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IS THERE A PHYSICALITY REQUIREMENT AT COMMON LAW?: A SURVEY OF THE PRE-*NRDC* CASES DISCUSSING 'MANUFACTURE'

ABSTRACT

One of the fundamental issues that remains unresolved in patent law today, both in Australia and in other jurisdictions, is whether an invention must produce a physical effect or cause a physical transformation of matter to be patentable, or whether it is sufficient that an invention involves a specific practical application of an idea or principle to achieve a useful result. In short, the question is whether Australian patent law contains a physicality requirement. Despite being recently considered by the Federal Court, this is arguably an issue that has yet to be satisfactorily resolved in Australia. In its 2006 decision in *Grant v Commissioner of Patents*, the Full Court of the Federal Court of Australia found that the patentable subject matter standard is rooted in the physical, when it held that an invention must involve a physical effect or transformation to be patent eligible. That decision, however, has been the subject of scrutiny in the academic literature. This article seeks to add to the existing literature written in response to the *Grant* decision by examining in detail the key common law cases decided prior to the High Court's watershed decision in *National Research Development Corporation v Commissioner of Patents*, which is the undisputed authoritative statement of principle in regards to the patentable subject matter standard in Australia. This article, in conjunction with others written by the author, questions the Federal Court's assertion in *Grant* that the physicality requirement it established is consistent with existing law.

I INTRODUCTION

There is a generally held belief that the patent system exists to promote the invention of new and useful physical machines and devices and new methods that physically transform matter from one state into another. What is not so well understood is whether, and to what extent, non-physical methods, being those that do not involve a machine or other physical device and those that do not involve a physical transformation of matter, are patent eligible. In other words, there is uncertainty as to whether patent law contains a physicality requirement.

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From its earliest days, the objective of patent law has been to encourage the introduction of new technologies by providing incentives to invent and invest in innovation.[1] In Australia, it has traditionally been thought that patents are the domain of engineering, applied science and industrial manufacturing. This traditional conception of the role of the patent system, inherited from mid-19th century British law, involves an assumption that patent protection is limited to the creation of physical articles and methods that involve a transformation of matter.[2] These expectations are arguably a consequence of our understanding of the notion of technology as being something necessarily tied to machines, physical devices and physically transformative methods.[3] However, it is by no means certain that the law is concordant with these traditional expectations, for tying patentable subject matter to the physical in this way ties the patent system to industrial and pre-industrial notions of patentability in ways that are inconsistent with the need for the patent system to be able to respond appropriately to new and 'excitingly unpredictable' technologies as they arise.[4]

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1 This is a concept that dates back to the early patent custom in the Venetian Republic: Giulio Mandich, 'Venetian Patents (1450–1550)' (1948) 30 *Journal of the Patent Office Society* 166 (Frank D Prager, trans, 1936) [trans of *Rivista di Diritto Commerciale*]; Giulio Mandich, 'Venetian Origins of Inventor's Rights' (1960) 42 *Journal of the Patent Office Society* 378 (Frank D Prager trans, 1958) 101 [trans of *Rivista di Diritto Industriale*]; Edward C Walterscheid, 'The Early Evolution of the United States Patent Law: Antecedents (Part 1)' (1994) 76 *Journal of the Patent and Trademark Office Society* 697, 709–10; Frank D Prager, 'A History of Intellectual Property from 1545 to 1787' (1944) 26 *Journal of the Patent Office Society* 711, 715, 750.

It is also evident in the early English custom of granting monopolies and the English common law: *Darcy v Allen (The Case of Monopolies)* (1603) 11 Co Rep 84b; 77 ER 1260; *Statute of Monopolies* 21 Jam 1, Ch 3 (1623) (Eng). It is also evident today: Fritz Machlup, *An Economic Review of the Patent System* (1958) US Senate, Committee on the Judiciary, 2d Sess., 36–8; Roberto Mazzoleni and Richard R Nelson, 'The Benefits and Costs of Strong Patent Protection: A Contribution to the Current Debate' (1998) 27 *Research Policy* 273 (who describe three different theories that address three different aspects of the broad incentive theory; Lionel Bently and Brad Sherman, *Intellectual Property Law* (Oxford University Press, 2001) 315 ('[i]n this sense, patents act as a vector that links scientific and technical research with commercial spheres.').

2 *The King v Wheeler* (1819) 2 B & Ald 345, 349; 106 ER 392, 394–5; Bently and Sherman, above n 1, 310 ('the image of the invention as the human intervention into nature that brings about a resulting physical change that underpins much contemporary jurisprudence, was well entrenched in British law by the mid-nineteenth century.').

3 Ben McEniery, 'The Patentability of Non-Physical Inventions: Lessons From the United States' (2009) 35 *Monash University Law Review* 376, 377–8.

4 The need for the patent system to be able to respond appropriately to new and 'excitingly unpredictable' technologies as they arise is documented by the High Court of Australia in *National Research Development Corporation v Commissioner of Patents* (1959) 102 CLR 252, 271.

Increasingly, competitive commercial advantage in today's modern economies will come from new and innovative business processes. It is then of little surprise that this issue has come to the fore at the dawn of the Information Age, as it is highly likely that much of the groundbreaking innovation we are likely to witness in the 'knowledge economy' of the Information Age will involve the use and manipulation of information and data rather than the use and manipulation of physical matter.[5] Whether Australian patent law will keep pace with this altered reality is as yet unknown. The early indication is that it will not, at least initially.

The Australian courts have to date had one dealing with attempts by patentees to expand the bounds of patentable subject matter beyond the realms of engineering, applied science and industrial manufacturing. In its 2006 decision in *Grant v Commissioner of Patents,*[6] the Full Court of the Federal Court of Australia asserted that, if an invention is to satisfy the patentable subject matter test, it must result in the production or alteration of a physical object or produce a physically observable effect.[7] While the Court accepted that business methods are not excluded from patent eligibility as a category subject matter, it found that a business method removed from any physical apparatus or other physical embodiment is not patentable.[8]

The alleged invention considered in *Grant* is a method to protect an asset from the claims of creditors. It comprises creating a trust, the person making a gift of money to the trust, the trustee lending a sum of money to the person, and the trustee securing the loan by taking a charge over the asset. The object is to establish in favour of the trustee a charge over the asset in priority to other creditors.[9] This is an unconventional use of the patent system in that it seeks to reserve the ability to apply certain aspects of the law in a particular way to achieve a useful result to one individual. This is an alleged invention that does not disclose a physical aspect and does not involve a physical transformation of matter. In essence, the Court concluded that any method that does not produce a physical result is merely 'intellectual information', which has never been patentable.[10]

The *Grant* case has been criticised in the academic literature on the grounds that its reasoning is fundamentally inconsistent with the principles set out in the

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5 John Maddox, *What Remains to Be Discovered: Mapping the Secrets of the Universe, the Origins of Life, and the Future of the Human Race* (Free Press, 1998) 375–6; James Canton, *The Extreme Future: The Top Trends that will Reshape the World in the Next 20 Years* (Plume Books, 2006) 75–8; Richard Watson, *Future Files: A History of the Next 50 Years* (Scribe Press, 2007).

6 (2006) 154 FCR 62 ('*Grant'*) (Heerey, Kiefel and Bennett JJ). The matter was heard on appeal from a decision of a single judge of the Federal Court of Australia: (2005) 67 IPR 1 (Branson J).

7 *Grant* (2006) 154 FCR 62, 70 [30], [32], 73 [47].

8 Ibid 73 [47].

9 Australian Innovation Patent No. 2003100074 ('Asset Protection Method') (filed Feb. 7, 2003).

10 *Grant* (2006) 154 FCR 62, 66–8 [14]–[23].

High Court's landmark decision in *National Research Development Corporation v Commissioner of Patents*.[11] It has been argued that the High Court in *NRDC* explained that the patentable subject matter inquiry is a broad test that recognises all new and useful innovation as patent eligible, regardless of whether it involves a physical embodiment or a transformation of physical matter.[12]

In its reasons for decision, the Full Court in *Grant* asked whether the alleged invention before it is a proper subject of letters patent according to the principles which have developed over time to inform the application of section 6 of the *Statute of Monopolies*. The Court examined a line of cases dating back prior to *NRDC* and observed that the patentability of an invention that does not produce a physical effect or cause a physical transformation of matter has never been upheld.[13] From its observations, the Court inferred that non-physical methods are categorically excluded from patent eligibility.[14]

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11 (1959) 102 CLR 252 ('*NRDC*').

12 For a critique of the *Grant* decision see Ben McEniery, 'Patents for Intangible Inventions in Australia After *Grant v Commissioner of Patents* (Part 1)' (2007) 13 *Computer and Telecommunications Law Review* 70; Ben McEniery, 'Patents for Intangible Inventions in Australia After *Grant v Commissioner of Patents* (Part 2)' (2007) 13 *Computer and Telecommunications Law Review* 100. See also: Ann Monotti, 'The Scope of 'Manner of Manufacture' Under the *Patents Act 1990* (Cth) After *Grant v Commissioner of Patents*' (2006) 34 *Federal Law Review* 461; McEniery, above n 3; Charles Lawson, '*Grant v Commissioner of Patents* and Patenting Knowledge Inventions' (2008) 15 *Journal of Law and Medicine* 626. For a critique of the physicality requirement created by the Court of Appeals for the Federal Circuit in the United States in *In re Bilski*, 545 F3d 943 (Fed Cir Oct 31, 2008) (*en banc*), see Benjamin J McEniery, 'The Federal Circuit in *Bilski*: The Machine-or-Transformation Test' (2009) 91 *Journal of the Patent and Trademark Office Society* 254. Note that the Federal Circuit's physicality requirement was subsequently overturned by the United States Supreme Court in *Bilski v Kappos*, 561 US __ (2010).

13 The court considered: *Burroughs Corp (Perkins') Application* [1974] RPC 147; *Commissioner of Patents v Lee* (1913) 16 CLR 138; *Commissioner of Patents v Microcell Ltd* (1959) 102 CLR 232; *International Business Machines Corporation's Application* [1980] FSR 564; *International Business Machines Corporation v Commissioner of Patents* (1991) 33 FCR 218; *Neilson v Minister of Public Works (NSW)* (1914) 18 CLR 423; *Re Brown* (1899) 5 ALR 81; *Re Cooper's Application for a Patent* (1901) 19 RPC 53; *Re ESP's Application* (1944) 62 RPC 87; *Re Fishburn's Application* (1938) 57 RPC 245; *Re GEC's Application* (1942) 60 RPC 1; *Re Johnson's Application for a Patent* (1901) 19 RPC 56; *Re Lenard's Application* (1954) 71 RPC 190; *Re W's Application* (1914) 31 RPC 141; *Rogers v Commissioner of Patents* (1910) 10 CLR 701. The court noted that in *NRDC*, an artificial effect was physically created on the land, and that in each of *Welcome Real-Time v Catuity Inc*, *CCOM v Jiejing* and in the United States decisions of *State Street Bank & Trust Co v Signature Financial Group* and *AT&T Corp v Excel Communications, Inc*, there was a component physically affected or a change in state or information in a part of a device or machine.

14 McEniery, 'Patents for Intangible Inventions in Australia (Part 2)', above n 11, 102.

One question the existing literature does not systematically address is whether the Federal Court's finding in *Grant* is actually consistent with the decisions in the cases that preceded *NRDC*. This article aims to fill that gap by examining whether there is anything in the pre-*NRDC* case law to support the finding in *Grant* that Australian patent law contains a physicality requirement, or whether that case law supports a patent eligibility standard free of physical constraints.[15] Its focus is the relevant case law from its inception in *Boulton and Watt v Bull*[16] in the late 18th century until the decision in *NRDC*, and it questions whether the Federal Court's application of principle in *Grant* was justified in light of existing precedent. The purpose of conducting an analysis of this sort is to gain a better understanding of the law as it stood at the time *NRDC* was handed down and to uncover the principles of law that are of continuing significance today.

Conducting an analysis of this sort requires an examination of the history of patentability since the enactment of the *Statute of Monopolies*.[17] Included in this discussion is a consideration of the pre-1977 case law from the United Kingdom,[18] and the Australian case law to date. This is an inherently difficult undertaking since many of the earlier cases were decided at a time when it was thought technology is grounded in physical artefacts and today's computing and information processing technologies had not yet been imagined. Essentially, what is sought is language in the jurisprudence to indicate whether judges over time have been open to the possibility that patent eligible technology might exist in a form that is free of physical or corporeal embodiment.

II Patentable Subject Matter: The 'Manner of Manufacture' Test

The patentable subject matter inquiry in Australia finds its statutory basis in s 18(1) of the *Patents Act 1990* (Cth) and the definition of 'invention'.[19]

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15 In actual fact, the author does not adhere strictly to this classification, as passing reference is made to cases that follow the 1959 *NRDC* decision, such as *Rolls-Royce Limited's Application* [1963] RPC 251. Although it is acknowledged that this case was decided after *NRDC*, the judicial approach it demonstrates is arguably consistent with pre-*NRDC* thinking on the nature of patentable subject matter.

16 (1795) 126 ER 651 (Eyre CJ, Buller, Heath, Rooke JJ).

17 21 Jam 1, Ch 3 (1623) (Eng). The *Statute of Monopolies* is the short title of the Act. The long title is 'An Act Concerning Monopolies and Dispensations with Penal Laws and the Forfeiture Thereof".

18 The reason for tracing United Kingdom law only to 1977 is that 1977 is the year the United Kingdom abandoned its *Statute of Monopolies*-based regime for a new patent system modelled on the *Convention on the Grant of European Patents*, opened for signature 5 October 1973, 13 ILM 268 (entered into force 7 October 1977) (EPC). See *Patents Act 1977* (UK) c 37.

19 *Patents Act 1990* (Cth) s 18 and Schedule 1 (which defines 'invention').

Section 18 provides that, where a standard patent is concerned,[20] an 'invention' is patentable if it: is a 'manner of manufacture' within the meaning of s 6 of the *Statute of Monopolies*; is novel; involves an inventive step, is useful; and has not been used in secret. Section 18 does not expressly require that an invention produce a physical effect or cause a physical transformation of matter, nor does it expressly exclude these things from the test for determining patentability.

Of the s 18 heads of patentability, the focus of this article is the 'manner of manufacture' requirement, which determines the scope of the subject matter for which a patent can be granted. Only if an invention is within the scope of patentable subject matter, does it then need to be tested against the remaining heads of patentability, such as novelty and inventive step. The requirement that an invention, to be a patentable invention, must be a 'manner of manufacture' stems from s 6 of the *Statute of Monopolies*. This section, purportedly in accordance with the common law in existence at the time of its enactment in 1623, rendered void all monopolies provided that the invalidating provisions of the statute:

> shall not extend to any [letters] Patents and Graunt of Privilege for the tearme of fowerteene yeares or under, hereafter to be made of the sole working or makinge of any manner of new Manufactures within this Realme, to the true and first Inventor and Inventors of such Manufactures, which others at the tyme of makinge such [letters] Patents and Graunts shall not use, soe as alsoe they be not contrary to the Lawe nor mischievous to the State, by raising prices of Commodities at home, or hurt of Trade, or generallie inconvenient.

The principal purpose of the *Statute of Monopolies* was to declare grants of monopolies void.[21] However, while the *Statute of Monopolies* reflected the common law's suspicion of monopolies, it recognised nonetheless that monopolies limited in duration have the potential to serve the public interest by providing an incentive to invent. Thus, the *Statute of Monopolies* is a prohibition on the Crown granting monopolies, other than those in respect of inventions.

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20 There are two types of patents in Australia: standard patents and innovation patents. Standard patents confer monopoly protection for a term of 20 years: *Patents Act 1990* (Cth) s 67. Innovation patents, which require a significantly lesser degree of inventiveness, are awarded for a term of 8 years: *Patents Act 1990* (Cth) s 68. The innovation patent is a second-tier patent introduced into Australian law by the *Patents Amendment (Innovation Patents) Act 2000* (Cth). The innovation patent replaced the petty patent and is designed to meet the needs of small and medium enterprises for inexpensive and easily acquired short-term patent protection for modest technological advances or incremental inventions.

21 Section 1 of the *Statute of Monopolies* provides that the central objective of the statute is to encourage free trade and competition by rendering void all monopolies, including those granted under the authority of letters patent. Section 1 provides: 'All monopolies and all commissions, grants, licenses, charters and letters patent heretofore made or granted or hereafter to be made or granted to any person or persons, bodies politic or corporate whatsoever, of or for the sole buying, selling, making, working or using of anything within this realm … shall be utterly void and of no effect.'

How the incorporation by reference of s 6 of the *Statute of Monopolies* in modern Australian patent statutes is to be interpreted was made clear by the High Court of Australia in the *NRDC* decision.[22] In *NRDC*, the Court considered the operation of the *Statute of Monopolies* in relation to the former patents legislation, the *Patents Act 1952* (Cth). There the Court explained that the relevant question to be asked when determining whether an invention is patentable subject matter is: 'Is this a proper subject of letters patent according to the principles which have been developed for the application of s 6 of the *Statute of Monopolies*?'[23] What the Court meant is that the scope of patentable subject matter is to be determined by reference to what has been deemed to be patentable by the courts over time. Therefore, any understanding and consideration of the concept and how it is to be applied to new forms of invention requires an analysis of that body of case law.

From its analysis of that case law, the Court embraced the view that 'manner of manufacture' is a broad, flexible and dynamic concept, the meaning of which has evolved, and will continue to evolve, over time.[24] It said that the principles are to be applied flexibly, as technological advancement is 'excitingly unpredictable' and that it is not appropriate to attempt to reduce the patentable subject matter test to 'an exact verbal formula':[25]

> The purpose of s 6, it must be remembered, was to allow the use of the prerogative to encourage national development in a field which already, in 1623, was seen to be excitingly unpredictable. To attempt to place upon the idea the fetters of an exact verbal formula could never have been sound. It would be unsound to the point of folly to attempt to do so now, when science has made such advances that the concrete applications of the notion which

22 *Grant* (2006) 154 FCR 62, 64 [7]. Barwick CJ in *Joos v Commissioner of Patents* (1972) 126 CLR 611, 616 described the case as a 'watershed'. According to the Full Court of the Federal Court in *CCOM v Jiejing* (1994) 122 ALR 417, 443: 'the decision changed the direction of the case law not only in Australia but also in the United Kingdom.' See also, Sam Ricketson, 'Business Method Patents: A Matter of Convenience? (The Stephen Stewart Memorial Lecture 2002)' (2003) 2 *Intellectual Property Quarterly* 97, 107. According to Andrew Christie, *NRDC* should be labelled as a 'bombshell' rather than a watershed because it has completely annihilated the test for inherent patentability and that 'there is no meaningful inherent patentability requirement operating under Australian law': 'Some Observations on the Requirement of Inherent Patentability in the Context of Business Method Patents' (2000) 40 *Intellectual Property Forum* 16, 20.

23 *NRDC* (1959) 102 CLR 252, 269.

24 Ibid 270 (the court noted that in *Maeder v Busch* (1938) 59 CLR 684, 706, Dixon J said that a widening conception of the notion of patentable subject matter has been a characteristic of the growth of patent law). Similarly, the High Court in *Lockwood Security Products Pty Ltd v Doric Products Pty Ltd* (2007) 235 CLR 173, 201 [66], by way of obiter dicta, recognised that since the growth of patent law demands it, 'any attempt to fetter the exact meaning of "a manner of new manufacture" could never be sound' citing *Maeder v Busch* (1938) 59 CLR 684, 706 (Dixon J) and *NRDC* (1959) 102 CLR 252, 271.

25 *NRDC* (1959) 102 CLR 252, 271 (cited and followed in *Grant* (2006) 154 FCR 62, 64–5 [7]-[8]).

> were familiar in 1623 can be seen to provide only the more obvious, not to say the more primitive, illustrations of the broad sweep of the concept.[26]

Instead, the Court said that the expression is a general title to be interpreted in accordance with the purpose of the *Statute of Monopolies* and in line with common law principles established for the application of that purpose:

> The inquiry which the definition demands is an inquiry into the scope of the permissible subject matter of letters patent and grants of privilege protected by the section. It is an inquiry not into the meaning of a word so much as into the breadth of the concept which the law has developed by its consideration of the text and purpose of the *Statute of Monopolies*. One may remark that although the Statute spoke of the inventor it nowhere spoke of the invention; all that is nowadays understood by the latter word as used in patent law it comprehended in 'new manufactures'. The word 'manufacture' finds a place in the present Act, not as a word intended to reduce a question of patentability to a question of verbal interpretation, but simply as the general title found in the *Statute of Monopolies* for the whole category under which all grants of patents which may be made in accordance with the developed principles of patent law are to be subsumed.[27]

In explaining the scope of manner of manufacture, the Court said that to be patentable, an invention must be an artificially created state of affairs that is of economic significance, meaning that its value to the country must be in the field of economic endeavour, and that it must have 'an industrial or commercial or trading character'.[28] Further, it said the invention must offer some advantage that is material in the sense that it must be part of the 'useful arts' rather than the 'fine arts':[29]

> The point is that a process … must be one that offers some advantage which is material, in the sense that the process belongs to a useful art as distinct from a fine art.[30]

The Court identified several categories of excluded matter to aid in distinguishing patentable from non-patentable subject matter. It made clear that patents protect new inventions and not discoveries, be they discoveries of the laws of nature,

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26 *NRDC* (1959) 102 CLR 252, 271.

27 Ibid 269.

28 Ibid 275–7.

29 For a view on the prohibition on patenting the fine arts see: Ben McEniery, '"Storyline Patents": Are Plots Patentable?' (2009) 33 *Melbourne University Law Review* 291.

30 *NRDC* (1959) 102 CLR 252, 275 citing *Re Virginia-Carolina Chemical Corporation's Application* (1958) RPC 35, 36.

natural phenomena, or abstract ideas.[31] In regard to the distinction between unpatentable discoveries and patentable inventions the Court said this:

> There may indeed be a discovery without invention — either because the discovery is of some piece of abstract information without any suggestion of a practical application of it to a useful end, or because its application lies outside the realm of 'manufacture'.[32]

It has been argued in the literature that the *NRDC* Court's broad and expansive statement of principle precludes any suggestion that the patentable subject matter test might involve a physicality requirement,[33] and that accordingly the Federal Court's finding in *Grant* is inconsistent with the High Court precedent it was bound to follow.[34] The argument then is that the dividing line between what is a patentable invention and what is a non-patentable abstract idea is not physicality.

As the Court in *NRDC* intended to consolidate rather than rewrite the law,[35] a comprehensive exploration of relevant principle requires that regard be had not to *NRDC* alone, but also to the cases that preceded it. Addressing these earlier cases is the objective of this article. As stated above, this article examines the cases that preceded *NRDC* with a view to identifying statements of principle that shed light on the issue of whether Australian patent law contains a physicality requirement. That analysis of the case law follows in the next section.

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31 *NRDC* (1959) 102 CLR 252, 262–4. In this regard, Australian law seems to replicate the United States position. Examples of laws of nature include Sir Isaac Newton's observations on the law of gravity and Albert Einstein's general theory of relativity, while abstract ideas include novel and useful mathematical formulae: *Diamond v Chakrabarty*, 447 US 303, 309 (1980); *Diamond v Diehr*, 450 US 175, 185 (1981). By way of a recent Australian example, in *Re Milton Edgar Anderson* (2008) 78 IPR 449 the Deputy Commissioner of Patents upheld the view that alleged inventions that relate to a mere scientific theory or discovery of the laws of nature without a specific practical and useful application are not a 'manner of manufacture'. The application in question relates to 'the new science of subtronics' and 'a new law of electric induction'. The applicant indicated that the inventive concept is the 'revelation and utilisation of an antimatter voltage force that stems from the discovery of electrosubtronic fields and culminated in the new science of subtronics'. The Deputy Commissioner held that the invention claimed is a scientific theory or discovery of the laws of science without a specific practical and useful application and that, if a specific application were claimed, such an invention is not fully described.

32 *NRDC* (1959) 102 CLR 252, 264. Laws of nature and physical phenomena are not patentable because the discovery of a law of nature, a principle of physical science, or a natural phenomenon is not an invention made by man. Thus, a new mineral discovered in the Earth or a new plant found in the wild is not patentable subject matter. Also excluded are methods of calculation, theoretical schemes (including business schemes and abstract plans): *Grant* (2006) 154 FCR 62, 66 [16].

33 McEniery, 'Patents for Intangible Inventions in Australia (Part 1)', above n 11.

34 McEniery, 'Patents for Intangible Inventions in Australia (Part 2)', above n 11.

35 *NRDC* (1959) 102 CLR 252, 269.

III Pre-*NRDC* Cases Discussing 'Manner of Manufacture'

A *Boulton and Watt v Bull*

Judicial consideration of inherent patentability begins with the 1795 decision of *Boulton and Watt v Bull*,[36] the first substantive English law decision to consider what an invention is and what the limits of the scope of patentable subject matter are.[37] Chief Justice Eyre noted that the law at the time did not contain guidance to inform this issue.

> Though we have had many cases upon patents yet I think we are here upon ground which is yet untrodden, at least was untrodden till this cause was instituted, and till the discussion were entered into which we have heard at the bar, and now from the court. Patent rights are no where that I can find accurately discussed in our books.[38]

The case involved a challenge to a patent held by James Watt, which broadly claimed a method of reducing the consumption of steam, and consequently, fuel in steam engines (then called fire-engines).[39] The invention was an improvement on existing steam engine technology. Watt's improvement was to have the condenser in a separate vessel from the steam cylinder. The method was described in the specification as the application of certain principles of nature in way to achieve its purpose. The method involved keeping the engine cylinder hot by insulating it, and by providing a separate vessel, which was kept cool, and within which the steam was to be condensed. This new method avoided the heat loss suffered when the steam was condensed in the cylinder itself.[40]

The Court construed the issue to be resolved as being whether the alleged invention is a patentable process or merely an unpatentable 'principle'. If the alleged invention were nothing more than a principle, the patent would be invalid for lack of patentable subject matter. This was a contentious question as the patentability of processes, as opposed to new machines or chemical substances, had not previously been considered and upheld in a court of law. The judges of the Court of Common Pleas who heard the case were divided equally 2–2 on this point. Chief Justice Eyre along with Rooke J held the patent to be valid, while Heath and Buller JJ held it to be invalid.

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36 (1795) 126 ER 651 (Eyre CJ, Buller, Heath, Rooke JJ).

37 Prior to *Boulton and Watt v Bull*, questions as to patentable subject matter had arisen in two cases that concerned additions to known machinery, but did not expressly consider whether an invention must have a physical aspect: *Morris v Bramsom* (1776) G 311 (NP); *R v Arkwright* (1785) 1 Web Pat Cas 64 (KB).

38 *Boulton and Watt v Bull* (1795) 126 ER 651, 665 (Eyre CJ).

39 Ibid 667 (Eyre CJ).

40 Ibid 668.

While the judges all appeared to agree that there can be no patent for a mere principle, they differed as to how this rule was to be applied. Chief Justice Eyre understood a 'principle' to be an 'abstract notion',[41] as distinct from a 'practical manner of doing',[42] while for Rooke and Buller JJ, it was an elementary truth of the arts and sciences.[43] Heath J was alone in taking the view that the prohibition on patenting 'principles' extends to preclude patenting methods of production and even patents on the application of a principle.[44]

On the physicality front, the involvement of some physical substance was for Heath and Buller JJ the basis for determining whether the invention is an abstract principle or patentable subject matter. According to Heath J, the term 'manufacture' is reducible to two classes: vendible machines or (chemical) substances,[45] both of which are objects of definite physical form. For Heath J, unless the method resulted in a vendible machine or substance, a patent could not be supported, and if it did so result, the patent would be for the vendible machine or substance and not the method itself.[46] By way of example, his Honour regarded 'patents for chemical processes' as being in truth 'for a vendible substance'.[47] In a similar fashion, but excluding the requirement for vendibility, Buller J agreed, opining that the scope of patent eligibility extends only as far as inventions embodied in mechanical and chemical forms.[48] Both Heath and Buller JJ, whose views would not accommodate the patentability of processes that make use of an existing engine, found the patent to be invalid.[49]

In contrast, Eyre CJ considered that the expression 'any manner of new manufacture' bore a much wider meaning. The Chief Justice held that it would apply to things made, the practice of making (thereby endorsing the patentability of processes), and principles reduced to practice in a new manner (thereby endorsing the patentability of non-physical processes).[50]

> It was admitted in the argument at the Bar, that the word manufacture in the statute was of extensive signification, that it applied not only to things made, but to the practice of making, to principles carried into practice in a new manner, to new results of principles carried into practice. Let us pursue

41 Ibid 667 (Eyre CJ).

42 Ibid.

43 Ibid 659 (Rooke J), 662 (Buller J).

44 Ibid 661 (Heath J).

45 Ibid 660–1.

46 Ibid 661.

47 Ibid.

48 Ibid 662–3.

49 Ibid 660–1 (Health J), 664–5 (Buller J).

50 Ibid 666. See also ibid 667, at which Eyre CJ regarded the view that methods of production were unpatentable as contradicted by the evidence in the patents granted since 1623, 'three-fourths' of which were likely to have been for methods of operating and manufacture 'producing no new substances and employing no new machinery.'.

> this admission. Under things made, we may class, in the first place, new compositions of things, such as manufactures in the most ordinary sense of the word; secondly, all mechanical inventions, whether made to produce old or new effects, for a new piece of mechanism is certainly a thing made. Under the practice of making we may class all new artificial manners of operating with the hand, or with instruments in common use, new processes in any art producing effects useful to the public.[51]

Chief Justice Eyre, unlike Heath J, noted that a patent for a method involving no new 'mechanism' and producing no new result would necessarily be for the method itself, that is, for the 'method detached from all physical existence whatever'.[52] He endorsed the view that abstract principles are not patentable and drew a connection between patentable subject matter and physical or corporeal objects or substances:

> Undoubtedly, there can be no patent for a mere principle, but for a principle so far embodied and connected with corporeal substances as to be in a condition to act, and to produce effects in any art, trade, mystery, or manual occupation, I think there may be a patent. … It is not that the patentee has conceived an abstract notion that the consumption of steam in fire-engines may be lessened but he has discovered a practical manner of doing it; and for that practical manner of doing it he has taken this patent. Surely this is a very different thing from taking a patent for a principle; it is not for a principle, but for a process.[53]

Although the focus of his Honour's judgment is upon mechanical and chemical devices and methods, there is nothing to indicate that he considered the concept to be limited to those objects. Indeed, his Honour's explanation of patentable processes ('the practice of making') was so broad as to include 'any art producing effects useful to the public'.[54] The extent of the Chief Justice's reasoning in this regard is that processes involving principles embodied in physical or corporeal objects or substances are patentable subject matter, rather than abstract ideas. This however, does not mean his Honour contemplated that patent eligibility was so limited. There is nothing in his reasoning that indicates that non-physical processes are necessarily abstract ideas or principles, or that non-physical processes are for any other reason excluded from patentability. At no stage did his Honour attempt to explain exhaustively what an abstract idea or principle is, other than to say that reduction to practice is what distinguishes an abstract idea or principle from a patentable process.[55]

Accordingly, his Honour's view cannot be interpreted as favouring a physicality requirement. In fact, there is nothing to suggest that his Honour contemplated the exclusion of non-physical inventions from patentability. Instead, both the Chief

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51 *Boulton and Watt v Bull* (1795) 126 ER 651, 666.

52 Ibid 667.

53 Ibid.

54 Ibid 666.

55 Ibid 667.

Justice and Rooke J indicated that patent eligibility turns on a principle being reduced to a specific practical application capable of producing effects that are of benefit to the public.[56] This is a position, which is as true today as it was then, that leaves open the possibility that non-physical inventions have being recognised as being patent eligible since the earliest judicial consideration of the 'manner of new manufacture' standard.[57]

Justice Rooke saw no difficulty with process patents or patents to improvements on existing technologies.[58] By focusing on the mechanical nature of the improvement, he allowed the patent, having determined that the invention claimed is more than a mere principle. Rather, Rooke J considered the claimed invention to be a principle reduced to a practical application.[59] His Honour said nothing to indicate that producing a physical effect or causing a physical transformation of matter is what distinguishes the abstract from the non-abstract.

The same James Watt patent considered in *Boulton and Watt v Bull* was re-litigated four years later in an action on the case in *Hornblower v Boulton*.[60] There the Court unanimously found in favour of the patentee and upheld the patent and confirmed the reasons and decision of Eyre CJ.

In the words of Kenyon CJ, the Court rejected the principal objection that the patent claimed is a patent for a 'philosophical principle' only.[61] Kenyon CJ understood 'manufacture' as meaning 'something made by the hands of man.'[62] Grose J agreed, finding that 'Mr. Watt had invented a method of lessening the consumption of steam and fuel in [steam] engines', and this was 'not a patent for a mere principle, but for the working and making of a new manufacture within the words and meaning of the statute.'[63]

Despite the finding in *Hornblower v Boulton*, it is widely accepted that it was not until 1842 that it was finally settled in *Crane v Price*,[64] that the term 'manufacture'

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56 Ibid 659–60 (Rooke J), 668 (Eyre CJ).

57 This view is supported by Justine Pila, 'Inherent Patentability in Anglo-Australian Law: A History' (2003) 14 *Australian Intellectual Property Journal* 109, 116.

58 *Boulton and Watt v Bull* (1795) 126 ER 651, 659.

59 Ibid 659–60.

60 (1799) 8 TR 95; 101 ER 1285.

61 *Hornblower v Boulton* (1799) 101 ER 1285, 1288 (Kenyon LCJ).

62 Ibid (Kenyon LCJ) ('But having now heard everything that can be said on the subject, I have no doubt in saying that this is a patent for a manufacture, which I understand to be something made by the hands of man.').

63 *Hornblower v Boulton* (1799) 101 ER 1285, 1290–1 (Grose J). Watt's steam engine patent was extended for 25 years by an Act of Parliament in 1775: 15 Geo III c 61: An Act for vesting in James Watt, engineer, his executors, administrators, and assigns, the sole use and property of certain steam engines, commonly called fire engines, of his invention, described in the said Act throughout His Majesty's dominions, for a limited time.

64 (1842) 4 Man & G 580; 134 ER 239.

used in the *Statute of Monopolies* is used in a dual sense, which comprehends both a process and a product.

B *The King v Wheeler*

The distinction between patentable manufactures and unpatentable 'principles' articulated in *Boulton and Watt v Bull* and *Hornblower v Boulton* was confirmed in the nineteenth century in *The King v Wheeler*.[65] The patent considered in *The King v Wheeler* concerned a new method of drying and preparing malt. It was controversial because no new machine was involved. The patent in question was declared void on the ground that the specification did not adequately describe the claimed invention.[66]

In the course of giving judgment for the Court, Abbott CJ described the concept of 'manufactures' in the following terms.

> Now the word 'manufactures' has been generally understood to denote either a thing made, which is useful for its own sake, and vendible as such, as a medicine, a stove, a telescope, and many others, or to mean an engine or instrument, or some part of an engine or instrument, to be employed, either in the making of some previously known article, or in some other useful purpose, as a stocking frame, or a steam engine for raising water for mines. Or it may perhaps extend also to a new process to be carried on by known implements, or elements, acting upon known substances, and ultimately producing some other known substance, but producing it in a cheaper or more expeditious manner, or of a better and more useful kind. But no merely philosophical or abstract principle can answer to the word 'manufactures'. Something of a corporeal and substantial nature, something that can be made by man from the matters subjected to his art and skill, or at the least some new mode of employing practically his art and skill, is requisite to satisfy this word.[67]

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65 (1819) 2 B & Ald 345; 106 ER 392. For further nineteenth century consideration of the distinction between patentable inventions and abstract 'principles', see *Household Iron Co v Neilson* (1843) 9 Cl & Fin 78; 8 ER 616, where the House of Lords confirmed the approach taken by Alderson B in *Jupe v Pratt* (1837) 1 Web Pat Cas 145 that all abstract principles may be patentable, subject to their having been directed to a practical application (which was described as being having been 'turned to account' through 'direction to the actual business of human life'). The House of Lords drew a distinction between an abstract principle and the same principle when connected with some 'special purpose or practical operation', which was capable of supporting a patent. Only when an abstract principle had been 'clothed with the language of practical application' could it be regarded as 'an invention, in the patent law sense of the term'.

66 *The King v Wheeler* (1819) 2 B & Ald 345 351–2.

67 *The King v Wheeler* (1819) 106 ER 392, 394–5.

From this statement it is clear that his Honour considered new physical objects and physically transformative processes as the basis of what has been 'generally understood' to constitute patentable subject matter. However, as with Eyre CJ in *Boulton and Watt v Bull*, it cannot be said that he saw the involvement of a physical substance as a prerequisite to patentability.

In this respect, his Honour considered the distinction between patentable subject matter and an unpatentable 'philosophical or abstract principle' as involving something broader than a physicality requirement. In the quote above, his Honour gave three distinct examples of patentable subject matter, namely, '[s]omething of a corporeal and substantial nature', 'something that can be made by man from the matters subjected to his art and skill', and 'or at the least of some new mode of employing practically his art and skill'.[68] By his Honour's use of the conjunction 'or' it is clear that these three examples are alternatives, rather than an aggregate. It is the inclusion of the last of these examples, which indicates that his Honour considered that the concept of manufacture might extend beyond things of a 'corporeal and substantial nature' such as processes devoid of physical elements.

C *Cooper's Application*

Re Cooper's Application for a Patent,[69] decided in 1901, involved a patent application for an improved form of newspaper featuring a blank space along which the page could be folded to avoid the trouble of reading over the folded part of the paper.[70]

In allowing an appeal from the decision of the Comptroller-General below, the Attorney-General Sir Robert Finlay held the invention to be patentable subject matter because it involves an 'invention with reference to a manufacture' that results in 'a material product of some substantial character'.[71] In reaching his conclusion, the Attorney-General approved the Comptroller's direction that:

> A Patent may be properly refused in any case in which no material product of a substantial character is realised or effected by the alleged invention, or in which the only material product is a printed sheet, or its equivalent, and the only alleged invention an arrangement of words, or the like, upon such sheet.[72]

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68 Ibid.

69 (1901) 19 RPC 53 ('*Cooper's Application'*).

70 Ibid 54.

71 Ibid.

72 Ibid. For a statement as to the correctness of the Attorney-General's quotation see *Re an Application for a Patent by Fishburn* ('*Fishburn's Application'*) (1938) 57 RPC 245, 246–7 (which involved a patent being allowed for an invention that consisted of arranging information on each end of a cinema ticket so that it could be torn in half).

In response to this direction, he distinguished a manufacture resulting in a material product from what might be described today as an unpatentable abstract business idea:

> You cannot have a Patent for a mere scheme or plan — a plan for becoming rich; a plan for the better Government of a State; a plan for the efficient conduct of business. The subject with reference to which you must apply for a Patent must be one which results in a material product of some substantial character. The specification must show how some such material product is to be realised or effected by the alleged invention.[73]

He then said that a patent might be properly refused if:

> the case is one in which the only material product is a printed sheet, or its equivalent, and the only alleged invention an arrangement of words or the like upon such sheet.[74]

However, he held that the application before him was of a different kind, being more than just a literary arrangement of words on a page.

> The present Applicant in no way proposes to arrange printed matter for its more convenient use from a literary point of view. What he proposes is a particular way of manufacturing a newspaper; and the alleged utility of his supposed invention is purely mechanical. It in no way is analogous to the arrangement of an index, or the arrangement of any other production of a literary kind, which may enable the reader more readily to appreciate the sense of the author.[75]

Thus, he focussed on the fact that 'the alleged utility of [the] supposed invention is purely mechanical'.[76] He described the invention as a new type of newspaper, which is clearly a physical article of manufacture and an artificial product.[77] The Attorney-General pointed out that he did not see any difference between this new form of newspaper and 'a proposal for so binding a book that it opens comfortably and conveniently for the reader' so as to make it 'physically more convenient for use'.[78]

The Attorney-General's judgment contains three statements of legal principle. The first is a general exclusion of abstract plans and schemes from patentability. The second is that excluded from patentability are processes not involving something

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73 *Cooper's Application* (1901) 19 RPC 53, 54.
74 Ibid.
75 Ibid 54–5.
76 Ibid 54.
77 Ibid 55.
78 Ibid.

'which results in a material product of some substantial character'.[79] The third is that an alleged invention will be patentable if it is something of a mechanical nature.

Given that the word 'material' comes from the Latin 'materialis', adjective of the Latin 'materia', meaning matter, it could be that by his reference to the need for a 'material product', the Attorney-General was in favour of a physicality requirement. This view is supported by Pila, who contends that Attorney-General saw the concept of 'manufacture' as being something that requires 'the production of a physical artificial object.'[80] The alternative is that 'a material product of some substantial character' merely indicates that something other than an abstract principle is required. Given the ambiguity that exists, it cannot be said one way of the other whether the Attorney-General was in favour of a physicality requirement.

D *Rogers v The Commissioner of Patents*

Rogers v The Commissioner of Patents,[81] is an example of the tensions that exist between narrow conceptions regarding the patentability of methods and the emergence of contemporary notions of broad subject matter. The case involved a method of burning timber by causing a self-feeding slow fire to act continuously against the side of a tree.

The High Court by majority denied the patent, seemingly on the basis that it considered the invention to be trivial. Chief Justice Griffth was of the view that the patent ought to be denied because the method claimed is merely 'a direction how best to use materials in everyday use to achieve an everyday object'.[82] Justice O'Connor objected to the patent on the basis that he considered that it produced nothing new. In his view, the result of the process is that 'no machine is made—nothing is invented, nothing is produced'[83] and that is absurd to describe an improved method of building a log fire as a patentable invention.[84] Justice

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79 Ibid 54.

80 Pila, above n 57, 135. According to Pila the view expressed by the Attorney-General in *Cooper's Application* was consistently confirmed in subsequent cases heard prior to 1959. Pila also cited two early cases which effectively pre-empted modern decisions which found that there is no business method exception to patentability, namely: *Fishburn's Application* (1938) 57 RPC 245, 248 (finding that whilst a 'mere scheme or plan' is inherently unpatentable, an alleged invention does not become such a scheme or plan merely because the mechanical purpose it serves is a purpose that has useful results in the carrying on of a branch of business); and *Re an Application for a Patent by Cobianchi* (*Cobianchi UK*) (1953) 70 RPC 199, 200 (finding a collocation of playing cards to be more than a mere 'idea or plan' by virtue of its possession of 'something more than the sum of its individual parts.').

81 (1910) 10 CLR 701 (Griffith CJ and O'Connor J, and Isaacs J dissenting).

82 Ibid 709 (Griffiths CJ).

83 Ibid 710 (O'Connor J).

84 Ibid 712 (O'Connor J).

O'Connor was seemingly of the view that the law requires that an invention disclose a physical aspect to be regarded as patentable.[85]

The decision, however, is of interest because it contains the strong dissent of Isaacs J, who rejected the majority's conception of patentable subject matter and took the view that the ingenuity of the method claimed in conjunction with its economic and practical significance made it patentable subject matter.[86] In doing so, his Honour dispelled any notion that an invention might not be deserving of a patent on subject matter grounds, without having recourse to its novelty, on the suggestion that what is claimed is an 'attempt to claim an every day practice':[87]

> Why is this contrivance not of the nature of an invention? Why is it to be treated as if it were an absurd attempt to claim an every day practice, say of lighting the kitchen fire, or striking a match? … It involves an idea, and a modus operandi … It is objected that to grant Rogers a patent for this would prevent a land owner from adopting the expedient. If this is an objection a great proportion of the patents in existence should never have been granted … The mere fact of simplicity, and that the expedient looks obvious now to those who have become acquainted with it for the first time, does not destroy its inventive character.[88]

It would appear that his Honour was aware of the significance of the majority's narrow conception of the patentable subject matter standard when he said, 'the principle upon which this case is decided appears to me to affect not merely the present and future applications, but also the possible validity of many existing patents'.[89]

His Honour's dissent arguably brought to light new thinking about the patent system and its ability to reach into what might be thought to be everyday activities that would later be adopted by the courts, namely that the focus of the patentable subject matter inquiry is on new and ingenious subject matter, rather than physically-observable results.[90]

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85 Ibid ('The proposition that a patent may be granted for a new method of producing an old result in a more efficient and more economical manner must therefore be qualified by the condition that the new method must either produce some vendible article or must be carried out by some mechanical contrivance or some substance the use or adaptation of which for the purpose of working the new method is part of the invention.').

86 *Rogers v The Commissioner of Patents* (1910) 10 CLR 701, 718 (Isaacs J) (dissent).

87 Ibid 715–6.

88 Ibid.

89 Ibid.

90 See also, *Commissioner of Patents v Lee* (1913) 16 CLR 138 (Isaacs J).

E *Re C & W's Application*

Re C & W's Application[91] was the first case in which a medical procedure patent was considered in England. It concerned a method of extracting lead from people suffering lead poisoning.

The Solicitor-General, Sir Stanley Buckmaster, held that the method was ineligible for patent protection because he believed that it did not involve the manufacture or sale of a 'commercial product' or something of 'commercial value'.[92]

> A manner of new manufacture may be a thing newly made, or a substance which, if made before, is improved in its manufacture; or, quite apart from that, it may be a machine or a process that can be used in making something that is, or may be, of commercial value.[93]

Rather than focussing on a physicality requirement, the Solicitor-General was concerned only that an invention be 'in some way associated with commerce and trade'.[94] It is arguable that by his use of the word 'may', he viewed patentable subject matter as being of broad compass. While the words, 'something newly made' and 'substance' indicate a reference to physical objects, the use of the word 'may' indicates that the Solicitor-General merely gave examples of patentable subject matter, rather than a hard-and-fast rule.

The Solicitor-General did not consider that policy arguments against the patenting of methods of treating the human body ought to affect the decision in a case such as this:

> It has been urged, and I think quite rightly, that the question of humanity ought not to affect the decision in such a case as this. I agree. Of course, it is well known that the medical profession do all in their power to discourage members of their body from obtaining protection for any discovery that has for its object the alleviation of human suffering, and it is impossible to speak too highly of such conduct, but it cannot affect my judgment in arriving at a conclusion upon the terms of the Section of the Act of Parliament, and I have altogether excluded such considerations from my mind.[95]

However, in the Solicitor-General's opinion, the fact that a human being could be considered to be something that could be improved by the method did not make it one 'of manufacture or of trade', even though a human may be a better working

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91 (1914) 31 RPC 235.

92 Ibid 235–6.

93 Ibid.

94 Ibid 235.

95 Ibid 236. See also *A & H's Application* (1927) 44 RPC 298, 298 (dealing with the patentability of a contraceptive device) ('I am a Court of Law, and not a Court of Morality').

organism when a poisonous quantity of lead is extracted.[96] Although, he thought that if the process were applied 'for the purpose of removing lead from animals in order to make them better marketable products, it might be that different considerations would apply'.[97] Arguably, the Solicitor-General here confused the vendibility of the subject of the process with the vendibility of the process itself.

In any event, regardless of the propriety of the exception to patent eligibility of methods of medical treatment of humans, the Solicitor-General's opinion does seem to support the absence of a physicality requirement in favour of an association with 'commerce and trade'.

F *Maeder v Busch*

In *Maeder v Busch*,[98] the High Court of Australia considered a patent for a cosmetic method of treating the human body to cause a permanent waving of human hair. The method was rejected for want of novelty by reason of prior common knowledge and prior public use, in accordance with the trial judge's findings.[99] None of the judges hearing the case considered that the issue of whether the subject matter of the invention was patentable was one that needed to be decided.[100]

Despite this, the decision contains obiter dicta of Dixon J on the manner of manufacture issue. His Honour made known his opinion that the result of a patented method must be the production, treatment of, or effect upon, some tangible thing:

> Applications of old things to a new use, accompanied by the exercise of inventive power, are often patentable though there be no production of a new thing. But in every case the invention must refer to and be applicable to a tangible thing. A disembodied idea is not patentable.[101]

In applying the law to the patent at hand, Dixon J put the question, '[c]an the discovery or improvisation of a mere process or method of treating any corporeal

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96 *Re C & W's Application* (1914) 31 RPC 235, 236. The Solicitor-General's reasoning in this regard is now seen as being too narrow after the High Court's *NRDC* decision: *Anaesthetic Supplies Pty Limited v Rescare Limited* (1994) 122 ALR 141; *Bristol-Myers Squibb Co v F H Faulding & Co Ltd* 97 FCR 524, 563 [114], 567 [130]–[131] (Finkelstein J); cf *Schering AG's Application* [1971] RPC 337 (in which Graham and Whitford JJ expressed as obiter an opinion that the decision in *Re C & W's Application* was correct, but held that a contraceptive process could not be described as a treatment of disease and thus the claim fell outside the prohibition on patenting methods of medical treatment of humans).

97 *Re C & W's Application* (1914) 31 RPC 235, 236.

98 (1938) 59 CLR 684 (Latham CJ, Dixon, Evatt, McTiernan JJ).

99 Ibid 699 (Latham CJ), 699–700 (Dixon J), 707 (Evatt J), 708 (McTiernan J).

100 Ibid 699 (Latham CJ), 700 (Dixon J), 707 (Evatt J), 708 (McTiernan J).

101 Ibid 705 citing Lewis Edmunds and Herbert Bentwich, *Copyright in Designs* (2nd ed, 1908) 20, 21 (citations omitted).

part of the human being afford subject matter for a patent?'[102] While his Honour left this question unanswered, he did explain the arguments in favour of distinguishing treatment of the human body for an increase in 'pride or appearance' say 'for use in ordinary trade or business such as that of hairdressing, manicure, pedicure', and surgical methods to improve 'physical welfare'. He hinted that the first would be patentable subject matter as they reflect a manual art or craft even though no 'substance or thing forming a possible subject of commerce or a contribution to the productive arts is to be brought into existence by means of or with the aid of the process'. He ruled, following *Re C & W's Application*, that the second would not be patentable as they were thought to be essentially non-economic.[103]

G *Fishburn's Application*

Re an Application for a Patent by Fishburn[104] is an early case that pre-empted the modern decisions refuting the business method exception to patentability.[105]

The case concerned a patent entitled, 'Improvements related to tickets and the like.' It involved the design of a printed ticket in such a way as to be capable of being divided into at least two portions, either transversely or longitudinally, such that each portion would bear all the essential printed information of the ticket including an identifying serial number. This design would allow a doorman or a machine to tear the ticket in half and return one half to the ticket holder and retain the other, leaving both parties with ticket stubs that contain all the essential information commonly printed on tickets.

In reaching the conclusion that the ticket design is patentable subject matter, Morton J held, in respect of printed matter, that Sir Robert Finlay's judgment in *Cooper's Application*:

> should not be read as a direction that a patent should be refused in every case in which the only material product is a printed sheet, ticket, coupon, or its equivalent and the only alleged invention is an arrangement of words or the like upon that sheet.[106]

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102 *Maeder v Bush* (1938) 59 CLR 684, 705.

103 Ibid 706–7 citing *Re C & W's Application* (1914) 31 RPC 235.

104 (1938) 57 RPC 245 (Morton J) ('*Fishburn's Application*').

105 The business method exception to patentability was rejected in the United States in *State Street Bank & Trust Co v Signature Financial Group, Inc* 149 F3d 1368, 1375 (Fed Cir, 1998) aff'd in *AT&T Corp v Excel Communications, Inc* 172 F3d 1352 (Fed Cir, 1999) and *In re Bilski*, 545 F3d 943, 960 (Fed Cir, 2008) (*en banc*). The *State Street* decision was followed and its 'useful, concrete and tangible result' test was endorsed by the Federal Court of Australia in *Welcome Real-Time SA v Catuity* (2001) 113 FCR 110, 137 [125]–[126] (Heerey J) and *Grant v Commissioner of Patents* (2006) 154 FCR 62, 69 [26].

106 *Fishburn's Application* (1938) 57 RPC 245, 246.

In his Honour's opinion, the decisive factor was that the alleged invention served a 'mechanical purpose' and it did not lose this character merely because it had utility in carrying on a business.[107] He indicated that while a mere scheme or plan is inherently unpatentable, an alleged invention is not a mere scheme or plan merely because the mechanical purpose it serves has useful results when used in connection with a business.[108]

Given that Morton J relied heavily on the decision in *Cooper's Application* and did not specifically mention physicality as an issue, no firm conclusions can be drawn from this opinion as to his Honour's views on the issue.

H *Re GEC's Application*

However, his Honour's views were quite apparent in *Re GEC's Application*.[109] In this case, Morton J upheld an opposition to a patent for a method of extinguishing fires using a known chemical substance because he did not consider that its application would result in the production, improvement, restoration or preservation of some vendible product.

Morton J sought to create a convenient formula for describing the 'manner of manufacture' concept. While not claiming to lay down a hard and fast rule applicable to all cases, his Honour made the oft-cited proposition, known now as Morton J's rule. Morton J's rule is that a method or process will be a manufacture if it:

> (a) results in the production of some vendible product; or (b) improves or restores to its former condition a vendible product; or (c) has the effect of preserving from deterioration some vendible product to which it is applied.[110]

In regard to a physicality requirement, as his Honour did not claim to lay down a hard and fast rule, it could be said he was giving only an indication as to the scope of patent eligible subject matter. While this formulation is a useful starting point, it has been said that if applied literally, it would have a narrowing effect on the law.[111] The narrow focus of Morton J's rule was considered by the High Court of Australia in *NRDC* as having been substantially qualified by the comments made in relation to it by Evershed J in *Re Two Applications for Patents by The Cementation Company, Limited*[112] and in *Re an Application for a Patent by Henry*

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107 Ibid 247–8.
108 Ibid.
109 (1942) 60 RPC 1 (Morton J).
110 Ibid 4.
111 *NRDC* (1959) 102 CLR 252, 276.
112 (1945) 62 RPC 151.

Barnato Rantzen,[113] and by Lloyd-Jacob J in *Re Elton and Leda Chemicals Ltd's Application*.[114]

I *The Cementation Company's Application*

In *Re Two Applications for Patents by The Cementation Company, Limited*,[115] processes for treating a stratum of subterranean soil to prevent subterranean combustion by drilling holes in the ground and injecting certain chemical substances into them were held to be patentable.[116]

In allowing the patent, Evershed J was careful not to confer upon Morton J's rule anything near the narrow construction a literal interpretation of its words would give. He observed that Morton J had not intended to create a form of words applicable in all cases.[117] He also noted that Morton J had not intended to limit the understanding of 'product' that results from a 'manufacture' to its common meaning, but that it should be construed much more broadly. Making reference to the Oxford Dictionary, Evershed J thought that the term 'product' is wide enough to encompass 'that which is produced by any action, operation or work: a production; the result.'[118]

Evershed J also observed that Morton J directed his attention to whether, and to what extent, the manner of manufacture concept extends to processes not resulting in the creation of some new articles or material which did not previously exist; and that the emphasis in Morton J's rule was upon the three activities of production, improvement or restoration, and prevention from deterioration. Evershed J noted that Morton J used the word 'product' in a sense which denoted the subject matter of each of the three forms of activity referred to, rather than placing any emphasis on the literal meaning of the particular words he used.[119]

In keeping with his view that patentable subject matter should be interpreted broadly, Evershed J was careful that the applicant should be given the benefit of the doubt in contentious cases in which the patentability of subject matter is in issue. In allowing the patent, he said, 'it cannot be asserted that [the subject matter of the application] is beyond reasonable doubt not a "product" within the terms'

113 (1946) 64 RPC 63.

114 [1957] RPC 267.

115 (1945) 62 RPC 151 ('*The Cementation Company's Application*').

116 Ibid 152 ('the process consists of a method of so treating "a subterranean formation containing material liable to combustion" so as to prevent the occurrence of such combustion.').

117 *The Cementation Company's Application* (1945) 62 RPC 151, 153. Evershed J, referring to Morton J in *Re GEC's Application*, commented that 'nothing was further from his intention than to lay down a rigid form of words which would govern—in substitution, as it were, for the language of the Act of Parliament—the grant of protection in all cases of methods or processes.'

118 *The Cementation Company's Application* (1945) 62 RPC 151, 153.

119 Ibid 154.

of Morton LJ's rule.[120] Thus, his Honour clearly envisaged a broad compass of patentable subject matter and that the critical test for denying a patent should lie within establishing that the invention is new. While he did not say so directly, or even consider the issue, such a broad view would be consistent with the view that the scope of patentable subject matter is not limited to inventions that produce a physical effect or cause a physical transformation of matter.

J *Re Rantzen's Application*

In *Re an Application for a Patent by Henry Barnato Rantzen*,[121] Evershed J allowed a claim to a method of producing a complex electrical oscillation on the ground that it would not be right to hold that an electrical oscillation is not a vendible product.[122] This is a purely non-physical invention. The only 'thing' affected is electrical energy when transmitted by wire or wirelessly.

His Honour noted the difficulty of considering electricity as a 'product', given its intangibility and lack of 'material content' and that its transmission does not require any 'material media', as the oscillation does not require a movement or vibration of a medium. It only requires the variation in the momentary voltage from a positive to negative charge.[123]

Notwithstanding this difficulty, Evershed J interpreted Morton J's use of the word 'product' as being wide enough to corporate electrical energy, despite its non-material character, because of its analogy in commercial respects with material commodities. Evershed J said that where he spoke of a 'vendible product' the proper emphasis of such an expression lies upon the trading or industrial character,[124] rather than physical or material character, which he regarded as not essential:

> I conclude, therefore, that it would not be right, nor, as I think, in accordance with *Morton,* J's intention, to give to the term 'vendible product' a narrow or rigid construction by placing undue emphasis on the material requirements

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120 Ibid. This is consistent with the view taken by the High Court of Australia in *Commissioner of Patents v Microcell Ltd* (1959) 102 CLR 232, 244–5, in which it decided that the Commissioner ought not refuse an application unless it appears practically certain that a patent granted would be held invalid.

121 (1946) 64 RPC 63 ('*Re Rantzen's Application*').

122 Ibid 67. See also *The Electric Telegraph Co v Brett* (1851) 10 CB 838; 138 ER 331 (a method of giving duplicate electric signals) and *Re Philips Electrical Industries Ltd's Application for a Patent* [1959] RPC 341 (treating visible light as a 'product'). This decision is clearly inconsistent with the majority's opinion in the United States Federal Circuit decision in *In re Nuijten,* 500 F3d 1346 (Fed Cir, 2007). It is, however, arguably consistent with the dissent expressed by Linn J in that case.

123 *Re Rantzen's Application* (1946) 64 RPC 63, 66.

124 Ibid. See also the use of the expression, 'industrial or commercial or trading character' by Lloyd-Jacob J in *Re Lenard's Application* (1954) 71 RPC 190, 192.

> of what may otherwise fairly be regarded as the outcome of a process of manufacture.[125]

His Honour held that the notion of a 'vendible product' is not confined to things that can be passed from one to another upon a transaction of purchase or sale, but rather encompasses anything that might 'fairly be regarded as the outcome of a process of manufacture'.[126] Thus, his Honour said:

> Nor, when regard is had to everyday usage and terminology, can it be said that the notion of electricity as a product which is paid for is, however metaphorical, wholly inappropriate and insensible.[127]

Thus, Evershed J held that the method of producing a complex electrical oscillation is indeed a manufacture, in spite of its non-physical nature.

K *Re An Application for a Patent by Bovingdon*

Re an Application for a Patent by Bovingdon[128] involved a method of fumigating enclosed spaces to control pests by forming a film of insecticide on the walls and other articles located within the space that would cause the destruction of insects and other pests therein.

In a curious decision that is difficult to reconcile with his earlier opinions in *The Cementation Company's Application* and *Re Rantzen's Application*, Evershed J took a narrow literal construction of Morton's rule and determined that the invention at issue needed to fit within one the branches of that rule, being whether the method improves or protects from deterioration some product. His Honour held that this invention did not, and accordingly, found it not be a manner of new manufacture. Evershed J held that such a method did not involve an 'alteration in the structure of the enclosing walls of the space or of the articles within it; so that it may be said, within the phrasing of the well known *GEC case*, that it improves or protects from deterioration … some 'product'.'[129]

In what can only be described as a short, vague and unsatisfactory judgment, his Honour said that this invention may perhaps fairly be said to lie somewhere between *The Cementation Company's Application* on the one hand, and *Re GEC*'s Application on the other, and that 'the inclination is towards the latter rather than the former.'[130]

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125 *Re Rantzen's Application* (1946) 64 RPC 63, 66.
126 Ibid.
127 Ibid 67.
128 (1946) 64 RPC 20 ('*Bovingdon's Application*').
129 Ibid 21.
130 Ibid 22.

It would appear that his Honour sought to distinguish *The Cementation Company's Application* on the basis that the application at issue does not result in any improvement in or alteration of the structure itself. The decisive factor for his Honour appeared to be that no substances were impregnated with the insecticide. Instead, his Honour appears to have thought that if the process had involved the impregnation of the fabric it would have been a manufacture.[131]

Evershed J's careless reasoning in *Bovingdon's Application* was followed in *Re Standard Oil Development Co's Application*[132] and *Re the Dow Chemical Company's Application for a Patent*,[133] unnecessarily confusing the law. It could be inferred that his Honour's reasoning in this case may have been responsible for the mistaken belief that patents were not available for agricultural and horticultural methods.

L *Re Standard Oil Development Co's Application*

In *Re Standard Oil Development Co's Application*,[134] a patent similar to that considered in the *NRDC* decision was sought for a selective herbicide used in the treatment of soil to improve its ability to bear crops. The invention involves applying to land and vegetation a herbicidal composition of stated ingredients and amount (mixed at a stated temperature) to kill the weeds, but leave the vegetables substantially unharmed in order to obtain an improved tract of substantially weed-free land.[135]

Two contentions were put forward to support the application. The first contention was that the method resulted in the production, improvement, or prevention from deterioration, of a vendible product, namely the growing crop. Lloyd-Jacob J, heavily influenced by Morton J's formulation, disposed of this by pointing out that the treatment did not produce the crop; secondly, that while there was an improvement, it was not the crop but the cultivation that was improved, which might ultimately be reflected in the quality and condition of the crop; and thirdly,

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131 Ibid 21–2.

132 (1951) 68 RPC 114.

133 [1956] RPC 247.

134 (1951) 68 RPC 114 (Lloyd-Jacob J).

135 See also *Re Lenard's Application* (1954) 71 RPC 190 (pruning to reduce mortality from disease in clove trees) and *NV Philips' Gloeilampenfabrieken Application* (1954) 71 RPC 192 (a method for producing a new form of poinsettia). Both seem to depend on the view that the process in question was only one for altering the conditions of growth, so that the contemplated end result would not be a result of the process but would be 'the inevitable result of that which is inherent in the plant': (1954) 71 RPC 192, 194. See also *BA's Application* (1915) 32 RPC 348, 348 (the Solicitor General rejected a claim to a 'process of fertilizing the ground "consisting in applying urea nitrate thereto"' on the grounds that it was nothing but a claim to a new use of an old substance'); *Re the Dow Chemical Company's Application for a Patent* [1956] RPC 247; *Re Canterbury Agricultural College's Application* (1958) RPC 85.

that since the only direct effect of the process was to remove weeds it did not directly preserve the crop from deterioration.[136]

The other contention was that the process is a 'manufacture' because it results in a product consisting of 'arable land treated with selective herbicides for the raising of vegetables'. In answering this, his Lordship said that the statutory requirement of a manner of manufacture is understood to be:

> the making of an article or material by physical labour or applied power. Unless and until a product of such a making is identifiable it is unnecessary to consider by what manner of making it comes into existence.[137]

His Lordship rejected the contention, first, because the invention does not result in land being made; and secondly, because the land would remain unimproved as a result of the process.[138] His Lordship did not consider that a process for obtaining weed-free land might be a commercially valuable vendible product.

Accordingly, Lloyd-Jacob J refused the patent, but was criticised by the High Court in *NRDC* for doing so. The High Court in this regard said the following:

> But it seems hardly sufficient to treat a case like this as if it were covered by the reasoning of *Bovingdon's Case* (1946) 64 RPC 20 and to dismiss it by saying that, since the structure of the soil is unaffected by the killing of weeds, the process of converting a weed-infested area into a weed-free area is not within the notion of 'manufacture'. Why is it not as completely within it as the process of converting a combustible subterranean formation into a non-combustible formation, or making a building fire-proof? Once it is conceded that land may be a 'product' within the sense of Morton J.'s 'rule' as now understood, and that accordingly a process for improving it may be a 'manufacture' in the relevant sense of the word — and Lloyd-Jacob J. did not question this — a considerable step seems to have been taken towards establishing that an artificial process for suppressing unwanted forms of growth which impede the profitable use of land may be within the concept.[139]

Re Standard Oil Development Co's Application has been cited as authority for the proposition that an invention must involve a tangible product if it is to be a 'manner of manufacture'.[140] It would, however, appear that this is not a correct reading of the law given the more expansive view of the term 'vendible product' that came

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136 *Re Standard Oil Development Co's Application* (1951) 68 RPC 114, 115.

137 Ibid 115–6.

138 Ibid 116 ('In the present case, the land remains unaltered. Some of the herbs in or upon it are affected', but the land is 'merely the carrier both of crop and herbage and plays no part in the operation by which they are selectively affected.').

139 *NRDC* (1959) 102 CLR 252, 274.

140 Monotti, above n 12, 463; Mark Davidson, Ann Monotti and Leanne Wiseman, *Australian Intellectual Property Law* (2008) 407.

to be endorsed in subsequent cases beginning with *Re Elton and Leda Chemicals Ltd's Application*, and the High Court's criticism of the decision in *NRDC*.

M *Re the Dow Chemical Company's Application for a Patent*

Re the Dow Chemical Company's Application for a Patent,[141] concerned a similar application involving a soil sterilisation method used to prevent the growth of germinative seeds in seed-infected soils.[142] The object of the treatment is to enable crops to be grown in soil. The difference between this method and the method considered in *Re Standard Oil Development Co's Application* is that this method was designed to prevent the growth of germinative seeds, whereas the method considered in *Re Standard Oil Development Co's Application* was designed to kill weeds while they grew.[143] The argument in favour of the patent was that '[i]f you have a bag of soil and treat it in a certain way to sterilize it you get a vendible product' that is clearly a manner of manufacture.[144]

The Superintending Examiner held the method to be unpatentable on the basis that the treatment does not alter the physical structure of the soil, but rather has the effect of rendering harmless any seeds or parasites that had infected the soil. While the soil here is the carrier of the weeds or seeds, it plays no part in the operation of the method. The case was treated as being distinguishable from *The Cementation Company's Application* for the reason that the subterranean formation in that case involves a modified or improved structure, whereas in the present case the soil itself is unchanged. It was instead likened to the applications refused in *Bovingdon's Application* and *Re Standard Oil Development Co's Application*. The Superintending Examiner chose these precedents because in the application in question, 'the soil structure is unchanged'.[145]

> The seedicide is applied to the seed infected soil in the same way as the insecticide is applied to the insect infested buildings in *Bovingdon's Application*, without in any way modifying or altering the soil apart from killing the seeds therein. The present case, to my mind, is closer to *Bovingdon's Application* and *Re Standard Oil Development Coy.'s Application* than it is to *Cementation Coy. Ld.'s Application*.[146]

Thus, he favoured a physicality requirement. This finding is curious given that in the method upheld in *The Cementation Company's Application* the soil structure was also unchanged. This, however, is now largely academic, as the decision in *Re*

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141 [1956] RPC 247.

142 Note that the term used in the judgment is indeed 'seed-infected soils', not seed-infested soils.

143 *Re the Dow Chemical Company's Application for a Patent* [1956] RPC 247, 251.

144 Ibid 248.

145 Ibid 253.

146 Ibid. Note the similarity in the reasoning in *Bovingdon's Application* (1946) 64 RPC 20.

the Dow Chemical Company's Application for a Patent was one of those criticised and not followed by the High Court in *NRDC*.[147]

N *Re Elton and Leda Chemicals Ltd's Application*

This narrow view of manufacture was overturned in *Re Elton and Leda Chemicals Ltd's Application*.[148] This case involved a patent for a method of dispersing fog by introducing a surface-active agent in the form of a smoke or spray into the fog in order to remove or lower the electric charge carried by the surfaces of the droplets, causing them to coalesce and precipitate as rain or drizzle. The utility of the invention is in its application to produce a fog-free atmosphere, say on a runway, or to deliberately induce rainfall.

Here we have an indication that the 'product' referred to in Morton J's rule, when used to denote a process, requires only something in which 'some new and useful effect' may be observed, rather than a physicality requirement. In considering the patent, Lloyd-Jacob J said:

> There has been no question, at any rate since before the year 1800, that the expression 'manner of manufacture' in the Statute of James I must be construed in the sense of including a practice of making as well as the means of making and the product of making. It has thus been appreciated that, although an inventor may use no newly devised mechanism, nor produce a new substance, none the less he may, by providing some new and useful effect, appropriate for himself a patent monopoly in such improved result by covering the mode or manner by means of which his result is secured. Seeing that the promise which he offers is some new and useful effect, there must of necessity be some product whereby the validity of his promise can be tested.[149]

Lloyd-Jacob J thus equated the term 'vendible' with things of commercial value, consistent with his earlier use of the expression, 'industrial or commercial or trading character' in *Re Lenard's Application*.[150] In this regard he said the following:

> Applied with a little latitude it might afford some assistance in the present case, for a fog-free atmosphere or a deliberately induced rainfall could be a factor in the site value of the land whereon the Applicants' process was applied. Pure air or abundant water may not by present commercial practice

147 See *NRDC* (1959) 102 CLR 252, 274 and above n 139.

148 [1957] RPC 267.

149 Ibid 268–9.

150 (1954) 71 RPC 190, 192 (which involved an application in respect of pruning to reduce mortality in clove trees caused by disease).

> be vendible as such, but they may well enter indirectly into estimations of commercial value.[151]

Given that the subject matter in question in this case involved the dispersion of fog, which entails a physical effect, there is only so much this decision can inform us of the need for such a requirement. What it does tell us can be sourced from the broad formulation given to the concept of 'vendibility' by Lloyd-Jacob J. By equating 'vendible' with things of commercial value, Lloyd-Jacob J indicated that the manner of manufacture concept extends beyond the bounds of material and physical constraints.

O *Virginia-Carolina Chemical Corp's Application*

In *Virginia-Carolina Chemical Corp's Application*,[152] Lloyd-Jacob J explained that the presentation of information recorded in or on a physical medium is not patentable, in and of itself. His Honour made clear that any intellectual, informational or visual content attached to a physical medium lies within the realm of the 'fine arts' and not the 'useful arts', and that it is the 'useful arts' and not the 'fine arts' that patent law protects.[153]

He clarified that the involvement of some physical apparatus in the presentation of information will not prevent it falling within the scope of the 'fine arts', unless the information itself automatically fulfils some mechanical, industrial or otherwise commercial purpose.

> Even where such information is of importance in describing or defining an operation to be performed on some apparatus it cannot be regarded as part of the performance itself and thus qualify as a manner of manufacture. If however the marks as such are described to operate through appropriate means automatically to fulfil a commercial purpose, whether the means are mechanical, optical or electrical, they can properly be regarded as an integral part of a manner of manufacture and as such fit subject matter for patent claims.[154]

This case confirms the earlier precedents in *Fishburn's Application* and *Cooper's Application* that any presentation of information characterised solely by the content of the information has traditionally been not patentable.[155]

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151 *Re Elton and Leda Chemicals Ltd's Application* [1957] RPC 267, 269.

152 [1958] RPC 35.

153 Ibid 36.

154 Ibid; cited in *NRDC* (1959) 102 CLR 252, 275.

155 See also *Pitman's Application* (1969) 86 RPC 646, where an arrangement of printed words for teaching pronunciation of language was thought to have a mechanical purpose, whereas any matter having a purely intellectual, literary or artistic connotation was thought to not be patentable; and *Moore Business Forms Application* [1979] AOJP 2521, where a claim to a business form having printed transverse bars was allowed because the bars served the purpose of allowing the

P *Rolls-Royce Limited's Application*

In *Rolls-Royce Limited's Application*[156] a method of operating an aircraft so as to reduce noise levels during take-off was rejected for being a mere scheme or plan. The method involved the pilot of an aircraft powered with gas turbine engines, inter alia, increasing the effective area of the final jet nozzle shortly after take-off to increase the mass overflow through the by-pass duct, thereby reducing the noise emitted by the jet nozzle. No modification of the aircraft itself resulted from the employment of the claimed method.

Justice Lloyd-Jacob held that this method is not patentable, being merely 'the disclosure of a general flight plan directing the initial operational movements of an aircraft between take-off and the commencement of free-flying conditions'. He dispelled any notion that this might be patentable subject matter by saying, 'this in my judgment is as much outside the operation of any of the useful arts as would be a trainer's direction to a jockey in his control of a racehorse'.[157] The alleged invention was held to not be either a new machine or process or an old machine giving a new and improved result.

It seems that the alleged invention in *Rolls-Royce Limited's Application* was refused because it is no more than information or instructions which could be given to a pilot on how to operate a known machine on which he might, or might not, act. One can only speculate on the significance of the comparison drawn between the claimed method and a method of instructing a jockey. This might indicate that the patent was rejected on the basis that the method was not sufficiently described or that it could not reliably be replicated time and again. That is, it consists of information that could be applied in a process involving human-decision making. Such a process cannot be guaranteed to produce stable, consistent and predictable results because of the human element involved.

Additionally, the patent was thought to be 'generally inconvenient' on the basis that pilots should not face the burden of concern that they may be infringing a patent monopoly while operating standard engine controls and conducting the potentially dangerous undertaking of flying.[158]

The issue of 'general inconvenience' aside, it is difficult to say how his Lordship's objection can be described. There is little emphasis on the need for a physicality requirement. The method in question does not involve a transformation of a physical object, as it involves no modification of the aircraft itself, although it does involve the use of a physical device, being an aircraft. The objection seems to be the fact that the alleged invention consists of a procedure a pilot in control of an aircraft could choose to follow, either in whole or only partially, as that person desires.

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form to be printed with more lines of type per inch which would still be as easy to read as prior forms having the usual number of lines of type per inch.

156 [1963] RPC 251.

157 Ibid 253.

158 Ibid 256.

IV Observations of the Pre-*NRDC* Case Law

There are a number of observations to be made from the historical survey of the pre-*NRDC* case law undertaken in the previous section of this article. The first is the very general and uncontroversial observation that patent law in Australia protects the products of intellectual effort and human ingenuity that fall within the useful arts and are of practical utility and economic significance.

That the scope of patentable subject matter includes vendible products of economic significance, and involves the practical application of ideas or principles to produce a useful result, is evident in almost all the cases examined dating back to *Boulton and Watt v Bull* and *The King v Wheeler*. However, this view of the law is not evident in all the cases. In some cases, this view is displaced in favour of a more restrictive requirement, that an invention be directed to utility of a chemical or mechanical nature.[159] While the scope of patentable subject matter certainly includes inventions of a mechanical nature, since cases such as *Re C & W's Application*, it would seem to have been made clear that the focus of patentable subject matter is in law broader than this.

While none of the cases preceding *NRDC* specifically address the issue of whether the 'manner of manufacture' test contains a physicality requirement, they contain strong indications that physical effect or transformation is not a prerequisite to patent eligibility. They establish that processes are certainly patentable subject matter if they are the result of a principle or idea having been reduced so as to achieve a specific result and are embodied in physical objects or substances. The cases make clear that there can be no patent for a mere principle or idea because principles and ideas are not inventions. However, that does not mean that non-physical processes are necessarily excluded as unpatentable principles or abstract ideas. In fact, most judges do not appear to have considered the possibility of non-physical processes, let alone sought to exclude them from the bounds of patentable subject matter. Instead, the cases show that the presence of a physical effect or transformation of matter is merely an example of one form that patentable subject matter may take, rather than an invariable requirement.

These are solid and established principles of patent law. They date back to the earliest cases that consider the concept of manufacture in the late eighteenth century, *Boulton and Watt v Bull* and *The King v Wheeler*.[160] These principles are also supported by the more recent cases, including: *Re C & W's Application*; the cases decided by Evershed J, *The Cementation Company's Application* and *Re Rantzen's Application*, in which his Honour described the question of whether an invention requires a physical or material character as not important; and the *Elton*

159 *Cooper's Application* (1901) 19 RPC 53; *Rogers v Commissioner of Patents* (1910) 10 CLR 701 (Griffith CJ and O'Connor J); *Fishburn's Application* (1938) 57 RPC 245.

160 See also *Household Iron Co v Neilson* (1843) 1 Web Pat Cas 673 in which the House of Lords confirmed the approach taken by Alderson B in *Jupe v Pratt* (1837) 1 Web Pat Cas 144 that all abstract principles may be patentable, subject to their having been directed to a practical application.

and Leda Chemicals Case in which Lloyd-Jacob J equated 'vendible' with things of commercial value, thereby indicating that the concept of vendibility extends beyond the bounds of material and physical constraints.[161]

In contrast, there are only a handful of cases which might indicate that the law may contain a physicality requirement, all of which have been overruled. These are *Cooper's Application*, where Sir Robert Finlay A-G appears to have found in favour of a physicality requirement by his statement that, '[t]he subject with reference to which you must apply for a Patent must be one which results in a material product of some substantial character';[162] the decisions of Morton J in *Fishburn's Application* and *Re GEC's Application* (Morton J's 'rule' requiring a vendible product) which were held in *NRDC* to be too narrow an interpretation if read literally;[163] *Maeder v Busch* (which contains Dixon J's obiter dicta referring to the need for a 'tangible thing'); and the horticulture cases, *Bovingdon's Application*; *Re Standard Oil Development Co's Application*; and *Re the Dow Chemical Company's Application for a Patent*, which were overruled by the High Court in *NRDC*. A small number of the cases examined, namely, *Virginia-Carolina Chemical Corporation's Application* and *Rolls-Royce Limited's Application* do not appear to indicate either the presence or absence of a physicality requirement.

Then, there is *NRDC* itself. Although the judges in *NRDC* said that the question of whether a non-physical invention is patentable subject matter remained undecided,[164] the answer is evident in the High Court's reasoning. The beauty of the *NRDC* approach to the manner of manufacture question is its flexibility and ability to adapt to 'excitingly unpredictable' changes in technology.[165] The difficulty is that it is tough to identify restrictions on the scope of patentable subject matter that can be easily applied on a case-by-case basis. However, that is the nature of the patentable subject matter standard in all jurisdictions. The only categories of excluded matter recognised in *NRDC* are mere principles, abstract ideas and discoveries, and matter that lies outside the useful arts. That excluded matter does not include non-physical inventions, since non-physical inventions are not necessarily mere principles, discoveries or abstract ideas. Accordingly, it must be said that the reasoning and decision in *NRDC* is entirely consistent with the cases preceding it, which create a patentable subject matter inquiry that does not make reference to physical effect or transformation.[166] Rather, those principles

161 See also *Rogers v Commissioner of Patents* (1910) 10 CLR 701 (Isaacs J) (dissent); *Cornish v Keene* (1837) 132 ER 530, 536, where it was held that production of a vendible article is sufficient test of patentability, but not the only test.

162 *Cooper's Application* (1901) 19 RPC 53, 54. Equally, it could be said that his Honour in this case was not in favour of physicality requirement. It is simply too difficult to say one way or the other.

163 In fairness to Morton J, given that his Honour in *Re GEC's Application* indicated that he did not intend to lay down a hard-and-fast rule, it is difficult to ascribe to him an intention to limit patent-eligibility with a physicality requirement.

164 *NRDC* (1959) 102 CLR 252, 270.

165 Ibid 271.

166 See McEniery, 'Patents for Intangible Inventions in Australia (Part 1)', above n 11.

show that the boundary between patentable subject matter and abstract ideas or principles is specific practical application, not physicality.

Although the Full Court's observation in *Grant* that the patentability of non-physical methods has never been upheld in the pre-*NRDC* case law is accurate, it is another thing entirely to infer that the concept of 'manufacture' is limited to the protection of inventions embodied in physical objects or physically-transformative methods. The Full Court erred by inferring that a line of cases involving largely inventions comprising some physical or corporeal embodiment necessarily means that physicality is a prerequisite to patentability. Accordingly, it is argued that the Federal Court's finding in *Grant* is not good law and should not be followed.

V Conclusion

This article has focused on the fact that the 'manner of manufacture' test as developed through the pre-*NRDC* case law, is broad, flexible, inclusive and technology-neutral. It recognises that the products of technological innovation will always be 'excitingly unpredictable',[167] and that such an approach is needed to appropriately recognise and protect new and emerging technologies.

The pre-*NRDC* cases examined show that the focus of the patentable subject matter inquiry is practical utility and economic significance rather than physical embodiment. They demonstrate that this is an established common law principle that dates back to the earliest cases dealing with the concept of 'manufacture'. The view taken is that the pre-*NRDC* cases are all consistent with the finding in *NRDC* itself, that the Australian patentable subject matter test is a broad, flexible, inclusive and technology-neutral standard.

This article disrupts the tenor of the Federal Court's decision in *Grant*, which is based upon the assertion that the physicality requirement it established is consistent with the existing case law. Instead, the historical survey of the cases undertaken indicates that the pre-*NRDC* case law, like *NRDC* itself, does not support the physicality requirement created in *Grant*. On the contrary, the argument made is that those principles show that the boundary between patentable subject matter and abstract ideas or principles is specific practical application. Rather than being a prerequisite to patentability, a physical effect or transformation is merely an indication, or 'clue', that the subject matter is patent eligible. While it is clear that the patent system exists to protect and encourage the creation of new and useful physical machines and devices and new methods that physically transform matter from one state into another, the cases show that this is not the extent of the patent incentive. As such, it is not only the traditionally recognised mechanical, industrial, chemical and manufacturing processes that are patent eligible. Patent eligible subject matter also encompasses non-physical inventions. Accordingly, this article provides further reasons, in addition to those set out by the author in the earlier

167 *NRDC* (1959) 102 CLR 252, 271.

academic literature,[168] to support the argument that the Federal Court's finding in *Grant* is not good law and should not be followed.

168 See McEniery, 'Patents for Intangible Inventions in Australia (Part 1)', above n 11; McEniery, 'Patents for Intangible Inventions in Australia (Part 2)', above n 11; McEniery, above n 3.