail project, Popular Mechanics the infectious enthusiasm of the do-it-yourselfer and the Goldberg approach in which the best solution is the least efficient.

# Image Index

Wolfe, D. (2011). *Cavorite: A remarkable Alloy*. Reteived from http://deaddoodles.blogspot.co.nz/2011/11/cavorite-remarkable-alloy.html **15**

Woodbury, D. O. (1924). Amateur Mechanics: A Homemade Washing Machine. *Popular Mechanics, 42 (5)*. Retrieved from http://books.google.co.nz/books?id=yNoDAAAAM **28**

# Introduction

In this exegesis, I set out a context for my sculptural project by examining three examples of invention and inventiveness. I consider two eccentric projects by the American inventor and businessman Thomas Edison, the spread of technology and inventiveness by Popular Mechanics Magazine and the cartoon inventions of Rube Goldberg.

Thomas Edison (February 11, 1847 – October 18, 1931) is one of the most prolific inventors in American history, responsible for producing approximately 1093 US patents throughout his career. Edison developed many devices that greatly influenced life around the world, including the phonograph, the motion picture camera, the carbon microphone for functional telephones and the commercially practical incandescent light bulb. Edison’s numerous inventions have become archetypes for modern technologies, particularly in the fields of electricity and sound. This exegesis focuses on two flawed and less well known projects, his search for an ‘avian antigravity chemical’ and his attempts to communicate with the dead using electricity. Both projects were ill conceived built as they were around false and impossible assumptions rather than on credible scientific ideas.

Popular Mechanics (first published January 11, 1902) was a response to the spread of technology from industry and science into the lives and homes of ordinary people. Popular Mechanics featured regular sections on home DIY, automotive, science and technology topics. The magazines creator, Henry H. Windsor envisioned that the magazine would adhere to two simple principles: “tells you how to do things” and “written so you can understand it” (as cited in Seelhorst, 1993, 46). Windsor said that the publication aimed to make hard things easy, through articles, diagrams, photographs and illustrations; offering instruction for how to make things either from scratch or by modifying already existing objects such as: vacuum cleaners, lawn mowers, coat hangers, buckets, blow torches, steering wheels, flower pots, rubbish bins, hair dryers, refrigerators and electric drills.  Popular Mechanics inspired enthusiasm for technology by influencing its readers to learn, explore, experiment and discover things for themselves.

Rube Goldberg (July 4, 1883 – December 7, 1970) was an American cartoonist, sculptor, engineer and inventor. Goldberg is renowned his cartoon inventions depicting complex gadgets and systems that perform simple tasks in indirect and convoluted ways. Goldberg was educated as an engineer, graduating form the University of California, Berkeley in 1904 with a College of Mining Degree. After six months of working as an engineer in San Francisco Goldberg resigned and got a job working as a cartoonist for the San Francisco Bulletin, where he remained until moving to New York in 1907. Between 1907 and 1934, Goldberg produced several cartoon series but his most prolific and most memorable involved a character named Professor Lucifer G. Butts and labeled schematics of his comical ‘inventions’. In 1931 the Merriam – Webster dictionary adopted the word “Rube Goldberg” as an adjective defined as “accomplishing by complex means what seemingly could be done simply” (Merriam – Webster, 1931). Goldberg’s cartoons critiqued the rise of technology through humour and elaborate machines which contradicted the nature of man-made machines, by making easy things hard, exhausting time and using unnecessary methods for solving simple problems.

Figure 1. Modern Mechainx, *New Life Preserver has Two Propellers*

Figure 2. Modern Mecahinx, *Cruising Parachute Driven By Motor*

## ***Pushing the Envelope***

### *Childish Hypotheses*

From an early age, Thomas Alva Edison displayed a pragmatic fascination towards understanding avian flight. As a child, Edison exhibited an affinity for applying his observations of nature with his understanding of the operating principles that constructed his surrounding world. These observations generated a theory rationalising man's inability to fly; Edison speculated that a bird's diet enabled it to fly. Abiding this rule, Edison concocted a bizarre liquid, made predominantly of the bird's stable diet: worms, and had one of his family's hired servants consume the mixture. Edison's diet theory proved to be false. However, this failed to diminish Edison's enthusiasm for solving the mystery of bird's ability to fly. Blending his interest in chemistry with his original theory cultivated a modified belief that the gases produced by the bird's diet generated the lift necessary for achieving flight. Edison was convinced that ingesting a large amount of Seidlitz powders would produce an efficient effervescent effect; however, this experiment achieved nothing more than severe stomach-ache.

### *The Avian Antigravity Theory*

Throughout the course of his inventive career, Edison continued to remodel his theory towards the comprehension of avian flight. Edison was an avid believer in the potential of modern science to solve practical problems. Because of his prior experience, dabbling in the discovery of, and experimentation with advanced chemical properties, Edison concluded that an 'antigravity agent' existed and was thus responsible for enabling avian flight. According to Joseph Lanza (1997), Edison believed these 'agents' "already lurked in nature", and due to his observation that "birds have insufficient wingspan to fly unaided, there existed a chemical in their skins, an alloy that enabled them to stay in the air" (90). In his text *Antigravity*, Grant Thompson explains how Edison attempted to validate his claim by combining pre-established theories:

> Edison's belief in an antigravity mechanism was dependent on Newton's Law of Gravitation that imagined gravity as a force between two objects, causing attraction in relation to the two objects' mass. Under such circumstances, ordinary matter repels an object with negative mass thereby creating the possibility of an antigravity effect. Given Newton's understanding of gravity as a force, it is also conceivable that the universe contains some material that could shield against or disrupt gravitational force thereby also producing an antigravity effect (2).

Many were sceptical that anything could neutralise the effect of gravity, although the possibility of constructing some form of device that could defy the power of gravity was a prominent theory amongst late nineteenth century society. As early as 1901, author H.G Wells published his science fiction novel *First Men on the Moon,* 'which discussed a substance that could nullify gravity and allow astronauts to ascend from earth with minimal effort" (Lanza, 1997, 91). This hypothetical substance named Cavorite is a metal that acted as a gravitational shield, possessing a negative gravitational mass. Wells' Cavorite fitted with popular speculation at the time, surrounding the possibility of shielding against gravity. The *First Men on the Moon* is a fictional story but it inspires genuine speculation into the nature of gravity by questioning what is truly possible. The creative far-sightedness displayed by Wells resonates with the forward thinking exhibited by Edison, demonstrated how the meeting of absurd ideas and rational thinking occasional provides ambiguous outcomes that offer new interpretations to existing problems. Edison based his antigravity alloy theory on speculation, empirical observation and popular assumption rather than scientific fact.

*Anything Goes*

Before Einstein's *Theory of Relativity,* gravity was thought to be a force that could be shielded. Edison wondered whether or not the chemical that allowed birds to defy gravity could be harnessed. According to Lanza(1997), "Edison's bigger inspiration was the idea of an antigravity

Figure 3. Wolfe, D. *Cavorite: A Remarkable Alloy*

screen capable of cancelling out gravity's effects, the way that an opaque surface blocks out light" (90). However, this idea was never tested. Edison believed that discontent is necessary for progress and that radical thinking can provide unthought-of solutions. This aberrant approach emulates the anarchist thinking of Paul Feyerabend (1975), specifically, "the only principle that does not inhibit progress is: *anything goes*" (14). Feyerabend believes "there are always circumstances when it is advisable to introduce, elaborate, and defend *ad hoc* hypotheses" (ibid, 14). Therefore, however speculative Edison's antigravity alloy may appear; its existence questions and advances our knowledge on the subject of gravity. To quote Feyerabend:

> There is no idea, however ancient or absurd, that is not capable of improving our knowledge. The whole history of thought is absorbed into science and is used for improving every single theory (pp.33).

Furthermore, Feyerabend claims, "the whole history of a subject is utilised in the attempt to improve its most recent and most 'advanced' stage" (33). As a devote workaholic and copious note-taker, Edison would have distinguished that the presence of an antigravity substance in birds had been neither confirmed nor denied. Embracing his status as an enthusiast of innovation and progression, Edison advocated unproven hypotheses as they produce evidence that could not be obtained in any other way. To procure the advancement of gravitational understanding and its application into technology, Edison had to realise that the only principle that can be defended is the abstract idea: *anything goes.* No matter how incongruous the idea, nothing should disparage its materialization, because even failures produces tangible results.  What is most important about Edison's theory and Feyerabend's principle; is the tangents promoted by accidental encounters.

### *The Results of Failure*

Edison died before he could validate his antigravity theory. Instead, he influenced eccentric businessman, Roger Babson to investigate on his behalf. In 1931, Edison conversed with Babson on their mutual speculative views towards gravity. Whilst marvelling at a passing bird, Edison stated how:

> That bird can do what no man can do- namely, fly with its own power. I wish you would take a greater interest in birds- not solely from the viewpoint of their beauty and song, but concerning their method of flying. (Lanza, pp. 89-90)

Encouraged by Edison’s object lesson, Babson used his wealth to collect and examine birds of all varieties. Eventually his collection exceeded some five thousand specimens but failed to produce the hypothesised avian antigravity chemical. However, in order to justify the purposeless deaths of so many birds, Babson’s failed investigation lead to the establishment of the Thomas A. Edison Bird Museum, a memorial to Edison’s enthusiasm for technological progression and the understanding of nature, despite the consequences (Lanza, 1997, 90). As Gertrude Stein noted, “a real failure does not need an excuse. It is an end in itself”, fear of failure prevents people from taking action (Le Feuvre, 2010, 8). Edison’s dedicated enthusiasm into a hopeless subject continues to inspire contemporary discussions. While his antigravity theory was proven false, it is still a worthy model for encompassing Edison’s devotion to ‘pushing the envelope’ of technological thinking and accepting failure as a successful result.

## *There are No Rules Here*

### *Fulfilling a Need*

If there was a popular need or desire, Edison believed that an invention might be able to fill it. The western world's surge in spiritualism was a direct response to the unexpectedly devastating causalities caused by World War I. Operating at the opposite end of the well-established philosophical spectrum, the spiritualist movement nurtured notions of the spiritual and ephemeral, contrary to conventional beliefs in the power of technology and science. As psychic mediums increased in popularity, grieving families entertained the conduction of séances, attempting to establish communication with their deceased relatives. Edison did not believe in the existence of spirits, he *did* believe that electricity and science could prove the existence of paranormal substances, thus creating a connection with the 'spirit world'.

### *Edison's Theory*

Edison was convinced that modern electrical machinery could divulge a link to the 'spirit world'. In 1920 during an interview with *American Magazine*, Edison announced, if communication with "personalities who have left this earth" is possible, "it will be accomplished, not by the occult, mystifying, mysterious, or weird means … but by scientific methods" (Forbes, 10). Edison could not acknowledge the techniques exhibited by mediums due to their lack of scientific grounding, and absence of evidence for substantiating their allegations. The discovery of electricity reconfigured the relationship between mind and body, thus altering perceptions of life after death. Edison was a materialist-minded man, who "believed all things physical and spiritual are inextricably related, and the relationship can be understood physically" (Levine, 1972, 155). Edison rejected the notion of the soul "as a spiritual, immaterial substance, and sought ways to rethink materiality itself in order to construct a scientific rationale that would explain this new kind of embodiment" (Enns, 2006, 77). Edison accepted that all physical objects were comprised of matter, a substance that science deems as immortal. Therefore, by adhering to this principle, in the consideration of Edison's theory, both the physical body and its invisible material extensions (personality and thought) must continue to retain attributes of ordinary matter.

### *Substantiating the Theory*

Edison believed that a material approach would facilitate communication with the dead. Edison's approach pivoted on his notion that human beings are "composed of myriads and myriads of infinitesimally small individuals, each in itself a unit of life" (Enns, 2006, 78). He also imagined that

> These units work in squads – or swarms, as I prefer to call them – and … these infinitesimally small units live forever. When we 'die' these swarms of units, like a swarm of bees, so to speak, betake themselves elsewhere, and go on functioning in some form or environment (Forbes, 1920, 11).

According to Edison's theory, communication with the dead is therefore possible; if the life units, which compose an individual's memory could remain intact after that individual's death, it is possible that these memory 'swarms' could retain what we perceive as an individual's 'personality' after the demise of the body (Forbes, 1920, 11). Although, despite maintaining their consciousness, Edison postulated that the deceased presumably possessed minute physical or material power. Therefore, any instrument designed to facilitate communications must be "super-delicate – as fine and responsive as human ingenuity can make it" (ibid, 11).

### *The Valve*

Based on his previous success in the field of sound technologies, Edison believed that the modification of existing devices capable of amplifying the indicative power of electricity; an appropriate and functioning apparatus could be created. In an interview with *Scientific American* magazine (1920), Edison described the function of his machine as similar in nature to that of a valve, “the slightest conceivable effort is made to exert many times its initial power for indicative purposes” (Lescarboura, 459). Edison’s intention was for the machine to emit a hypersensitive aura, designed to react to the presence of invisible material. Similar in theory to the Edison’s phonograph, a sound recording and amplifying machine, the valve was intended to “focus or magnify the efforts of a swarm of infinitesimally small units” (Enns, 2006, 78), thus confirming the continuation of some form of human consciousness after death. In 1933, *Modern Mechanix* magazine published an article validating the existence of Edison’s enigmatic invention. The article titled, *Edison’s own Secret Spirit Experiments* (released thirteen years after the invention’s single documentation), recites a questionable account of Edison’s unsuccessful attempt to prove or disprove the existence of an afterlife. The article describes the mechanism as a “powerful lamp”, emitting “a tiny pencil of light [that] bored through the darkness and struck the active surface of … a photo-electric cell” (Modern Mechanix, 1933, 35). According to the author, “any object, no matter how thin, transparent or small, would cause a registration on the cell if it cut through the beam” (ibid, 35). Although the article’s authenticity is debatable, it does describe a physical manifestation of Edison’s proposed invention. The magazine attributes the experiment’s negative results as the reason for its conspiracy claiming, “Edison would not reveal his belief-shattering discoveries to a believing world” (Modern Mechanix, 1933, 36).

### *To Accomplish Something*

As a successful inventor, Edison advocated the potential of technology and electricity. Wyn Wachhorst (1981) attributes this belief in technology as a key feature of the electric age, at a time “when machines began to do things that no quantity of men could do, becoming not only extensions of the finer muscles but of the eye, ear, and even the brain itself” (77-78). At a time when machines began to exceed reasoning, the success of Edison’s machine became irrelevant when compared to his devotion to technology and his ability to inspire others to persevere by applying logical reasoning to their pursuits of mystifying and taboo subjects.

Figure 4. Modern Mechanix, *Edison's Secret Spirit Experiments*

## *Answers for Curious Minds*

— *Hearst Corporation*

*Encouraging Technological Enthusiasm*

Although the style of technical manuals have changed considerably over time, magazine's such as *Popular Mechanics*, have played an essential part in helping consumers integrate new technologies into their everyday lives (Franz, 2013, 434). At a time when daily lifestyles were adapting to 'the machine's way' of life, Popular Mechanics advocated the need for simple, and clarifying technological knowledge; in response to what Virginia Scharff (1993) attributes as, the "growing gap between increasingly complex technological systems and [their] users" (417). In response to this 'growing gap', Popular Mechanics was designed to present easy ways  for doing hard things; advocating the simple approach to a presumably arduous subject. The initial contributors of Popular Mechanic recognised both the enthusiasm and ambivalence people felt for technology, as they searched for a means of establishing order in a generation of tumultuous change. Popular mechanics has continued to renew technological competence as each generation ushers in new waves of complex personal technology (Franz, 2013, 435).

*Because it's Possible*

In a synopsis of *Possible Dreams*, an exhibition reflecting on ninety years of Popular Mechanics magazine's history, Robert C. Post elaborated on how  "drag racing embodies a desire to create machines not because they are useful, but because they are possible" (Scharff, 1993, 417). In his own review of the exhibition, Joseph J. Corn commented on the magazine's "dynamic symbiosis between texts and technics" (ibid, 417). Popular Mechanics magazine began with two simple mottos: *tells you how to do things* and *written so you can understand it*. In 1903, celebrating the magazine's first anniversary, Editor Henry H. Windsor proclaimed that, "These mottos have steadily been adhered to and always will be" (as cited in Seelhorst, 1993, 83). Throughout its history, Popular Mechanics has reported on the finest accomplishments of human ingenuity, reflecting on how the greatest minds of the last century have continued to exceed the ‘impossible’. With each generation of technological advancements, the purpose of technology recedes further from a need and closer to desire, as inventors, experts and tinkerers alike continue to stretch the limits of what is technologically feasible, and expand the range of technological knowledge. However, what is apparent in Popular Mechanics’ success is that the process of adapting to new technologies remains complicated for consumers, stressing that the renewed acquisition of technical knowledge will continue to be a complex and challenging process that requires simple instruction to stimulate future technological enthusiasm (Franz, 2013, 435). Because Popular Mechanics advocated technological enthusiasm, the magazine also reflected the rise of a do-it-yourself attitude, as everyday enthusiasts developed an interest in doing things for themselves.

Figure 5. Popular Mechanics, *Home Made Bandsaw*

## *Easy Ways to Do Hard Things*

*– Popular Mechanics Shop Notes*

*How to build a Homemade Washing Machine*

In 1924, D. O. Woodbury published an article in Popular Mechanics, that demonstrated how to build a washing machine out of a rubbish bin and a used vacuum cleaner motor (fig. 5), through a series of easy-to-understand instructions and accurate drawings designed to facilitate the ‘domestic handy-man’s’ endeavour. Woodbury emphasises that there is nothing particularly difficult about this ‘job’ and that the money saved by making it yourself justifies the time required for its construction. Woodbury advocated DIY not only for its financial benefits but also for the experience gained in the machines making (Woodbury, 1924, 858). This is one example of the kind of ‘weekend projects’ that have inspired generations of keen readers. Popular Mechanics does not denounce the craftsmanship of experts, on the contrary, regardless of the reader’s expertise, Popular Mechanics appeals to the inventive spirit and the desire to learn for one’s own benefit and satisfaction. Advertisements used throughout the history of the magazine’s publication represent an important shift in the *practice* of technology. Paul Israel (1994) describes how they moved from advertising “courses for electrical, radio, and design engineers in the early years to displaying consumer products in the post-World War II era” (397). The former appealed to those who might consider a conventional technological career, whilst the latter targeted the enthusiastic do-it- yourselfer. The plans maintained relevance with the needs and desires of the times. Articles such as, the homemade washing machine, influenced the general population to think-for-themselves, and thus cemented the do-it-yourself mentality within the culture of contemporary western society.

*Satisfying Personal Curiosity and Trepidation*

DIY implies that unqualified individuals build or repair everyday objects without the assistance of experts. The act of performing DIY, according to Kevin Wehr (2012), can be read as “a conscious reply to a complex and fast moving world”, furthermore, “ it can be a politicised response to the proliferation of technology that seems to rule our lives” (xi). Wehr breaks down the components that constitute DIY behaviour into two motivational categories: satisfaction and self-reliance. These two operate independently of one another in both practical and theoretical contexts. For example, the desire to know how things work, requires the demystification of its operating systems, which delivers both personal satisfaction over mastering the machine, whilst this mastery delivers us self-reliance and a level of control over technologies most do not entirely understand.

Figure 6. Popular Mechanics, *Homemade Washing Machine*

DIY enthusiasts desire moments of ‘acceleration’, situations that push them beyond the comfort of their own understanding, causing the creation of their own esoteric knowledge.

More often than not, DIY implies a reversion to simpler methods or procedures that equate to the users competency, using the homemade washing machine as an example, the aesthetics are crude and rudimentary, but the function performed, the washing of clothes, remains as the primary focus; a function that the Popular Mechanics exemplar achieves. Unlike the professional, the DIY enthusiast does not concern himself with perfection; design characteristics such as aesthetics, practicality, and manufacturability are arbitrary. The adoption of DIY behaviour is society's response for the need to understand 'the machine's way', and maintain some form of control in a time "when technologies drive so much of the world around us – technologies that most of us don't fully understand" (Wehr, 2012, xii). Popular Mechanics magazine and DIY are, therefore, society's methods for optimistically channelling their enthusiasm for technology, whilst simultaneous coping with their increasing anxiety towards the proliferation of new technologies. Popular Mechanics encapsulates societal apprehension and excitement about technology; whilst at the same time, encourages individuals to acquire their own alternative form of technical competence, thus creating their own sense of self-satisfaction and reliance.  As an advocate of simplicity, Popular Mechanics embodies the enthusiasm of a technologically curious culture by presenting the easy way to do hard things, allowing anxious enthusiasts to trump their technological anguish.

## *A Burlesque of Technology*

### *What will Technology do next?*

Peter L. Berger (1997) believes that satire is a comic's 'weapon' used for the purpose of constructive social criticism (157). Rube Goldberg employs satire in his cartoons to reflect societal anxiety and apprehension towards technology. Goldberg's inventions focused on the disruptive influence of machines by ridiculing the pretension towards the hi-tech lifestyle. Goldberg critiqued how the majority of people preferred doing things the hard way, rather than employing a simpler and direct method for accomplishing a goal. His drawings embodied this idea by following an incredibly complex progression what was both ingenious and surprisingly logical. By dramatising the incongruities of technology, primarily simplicity against ultra-refinement, Goldberg demonstrated the "earnestness and the folly of our aggressive pursuit of automation" (Marzio, 1972, 323). However, Goldberg's cartoons never attempted to defeat technology; rather they reflected how the integration of the machine's way of life enthralled twentieth century society. The satirical tone of Goldberg's inventions embodied societal ambivalence towards the capacity of technology; inherently asking what *won't* technology attempt to do next.

### *Technological Civilisation*

The effect of the evolution of technology is nowhere better observed than in the Second Industrial Revolution of the United States. Because of America's shortage in manual labour and the absence of ancient gilds, 'mechanisation', "is inextricably woven into [their] pattern of thought and customs" (Gideon, 1969, foreword). As America's dependence on technology deepened, specialised workers operating machinery that could replicate the artisan's work in a fraction of the time replaced the traditional craftsman. A machine could equal volume of work produced by several individual workers, declaring technology a more efficient and time-saving approach for rapid industrialisation. The same *mechanical efficiency* that structured the factories steadily pervaded household life, as homes began adopting labour-saving devices that appeared simultaneously marvellous and frightening. Household mechanisation reflected the fundamental principles of the factory, the curtailing of wasted labour and shortening the time required to do things. Peter C. Marzio postulated that “the application of complex scientific laws to mundane chores of home and work could transform everyday life” (1972, 320). This implies that the practical application of knowledge would benefit life, as it was known. The desire to revolutionise domestic work processes, predominately cleaning operations such as laundering, dishwashing, ironing, sweeping, reflected the purpose of factory-based machines; the minimising of both the physical effort required from the user, and time expended performing the task (Giedion, 1969, 512). Technology accelerated the pace of everyday life for early twentieth century Americans, thus developing a societal reliance on machines to complete everyday tasks fast and effectively. This became the impetus of the satire behind Goldberg’s ‘labour-saving’ contraptions.

### *Goldberg’s Labour-Saving Devices*

The inventions created by Goldberg intentionally parodied the definition of a ‘labour-saving’ device. Goldberg’s inventions consist of nonsensical gadgetry constructed to follow a complex chain of improbable and linked events to accomplish a simple task. Each invention is a deliberately over-engineered solution to a simple problem. For instance, his *Simple Fly Swatter* (fig.7) is precisely anything but simple. Whilst the device is ingenious, it is also an unnecessary application of technological ingenuity. Labour-saving devices make a task easier to perform than a traditional method, however, it would indeed be easier for the user to swat the fly himself rather than use Goldberg’s machine. The effort ‘saved’ by using the machine is outweighed by the effort exerted and time taken, through its making. The over-dramatised operations prevalent in *Simple Fly Swatter* emphasis what Goldberg describes as “man’s capacity for exerting maximum effort to accomplish minimal result" (Marzio, 1972, 323). Goldberg's inventions critique societal reliance on machines by exaggerating the application of technology.

Figure 7. Rube Goldberg, *Simple Fly Swatter.*

The combination of Goldberg's application of idiosyncratic technical competence and incongruous components made his inventions immensely popular. Marzio (1972) says that Goldberg began his 'mission' with a joke, "in the beginning, he saw his inventions as fanciful gadgets designed to fill the gaps between great technological discoveries of the early twentieth century and the simple, crying needs of everyday life" (320). His drawings were a critical and ironic commentary on the truly important problems besieging society that were overlooked by technology. Goldberg protested against the failure by inventors to consider such pressing concerns as:

> Gravy spots on freshly cleaned vests and cigarette butts burning cruel holes in deep pile rugs. Good-natured boobs [suffering] through afternoon teas juggling cups and saucers and plates and napkins and cake only to prove that the force of gravity was still triumphant (Marzio, 1972, 321).

These ridiculous problems became the subject of his inventions. When seeking inspiration for one of his inventions, Goldberg mentally assumed the role of his 'other self', Professor Lucifer G. Butts, A.K, an ingenious man responsible for many of life's modern inventions.

### *The Punch Line*

Perhaps the funniest aspect of Goldberg's cartoons is found in their retrospective irony. At the time of their creation, the inventions encompassed Goldberg's satirical perception of how technology had radically changed societal behaviour. The supreme irony of his drawings is that they anticipated *real* technological developments. Under his pseudonym of Professor Butts, Goldberg concocted numerous labour-saving devices such as "complicated cork removers, window openers, soap retrievers, cigarette extinguishers, dishwashers, garage door lifters and self washing windows" (Marzio, 1972, pp.321).

Figure 8. Goldberg, R. *Automatic Garage Door Opener*

Goldberg's *Automatic Garage Door Opener* (fig.8) predates its practical equivalent by more than twenty years. Real machinery has exceeded Goldberg's technological mockery; his simple problems have inspired technological enthusiasts to solve them. Goldberg's critique of machines remains relevant in contemporary society; various artists such as Joseph Herscher and Fischili and Weiss have incorporated the spirit of Goldberg’s idiom (exerting maximum effort for minimal results) in aspects of their practices. Purdue University holds an annual Rube Goldberg Contest, dedicated to creating the most ‘successful’ Rube Goldberg machine. Why then does Goldberg’s humour and critique of technology continue to remain popular half a century later?

## ***Understanding the Humour***

*To Make Fun of*

Max Eastman (2009) concludes that "the easiest way to make things laughable is to exaggerate to the point of absurdity their salient traits" (156). The act of 'making fun of' something is a way diminishing apprehension towards that thing. Rube Goldberg reflects shared apprehension towards technology by exaggerating its salient traits. John Lowe observes that humour "is absolutely central to our conception of the world" (as cited in Gruber, 2008, preface). Goldberg's satirical inventions diminish technological stigma, by suggesting that technology and playfulness may be inseparable. This relationship reinvents our perception of technology, by inspiring an enthusiasm for the 'disagreeable things' or incongruities of technology and its connection to life. Goldberg's cartoons use laughter as a mechanism to inspire admiration, which consequently, encourages an interest for 'playing' with technology. By making fun of technology, Goldberg disarmed its perceived threat and made more palatable for the populace.

*A Dash of Freud*

Marzio (1972) suggests, "The Goldberg inventions…are a dream-like fusion of disparate pieces precariously arranged in unexpected groupings" (322). Sigmund Freud says that the principle elements of humour are the same as dreams: condensation and displacement. It is Freud's belief that condensation implies a compression of time and space and the denial of physical laws and limits. Additionally, in Freud's mind displacement refers to our experience of objects and subject matter within the 'dream world'. Freud's two elements are apparent in Goldberg's treatment of technology. His humour is derived from technology's incongruities: the manipulation of time and the unexpected displacement everyday objects.

*Manipulation of Time*

The most obvious yet overlooked element in Goldberg's inventions is the condensing of *time*. A Goldberg contraption contradicts the purpose of its use, for example, the *Moth Exterminator (fig 9)* may take hours to perform its simple task, assuming it remains in operation for the entirety of its usage. The humour in Goldberg's manipulation of time is derived from a simple theory of opposites. In Goldberg's world, every machine labelled 'labour-saving' is in fact time-consuming. Goldberg parodies our expectations of the machine; we perceive the machine as an epitome of regularity and predictably, accordingly the expenditure of time is funny because it exaggerates the natural rigidity in real machines (Marzio, 1972, 323). Therefore, the manipulation of time is an essential part of Goldberg's humour because it inverts the subject of the joke. Time is a primary factor in the art of technology. Particularly with kinetic sculpture, we stand and wait for the work to meet our expectations, "occasionally feeling that the joke is on us" (Marzio, 1972, 322). Goldberg's ironic depiction of the application of time demonstrates what he believed was "the roundabout way some people have of doing things" (Goldberg, 1916, 19). When reading a Goldberg cartoon we are inevitably laughing at ourselves.

Figure 9. Goldberg, R. *Professor Butts Moth Exterminator*

*Disagreeable Things*

The displacement in Goldberg's inventions occurs through his arrangement of everyday and dissimilar, animate and inanimate objects. He does this by replacing regular machine parts with strange substitutes that perform the same function as their conventional counterparts. Examples include frogs, bees, flies, elephants, old shoes, dogs, fish, false teeth, elephants and circus monkeys. The inventions themselves are as graphic and improbable in real life as dreams, whereby they hold no practical feasibility. Goldberg's inventions valued what was *possible* over what was practical. The blending of what is real and fictitious symbolises Goldberg's signature style, a combination of "the old with the new, the mechanical with the organic, and order with chaos" (Axtell, 2006, 13). The combined actions performed by the objects are responsible for the machines humour. According to Henri Bergson, "we laugh every time a person gives us the impression of being a thing" (as cited in Miller, 2012, 13), and the same can said of its converse. Jeremy Millar believes that our attempt to empathize with objects is the cause of our laughter:

> The humour occurs, then, when we fail to see these [actions] as nothing more than the playing out of physical forces – the overcoming of inertia, for example – and instead attribute human characteristics to them. Although this might seem little more than simple anthropomorphism, by sensing even a degree of self-awareness from within the debris of objects, we become aware of an incongruity, and in that moment, it makes us laugh (2012, 14).

We laugh because the objects violate our knowledge of what we expect them to do. By highlighting its incongruities, Goldberg disarmed technology of its seriousness and pretentiousness. Overall, his humour persuades us to laugh at ourselves and at our misconceptions towards technology. His humour remains relevant because it continues to inspire enthusiasm for technology, the need for "exerting maximum effort to accomplish minimal result" (Marzio. 1972, 323), and the desire to invent not because it is practical but because it can and *should* be done.

Figure 10. Goldberg, R. *Device for Keeping Screen Doors Closed*

# Conclusion

I have taken the three examples of Thomas Edison, Popular Mechanics and Rube Goldberg, as a way to characterise my sculptural project. The irrational projects proposed by Edison, the DIY of Popular Mechanics and the comical treatment of objects, space and time by Goldberg, manifest in the forms and functions of my sculptures. Constructed from found objects, used electrical motors, and home appliances, my sculptures perform banal tasks in intentionally impractical and inefficient ways. *The Automatic Table Tennis Ball Dispenser and Server (2013)* is a sculptural machine designed to dispense individual table tennis balls and serve them to the user for the purpose of practicing his or her swing. It is a machine that requires constant attention to keep it working, while balls are propelled less than a metre making any form of practice meaningless.

In my practice failure can be an end in itself, allowing the work to evolve beyond my control and like Babson's bird museum, permits new ideas to arise from failed attempts. Many of my more recent works consistently fail to perform their intended function. My sculptures critique the predictability and reliability of machines, pointing up flawed actions and reflecting the work and effort required in their making. The sculptures *try* to work and those attempts become the work itself. Like the writers and inventors featured in the pages of Popular Mechanics magazine I'm excited by improvisation. Popular Mechanics demonstrates that there is always another way to do things and that there (probably) is no universally *correct* way for doing things. Goldberg's cartoon inventions epitomise the fulfilment of purpose. However convoluted and ridiculous his contraptions are they *improbably* succeed in performing their intended functions. Unlike the inventions of Edison or those found in Popular Mechanics, Goldberg's contraptions solve problems while they critique progress. With my sculptures I aim to embody Goldberg's enthusiasm for experimenting and 'playing' with technology, building machines that can perform a specific function by themselves, not because they are useful but because it can be done.

Robert C. Post said of drag racing that it demonstrated– “a desire to create machines not because they are useful, but because they are possible” (Scharff, 1993, 417). This reflects a motivation in  my making, that usefulness may be outweighed by the desire to make an idea ‘work’; successfully smacking the table tennis ball is inconsequential to figuring out *how* to smack the ball. What I am trying to achieve in making my sculptures are machines that work for the sake of working, regardless of whether they successfully perform a function.

Figure 11. Blackburn, N. *The Automatic Table Tennis Ball Dispenser and Launcher*

# Final Exhibition

My final Masters show, *Untitled (2013)*, in November 2013 comprised one large installation consisting of several individual works. Overall, the ideas of improvisation, invention, DIY and intentional impractically were evident through both the physical forms of the works and in the nature of their operations. Each work performed a different function, such as hoisting plastic balls paddling pool, to causing a disparate lampshade to rock just enough to cause a ping pong ball to oscillate. Audience expectations were a mixture of uncertainty and amusement, as each work proceeded to deteriorate over time, demanding constant attention and reparation.

Improvisation was nowhere more apparent than in the gear systems that ran each of the machines. Comprised mainly of broken construction rulers, crudely crafted wooden apparatuses and simple motors, each one performed how it needed to for the completion of it's intended function. The motors designs are rudimentary but their precision and exactitude is outweighed by the desire to make an idea work post-haste. The construction of the fabric-table work exemplifies this idea; the 'springing' action is the result of a crude mechanism that uses simple physics to propel several balls into the air. A clamp suffices as a means of linking the fabric to the motor to create the haphazardous invention. A common trend between the works is that the *best* solution is often the least efficient.

In this show, I chose to reduce the amount of inactive objects, intentionally peering back the installation to leave it in an incomplete state, alluding to the possibility of continual improvisation with the littered objects. Some of the works were a development of particular ideas and objects from previous work, particularly the two rulers that slowly rolled the blue ball. Whilst this work was less chaotic and more poetic than the others, its beauty was squandered by its overly convoluted gear system. In summary the installation *Untitled (2013*), reinforced much of what has been theorised throughout this exegesis, providing, I hope, a fitting example of what has become my idiosyncratic style as a student and the foundations of my career as an artist.

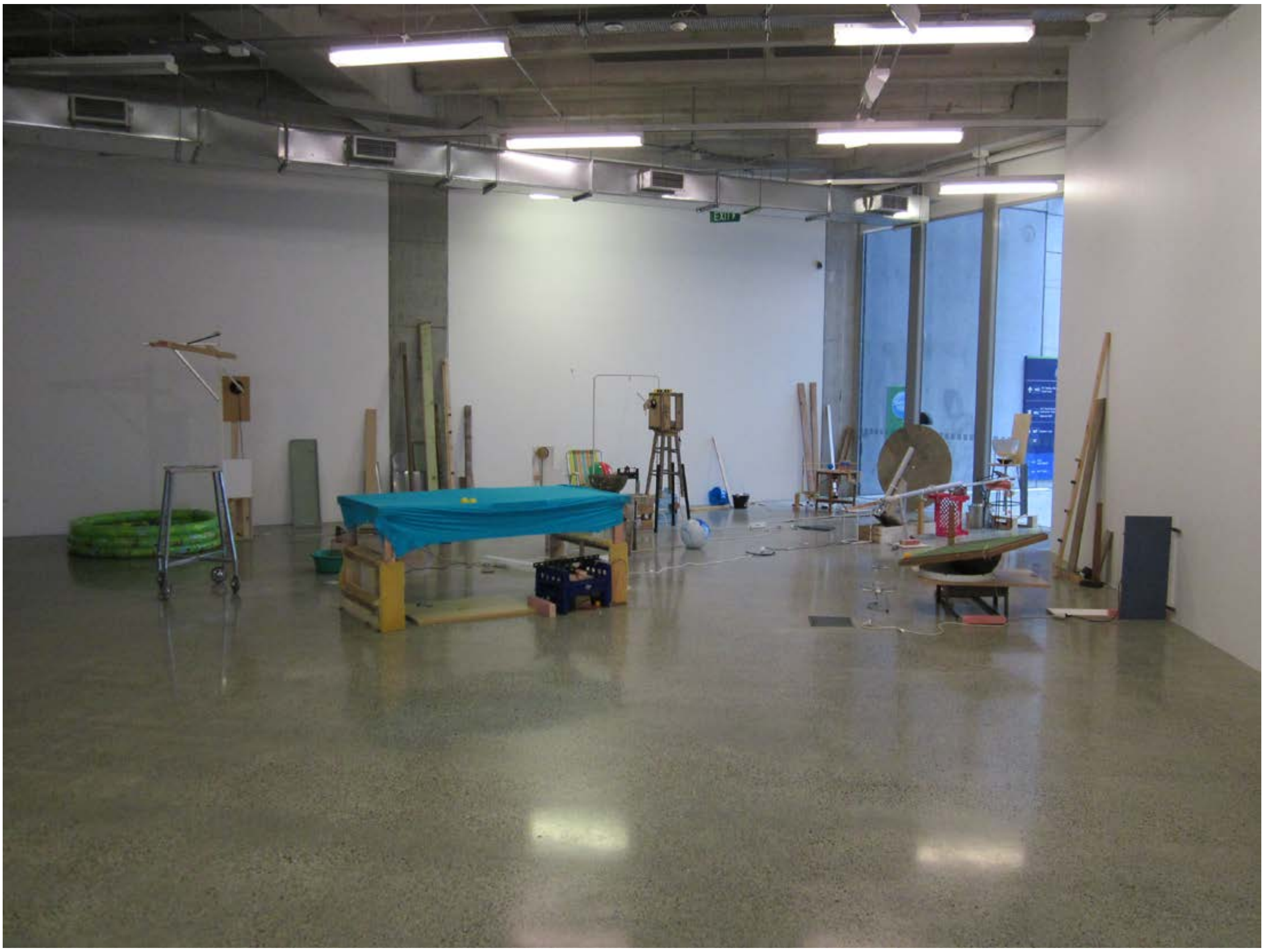

*Figure 12. Blackburn, N. Untitled*

*Figure 13. Blackburn, N. Untitled*

*Figure 14. Blackburn, N. Untitled*


*Figure 15. Blackburn, N. Untitled*

*Figure 16. Blackburn, N. Untitled*

*Figure 17. Blackburn, N. Untitled*

*Figure 18. Blackburn, N. Untitled*

*Figure 19. Blackburn, N. Untitled*

*Figure 20. Blackburn, N. Untitled*

*Figure 21. Blackburn, N. Untitled (detail)*

*Figure 22. Blackburn, N. Untitled (detail)*

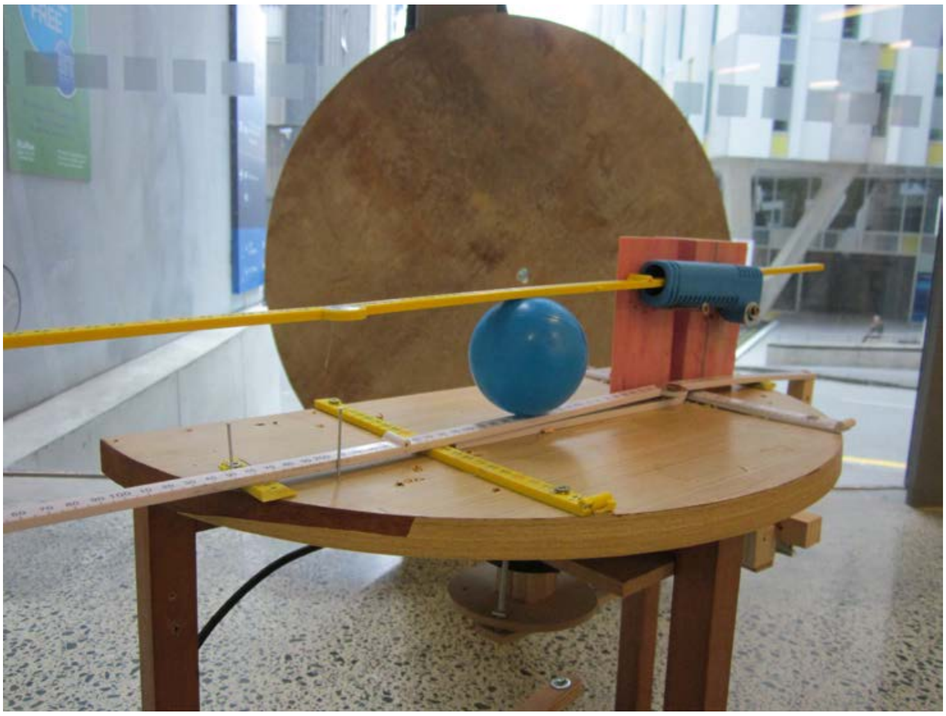

*Figure 23. Blackburn, N. Untitled (detail)*

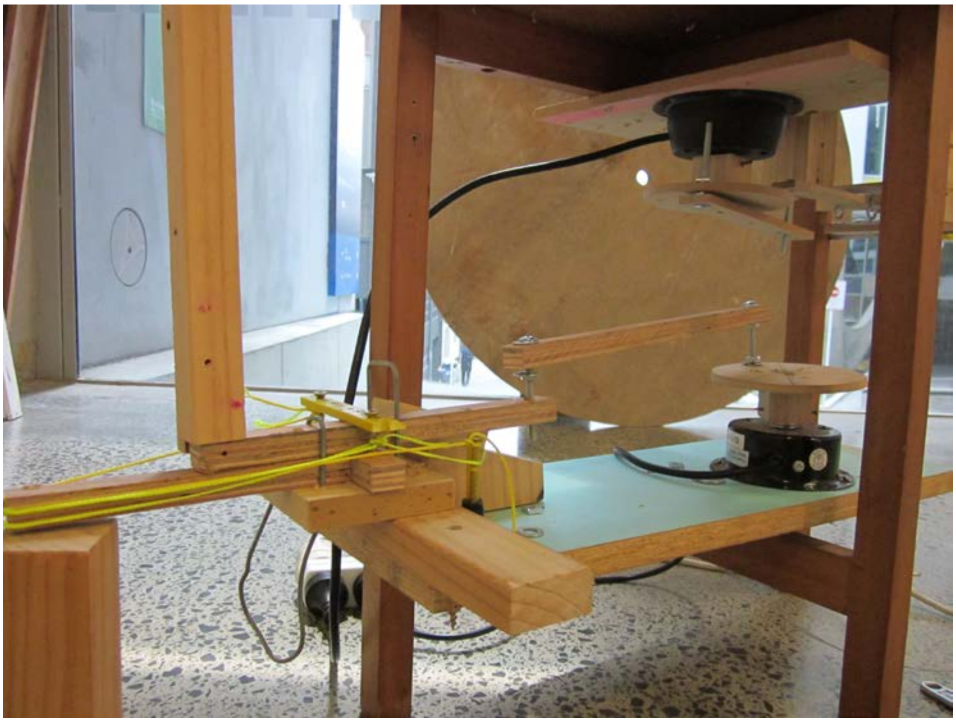

*Figure 24. Blackburn, N. Untitled (detail)*

# References


Axtell, M (2006). Garbage Can Music!: Rube Goldberg's Three Careers. Retrieved from http://www.columbia.edu/cu/cjas/print/axtell.pdf

Berger, P. L. (1997). *Redeeming Laughter: The Comic Dimension of Human Experience*. Berlin, BER: Walter de Gruyter & Co.

Eastman, M. (2009). *Enjoyment of Laughter*. Piscataway, NJ: Transaction Publishers.

Edison's Own Secret Spirit Experiments. (1933*). Modern Mechanix, 10 (6),* 34-36. Retrieved from http://blog.modernmechanix.com/edisons-own-secret-spirit-experiments/

Enns, A. (2006). Mesmerism and the Electric Age: From Poe to Edison. In Willis, M. & Wynne, C. (Eds), *Victorian Literary Mesmerism (61-82*), New York, NY: Rodopai.

Feyerabend, P. (1993). *Against Method: outline of an anarchistic theory of knowledge* (2nd ed.). London, GB: Verso

Forbes, B. C. (1920). Edison Working on How to Communicate with the Next World*. American Magazine, 90,* 10-12.

Franz, K. (2013). [Review of the book *User Unfriendly: Consumer Struggles with Personal Technologies, from Clocks, Sewing Machines to Cars and Computers*]. *Technology and Culture*, *54 (2),* 434-435. Retrieved from http://muse.jhu.edu/journals/technology_and_culture/v054/54.2.franz.html

Giedion, S. (1969). *Mechanization takes Command, a contribution to anonymous history* (2nd ed.). New York, NY: Oxford University Press.

Gruber, E. (2008). Humor in Contemporary Native North American Literature: Reimagining Nativeness. Rolechester, NY: Camden House Publishing, Israel, P. (1994). Enthusiasts and Innovators: Possible Dreams and the Innovation Station at the Henry Ford Museum, *Technology and Culture, 35 (2),* 396-401. Retrieved from http://www.jstor.org/stable/3106308

Lanza, J. (1997). *Gravity: tilted perspectives on rocketships, rollarcoasters, earthquakes and angel food*. London, UK: Quartet Books.

Lescarboura, A. C. (1920). Edisons's views on Life and Death. *Scientific American, 123 (18),* 446-459.

Le Feuvre (2010). *Documents of Contemporary Art Series: Failure*. London, GB: MIT Press.

Marzio, P. C. (1972). Art, Technology and Satire: The Legacy of Rube Goldberg*. Leonardo, 41 (1)*, 315-324. Retrieved from http://www.jstor.org/stable/1572586

Millar, J. (2007). *Fischli and Weiss: The Way Things Go*. London, GB: Afterall.

Praeger, D. (2007). Poop Culture of Movements and Men. Reteived from http://www.wimdelvoye.be/images/catalog/image_1140.pdf

Scharff, V. (1993). [Review of the book Possible Dreams: Enthusiasm for Technology in America]. *Technology and Culture, 34 (2),* 417-419. Retrieved from http://www.jstor.org/stable/3106548?seq=1

Seelhorst, M. (1993). Possible Dreams: Ninety years of Popular Mechanics comes alive at Henry Ford Museum & Greenfield Village. *Popular Mechanics, 170 (3*). Retrieved from http://books.google.co.nz/books?id=peMDAAAAMBAJ&dq=mary+seelhorst&source=gbs_all_issues_r&cad=1

Thompson, G. (2008). *Antigravity*. Retrieved from http://www.paulcullen.info/files/antigravity.pdf

Wachhorst, W. (1981). *Thomas Alva Edison: An American Myth*. Cambridge, MA: MIT Press.

Wehr, K. (2012). *DIY: The Search for Control and Self-Reliance in the 21st Century*. New York, NY: Routledge.

Woodbury, D. O. (1924). Amateur Mechanics: A Homemade Washing Machine. *Popular Mechanics, 42 (5)*. Retrieved from http://books.google.co.nz/books?id=yNoDAAAAMBAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false