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Immaterial Labour and Production Seen Through Colour and
Diagrams of Automata

A thesis presented in partial fulfilment of the requirements for
the degree of

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ABSTRACT

This thesis embodies my personal experiences associated with industrial production and the concerns I have with the job losses through the implementation of new technology in sites of production. The text primarily deals with technologies of automated industrial production process and systems, researching them through the concepts of immaterial labour and immaterial production.

The studio works offered for examination are a series of drawings and paintings, that depict a semiotic language of colour, codes and symbols of schematic systems and processes of gas and air service lines and machinery, that narrate industrial production plants.

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Introduction

As I stand in the supermarket - I reflected

Like the obedient shoppers on the (assembly line) next to me, I replace the teller scanning, paying and packing the goods as instructed by the machine – I am no longer a Luddite shopper – the machine has finally beat me – the chats with the till operator are becoming a distant memory – the machine does all the talking, Frederick Winslow Taylor's Scientific Management System has finally crossed over from the factory to the shopping mall.

C. S. MacPherson. (2013).

Industrial engineering and the production process have been part of my working life for over fifty years, both my studio practice and this accompanying exegesis, draw upon these experiences and incorporating personal anecdotes.

In my proposal last year, I was researching how technology influenced labour and production, and in particular the replacement of manual labour by machines and automated systems. Finding research that directly addressed the subject was proving difficult, until a cohort suggested looking at the theory of immaterial labour, the basis for this thesis.

Political and social issues associated with labour and production have always interested me, this and my love of making things, is conveyed through a series of hand drawings and handmade canvas paintings, called *Colours and Diagrams of Automata*.

The Engine Room Gallery at Massey University, Wellington campus was formerly the Wellington Polytechnic training workshop for apprentice motor mechanics – this historical connection with industry and current gallery space creates the ideal setting for my exhibition.

Changing from kinetic sculpture to drawing and painting in the second year of the MFA program heralded a happier time for me in my studio practice. I expand on this and the first year sculpture project later in the text.

Immaterial labour is the theoretical basis of this thesis draws from the authors who initiated the theory, American theorist Michael Hardt and Italian political philosopher Antonio Negri who collaborated to write the book *Empire*, Hardt and Negri (2000).

The Italian theorist Maurizio Lazzarato in his essay *Immaterial Labour* (2010) provides an alternative explanation of immaterial labour.

Hardt and Negri also talk about abstract immaterial production of which the numerically controlled machine tool (N/C) is an example. David Noble in his book *Forces of Production*, Noble (2008), argues that its development changed the course of production.

Factory automation involves a series of seen and unseen processes of electronics, pneumatics, steam, electrical circuitry, valves and equipment, all of which at some time or another I have been involved with and which relate to the concept of immaterial labour. Industrial processes rely extensively on semiotics, a conceptual framework that utilises colour, sign and symbol, founded by the Swiss linguist Ferdinand de Saussure (1857 – 1913).

The series of drawings and paintings submitted for examination depict some of these elements, in diagrammatic form, from directional arrows to colour coded wiring, blue for pneumatic pipes and yellow gas, which may differ in the works. The combination of geometric forms and colour, (technically as a working schematic it is irrelevant) balance and aesthetic content for the artwork is more important.

While narrating automated processes and systems of modern production plants, the notion of immaterial labour is also at work.

Many artists like the Australian painter Margret Bolt have procedures and idiosyncrasies that they perform before making art. I examine this further through Bolt's essay *Unimaginable Happening: Material Movements in the Plane of Composition*, in O'sullivan & Zepke (Eds.). (2010), in particular the making and preparation of canvases and how this connects with nature and daily tasks.

‘I’m not so concerned with whether or not my ideas are true or whether they have a greater claim to truth than someone else’s. In an almost situationist way, I want my work to give the viewer something to think about. This is more important to me than an investment in the truth of the work’ - Peter Halley 1987.

Reynolds (Ed.) (2000, P. 262).

The American abstract painter Peter Halley as Riley (1995, P. 194) explains, was deeply concerned about political and social issues associated with new technology, and voiced these concerns through his art and writing. Halley argued that all artists should use their practice to address social issues.

Halley’s abstract geometric works depict the hidden building services of conduits, wiring and communication lines which Paul Crowther in the book *Meanings of Abstract Art*, Crowther (2012, p. 220.) terms techno-nature, resemble the hidden process systems of the automated factory and immaterial labour, drawing me to his work.

The American curator Laura Hoptman reflects on the German abstract painter Tomma Abts’ work in the monograph, *Tomma Abts* (2008, p. 10.) describing them as being neither from the Kandinsky nor the Mondrian school but unique to Abts, works that I can connect with. Later in the text, I compare in more detail Halley and Abts’ works with my practice.

The psychological state and mood of an artist can influence their art, the English abstract painter Bridget Riley in her book *Bridget Riley, colour, stripes, planes and curves*, Riley (2011), notes such an occasion when she went through a phase of using only the colour black in her paintings. Similarly, the Spanish cubist painter Pablo Picasso’s (1881 – 1973), frame of mind affected his work, as Norm Mailer explains in his book, *Picasso Portrait of Young Man*, Mailer (1995). The two books *Chromophobia*, Batchelor (2000), and *Colour*, Batchelor (Ed.). (2008), in conjunction with the above are used later in the exegesis to examine the role of colour in painting.

The twentieth century American Precisionists (Machine Art) and New York-based Dadaists whose works centred on industry, influenced this interest in industrial themed art.

In particular Gerald Murphy (1888 – 1976), New York based Dadaist, Francis Picabia (1879 – 1953) and informal Dadaist Man Ray (1890 – 1976). In her book *Assembling Art the Machine*

and the American Avant-Garde, the American author Barbara Zabel (2004, p. 89, 90.) explains these movements borrowed from the new automotive and industrial technologies that emerged in early nineteenth century, to comment on current social issues.

Work and technology are fundamentals of my practice, elements that American curator Helen Molesworth addresses in her catalogue for The Baltimore Museum of Art exhibition *Work Ethic* in 2003, which featured a range of modern and contemporary art practices.

Sculpture versus Painting

As the MFA covers two years I think it is important to offer a short summary of my first year MFA practice, focussed on kinetic sculpture, incorporating tanks, electric pumps, piping and associated equipment of a semi-automatic bottle filling process, (Figure 1).



Figure 1 MacPherson, C. (2013). [Surplus value Kinetic sculpture, electrically driven pumps, steel, plastic and water].

The intention was the investigation of the German Philosopher Karl Marx's (1818 – 1883) theory of surplus value (cited in Matthewman, 2011, p.), the profit on a workers labour. Two audience participants would fill three bottles of bubble bath; they would retain one bottle between them as wages, being the owner I kept the other two as profit (surplus value). The work and research, investigates the influence technology has on production, particularly its effect on labour, in terms of deskilling and worker alienation.

At the end of last year's MFA, I made a conscious decision to move back to drawing and painting, simply because of work; I felt that my kinetic sculpture practice had become an extension of my working life and the attached stress of ensuring machines worked and production carried on - I felt I was working overtime without pay.

Immaterial Labour

Hardt and Negri (2000, p. 290 – 294) as mentioned in the introduction, Immaterial labour is paid or voluntary work that produces a non-tangible good or service. Homemakers, slaves, doctors, pilots, sex workers and waiters are examples as differentiated from bakers, factory workers, manual labourers and so forth that produce durable material goods. Immaterial labour can be further broken down into three categories. Firstly, labour that is involved in automated industrial production. Secondly, analytical and symbolic labour that is creative or routine. Thirdly, human contact labour that is actual or virtual contact. The latter could apply to my studio practice which Hart and Negri term affective labour as distinct from symbolic labour such as computer data entry.

The Italian theorists Maurizio Lazzarato in his essay *Immaterial Labour* (2010), has a different slant claiming that post models of Fordism and Taylorism saw the restructuring of factories to include worker input in all facets of the production process. The Ford Motor Company utilised the American engineer Frederick Taylor's (1856 – 1915) Scientific Management System designed in 1911, which relied on the efficient utilisation of materials, machinery and labour in cutting costs in the pursuit of higher profits. Assembly line workers were limited to menial repetitive tasks and alienated from any decision making in the production process. Factory restructuring and the implementation of automated systems

removed the need for many manual tasks in the production process. According to Lazzarato, these changes led to the need for worker involvement in various functions, decision-making and hierarchy of the organisation, which Lazzarato saw as the transfer of working class labour into a labour of control and a form of immaterial labour.

As mentioned earlier what concerns me mostly is the loss of jobs through new technologies. Apart from a reduction in manual labour through factory automation, increasingly new technologies are influencing mainstream life, in particular the work force. McDonald's fast food restaurants and assembly line style that encouraged self-waiting and clean up may have been the first to encourage public participation in unpaid labour. More recently, internet banking and emails are replacing bank tellers and postal deliverers; super markets are slowly replacing frontline staff by providing technology for the shopper to complete these tasks.

Immaterial labour fits well with my research practice however; I am not quite convinced that the concept is relatively new. I would like to argue that the industrial revolution, which saw the new technology of steam powered production, resulting in the demise of cottage industries, is also a form of immaterial labour.

Abstract Immaterial Production

Neither computerisation nor the internet interest me in my practice, however Hardt and Negri (2001, p. 292) describe them as being abstract immaterial labour, and therefore important in relation to distinguishing them from the other two types, symbolic and actual. David Noble (1945 - 2010), the Smithsonian Institution's Curator of Industrial Automation at the National Museum of American History, in his book *Forces of Production* (Noble, 1985, p. 111, cited in Matthewman 2011, p. 44) wrote 'it heralded an entirely different philosophy of manufacturing.' Noble was referring to John Parsons's development in 1955 of a self-acting multi-purpose machine tool, an actuarial mechanism that translates electrical signals into machine movements in steel cutting processes, known today as a numerically controlled machine tool (N/C). Developed by The Parsons Corporation and the Massachusetts Institute of Technology (MIT) for the American Air Force, the prime object of the technology was to

eliminate the risk of human error, in the critical process of cutting the contours of helicopter rotor blades.

Noble (2011, p. 45 – 46) suggests that the real reason for the N/C development was to take away worker control of the machining process; I believe this is a biased argument.

Thirty years later when the technology became more affordable, my brother in-law Iain Locke (1942 - 2004) who owned a tool and die company in London Ontario Canada, solved recurring problems of rejected dies caused through human, error by implementing N/C technology. Journalist David Miller featured the plant upgrade in the local business paper, The London Press, Miller, D. (1989, November 20). Surviving the shakeout. *The London Free Press*. pp. 14-15.

The internet began as a project for the U.S. Defence Department Advanced Research Projects Agency, primarily designed to withstand military attack. According to Hardt and Negri (2001, p. 299) the system was what Deleuze and Guattari termed a rhizome (cited in Hardt and Negri, p. 299) a non-hierarchical and non-centred network structure. Hardt and Negri describe this initial internet as a centralised broadcasting network of one-way communication, controlled by monopolies within the media industry. This 2001-year view is interesting when contrasted with the prediction of Bill Gates (p. 296) the co-founder of the Microsoft Corporation that networks will become “friction-free” and act as a universal go-between producer and consumer in a global market place. Hardt and Negri saw Gate’s vision as extreme and if correct, sites of production and consumption would exist globally

Diagrams Flow Charts and Graphs

The drawings and paintings are integral to the works as a whole, narrating the traditional engineering process of preparing drawings for the installation of machinery. Prior to computer based drawing programs, drafters would hand draw detailed schematic renderings of new or changes to old plant, which the plant engineers used to complete the work. The drawings in (Figure 2 - 3) are far from being detailed engineering drawings;

however, as schematic layouts in preparation for the paintings, their actual purpose is very similar.

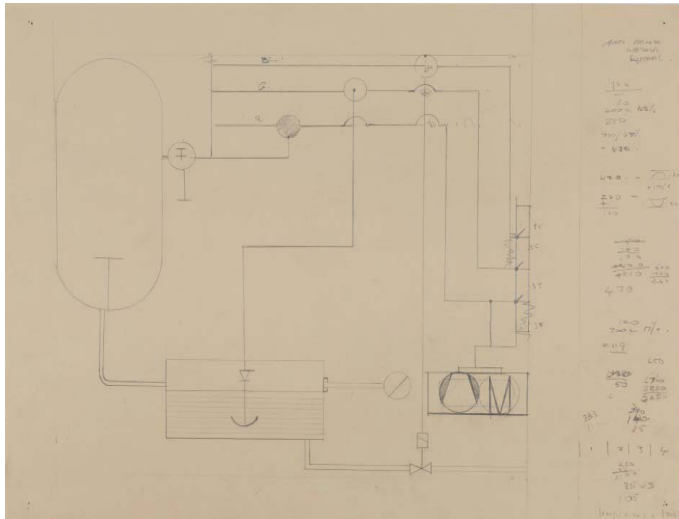


Figure 2 MacPherson C. (2014). [Untitled pencil on paper 50 x 65 cm].]

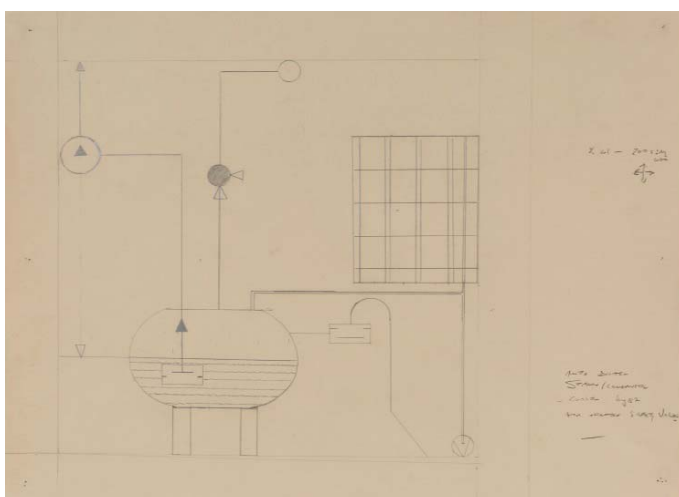
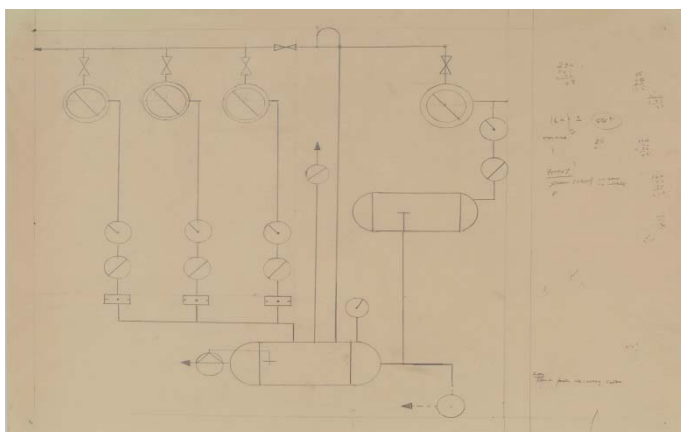
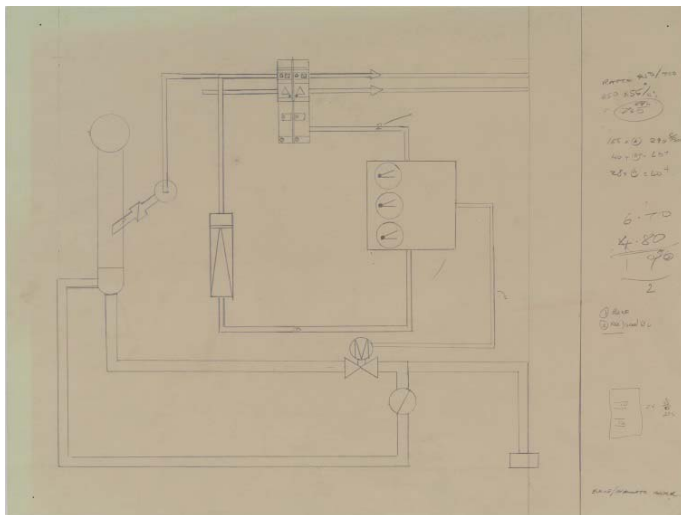
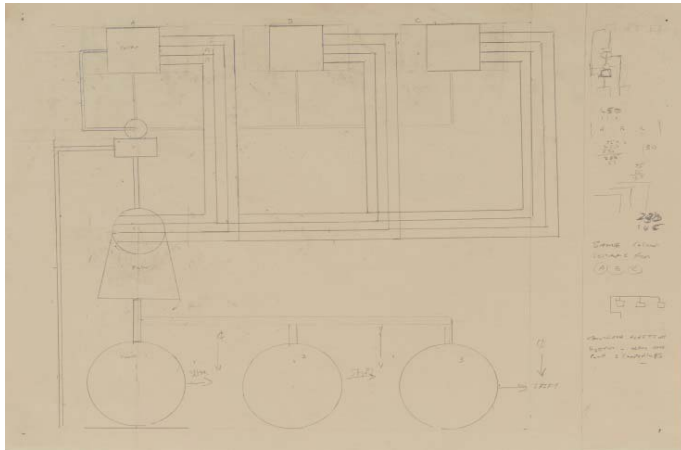


Figure 3 MacPherson, C. (2014). [Untitled Pencil on paper 50 x 65 cm].



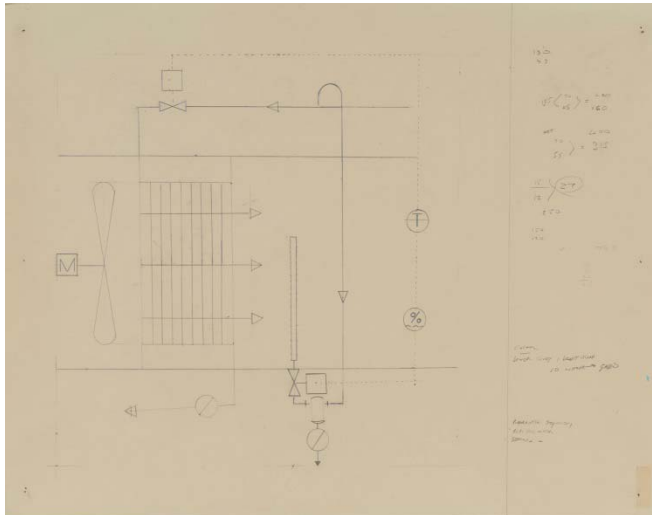


Figure 7 MacPherson, C. (2014). [Untitled Pencil on paper 50 x 65 cm].

The neo-conceptual American artist Mark Lombardi (1961 – 2000) produced hand drawn diagrams in pencil on paper (Figure 8), of geometric patterns, both as an art form and to highlight and expose global networks of financial trails of transactions within government, corporations, and politicians that Lombardi saw as corrupt. Zdebik (2011) explains that Lombardi utilised these diagrams to chart the clandestine meetings and movements of people and organisations such as Presidents Bush, the Vatican and the Mafia.

Where is the association between my diagrams and Lombardi's? We use diagrams in our artwork to comment on political issues that concern us.

From the Greek word *diagramma* (to mark out by lines) the diagram as Zdebik suggests has both visual and textual elements and an ability to reveal compiled data from various relatively hidden sources in in two-dimensional language. Although Lombardi's diagrams are concerned with political matters of corruption, which may or may not be true, my main interest is their relationship to the overall artwork.

The work in (Figure 8) is an example of Lombardi's work, which is a collation of his research into an 'invisible' network of insider trading, involving George Bush Jr., and Harken Energy, in which both parties seemingly benefited from the Gulf War.

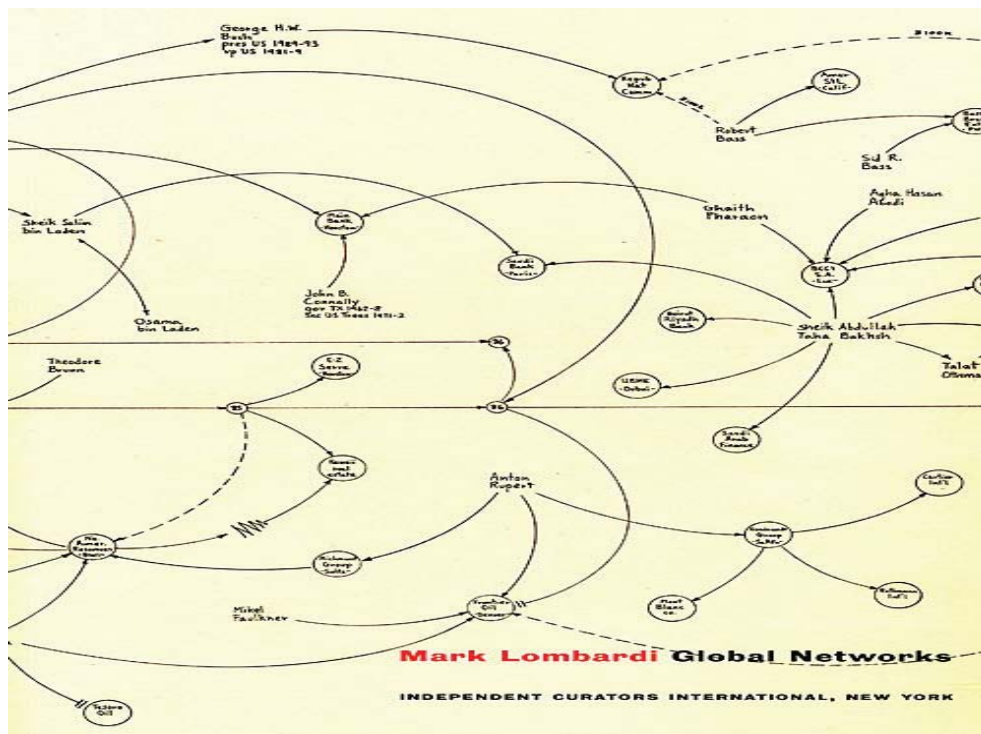


Figure 8 Mark Lombardi (2000). [Global Networks Pencil and ink on paper]

Signs and symbols are essential to the language of diagrams.

“Like maps, Lombardi’s drawings use graphic shorthand that viewers need to learn in order to navigate the material. A curved line with an arrow on one end, for instance indicates some kind of influence or control. A line with arrows at both ends describes some type of mutual relationship or association” (Tam Lim, cited in Zdebik 2011, p. 75)

The arrow in Lombardi’s work, according to Lim is the key to deciphering the meanings within the work, the lines unbroken and full relate to flow (in money). Lombardi’s diagrams although aesthetic, retain a tradition of schematic intention in the work.

There are three major contextual differences between my diagrams and Lombardi’s; symbolism, written text and finality. Although Lombardi uses the symbols of the arrow and line to indicate direction of flow, the reliance and clarity of the written text between the points of flow, for me, releases any tension while excluding the viewer from having any input into the final message.

For instance, in my diagram (Figure 7), the arrow and line also relate to direction and flow, but the various shapes, relate to symbolic text and are open to the viewer’s interpretation.

What each have in common is our use of the diagrams to highlight invisible networks which in Lombardi's case, are the hidden communication lines of corruption, and in mine, immaterial labour represented by automated systems and processes, that replace manual labour.

"It is not so much the individual word or sentence that 'stands for' or 'reflects' the individual object or event in the real world, but rather the entire system of signs, the entire field of the *language*, lies parallel to reality itself; that is the totality of systematic language, in other words, which is analogous to whatever organised structures exist in the world of reality, and that our understanding proceeds from one whole or Gestalt to the other, rather than on a one to-one basis." (Jameson, 1972, p. 32-3, cited in Chandler, 2002, p. 23)

The American Literary theorist Frederic Jameson commented on the Swiss Linguist Ferdinand de Saussure's (1857 – 1913) Relational System, that a sign (symbol) on its own is senseless, by combining with another sign it creates dialogue. For instance, in an engineering diagram, the valve symbol denotes a device for controlling the flow of a fluid, however, the addition of colour coded service lines and associated equipment, the valve takes on a new language of - gas, steam or maybe pneumatics.

Semiotics and Art

Why have I chosen technology as the subject? Apart from a background in engineering, mechanisms and industrial smell and noise for me convey beauty and art. The depiction of valves, cogs and the like come from real life events, in industrial plant installation and maintenance, they are part of my practice and my identity.

The French philosopher Roland Barthes (1915 – 1980) advances the theory of the *Studium* and *Punctum*, Barthes (1980, p. 26) the meanings within an image. The *studium* a Latin word connected with study, which Barthes explains, refers to the cultural, historical and factual contents within the image, whereas the *punctum* is that which punctuates the *studium* – pricking the viewer conscious, by replacing the details within the image, with a mental image relevant only to the viewer. Although Barthes is specifically talking about photographs, I think any image or object could convey similar thoughts and meanings.

There is a certain feeling I get when drawing and painting, (or sculpting) a cog or the colour of a simulated service line, the recalling of past events and people I met. The nostalgia of redundant machine parts, their past uses and users and the narrative behind the artefact – worker – happiness – sadness – families – redundancies and so on.

As I mentioned earlier the rhythmic sounds emanating from machinery such as the starting of a pumping system, the clicking of an assembly line, the smell of lubricants and the colour-coded service lines, for me are soothing and uncannily I feel their presence and influence in my work. Maybe Barthes *punctum* theory is at work, the blue colour of pneumatic lines or the loading unloading¹ of a compressor; bring back memories of my first connection with pneumatics, nearly fifty years ago as an apprentice in the engineering department of a large family owned iron foundry that manufactured cast iron bathroom ware. A multi-national company took over the firm; they replaced manual moulding production with a pneumatically controlled automated system, resulting in many of the hand moulders losing their jobs. One of the aspects of the new equipment was its colours, cream, green and blue, standing out against the black sand and grey castings of the traditional foundry and I can still recall the make – Norgren. I did a little bit of research and found some hand drawings of a pneumatic lubricator, drawn in 1927 by Norgren founder, American Carl Norgren (1890 – 1868) in his kitchen. The sketches according to the Norgren history home page pioneered the use of pneumatics in industry, as we know it to-day.

This scenario connects with working class labour and immaterial labour as Hardt and Negri (2003, p. 53) explain. *The industrial working class*, manual workers (hand moulders), those workers whose position in the hierarchy of work was foremost, have all but disappeared. As Hardt Negri claim the automation of factory systems and production, removed the need or expertise of human input, resulting in their theory of immaterial production and labour. The multi-national company closed the plant two years later and moved production to South Africa. I think there is a similarity here with Helen Molesworth (2003, p. 28.) claims how in the 1960s, manufacturing in the United States was diminishing, due to companies relocating production to countries such as China and Mexico, compounded by a change from a production based economy to a service one. According to Paul Osterman *et al* (2001,

¹ When a compressor reaches pre-determined pressure, an automatic valve opens releasing excess air in cylinder(s) to atmosphere, which allows the compressor to operate without using excess energy. Loading occurs at a lower set pressure, the automatic valve opens and a new cycle starts.

cited in Molesworth, 2003, p. 27) these events saw a reduction in skilled labour and a rise in managerial labour who oversaw the unskilled workers, this resulted in a change in labour definition from the traditional production of objects, to being represented in diagrams, flow charts and graphs.

The example below, on the use of semiotics, in art and in engineering I found to be coincidental and uncannily similar to my research and studio practice. The paper *Semiotics and intelligent Control*, by Morten Lind (2001), Professor Emeritus, Electrical Engineering Department, Technical University of Denmark, explains the use of semiotics to control a marine engine cooling system. The main feature in this is example is the pressure sensor valve, any change to the pressure denotes a *meaning* signifier (four involved), which in turn signifies an action and remedy. I believe that Professor Morten's paper and diagram, helps support and consolidate my argument, conveyed in the exegesis and works that, semiotics and automation are inherent part of immaterial labour.

Preparing for Painting

"Thus whilst a method is needed and technical means are employed, the conditions under which an artist produces aesthetic figures requires that the material becomes expressive. Making a painting allows us to witness the creation of such conditions." (Barbara Bolt, cited in O'sullivan & Zepke, 2010, p. 272).

The Australian painter Barbara Bolt in her essay *Unimaginable Happenings: Material Movements in the Plane of Composition* explains her painting process, which I found strikingly similar to my own approach.

This plane of composition that (in visual art) Bolt is talking about is the virtual meaning brought about through the physical form and content of the work.

This is similar to the notion within my artwork of industry, conveyed through a composition of diagrammatic lines, shapes, symbols and colour that signifies the plane and the virtual labour of automation, alluding to (immaterial labour). Not only is the material contents of the paintings an integral part of the composition, but also the physical shape, dimensions and aesthetic sense, which also give a visual vocabulary. That is to say, contemporary manufacturing plants are module in design and industrial machines are generally associated

with power and production. Therefore, to convey this sense of industrialisation, I use relatively large and dimensionally square handmade canvases, complimented with hand drawn paper schematics.

It seems that many theorists and artists' writings on art practice comment on the finished work, rather than the steps towards this final stage, which, for me is an integral part of the process in making art, a belief also held by Barbara Bolt.

(Deleuze and Guattari, 1994, p. 184, cited in O'Sullivan and Zepke, 2011, p. 273) describe the ritual of the *Scenopoetes Dentirostris* (Australian Tooth-billed bowerbird).

"Every morning the *Scenopoetes dentirostris*, a bird in the Australian rain forests, cuts leaves, makes them fall to the ground, and turns them over so that the paler, internal side contrasts with the earth. In this way, it constructs a stage for itself like a readymade; and directly above, on a creeper or a branch, while fluffing out the feathers beneath its beak to reveal their yellow roots, it sings a complex song made up from its own notes and, at intervals, those of other birds that it imitates: it is a complete artist."

Barbara Bolt was commenting on the ritual and set of actions of the Tooth-billed bowerbird, where it clears ground, cuts material and makes marks, in a final performance of colour, sound and movement, which she compare with her process of making art.

Bolt's routine starts with a visit to her favourite art store, to handle and select the materials, discuss cost and any other items that are connected or otherwise to the project. Back at her studio, just like the bird she constructs the stage by setting out the canvas, oil paints, brushes and stands above ready to perform. Bolt explains, this process relies not on the "*Masterly of the artist*" or the "*know how on what to do and how to do it*" as (Deleuze and Guattari, 2003, p. 97, cited in O'Sullivan and Zepke, 2011, p. 273) claim, but on chance. I agree with Bolt, making art is trying and see, many mistakes just work, whether it is masterly or not, the viewer decides.

The execution of a craft can rely only on masterly, such as in the procedure in the replacement of shaft bearings and the mechanical seal² in a pump. Although an industrial performance, the process is similar to the *Scenopoetes Dentirostris* ritual.

²A mechanical seal eliminates leaking from a rotating shaft in a liquid pump.

Firstly, I prepare a clear area on the workshop bench, carefully dismantling the pump, systematically laying each part out for inspection. The impeller is balanced and the shaft checked for straightness, then cleaned and polished ready for the new bearings, oil seals and mechanical seal. The new parts are installed, various lubricants, thread seals, anti-seize and gaskets are applied before the pump is re-assembled and painted. Then like a rehearsal, the pump is pretested electrically and mechanically on the workbench, before going back into service to perform its pumping role.

The approach I take in my practice is similar (maybe there is a natural connection with ritual and task), I need a clear area and mind, simple things like undone chores distract me – I need to do these first, some artists like quietness others music, in my case I listen to horse racing in the background.

Another important part of the painting process for me is making the stretcher frame, stretching the canvas and preparing the canvas surface for painting (Figure 9 – 12).



Figure 9 Making the stretcher frame



Figure 10 Stretching canvas



Figure 11 Sizing canvas



Figure 12 Undercoating canvas

The preparation of raw rabbit skin glue, sizing the canvas and the drumming noise from the tapping of the treated canvas next day, sets the stage for a good performance. In the past, I used readymade pre-sized canvases, although they came in a selection of dimensions, they never quite fitted my requirements, and the texture and surface of the canvases were unvarying and hard.

When I painted on a readymade canvas I felt I was pushing against a brick wall, the feel of the brush on a canvas stretched and prepared by myself (whether psychological or otherwise), just seems to flow and reverberate.

In (O'Sullivan and Zepke 2011, p. 2010, p. 268), Guattari and Deleuze talk about the artist's treatment of form, plain and material, in relation to composition and the final work. Yet argue the artist plays no part in the final work, claiming that the intention of art is neither to communicate, nor read nor decoded, but art is concerned only with expression through the manipulation of materials.

This reminds me of reading about an interview Pablo Picasso had with an art critic, where the critic explained to the painter the meanings within his work, whereas Picasso replied, “You know more about my work than I do.”

For me as an artist, the production of art, is not just to reproduce an image, there needs to be a reason, that is, something that interests and or concerns me. The works attempt to convey these concerns, through shape, form and colour and the manipulation of materials. Deleuze (Deleuze 2003, p. 56, cited in Zepke and O’Sullivan 20011, p. 280), seem to support this notion, claiming that the task of a painting is not to, reproduce an image of a scene or object, but rather to display the abstract forces (the message) within the work.

Barbara Bolt in her essay conclusion (p. 283) in a way sums this up. An artist’s style and intention consists of the rhythms of line and flow, eccentric positioning, material interface and animated colour, all of which are art, dismantling the image to reveal something true to lived experience.

Occasionally things go wrong, such as my first critique, which I prepared for in a hurry and exhibited work that was either irrelevant or badly made and judged accordingly. However, I believe there is no such thing as a bad critique, the advice given by the audience I took on board and the next assessment proved more encouraging.

Painted Diagrams and Systems

In *Meanings of Abstract Art, Between Nature and Theory* Crowther, P. & Wunsche, I. Eds. (2012, p. 64) Christopher Short analysis the Russian Expressionist and Abstract painter Wassily Kandinsky’s (1866 – 1944) theory of mathematics, form and unity in art, in particular his works painted during his time at the Bauhaus³ of which *Transverse Lines* is one (Figure 13).



Figure 13 Kandinsky, W. (1923). [Transverse Lines oil on canvas, 141 x 202 cm].

Kandinsky saw cosmic law⁴ with its combination of geometric structure and mathematics as the centre of his work, described by Short as a synthesis of art, similar to that of Italian artist Leonardo da Vinci's (1452 – 1519). Short explains, da Vinci has conveyed his philosophy of the universe as a language of mathematics, through circles, squares, triangles and various geometric figures. Apart from the relation to cosmic law or the universe, the elements of mathematics and geometry are pivotal to my practice and work in synergy with my experiences in creating art.

Along with the drawings, the paintings in (Figure 14 - 19) are an integral to each other, part of a series of abstract works, all six acrylic paintings on canvas are 80 cm square and depict various industrial automated process systems, appropriated from real life experiences of engineering diagrams and equipment installation, depicted in two-dimensional abstract form.

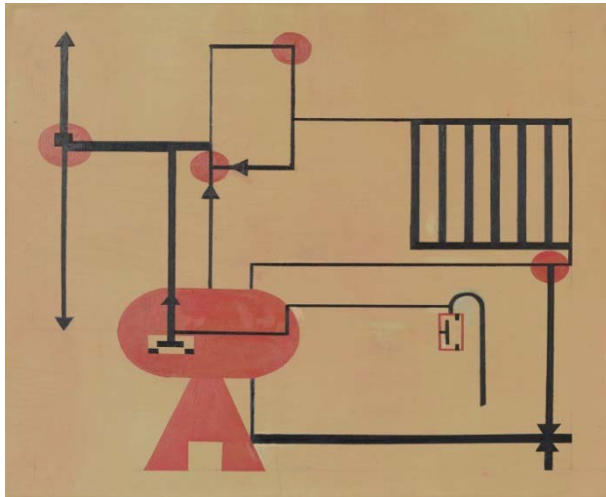


Figure 14 MacPherson, C. (2014). [Untitled Acrylic on canvas 80 x 80 cm].

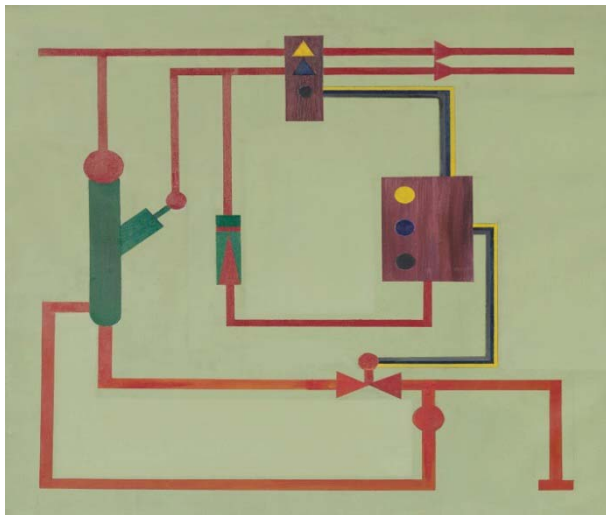


Figure 15 MacPherson, C. (2014). [Untitled Acrylic on canvas 80 x 80 cm]

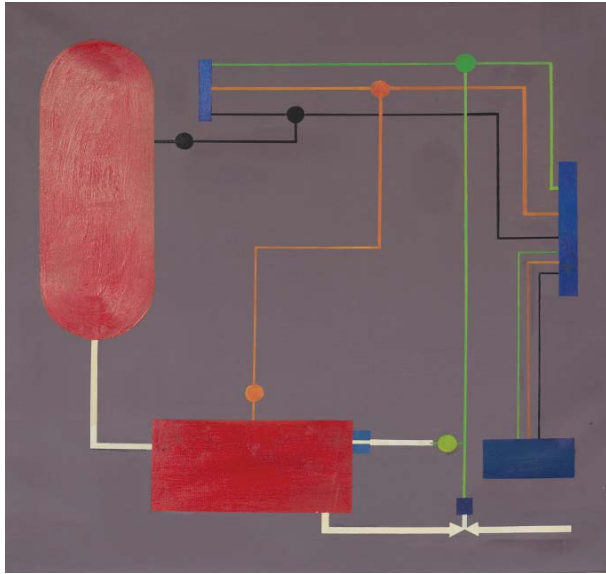


Figure 16 MacPherson, C. (2014). [Untitled Acrylic on canvas 80 x 80 cm].

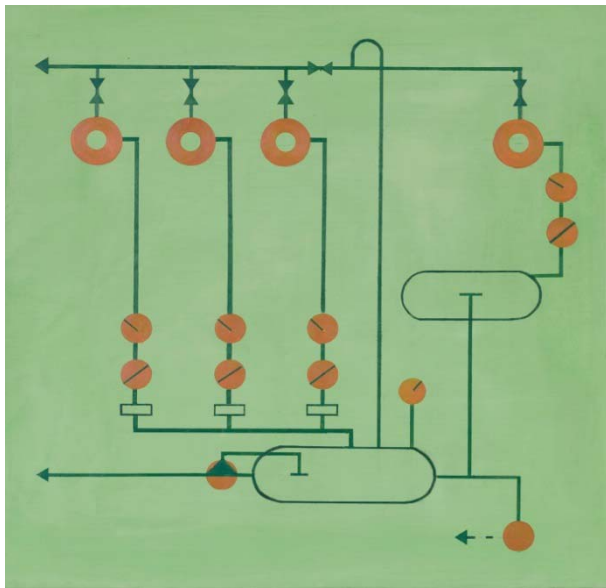


Figure 17 MacPherson, c. (2014). [Untitled Acrylic on canvas 80 x 80 cm].

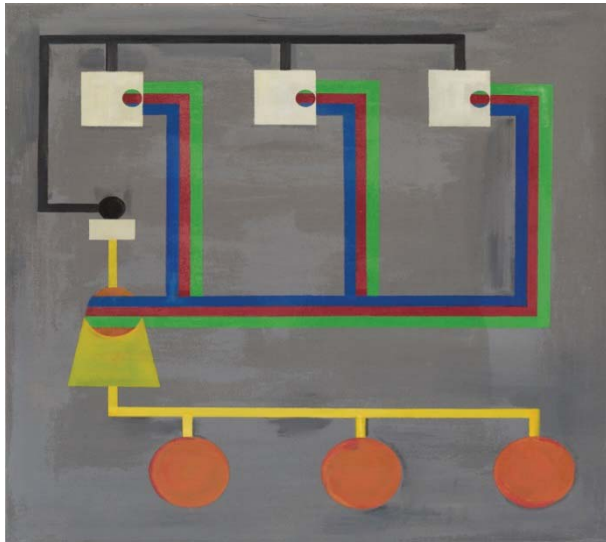


Figure 18 MacPherson, C. (2014). [Untitled Acrylic on canvas 80 x 80 cm].

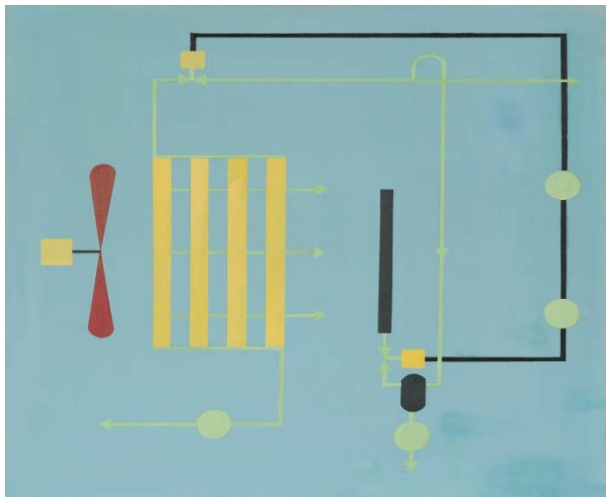


Figure 19 MacPherson, C. (2014). [Untitled Acrylic on canvas 80 x 80 cm].

The works borrow from each other, having similar shape, form and style, yet individual, a mixture of inter connecting processes, working together to narrate immaterial labour and production.

I decided to leave them untitled; I prefer the viewer(s) to interpret the meanings and their intended function, however, while examining them for the exegesis, I became more aware of colour and tone within each image. Up until then, (I believe) unconsciously I treated the paintings as reproductions, by the addition of colour form and shape the diagrams became the real object, rather than abstract images as intended

I employed a colour selection process that started with the background, I wanted the shapes and lines in each painting to have similarity, but colour and tone value for each needed to differ dramatically. I use colour ideas appropriated from various sources, the green and orange in (Figure 17) came from my grandson's plastic toy. In this example like the others, whatever colours used I generally mix small amounts with the background colour, pulling them together.

To emphasise the geometric forms and hard edge in each painting while retaining a flat two-dimensional quality, I deliberately painted the majority of the canvas surface in a singular flat colour. In most cases, I felt satisfied by the outcome, however possibly in (Figure 5) the background colour could be less active and the line and form leaner.

Industrial service lines for reasons of safety and identification are traditionally colour coded; however, in the works, I juxtaposed them to create an abstract image, allowing the viewer(s) to interpret the idea or meaning within the work.

Are my works abstract? While researching the German artist Tomma Abts and the American abstract painter Peter Halley it was interesting that they too question whether their works are abstract.

In the monograph of Tomma Abts, Laura Hoptman in her essay *Tomma Abts: Art for an Anxious Time* (2008. p. 12), Hoptman recalls an interview that Abts had with Scottish figurative painter Peter Doig – where Abts commented that 'she never knew if her paintings were abstract'.

Returning to my question and comparing my works with Abts, while her paintings for example *Kobo* (Figure 20) employ geometric form, albeit eccentric and generally nonrepresentational.



Figure 20 Abts, T. (1999). [Kobo oil and acrylic on canvas 48 x 38 cm]

In this particular example, Abts uses oil and acrylic, (a technique I used in two paintings Figure 2 and 3), layering and overlapping and covering the entire area of the small canvases, creating a feeling of endlessness and multi-dimensional shapes. It was reassuring to see that like me Abts overpaints, quite possibly from earlier mistakes or change of heart. I also saw a connection with Abts use of colour and shape, particularly their simplicity, a character that I was attempting to achieve in my work, for example in (Figure 6). It was also interesting that the titles, according Hoptman (p. 12) had no etymology, and the crayon, ink and pencil drawings, which certainly connected with my practice, were untitled and had no direct connection with the paintings, nor any substantial comment from the essayists, in the monograph.

“The term ‘New Abstraction’ worries me. I don’t think of myself as abstract artist, rather I describe my paintings as diagrammatic” (Halley, 1987, p. 171, cited in Schwarz, 1998, p. 19). If asked to describe my practice and paintings, Peter Halley’s statement seems to reflect them quite well; I think they are located between Francis Picabia’s mechanical themed works (which I deal with later in the text) and Halley’s conduit paintings.

As mentioned in my introduction, Halley felt that one’s practice should connect with and comment on wider social issues within society. Charles Riley in his book *Color Codes*, Riley

(1995, p. 194) re-enforces these beliefs in his review of Halley's writings and works, commenting that Halley was deeply concerned with the affect nuclear energy and computerisation had on society – similar concerns I have with how technology affects labour.

The once simple diagrammatic works of Halley have become more complicated in addressing this preoccupation with social issues.

As the Japanese academic and curator Makiko Matake, in her essay *Painting as Sociogram* Reynolds (Ed.). (2000) explains, the earlier works tended to reflect society as two-dimensional and employed minimal colour. Halley at this stage was narrating institutional sites such as the prison represented by the black bars in his work *Rectangular Prison with Smokestack* (Figure 20). His later works as in *Joy Pop* (Figure 22) presented a more complex form and colour range that comment on the intricate networks that connect society such as computer, traffic control and communication systems.



Figure 21 Halley, P. (1987). [*Rectangular Prison with Smokestack* Acrylic Roll-Tex 60 x 35.5 cm].

When I look at my *machine paintings* and compare these against my *painted diagrams*



Figure 22 Halley, P. (1998). [*Joy Pop Acrylic Day-Glo*, pearlescent and metallic acrylic and Roll-a-Tex on canvas 188 x 185 cm].

I saw a similarity, the painted diagrams are more complex and depicting multi process networks and (I believe) more colourful than the earlier machine works.

Painted Machines

Barbara Zabel in her book *Assembling Art the Machine and the American Avant-Garde*, Zabel (2004, p. 6) explains, how the American novelist John Dos Passos, (1896 – 1970) in his trilogy, *U.S.A.*, (1932, part 2, 1919), saw how factory workers were losing their identity and being treated as machines in the repetitive process of production. Dos Passos described this as a “Taylorised speed up” at the Ford Motor Company. “Reach under, adjust washer, screw down bolt, shove in cotter pin - reach under, adjust washer, screw down bolt, shove in cotter pin. After their shift, devoid of all skills and dignity, the worker shuffled home exhausted”. Perhaps Dos Passos was describing the early signs of machine-based systems of artificial intelligence, which would eventually replace human input in the production process.

The advent of the machine and mass production in the early 1900s, not only affected the workplace and lives, this new era of the automobile, air travel and gadgets, explains Zabel (p. 3), created a new culture in art, associated with machine imagery.

The American Precisionist (Machine Artists), such as Morton Schamberg (1881 – 1918) and the Dadaists Francis Picabia (1879 – 1953) and Man Ray (1890 – 1976), were the avant-garde of the New York art scene in the early 1900s.

In contrasting these artists and a selection of their works with my practice, it is important to highlight; they were primarily concerned with current technology of the time and its relevance to change in social issues such as gender – whereas my practice deals with the politics of work associated with work, through the depiction of old and technology.

The painters, Schamberg, Zabel (pp. 51, 55) and Picabia, Mundy (2008, p. 9) came from well off families, with no practical experience in engineering, whereas, Man Ray who was predominately a photographer. The latter as Mundy (p. 24) explains would make sculptures from various found objects, for some reason Man Ray's technical ability and his object making, reminded me of my school days and the fascination I had with the *Tour de France* bicycle (bike) race. In those days, to buy a new bike was a distant dream, therefore I used to buy, sell and trade various bike parts, to make an ever-changing bike. The colours of the cyclists' outfits and their bikes always mesmerised me, when I finished making a bike, the best part was selecting a colour for the frame, limes - yellows and reds were favourites, colours that influence my paintings.

The painting by Schamberg (Figure 23) titled *Formerly Machine*, as Zabel (P. 52) explains saw Schamberg move from painting still life works, to mechanical abstraction associated with industrial sewing factories of the early 1900s.

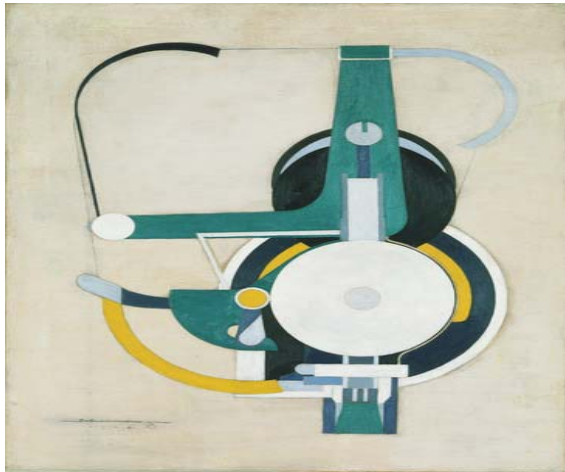


Figure 23 Schamberg, M. (1916). [Formally Machine oil on canvas 76.5 x 57.8 cm].

Both the work and the subject connect with mine, particularly the painting *Grinder* (Figure 24), which takes on a 3D form as distinct from my other works in the series, which I purposely attempt to present in a flat 2 D style. Although dimensionally different and painted in acrylic, each depict mechanical workings, of round shafts, connections, bolts, yet the similar bright colours, shapes and form, expose them as engineering abstractions.

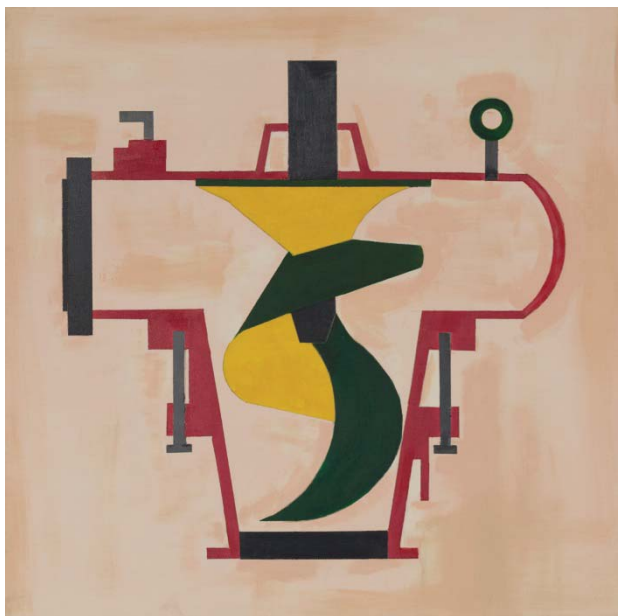


Figure 24 MacPherson, C. (1914). [*Grinder* Acrylic on canvas 80 x 80 cm].

As Zabel (p. 51) comments Schamberg's works connect with textiles and connote a feminine domesticity. Yet the notion of steel, machinery and industrial colours of the day, points to a

masculine ethic, which I found interesting when contrasted with the Singer Sewing Machine Company's advertisement for their domestic model 99, in 1911, '*as being smaller and prettier than their model 66*'.

This sets the stage to review the work, *Timing* (Figure 25) an abstract image of an ignition timing system of an air compressor engine which I worked on.

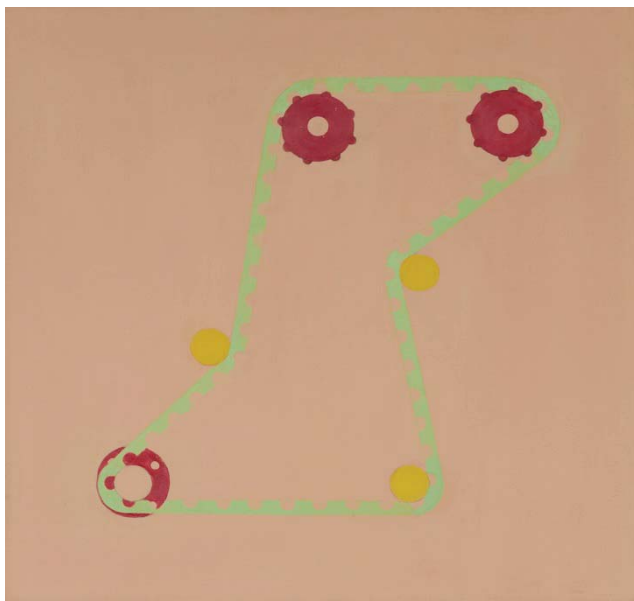


Figure 25 MacPherson, C. (2014). [*Timing* Acrylic on canvas 80 x 80 cm].

This work probably took me the longest to paint, because I made many changes in both colour and form, but I think it is successful. I wanted it to portray a delicate and simple manor, hence the pinkish pastel background and light colouring. Every time I look at the image, I unintentionally conjure up a female Flamenco dancer. Maybe a metaphor as Zabel (p. x v 1) explains, that originated from a masculine dominance of engineering at the turn of the 19th century, which saw these 'manmade' machines often characterised as female. As Zabel (p. 89) explains that, the New York Dadaists proliferated this female gendering in their machine art works. In his machine portraits, Picabia reveals his passion for automobiles – which, like other machines Zabel argues are gendered female, referencing

many sources including the French journalist and art critic Octave Mirbeau (1848 – 1917), who in early European literature of automobile culture, often characterised them as female sex objects. Picabia in his 1915 oil painting, *Portrait d'une jeune fille americaine dans l'état de nudité* (portrait of a young American girl in the state of nudity}, (Figure 26) appropriates a mass-produced automotive spark plug, which in the words of Picabia's wife Gabrielle Buffet-Picabia.

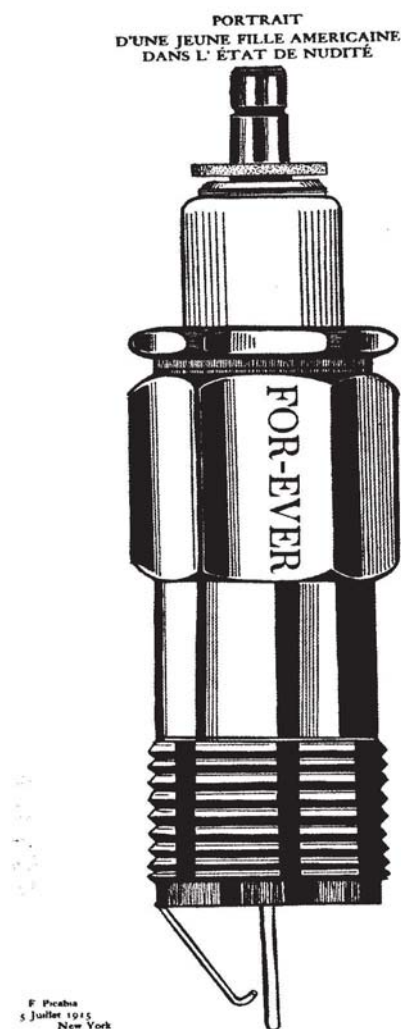


Figure 26 Picabia, F. (1915). [*Portrait d'une jeune fille americaine* in 219 oil on canvas}.

She represents the generic “young American girl” inscribed “FOR EVER” she becomes a perpetual flirt or “kindler of flame”.

Barbara Zabel’s argument about gender (I think) is valid; however, her claims refer to actual machines, whereas the works depicting machinery are simulacrum images.

Colour and Psychology

I always find it difficult explaining the selection and use of colour in my paintings, the Scottish artist David Batchelor (2007) in his book *Chromophobia* (p. 97 – 98), argues that many critics have attempted to define colour and its voice in art. Batchelor suggests that colour speaks silently for itself, and any attempt to speak on its behalf is bound to fail. Maybe Batchelor’s statement was the catalyst maybe I needed, because my disagreeing with his claim got me questioning this. Yes, colour has a language, for example, in Western culture, we accept red as a sign of danger and white might refer to pureness, but I think these are cultural and ideological.

Felix Janssens, author and Creative Director at the Amsterdam based company Total Identity, in the introduction to his book *How Colours Unite Us All* (2014), explains this quite well.

“Identity *Colour Codes* shows the richness of colour for social identities to brand an idea, theme, or domain that the participants share. Each domain has its own code, in nationalism, politics, religion, culture, life style or sports.”

Whether consciously or otherwise, I think artists incorporate conventions of colour in their art.

What I am trying to say is this, the artist determines the mood or intention of the painting, from their choice of form, colour and shape within the image, influenced by the artist’s state of mind, which I have attempted to illustrate in the following two examples.

Bridget Riley, an English abstract painter Kudielka (2009, p. 27) at the age of twenty-eight, began her series of black and white paintings, after her lover Maurice de Sausmarez (1915 – 1969) left her in 1960. Riley was angry and hurt and thought, ‘I’m not going to discuss

anything with you. I cannot communicate verbally with you, so what is the point in trying?

But I will paint you a message so loud and clear you'll know exactly how I feel.

In her recent works Riley presents an opposite view point, inviting the viewer to perceive a sense of tenderness in her paintings, Riley (2011, p. 25) and bringing a feeling of warmth that comes from the closeness of the pastel colours.

The suicide by gunshot of his friend Carlos Casagemas (1881 – 1901), resulted in the Spanish painter Pablo Picasso (1881 – 1973) becoming depressed. As Norman Mailer explains in his book *Portrait of Picasso as a Young Man* (1995, p. 61) was the start of his *blue period*, which would last for three years. During this period, Picasso's depression was evident in his paintings, depicting degradation and melancholy, emphasised by his use of a dark blue and bluish green palette.

In 1903, Picasso with the help of his new French mistress and model Fernande Olivier (1881 – 1966) and newfound friend, French poet Guillaume Apollinaire (1880 – 1918) real name (Wilhelm Apollinaire de Kostrowitzky), (p. 153, 164) began to use bright red and pink colouring in his paintings, which reflected a happier mood, which saw the beginning of his rose period.

I think feelings and the state of mind contribute, to not only the selection of colour, but also the form and context of the subject. For instance, painting abstract images of objects that are part of my working life, gives me a sense of freedom and relief, from the demands that work can bring. Yet, when recalling their practical use and the people and places connected to them, brings a feeling of nostalgia, similar to the feelings I mentioned earlier of the studium and punctum, Barthes (1980).

The French chemist and colourist Michel Chevreul (1786 – 1889), in particular his paper, *Simultaneous Contrast of Colours*, Chevreul (1839, chapter 1), together with the colour (simple-complicated) wheel, provide me with guidelines for colour and tone selection. Although these technical concepts of colour, such as complimentary, triad and split complimentary are important, David Batchelor (2000, p. 48) argues that form is the basis of a painting and colour is its subordinate. Putting Batchelor's theory into practice, I found that collage (Figure 27) provided a means to experiment with colour, form and shape, by contrasting these on the canvas, a technique that Bridget Riley also employs, Riley (2011, p.

16). Like me, Riley found that collage made the studio preparatory work, and the testing and moving of colour planes, could continue throughout the many stages of the work.



Figure 27 Usage of collage for *Cog and Chain* painting.

Restricting the colour palette to the primary colours, except for a limited use of white, and very seldom do I use pure colours, rather, I prefer to mix my own, which allows me to adjust the tone value to create harmony in the painting. This manipulation of colour in part, is maybe my desire to make things, or alternatively, perhaps it lies in my Scottish working class background, immersed in industrialisation.

Under the influence of the hallucinatory drug mescaline, the English philosopher Aldous Huxley (1863 – 1963) in his book, *The Doors of Perception* (1954), (cited in Batchelor, 2000, p. 111), proposed that colour had been contaminated by the unsophisticated working class, destroying the refinements and subtleties of colour by their unrefined attraction to industrial hues.

I will confess that, although not under the influence of mescaline, I did occasionally paint with one or two drinks.

The first works,(Figure 27 , 29) I initially used oil based paint in an attempt to create a gloss finish while retaining a two-dimensional form, however, even with the use of a drying agent

and working between them I found the process to slow to meet my time frame, and decided to complete the rest of the works in acrylic.



Figure 28 MacPherson, C. (2014). [*Cog and chain* Acrylic and oil on canvas 80 x 80 cm].

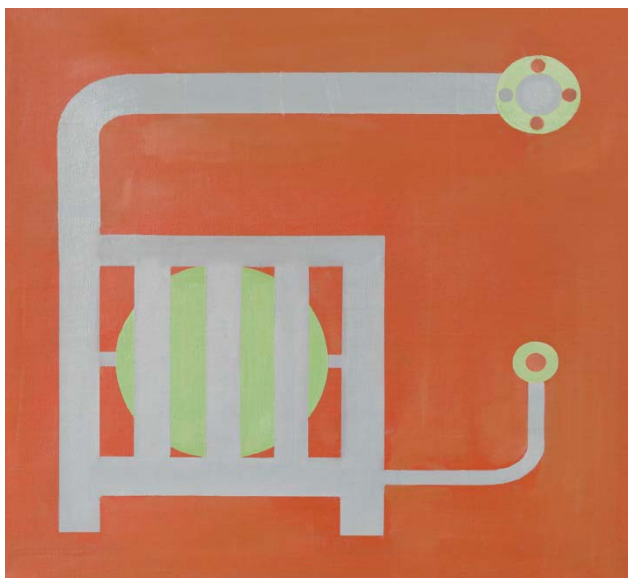


Figure 29 MacPherson, C. (2014). [*Exchanger* Acrylic and oil on canvas 80 x 80 cm].

Once united as part of an old and grey production process, the gearbox sprocket – chain, timing system and grinder pump, in their new life, they shed any connection with each other

or production, instead they take on new roles as colourful dandies.

In an attempt to convey these notions, shape and form are depicted in an uncomplicated manor, and by using only four colours, of vivid (or maybe a better description – saturated) tones.

Cog and Chain (Figure 28), began with a blue chain and green cog, with the chain studs represented by the paintings background, similar to the cog squares. However, I decided it needed another colour and painted the studs grey, (in hindsight, maybe I made the wrong decision). These colours were obviously uncomplimentary and clashed, I think I was trying replicate how it looked and worked originally – an oily grey gearing, rather than as an abstract cog with a chain. By employing collage to test various colour combinations I finally settled on the orangey colour (lots of red and a little yellow) to the chain stud, which (I felt) brought tone and harmony to the image.

The interesting thing here for me is; the claim by David Batchelor (mentioned earlier), that colour is subordinate to form, Batchelor (2000, p. 48) yet, the addition of orange in this instance, can transform the aesthetic and meaning of a painting.



Figure 30 Ryman, R.(1955). [Untitled orange painting mixed media 72 x 72 cm].

The American art critic Charles Riley, in his book, *Color Codes*, Riley (1995, p. 198 - 199) comments on the works of the American abstract painter Robert Ryman, in particular his monochrome work called *Orange Painting* (1955), (Figure 30).

The word orange and Riley's description of it as, 28 inches square (70 cm) and a

‘monochrome in an ugly orange’, drew me to the work. I could see a connection with my painting exchanger (Figure 29), although not a monochrome, orange is the predominant colour, square and similar in size.

Ryman describes the work as being odd, and the orange as being shocking, yet it was one of his favourite works, which seemed to fit with how I feel about mine. Although Exchanger depicts only three colours, like Ryman, the orange contains many hues, reds, yellows and even greens and blues, including those of the other two colours. I wanted the work to have an uncomplicated two-dimensional form, unattached – a remittance man (or woman).

Work Technology and Art

Work and technology has featured in many contemporary practices, the curator Helen Molesworth, (2003, p. 19) explores various examples of this in the catalogue *Work Ethic* (2003, p. 17, 19) accompanying The Baltimore Museum of Art’s exhibition in 2003. The exhibition highlights changes that took place in modern and contemporary art from the 1960s until 2003, which saw traditional culturally elite painting and sculpture of the trained artists, replaced by art movements and practices that resisted the gallery context. Their works abandoned the notion of skill or training in the production of art, yet as Molesworth explains, the viewer might be unaware of the artistic enquiry and research connected to the art. The aim of the exhibition was an attempt to address this by involving the audience as a participant in the work, as well as to comment on conditions of labour. The intention of the latter was to arouse debate on increasing shift from a production-based economy to a service, through automation and managerial control.

Divided into four sections, The Artist as Manager and Worker: The Artists Creates and Completes a Task, The Artist as Manager: The Artist Sets a Task for Others to Complete, The Artist as Experience Maker: The Audience Completes the Work, and Quitting Time: The Artist Tries Not to Work.

The fourth section Molesworth (2003, p. 204) connects to the Swiss artist Jean Tinguely’s (1925 – 1991) work *Meta- Matics* (1959), which she describes as a Taylorised kinetic sculpture that produces humorous and nonsensical abstract drawings, which I believe fits well with my sculpture (Figure 1).

As mentioned earlier many of the artists featured in the exhibition took up new ways of producing and presenting art. Jean Tinguely and the American artist Allan Kaprow, known for his conceptual art *Happenings* (p. 171) began their careers as expressionist painters and the American artist Andy Warhol (1928 – 1987), (p. 157) moved from hand produced sentimental paintings of still life, to utilising screen printing (a technology of the time). The connection with labour and production in the exhibition, for me raised more questions about art than labour. What I garnered was a focus by the exhibition was an abandonment of traditional art forms, and an attempt at teaching the audience to appreciate the desires of the avant-garde.

The post-war change from a manufacturing led economy to a service-based one according to Helen Molesworth (p. 28,) had a major effect on art production and type, yet in the same paragraph, Molesworth contradicts this, suggesting the work of Marcel Duchamp was the underlying influence.

In his book *Against Postmodernism*, (1989, p. 122) American Professor of Politics at the University of York, Alex Callinicos, argues that, although employment in manufacturing fell during the 1960s, production actually increased and the rise in employment in the service economy was at the expense of agriculture and not manufacturing. Professor Callinicos also claims that productivity in the service industry declined. His reasons for this are that unpaid (female) domestic labour or paid servants substituted for cleaning services, resulting in a higher demand for white good appliances, such as vacuum cleaners and washing machines, while the service sectors such as cinemas and public entertainment, declined due to the mass production of televisions, transistors and video recorders. What is significant here is, production increased while employment fell, principally due to factory automation, reflecting the notion of immaterial production.

The tradition of making art in particular for sale, as exemplified in Andy Warhol's silkscreen works, reflects on immaterial labour that utilises technology and human input in to producing saleable goods, Hardt and Negri (2000, p. 293). On the other hand, making art for creative purposes is an analytical and symbolic type of immaterial labour.

Conclusion

This exegesis gives me the opportunity to expand on the concerns I have with technology's impact on the workplace and labour, in particular immaterial production and immaterial labour. It also allows me to describe and explain how my studio practice over the last two years relates and comments on these issues.

The research uncovered some areas that have enhanced and given me a better understanding of my practice.

Prior to reading Hardt and Negri's theory of immaterial labour and immaterial production, the concept was entirely new to me. As mentioned in the introduction, in the first year I was looking at how technology influenced the workplace from a Marxist viewpoint, although valid, Hardt and Negri offer a more contemporary approach, which embraces computerised production process, the internet, paid and voluntary labour.

Maurizio Lazzarato argues that immaterial labour and production came about by the automation of factory production, which resulted in a reduction of manual labour. Maurizio suggests that this led to, workers being more involved in administration duties and in the decision-making process, which he terms immaterial labour.

The development of N/C technology, which David Noble claims, resulted in the need for human input in the production process, identifies a link between the above concepts, of systems and production, demonstrated in my painted diagrams.

As the text is an explanation of my practice, I mentioned my change in the first year from sculpture to painting, because I felt that sculpture was becoming an unpaid extension of my job. This for me raised the question of how an artist's state of mind can influence their work, while making some works I felt a sense of nostalgia for former times and events.

Barbara Bolt, like me needs to be in the correct state of mind by preparing her work area, collecting, and arranging her materials before applying any paint to the canvas. Bolt contrasts this procedure with the mating ritual of the Australian bird *Scenopoetes Dentirostris*. In my process, my head needs to be clear and any undone chores such as,

cutting the lawn need to be completed and a clear working area prepared. Part of this process is making the canvas stretcher, stretching the canvas and preparing the surface for painting, inherent to the overall work.

I also identified that the colour choice related to my feelings, moving to painting gave me a sense of wellbeing, reflected in a vivid palette, as compared with Bridget Ryley who chose black to convey anger.

One of these was my social concerns about the effect new technology had on production and labour, conveyed through my work and how other artists such as, Peter Halley use their practices to comment on social issues. Halley's paintings that depict buildings and social networks of computerisation and communication lines and the like reflect his concerns of how technology impinges upon society.

As well as Halley's, geometric works the exegesis comments on abstract painting and the meaning of abstract through Tomma Abts' works.

The schematic drawings and diagrammatic paintings rely on semiotic language of colour and signs associated with engineering and process systems, explained through a combination of the drawing by Mark Lombardi, the writings of Roland Barthes and the academic paper of Morten Lind, which define the importance of semiotics in my works.

The earlier twentieth century paintings by Morton Schamberg and Francis Picabia, as Barbara Zabel explains, depict new technology of the era, works that influence my machine paintings. In particular, Schamberg's image, *Formally Machine* and mine *Grinder*, each reflecting past and contemporary production, while Picabia's spark plug compared with my painting *Timing*, allowed me to analyse gender within art.

Helen Molesworth catalogue *Work Ethic* explored the reasons artists moved from traditional studio based work, to conceptual art, brought about by their abandonment of skill and training in art due to concerns that profit rather than the art was the focus of dealers and galleries.

This I believe underlines my and the opinion of Peter Halley, that all artists should use their practices to address social issues.

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