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CAN'T SEE THE SCIENCE FOR THE SOLICITORS: JUDICIAL REVIEW OF SCIENTIFIC RESEARCH IN LIGHT OF NIWA'S CASE

*Laura Hardcastle**

The existence of climate change remains an unjustifiably vexed issue worldwide. In New Zealand Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd, climate change sceptics' attempts to challenge NIWA's temperature records allowed the Court to extend its reach into the heart of the scientific research process. Whilst this article supports Venning J's determination that NIWA's decisions were within the Court's jurisdiction for review, his finding that individuals might suffer harm as a result of them is shown to be unjustified. Furthermore, the Court is inherently unsuited to addressing matters with high scientific content, due to its adversarial nature and judges' lack of scientific training. This supports a finding of non or partial justiciability. However, non-justiciability is here rejected for allowing scientists behaving fraudulently to escape rebuke. The standard of deference Venning J attempts to introduce is similarly flawed, as it risks judges unintentionally judging matters of science. Concerns are also raised that research might stagnate if scientists must worry about judicial scrutiny of their work. Thus, a standard of flagrant impropriety, or "fraud, corruption or bad faith", is argued to be the ideal threshold for permitting judicial review of scientific research.

I INTRODUCTION

In 2012, scientists nationwide celebrated Venning J's decision in *New Zealand Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd* (NIWA's case).¹ The

* Submitted as part of an LLB(Hons) degree at Victoria University of Wellington. The author is also completing a BSc in Geology and Environmental Science. My thanks to my supervisor, Dean Knight, and the anonymous reviewer for their feedback and advice. Any errors remain mine.

¹ *New Zealand Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd* [2012] NZHC 2297, [2012] 1 NZLR 75 [NIWA's case]; James Renwick "Leading Climate Scientists Welcome Judge's Decision" (press release, 7 September 2012) which was endorsed by Professors Jim Salinger, Martin Manning, Peter Barrett and Keith Hunter, and Professor (Emeritus) Blair Fitzharris; and

case was brought by the New Zealand Climate Science Education Trust (the Trust), which questioned the methodology used by the National Institute of Water and Atmospheric Research (NIWA) to compile data indicating that New Zealand's temperature had risen over the last century. The Trust sought judicial review of NIWA's decision to publish the data; however, having dismissed much of the Trust's evidence, the Judge found in NIWA's favour. This result, scientists believed, demonstrated judicial willingness to uphold scientific research processes, forcing "those wanting to challenge widely-agreed scientific findings to do so honestly and openly in scientific forums".² However, the High Court had in reality ensured its own ability to review research compiled by Crown Research Institutes (CRIs).³ A requirement that courts be "cautious" when interfering with specialist bodies' findings is all that now prevents judges from intervening in scientific research.⁴

In this article, I seek to demonstrate that the decision offers insufficient protection for scientists and scientific research. Instead, CRIs' decisions should be reviewed only in cases of "fraud, corruption or bad faith."⁵ Part II of the article provides an overview of the case. In Part III, I agree with Venning J that NIWA's decisions were public and thus theoretically amenable to judicial review. Despite exaggerating the decisions' impacts on individuals and the lack of alternative relief, the Judge was right to consider NIWA's institutional characteristics. However, the unsuitability of court processes to address matters of science, as demonstrated in Part IV, remains problematic. Issues surrounding the adversarial system, inexperienced judges and partisan expert witnesses make the Court ill-equipped to resolve scientific issues. In Part V, I examine two possible responses: non-justiciability, and partial justiciability otherwise known as deference. Non-justiciability is rejected because it would allow scientists behaving fraudulently to escape scrutiny. However, Venning J's formulation of deference is, with respect, insufficient to protect the research process's integrity. I instead advocate review only in cases of flagrant impropriety.

Cases such as *NIWA's case*, where the courts are asked to review scientific information gathered by or on behalf of public bodies, are likely to become more frequent as science becomes increasingly complex and is incorporated into decision-making at all levels.⁶ In *Weir v Kapiti Coast*

Catherine Masters "In the heat of battle" *The New Zealand Herald* (online ed, Auckland, 15 September 2012).

2 Renwick, above n 1.

3 The Crown Research Institutes are AgResearch, Institute of Environmental Science Research, Institute of Geological and Nuclear Sciences, Landcare Research, NIWA, Plant and Food Research and Scion: Ministry of Business, Innovation and Employment "Crown research institutes" (1 February 2013) <www.msi.govt.nz>.

4 *NIWA's case*, above n 1, at [41].

5 *Mercury Energy Ltd v Electricity Corporation of New Zealand Ltd* [1994] 2 NZLR 385 (PC) at 392.

6 NIWA, for example, already advises "government, businesses ... individuals", regional and local councils: NIWA "Climate services" <www.niwa.co.nz>.

District Council, for example, the Court relied upon the principles expounded in *NIWA's case* when refusing to examine a scientific report.⁷ The report in question concerned likely erosion of the coast with sea level rise over the next century, information which was then included on Land Information Memoranda to alert future purchasers, much to the current owners' chagrin. More such decisions are likely to be needed in the coming decades based on science provided by NIWA and other organisations. For this reason, it is imperative that the courts are clear on what basis they will and will not intervene, to avoid a situation in which challenges to the underlying science become just another ground to be raised in litigation on the off chance that they might be accepted.

II OUT OF THE LAB AND INTO LITIGATION: NIWA'S CASE

In 2012, the Trust sought judicial review of NIWA. NIWA is a CRI dedicated to environmental science, including atmospheric, climatic and marine disciplines.⁸ At issue were temperature records, collated by NIWA, indicating that New Zealand had warmed over the past century. The Trust's first complaint concerned NIWA's decision to publish the 7SS (seven-station series) temperature series, which revealed 0.9°C warming between 1909 and 2009.⁹ The 7SS takes data from seven locations nationwide, merging it to give a national average of the annual mean surface temperature.¹⁰ However, the raw data must be adjusted to account for regions' differing climates as well as site-specific factors such as shelter from trees and movement of weather stations.¹¹ The Trust objected to NIWA's method of adjustment, similarly criticising the eleven-station series (11SS) which corroborated the 7SS, and the review NIWA conducted after the Trust's initial complaint.¹²

A Availability and Standard of Judicial Review

The initial issue was whether NIWA's decisions were amenable to judicial review. Justice Venning determined that they were, having considered NIWA's statutory origin, its obligation to undertake research benefitting New Zealand, and the retention of its shares by responsible ministers.¹³ The Judge also reasoned that as NIWA's research may influence government policy, its actions may affect citizens' rights.¹⁴ Furthermore, unlike cases involving State-owned Enterprises

7 *Weir v Kapiti Coast District Council* [2013] NZHC 3522, (2013) 15 NZCPR 28.

8 NIWA "Our Science" <www.niwa.co.nz>.

9 *NIWA's case*, above n 1, at [4].

10 The sites used are Auckland, Masterton, Wellington, Hokitika, Nelson, Lincoln and Dunedin: see NIWA "Seven-station series temperature data" <www.niwa.co.nz>.

11 "Seven-station series temperature data", above n 10.

12 *NIWA's case*, above n 1, at [11].

13 At [20], [21] and [26]. See also Crown Research Institutes Act 1992, s 5.

14 At [27].

(SOEs), plaintiffs could not seek private law remedies if judicial review were denied.¹⁵ Thus, Venning J concluded that judicial review was available as NIWA's functions are public, not commercial.¹⁶

In contemplating the appropriate standard of review, Venning J held that courts should be "cautious" when examining the work of specialists "acting within their own sphere of expertise".¹⁷ Thus, "less intensive review" is appropriate where the Court feels unable to decide between scientific opinions.¹⁸ The Trust therefore needed to demonstrate that the decision-making process was defective or "clearly wrong in principle or in law" before the Court would intervene.¹⁹

B The 7SS

Having dismissed much of the Trust's evidence as non-expert opinion, the Judge rejected all complaints about the 7SS.²⁰ These included that NIWA failed to consider "recognised scientific opinion", using methods to account for movement of monitoring sites described in a 1990 thesis, rather than the 1993 paper the Trust endorsed.²¹ This, the Trust claimed, breached NIWA's obligation to "pursue excellence", which the Judge found to be enforceable,²² as well as constituting a failure to consider mandatory considerations, unreasonableness and a mistake of fact.²³

Justice Venning was clear that, while he did not wish to interfere with scientific debates, the Court would determine factual disputes.²⁴ Thus, he would not resolve the parties' conflict over whether the 1993 paper contained the definitive methodology for such calculations.²⁵ This was in any case rendered irrelevant by the Court's determination that NIWA had effectively used the 1993 paper's approach.²⁶ The Judge further found that NIWA met its obligation to consider "accepted scientific practices and opinions".²⁷ The Court also dismissed an argument that NIWA made a

15 At [34].

16 At [32]–[33].

17 At [36] and [41].

18 At [44].

19 At [48].

20 At [49]–[54] and [116].

21 At [56].

22 At [66] and [77].

23 At [106], [116] and [114].

24 See for example at [78] and [115].

25 At [79]–[82].

26 At [83] and [104].

27 At [105].

mistake of fact by not appreciating that the warming trend observed was due to the movement of weather stations to warmer sites since NIWA's contrary explanation was "credible and understandable".²⁸

C The 11SS and the Review

Similar claims regarding the 11SS were dismissed.²⁹ The Judge found NIWA's evidence that it had neither deliberately chosen sites supporting a warming trend nor ignored gaps in the record "credible and reasonable".³⁰ However, he reiterated that the Court would not resolve matters involving "different contestable scientific opinions".³¹

The Trust's final target was NIWA's review, which used a different methodology to demonstrate the 7SS's validity.³² It claimed that NIWA ignored recognised scientific opinion, utilising the same grounds of review as for the 7SS.³³ In rejecting these arguments, the Judge concluded that whether a particular methodology was open to NIWA, and was not unprecedented and unpublished, was a matter of scientific debate and not for the Court to resolve.³⁴ Justice Venning also accepted that recalculating temperatures using different methods but generating the same results strengthened the claim that the 7SS was robust.³⁵ Arguments that NIWA should not have compared particular sites and that data was used from sites sheltered by trees or buildings or impacted by urban heat island effects (resulting from cities being warmer than surrounding countryside as buildings and concrete retain additional heat) were dismissed as issues of science.³⁶

Thus, all of the Trust's arguments were rejected entirely. However, that they were even considered sets a precedent which should concern all associated with CRIs. Whilst the following parts of this article support Venning J's determination that NIWA's decisions were within the Court's jurisdiction for judicial review, they also examine why his attempts at deference were less than deferential and why review of scientific research should be severely restricted.

28 At [113].

29 At [138]–[139].

30 At [120].

31 At [137].

32 At [180]–[184].

33 At [145].

34 At [151].

35 At [157].

36 At [173].

D Subsequent Hearings

At a later hearing, Venning J awarded costs in NIWA's favour.³⁷ It was argued on behalf of the Trust that it had acted in the public interest by holding NIWA to account and thus costs should be lowered. Whilst the Judge acknowledged climate change to be a matter of public interest, he held that it is a matter of scientific debate and not open for the Court to determine.³⁸ The Trust had not acted reasonably and could be seen as mounting a crusade against NIWA's records.³⁹ The Trust also took issue with Venning J's maintenance of interests in an area of forest which is expected to yield profits through New Zealand Units issued under the Emissions Trading Scheme (ETS), suggesting that a fair minded lay observer might consider there to be a risk that a judge with a "material pecuniary interest in the future of any climate change policy" might not be impartially minded in a case such as the Trust's.⁴⁰ However, the Judge pointed out that the matter before the Court was not whether climate change is occurring but whether the methodology used by NIWA to calculate these particular temperature series was demonstrably incorrect.⁴¹ Even if this were the case, the preponderance of international evidence confirming climate change means it is unlikely the ETS would be altered and the judge's interests affected.⁴²

The Trust has since abandoned a substantive appeal to the Court of Appeal, ostensibly due to confusion over the ability to cross-examine witnesses in the High Court.⁴³ The Court of Appeal's judgment as to costs shows their agreement with Venning J both regarding costs and on the substantive point that the Court is not the appropriate place to determine issues of science.⁴⁴ After the appeal was abandoned, the Trust stated that it would pursue other avenues in what it considered to be an attempt to hold NIWA to account.⁴⁵ These would apparently include applications to the

37 *New Zealand Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd* [2012] NZHC 3560.

38 At [46].

39 At [47].

40 At [2].

41 At [20].

42 At [30].

43 Jamie Morton "Sceptics bail on climate court case" *The New Zealand Herald* (online ed, Auckland, 17 October 2013).

44 *NZ Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd* [2013] NZCA 555 at [9] and [17].

45 Steve Kilgallon "Failed doubters trust leaves taxpayers at loss" *Dominion Post* (online ed, Wellington, 12 January 2014).

Minister for CRIs and the Auditor-General.⁴⁶ However, the latest information available is that the Trust is currently in liquidation, having been unable to pay the costs awarded against it.⁴⁷

III PROBLEMS OF "PUBLICNESS": WHY NIWA'S DECISIONS WERE WITHIN THE COURT'S JURISDICTION

In this part, I contend that whilst Venning J was right to conclude that the Court had jurisdiction to judicially review NIWA's decision, his reasoning, with respect, relies upon unjustified assumptions. Whilst the terminology remains controversial,⁴⁸ jurisdiction here refers to one of two facets of amenability to review.⁴⁹ The second, justiciability, is addressed in Parts IV and V.⁵⁰ Jurisdiction requires that decisions be public in nature before judicial review is permitted. It is essentially a "value judgment" as to whether public law principles should apply.⁵¹ Jurisdiction and justiciability overlap significantly. Alternative remedies and impacts on individuals' rights, for example, will here be included under jurisdiction, following Venning J's lead, although they could equally well be considered under justiciability.⁵² Thus, this part demonstrates that the Judge was mistaken in finding that NIWA's decisions affected individuals' rights and that alternative remedies were not available.

A Have Individuals' Rights been Affected?

A key element of "publicness" and thus jurisdiction is whether a decision affects private individuals' rights.⁵³ I contend that any "effects" of NIWA's decisions on individuals are far too remote to justify review. Justice Venning determined that NIWA's research "may be used in

46 Kilgallon, above n 45.

47 Kilgallon, above n 45.

48 See for example Chris Finn "The Justiciability of Administrative Decisions: A Redundant Concept?" 30 FLR 240 at 262–263; and BV Harris "Judicial Review, Justiciability and the Prerogative of Mercy" (2003) 63 CLJ 631 at 632–633.

49 Chris Finn "The concept of 'justiciability' in administrative law" in Matthew Groves and HP Lee *Australian Administrative Law: Fundamentals, Principles and Doctrines* (Cambridge University Press, Cambridge, 2007) 143 at 144–147; and Jenny Cassie and Dean Knight "The Scope of Judicial Review: Who and what may be reviewed" (paper presented to New Zealand Law Society Administrative Law Conference, August 2008) at 63–64.

50 Finn "The concept of justiciability", above n 49, at 144–147.

51 Peter Cane *Administrative Law* (5th ed, Oxford University Press, Oxford, 2011) at 16.

52 They are similarly treated in *R v Panel on Take-overs and Mergers, ex parte Datafin plc* [1987] 1 All ER 564 (HL).

53 *Reckitt and Coleman (New Zealand) Ltd v Pharmaceutical Management Agency Ltd* [1997] NZAR 464 (HC) at 474; and Judicature Amendment Act 1972, s 3. For an example of a decision to publish affecting rights, see *Royal Australasian College of Surgeons v Phipps* [1999] 3 NZLR 1 (CA) at 10.

developing Government policy" and thus may "adversely affect ... rights and liabilities".⁵⁴ However, it would then be the Government's decision to act in a particular way in light of that research, not NIWA's publishing it, which caused harm. NIWA does not even suggest what action, if any, the Government should take. Harm resulting from NIWA's decision is "hypothetical [in] character" as the Government may not (and often will not) act upon NIWA's findings.⁵⁵ Furthermore, decisions would be taken in the wider scientific context. If the Government opted to combat climate change, it would do so based on an array of national and international scientific opinion. A single temperature series could make only a minor contribution to this.

Furthermore, Venning J's approach assumes that policy-makers are ignorant of the uncertainties associated with science, which might lead to one paper with aberrant results directly influencing policy. In reality, significant public policy literature exists on the part scientific uncertainties play in "wicked" (highly complex) problems.⁵⁶ Further, while no statistics exist on public servants' scientific literacy, it is noteworthy that four ministries regularly encountering scientific challenges have at least one science graduate on their leadership teams – two at PhD level – in addition to various scientific advisors.⁵⁷ Thus, policy-makers should know not to base important decisions on single pieces of questionable scientific evidence. Should they do so, judicial review of the resultant policy decision to force a wider look at the available information would be appropriate.

Harm to individuals' reputations might also prompt review.⁵⁸ Even mere opinion may be sufficiently damaging, if accompanied by "real practical consequences".⁵⁹ However, NIWA's decision to publish seems unlikely to harm even highly-polluting industries' reputations. First, the 7SS and its associated reports merely illustrate a warming trend; there is no reference to climate change, the greenhouse effect or carbon dioxide and thus no implied criticism of organisations

54 *NIWA's case*, above n 1, at [27].

55 *Peters v Davison* [1999] 2 NZLR 164 (CA) at 188.

56 Jake Chapman, Charlie Edwards and Simon Hampson *Connecting the Dots* (Demos, London, 2009); Matthijs Hisschemöller and Rob Hoppe "Coping with Intractable Controversies: The Case for Problem Structuring in Policy Design and Analysis" (1996) 8 *Knowledge and Policy* 40; and Connie P Ozawa "Science and Intractable Conflict" (2006) 24 *Conflict Resolution Quarterly* 197.

57 These being the Ministries of Health, Environment, Primary Industries and Business, Innovation and Employment: see Ministry of Health "Executive Leadership Team" (21 September 2012) <www.health.govt.nz>; Ministry for the Environment "Leadership Team" (25 January 2013) <www.mfe.govt.nz>; Ministry for Primary Industries "Senior Leadership Team" (25 July 2013) <www.mpi.govt.nz>; and Ministry for Business, Innovation and Employment "Senior leadership" (30 January 2013) <www.mbie.govt.nz>.

58 *Peters v Davison*, above n 55, at 166.

59 At 182 and 188.

potentially contributing to climate change.⁶⁰ Second, attributing any harm to reputations to this particular report would be difficult. It would more likely result from the huge volume of scientific evidence of anthropogenic climate change worldwide. Even where a more direct connection between the research and businesses' activities exists, it remains arguable that reasonable members of the public understand that a single piece of research is not conclusive. Events such as "Glaciergate", where the Intergovernmental Panel on Climate Change mistakenly reported that all Himalayan glaciers would disappear 300 years too early, have shown that reputable institutions can make mistakes.⁶¹ This of course does not mean we should abandon all control of the scientific process to judges lacking scientific training.

B Will Individuals be Left without Redress?

If individuals are to be harmed by a decision, courts will be reluctant to deprive them of redress; however, where other remedies are available, relief may be denied.⁶² Justice Venning expresses anxiety that, as private law actions against NIWA are unavailable, denying judicial review would leave plaintiffs without recourse to the courts.⁶³ This concern is unfounded. Executive decisions made using NIWA's research will remain subject to the usual rules of judicial review. Furthermore, the policy stage is when individuals are affected and to postpone review until then is more consistent with international authority. Parties may also utilise non-legal methods.

C Legal Remedies

As discussed above, Venning J finds that harm may be caused by government decisions made using NIWA's research.⁶⁴ It is therefore contended that it is more appropriate to seek remedies at the policy stage. Alternatively, in the language of "ripeness for review", a concept prevalent in US literature, no "real and ... imminent" problems exist until the Government acts; only then is judicial intervention appropriate.⁶⁵

Belize Alliance of Conservation Non-Governmental Organizations v The Department of the Environment and Belize Electric Company Ltd offers a prominent example of review occurring at

60 Global warming is mentioned but in reference to the findings of a particular article and not in reference to the temperature data at issue: NIWA *Report on the Review of NIWA's "Seven-Station" Temperature Series NIWA Information Series No 78* (NIWA, Wellington, 2010).

61 Malcolm Downden "Has climate change litigation become more difficult?" (2010) 160 NLJ 171 at 171.

62 *Waitakere City Council v Waitemata Electricity Shareholders Society Inc* [1996] 2 NZLR 735 (HC) at 747; *Mercury Energy*, above n 5, at 391; and *McGechan on Procedure* (Brookers, Wellington, 1995) at [JA4.03].

63 *NIWA's case*, above n 1, at [34].

64 At [27].

65 Kenneth Culp Davis "Ripeness of Governmental Action for Judicial Review" (1955) 68 Harv L Rev 1122 at 1122.

the policy stage rather than once research is published.⁶⁶ The Privy Council was primarily occupied with deficiencies in scientific reports on the planned location for a dam. These included glaring errors in the geological survey undertaken by a Canadian company, which mistook sandstone for granite.⁶⁷ However, it was the Government's decision to build the dam that was under review; there were no separate proceedings reviewing the research.

Closer to home, as Rodriguez Ferrere identifies, the Court in *Daganayasi v Minister of Immigration* was also called upon to review a decision based upon errors in an expert's report.⁶⁸ Again, it was the final decision of the Minister which was under review, with the possibility of reviewing the expert's report never considered. Indeed, Cooke P is emphatic that "the Minister should bear responsibility for a misleading or inadequate report."⁶⁹

The European Community courts also review scientific research only at the regulatory stage.⁷⁰ Expert bodies' scientific opinions are considered merely non-binding preparatory measures.⁷¹ They may thus be reviewed only indirectly once regulations based upon them are implemented. Furthermore, these opinions recommend courses of action and may not involve primary research, making them closer to policy decisions than the pure scientific research NIWA undertakes, yet they are not reviewable.⁷² However, clear illegality relating to these opinions generates a presumption that unlawfulness taints any consequent regulatory decisions.⁷³ European courts will also only scrutinise procedural matters, not the underlying scientific evidence.⁷⁴

66 *Belize Alliance of Conservation Non-Governmental Organizations v The Department of the Environment and Belize Electric Company Ltd* [2003] UKPC 47.

67 At [38]–[48].

68 Marcelo Rodriguez Ferrere "Judicial review of scientific findings" [2012] NZLJ 380 at 381; and *Daganayasi v Minister of Immigration* [1980] 2 NZLR 130 (CA).

69 At 149.

70 See for example Case T-326/99 *Nancy Fern Olivieri v Commission and European Agency for the Evaluation of Medicinal Products* [2003] ECR II-06053.

71 Oliver Hartmann "The (Dis) Entanglement of Law and Science: Judicial Review of Science-Based Measures by EC Courts" (Dissertation (LLM), University of Maastricht, 2008) at 10.

72 At 8.

73 At 13 and 38.

74 Joined Cases T-75/00, T-76/00, T-83/00, T-84/00, T-85/00, T132/00, T-137/00, T-141/00 *Artegodan GmbH v Commission* [2002] ECR 4945 at [197].

By contrast, in the United States, "agency science" is reviewed, albeit with great deference.⁷⁵ However, agency science differs significantly from NIWA's "pure research science".⁷⁶ Its purpose is to fulfil legal obligations to allow implementation of policy decisions, leaving it open to abuse as government and interest groups heavily influence outcomes, timetables and funding.⁷⁷ Former agency employees report that lawyers and policymakers deliberately manipulate and distort research outcomes.⁷⁸ Thus, apparently scientific decisions are actually a science-policy hybrid.⁷⁹ In contrast, CRIs, although Crown entities, are not in thrall to the Government, instead producing research for New Zealand's benefit, rather than for the ruling party.⁸⁰

As the resulting policy decision may be reviewed, I contend that comprehensive judicial review of NIWA's decisions is unnecessary. Plaintiffs should not be allowed to challenge scientific research in respect of both the decision to publish and the eventual policy decision. This would not only waste court time and resources, but also undermines the finality of the Court's ruling. It may be argued that it is more efficient to address problems with research before policy decisions are taken to avoid the same issue arising regarding multiple regulations. However, this presupposes that any policy decision will be made based upon that research alone. Furthermore, as discussed below, there are other non-legal methods to ensure problems with research are addressed, whilst the standard of review suggested in this paper – flagrant impropriety – would still allow serious breaches of NIWA's obligations to be remedied.

D Non-legal Remedies

Plaintiffs might also pursue non-legal options, such as publishing papers rebutting NIWA's research in well-respected journals. The principal control on scientific research comes after publication, when other scientists may scrutinise results and publish dissenting papers. While peer review attempts to ensure only quality research is published, it is not infallible.⁸¹ Less robust

75 Sara A Clark "Taking a Hard Look at Agency Science: Can the Courts Ever Succeed?" (2009) 36 Ecology LQ 317 at 326.

76 Emily Hammond Mezell "Super Deference, the Science Obsession and Judicial Review as Translation of Agency Science" (2009) 109 Mich L Rev 733 at 735 and 743.

77 At 743 and 747.

78 E Donald Elliott, Alan Charles Raul, Richard J Pierce Jr, Thomas O McGarity and Wendy E Wagner "Science, Agencies, and the Courts: Is Three a Crowd?" (2001) 31 ELR 10125 at 10127.

79 Hammond Mezell "Super Deference", above n 76, at 744–745.

80 Crown Research Institutes Act 1992, s 5.

81 Patrick A Fuller "How Peer Review of Agency Science Can Help Rulemaking: Enhancing Judicial Deference at the Frontiers of Knowledge" (2007) 75 Geo Wash L Rev 931 at 956–957.

findings might not appear in major journals, but still be accepted by lesser known publications.⁸² Some peer reviewers may also favour particular methodologies or results.⁸³ Thus, papers will only gain reputability if other scientists support their conclusions and can repeat their results.⁸⁴ If NIWA's results cannot withstand such scrutiny, the scientific community will quickly abandon them. This may take time, but as demonstrated above, organisations are unlikely to suffer harm in the interim. Even the Trust's own expert witness acknowledged that publishing a dissenting paper is the correct approach.⁸⁵ This is more likely to advance the Trust's cause than court action as most people understand that judges are not scientists. The ability to resolve issues through non-legal methods has previously contributed to courts refusing judicial review, and arguably should have influenced Venning J.⁸⁶

E Has a Public Decision-making Power been Exercised?

Determining whether NIWA has exercised a public decision-making power is problematic as, while the above suggests that its decisions had no "real practical" public consequences, NIWA is undoubtedly a public body.⁸⁷ Cases examining a decision's "publicness" may be categorised as institutional, which examine whether the responsible institution is a public body, or functional, which focus on the decision itself.⁸⁸ Justice Venning employs the former approach, highlighting NIWA's establishment under the CRI Act, which dictates that research "be undertaken for the benefit of New Zealand".⁸⁹ Further, he notes its public funding and accountability to a responsible minister.⁹⁰

Rodriguez Ferrere criticises Venning J's institutional approach, arguing that the focus should have been on the nature of the decision.⁹¹ Indeed, since *R v Panel on Take-overs and Mergers, ex parte Datafin (Datafin)*, New Zealand has seen a trend towards an increasingly functional approach.⁹² Private institutions exercising public powers are now reviewable, whilst statutory

82 H Doremus "The Purposes, Effects and Future of the Endangered Species Act's Best Available Science Mandate" (2004) 34 *Envtl L* 397 at 411.

83 Fuller, above n 81, at 957.

84 Doremus, above n 82, at 411.

85 *NIWA's case*, above n 1, at [81].

86 *Cowl v Plymouth City Council* [2001] EWCA Civ 1935, [2002] 1 WLR 803 at [25].

87 *Peters v Davison*, above n 55, at 188.

88 Cassie and Knight, above n 49, at 66.

89 *NIWA's case*, above n 1, at [21] and [33].

90 At [26].

91 Rodriguez Ferrere, above n 68, at 381.

92 *Datafin*, above n 52, at 569.

recognition does not guarantee that all of an organisation's functions will be scrutinised.⁹³ However, there is a fundamental difference between individual researchers making false claims and publicly-funded CRIs doing so. Prominent later cases have acknowledged this, with courts adopting a combined institutional/functional, or contextually functional, approach.⁹⁴ Even the Court in *Datafin* does not completely ignore institutional factors.⁹⁵ Thus, Venning J was right to consider NIWA's position as a public institution.

Here, a contextually functional approach would acknowledge the improbability of NIWA's decisions having "important public consequences".⁹⁶ Furthermore, since anyone can publish virtually anything in today's technological world, it is difficult to consider publishing as a public function.⁹⁷ However, courts have reviewed decisions to publish reports based on inaccurate content.⁹⁸ More importantly, NIWA's position as a CRI and use of public funds demand the application of the more stringent public law norms if they are being abused. Justice Venning was thus justified in determining that NIWA's decisions were public and within the Court's jurisdiction for judicial review.

F Summary

Ultimately, there is no right answer as to whether NIWA's decisions are public or not, as "publicness" is not "like redness – a characteristic that can simply be observed."⁹⁹ The lack of harm to individuals and availability of other remedies do not conclusively exclude the Court's jurisdiction.¹⁰⁰ The trend since *Datafin* has been towards a contextually functional, not merely a functional, approach. Justice Venning was thus justified in considering NIWA's public attributes and concluding that its decisions were within jurisdiction. However, this does not mean that the contrary arguments explored above should be disregarded. Instead, these lend support to the arguments for non- or partial justiciability traversed in Part IV, and ultimately to my conclusion that review should be limited to cases of flagrant impropriety.

93 *Finnigan v New Zealand Rugby Football Union Inc (No 2)* [1985] 2 NZLR 181 (HC) at 186; and *Auckland Electric Power Board v Electricity Corporation of New Zealand* CA 45/93, 8 September 1993 at 15.

94 *Mercury Energy*, above n 5; and *Lab Tests Auckland Ltd v Auckland District Health Board* [2008] NZCA 385, [2009] 1NZLR 776. For discussion, see Cassie and Knight, above n 49, at 66.

95 *Datafin*, above n 52, at 574.

96 *Royal Australasian College of Surgeons*, above n 53, at 11.

97 *Cane*, above n 51, at 271–272.

98 See for example *Agrotain International LLC v Fertiliser Quality Council Inc* HC Wellington CIV-2009-485-1855, 17 December 2009.

99 *Cane*, above n 51, at 17; and Cassie and Knight, above n 49, at 65–66.

100 *R v Somerset County Council ex p Dixon* [1998] Env LR 111 (QB).

IV JUDGING JUSTICIABILITY: WHY NIWA'S DECISIONS SHOULD BE DECLARED NON- OR PARTIALLY JUSTICIABLE

The "[un]suitability of the Court's personnel and processes" to resolving a particular dispute is key to determining justiciability.¹⁰¹ However, justiciability, unlike jurisdiction, is part of a spectrum of responses the Court might employ, from non-justiciability (not examining the issue at all) to partial or secondary justiciability (which involves deference to the decision-maker) through the ordinary standard for review and on to hard-look review (where the Court more intensively scrutinises decisions). In this part, I traverse the arguments for review of scientific research falling on the non- and partial justiciability side of the spectrum. Issues highlighted include problems with the adversarial system, particularly in relation to polycentric decisions. Judges lacking scientific knowledge may struggle with decisions regarding research whilst expert witnesses may not represent mainstream scientific views. Furthermore, plaintiffs are unlikely to be disadvantaged if deprived of the full suite of judicial review grounds by either non- or partial justiciability, as many grounds are problematic in their application to scientific research.

A The Adversarial System

The adversarial system sees parties relentlessly advocating for their position to ensure that both sides' best arguments are considered. This contrasts strongly with the scientific approach of posing a hypothesis to see if the academic community can disprove it.¹⁰² Both methods have adapted to meet different objectives. Whilst science is the dispassionate search for truth, the law also seeks fairness.¹⁰³

A clear example of the conflict between scientific and adversarial methods, although not court-based, is the climate change debate. The scientific community has long agreed that anthropogenic climate change is occurring, having rigorously tested this hypothesis. The only disagreements concern the precise magnitude of change, whether "tipping points" exist and the sensitivity of the Earth system to changes in greenhouse gas concentrations.¹⁰⁴ By contrast, the public has witnessed a war of attrition between ardent believers and disbelievers in climate change. In adversarial

101 Harris, above n 48, at 640.

102 Kristin Carden "Bridging the Divide: the Role of Science in Species Conservation Law" (2006) 30 Harv Env'tl L Rev 165 at 171–172.

103 Emily Hammond Meazell "Scientific Avoidance: Toward More Principled Judicial Review of Legislative Science" (2009) 84 Indiana LJ 240 at 250.

104 See for example Greg O'Hare "Reviewing the Uncertainties in Climate Change Science" (2001) 32 Area 357 at 362 and 364.

fashion, both sides cling to their convictions, raising any and all evidence, however dubious.¹⁰⁵ This macro-scale example exposes the dangers of trying to resolve scientific issues using adversarial methods.

The adversarial system is also criticised for failing to adequately address polycentric decisions, those containing many intermingling and interacting factors which vary over time.¹⁰⁶ These are not easily resolved into a two-sided issue as the Court process demands.¹⁰⁷ Thus, it is doubtful whether polycentric decisions belong in court at all. Some authors counter that courts decide complex matters frequently. However, just because a question is complex does not mean it is polycentric. For example, considerable highly technical information might be needed to establish that a scientist acted fraudulently when conducting research; however, this remains a two-sided issue. By contrast, selecting a methodology requires consideration not only of existing scientific opinion, but also data that may contain subsets which would work better with different methodologies. Other factors such as required corrections and margins of error are then affected by methodology decisions and, in turn, impact the strength of final conclusions. Thus, such decisions are comparable to a spider's web, with multiple nodes affected if one strand is moved.¹⁰⁸

B Inexpert Judges

Justice Venning rightly identified the inappropriateness of an inexpert court addressing complex scientific issues. In theory, this should not be problematic for conducting judicial review of scientific decision-makers as the review should concern the process, rather than the merits of the decision. However, the permeability of this divide is becoming increasingly apparent, and as is demonstrated in Part V, there is scope for judges to inadvertently make scientific decisions.¹⁰⁹ It is therefore necessary to consider the consequences of judges trespassing into the realms of science.

Studies from the United States in light of *Daubert v Merrell Dow Pharmaceuticals Inc* suggest that judges, a key component of the adversarial system, have difficulty understanding scientific matters. There is as yet no evidence to suggest a different result would be obtained in New Zealand.

105 For further discussion see Graham Knight and Josh Greenberg "Talk of the Enemy: Adversarial Framing and Climate Change Discourse" (2011) 10 *Social Movement Studies: Journal of Social, Cultural and Political Protest* 323.

106 Cane, above n 51, at 274.

107 At 275.

108 Lon Fuller "The Forms and Limits of Adjudication" (1978) 92 *Harv L Rev* 353 at 395 as cited in Finn "The concept of justiciability", above n 50, at 146.

109 See for example Michael Taggart "Administrative Law" [2006] *NZ Law Review* 75 at 83; Sian Elias "Righting Administrative Law" in David Dyzenhaus, Murray Hunt and Grant Huscroft (eds) *A Simple Common Lawyer: Essays in Honour of Michael Taggart* (Hart Publishing, Oxford, 2009) 55 at 71; Cane, above n 51, at 191–192; and Henry Woolf, Jeffrey Jowell and Andrew Le Sueur (eds) *De Smith's Judicial Review* (6th ed, Sweet & Maxwell, London, 2007) at 544

In *Daubert*, the United States Supreme Court gave itself the responsibility for judging the credibility of scientific studies.¹¹⁰ Judges were charged with eliminating "junk science" from the courtroom to prevent it from influencing juries. Rather than relying on experts with impressive credentials, judges must examine criteria such as falsifiability, peer review, error rates and whether the particular evidence is generally accepted by the scientific community.¹¹¹ However, commentators have argued that judicial understanding of science is insufficient to perform this function, despite efforts to better train judges in dealing with scientific information through conferences and courses.¹¹² Others have questioned whether it is fair to force judges to make decisions they are not trained for, with some finding the experience "uncomfortable and daunting".¹¹³

Education within an adversarial system may cause judges to understand crucial concepts, such as uncertainty, very differently from scientists. The scientific method demands careful collection of data and integral to this process is recognising and accounting for uncertainty, with results always accompanied by confidence intervals. Judges by contrast seek "clear decisions [from] uncertain principles", and so often favour "bright-line" approaches, creating a threshold that evidence must meet to sustain a case.¹¹⁴ An example is the United States' approach to epidemiological evidence involving the increased risk of a particular condition developing in individuals exposed to certain factors. Multiple courts have held that to find causation between the factor and condition, the risk to an average person must have doubled.¹¹⁵ This leaves particularly susceptible plaintiffs unprotected.¹¹⁶ Whilst not a judicial review situation, this example shows that even senior judges may inappropriately fuse legal and scientific concepts.

Essentially, a language barrier exists between judges and scientists, which is unsurprising given that 96 per cent of 400 judges surveyed in the United States lacked general scientific training.¹¹⁷ Only four per cent properly understood error rates, whilst only six per cent understood falsifiability:

110 *Daubert v Merrell Dow Pharmaceuticals Inc* 509 US 597 (1993).

111 At 594.

112 Edward K Cheng "Independent Judicial Research in the *Daubert* Age" (2007) 56 Duke LJ 1263 at 1273.

113 Andrew Jurs "Judicial Analysis of Complex & Cutting-edge Science in the *Daubert* Era: Epidemiologic Risk Assessment as a Test Case for Reform Strategies" (2009) 42 Conn L Rev 49 at 55.

114 At 57.

115 *Hall v Baxter Healthcare Corp* 947 F Supp 1387 (D Or 1996); and *Allison v McGhan Medical Corporation* 184 F3d 1300 (11th Cir 1999) as discussed in Jurs, above n 113.

116 Jurs, above n 113, at 58–59.

117 Sophia I Gatowski, Shirley A Dobbin, James T Richardson, Gerald P Ginsburg, Mara L Marino and Veronica Dahir "Asking the Gatekeepers: A National Survey of Judges on Judging Expert Evidence in a Post-*Daubert* World" (2001) 25 Law and Human Behaviour 433 at 442.

worrying statistics given that these are fundamental scientific concepts.¹¹⁸ Judges failed to accurately interpret statistical information, a problem also experienced in the New Zealand courts.¹¹⁹ Indeed, one argument raised in support of judicial review is that judges' written reasoning shows scientists how generalists perceive their evidence, as well as communicating it to the public.¹²⁰ However, such an opinion could be obtained more cheaply and quickly through means other than litigation.

Undoubtedly, judges regularly consider complex scientific matters, such as those regarding forensic evidence in criminal trials.¹²¹ However, this does not justify ignoring the poor scientific literacy illustrated above. It is perhaps better to question whether currently judges are sufficiently equipped to determine the reliability of forensic evidence. Indeed, some surveys suggest that judicial understanding of concepts key to evaluating the usefulness of forensic analyses is also worryingly poor.¹²²

It has been suggested that judges educate themselves before particular cases. Whilst this may undermine the adversarial system by encouraging judges to be more inquisitorial, whether this is considered positive or negative may depend on perspective.¹²³ Of 136 United States judges surveyed, 21 per cent reportedly thought it very desirable to read additional peer reviewed articles, whilst 25 per cent considered it very undesirable. Such supplementary study is already banned in several states in the United States, illustrating the tension over the appropriateness of judicial research into anything besides the law.¹²⁴ Other problems include time constraints given judges' caseload, and ensuring the resources considered are of good quality.¹²⁵ Further, inconsistencies may arise if some judges undertake additional research and others do not.¹²⁶

Alternatively, specialist courts might be created to decide cases with high science contents.¹²⁷ Such courts already exist for family, employment and environmental cases, with points of law

118 At 444 and 447.

119 Jurs, above n 113, at 73–74; and Dean R Knight "*Dunne v Canwest TVWorks Ltd: Enhancing or Undermining the Democratic and Constitutional Balance?*" (2005) 21 NZULR 712 at 720–721.

120 Hammond Meazell "Super Deference", above n 76, at 738.

121 Elliott, Raul, Pierce, McGarity and Wagner, above n 78, at 10135.

122 See for example Jan de Keijser and Henk Elffers "Understanding of forensic expert reports by judges, defense lawyers and forensic professionals" (2010) 18 Psychology, Crime & Law 191.

123 Cheng, above n 112, at 1275 and 1280.

124 At 1275–1276 and 1279.

125 Elliott, Raul, Pierce, McGarity and Wagner, above n 78, at 10135.

126 Cheng, above n 112, at 1308.

127 Jurs, above n 113, at 94–96.

appealable to the High Court and Court of Appeal. Specialist judges might better distinguish non-scientific issues they may determine from scientific matters to be avoided.¹²⁸ However, cost is likely to be prohibitive, especially as difficult cases are infrequent. Furthermore, a court whose primary purpose is to decide what it should not itself decide seems wasteful of resources. A further alternative might be the creation of a panel of specialist judges to address scientific matters, just as the Judicature Modernisation Bill 2013 seeks to do for commercial cases.¹²⁹ Yet another option would be to have a judge with a scientific background able to advise on the key issues of a case before it is heard, adding in a short preliminary process. Whilst this may appear an overreaction, given the small number of science-based cases compared to commercial cases, the judicial ignorance of science demonstrated above, if replicated in New Zealand, runs the risk of undermining any judgments made in this area, and potentially the justice system itself. Given that science permeates not only some judicial review cases, for example those concerning pharmaceuticals and biosecurity, but also criminal cases with complex forensic evidence, some attempt to address these issues seems warranted. However, it appears likely that there would be insufficient scientifically-trained judges to form such a panel, and again questions may be raised about the utility of a panel whose principal duty is to decide what should be beyond its reach. Thus, issues of judges' lack of scientific expertise may be better addressed through other means, such as justiciability.

C Expert Witnesses

Expert witnesses should help remedy the deficiencies in judges' scientific knowledge. Expert witnesses are those with "specialised knowledge or skill based on training, study or experience".¹³⁰ Their role is to assist the Court in understanding evidence or reach a decision of fact.¹³¹ Whilst uncommon in judicial review cases, which are generally decided "on the papers" and concern procedural rather than substantive matters, they were used in *NWA's case* and are likely to be needed in cases with high science contents.¹³² The infrequency of such cases does not justify ignoring issues which may ultimately undermine judicial decisions. Thus, the effectiveness of expert witnesses should be questioned, given that a survey of lawyers found that many do not understand their own expert's testimony.¹³³ It is unlikely that judges fare any better.

128 At 94.

129 Judicature Modernisation Bill 2013 (178-2), cl 18.

130 Evidence Act 2006, s 4.

131 Section 25.

132 Philip A Joseph *Constitutional and Administrative law in New Zealand* (3rd ed, Thomson Brookers, Wellington, 2007) at 881–882.

133 Emily Henderson and Fred Seymour *Expert Witnesses Under Examination in the New Zealand Criminal and Family Courts* (New Zealand Law Foundation, Auckland, 2013) at 118–119.

Such experts' overriding duty is to impartially assist the Court; however, their testimony may exhibit unconscious and selection biases.¹³⁴ Unconscious bias refers to expert witnesses inadvertently aligning themselves with their client, in reaction to the adversarial system's competitive nature.¹³⁵ Indeed, judges have criticised expert witnesses for precisely this.¹³⁶ Selection bias is also problematic, as counsel hire experts not representative of mainstream scientific opinion, purely because they support their client's case.¹³⁷ Thus, scientists with unconventional views are perceived to garner unjustified prominence in the courtroom.¹³⁸ This may give decision-makers the impression that the debate amongst experts is heated when in fact one side has overwhelming support.¹³⁹

Such bias might be overcome by utilising independent experts. Judges sitting alone might increasingly use their discretion to appoint independent experts to inquire into questions of fact or opinion outside of the judge's expertise.¹⁴⁰ Alternatively, the ability to appoint lay members to assist in understanding expert evidence could be extended to trials involving high scientific content. Lay members are currently permitted only in certain commercial, human rights and property matters.¹⁴¹

Even a court-appointed expert's opinion may not reflect the mainstream scientific position.¹⁴² A panel of experts would give a more nuanced view of any debate, although the generalist judge must make the final decision. Furthermore, judges supported by a panel of experts may feel confident ruling on increasingly scientific matters rather than restricting themselves to law and facts. There would also be practical constraints such as timing and cost when endeavouring to appoint such a panel and little research exists on the effectiveness of independent experts.

D The Grounds of Judicial Review

Furthermore, even if scientific research were declared non- or partially justiciable, plaintiffs will suffer little hardship as cases like NIWA's fit poorly into the grounds of judicial review. The Court

134 *R v Carter* (2005) 22 CRNZ 476 (CA) at [47]; and David E Bernstein "Expert Witnesses, Adversarial Bias, and the (Partial) Failure of the *Daubert* Revolution" [2008] 93 Iowa L Rev 101 at 104.

135 At 106.

136 *Vernon v Bosley (No 2)* [1997] 1 All ER 614 (CA) at 647.

137 Bernstein, above n 134, at 106.

138 *Jurs*, above n 113, at 79; and *Henderson and Seymour*, above n 133, at 89.

139 Bernstein, above n 134, at 106.

140 High Court Rules, r 9.36.

141 See Commerce Act 1986, s 77; Human Rights Act 1993, s 126; and Land Valuation Proceedings Act 1948, s 3.

142 *Jurs*, above n 113, at 87.

is not restricted to examining the three traditional grounds of illegality, procedural impropriety and irrationality.¹⁴³ However, many sub-grounds will be satisfied in such limited circumstances as to be virtually useless to plaintiffs. Scientific research seems very unlikely to encounter errors of law, for example. Others, such as error of fact, relevancy, bias and irrationality may be problematic in their application.

A claim of procedural impropriety, for example, appears unlikely to succeed in cases like NIWA's. Many organisations making decisions based on scientific information have consultation processes dictated by statute and it is entirely proper that the Court should enforce these.¹⁴⁴ However, CRIs have no mandated procedure and it is argued that the nature of the power exercised and surrounding circumstances do not justify implying a duty to consult.¹⁴⁵ It is unrealistic to expect NIWA to take submissions on how research should be performed.¹⁴⁶ Consulting non-experts would yield little benefit and expert opinion should be canvassed through a thorough literature review. Furthermore, Venning J reasons that the public may be affected by resulting government policies. To consult the public would not be feasible and would mean material would effectively be published before the official decision to publish was made. The scientific method also already provides for criticism of NIWA's approach.¹⁴⁷ Wider consultation should only occur at the point that policy based on the research is formulated.

Error of fact claims are also problematic as they require serious errors regarding an incontrovertible fact which is central to the decision.¹⁴⁸ Few incontrovertible facts exist in science, with uncertainty attached to virtually every result. Also, as *NIWA's case* demonstrates, it is practically impossible to demonstrate that it is an incontrovertible fact that a particular methodology should be used. Thus, even if available, the error of fact ground would rarely assist plaintiffs.

Justice Venning appeared to consider the "current state of knowledge" and "currently recognised scientific opinion" to be mandatory relevant considerations.¹⁴⁹ However, given that in many fields there is much debate as to what the current state of science is, it would be inappropriate for generalist judges to determine what this entails.

143 *Council of Civil Service Unions v Minister for the Civil Service* [1984] 3 All ER 935 (HL).

144 See *New Zealand Pork Industry Board v The Director-General of the Ministry of Agriculture and Forestry* [2012] NZHC 888; and *Walsh v Pharmaceutical Management Agency* [2010] NZAR 101 (HC).

145 *Daganayasi v Minister of Immigration*, above n 68, at 140.

146 *Walsh*, above n 144, at [163].

147 See Part IIIC.

148 *Bryson v Three Foot Six Ltd* [2005] NZSC 34, [2005] 3 NZLR 721 as discussed in Joseph, above n 132, at 924 and 926.

149 *NIWA's case*, above n 1, at [82], [105] and [106].

Strong arguments exist that claiming the decision-maker was biased would rarely assist plaintiffs. The test for bias amongst judges is whether a "fair-minded lay observer would reasonably apprehend that the [decision-maker] might not bring an impartial mind" to the issue.¹⁵⁰ Being in debt to or related to one of the parties is thus sufficient.¹⁵¹ However, research often relies on funding from organisations with vested interests. Furthermore, the process of formulating hypotheses arguably biases researchers towards a particular result. However, the scientific method is designed to assist the objective search for truth, regardless of researchers' backgrounds. Indeed, there are precautions in place to prevent scientists' expectations from influencing results, such as undertaking a double-blind trial, where neither the subject nor the investigator knows who is in the test and control groups. Additionally, many journals require authors to declare conflicting interests in their articles.¹⁵² A reasonable lay observer should understand this. Thus, scientists are only likely to be successfully accused of bias in the presence of corruption or fraud, which I argue below, is the only time that judicial review is justifiable.

Irrationality is also unlikely to yield results. No mitigating factors, as described in *Wolf v Minister of Immigration*, apply so the threshold to demonstrate unreasonableness would be high.¹⁵³ The *Wednesbury* test which requires a decision "so outrageous in its defiance of logic ... that no sensible person ... could have arrived at it" is falling from favour, but judges remain anxious not to usurp the decision-maker's role as finder of fact.¹⁵⁴ Such high thresholds will never be satisfied when there is any scientific dispute on the matter, as there was in *NIWA's case*. Furthermore, to understand the differences between scientific methodologies often requires considerable training so the majority of "sensible" people could not be expected to distinguish between them.

The innominate or *Guinness* ground is perhaps the most far-reaching in judicial review, leaving much to the Court's discretion. It only requires that something has "gone wrong of a nature and degree which [requires] the intervention of the Court".¹⁵⁵ Some judges consider it merely a repetition of the principle that courts are not confined to existing grounds of review;¹⁵⁶ others view

150 *Saxmere Company Ltd v Wool Board Disestablishment Company Ltd (No 2)* [2009] NZSC 122, [2010] 1 NZLR 76 at [4].

151 At [17]; and *Saxmere Company Ltd v Wool Board Disestablishment Company Ltd* [2009] NZSC 72, [2010] 1 NZLR 35 at [66].

152 See Jessica S Ancker and Annette Flanagan "A comparison of conflict of interest policies at peer-reviewed journals in different scientific disciplines" (2007) 13 *Sci Eng Ethics* 147.

153 *Wolf v Minister of Immigration* [2004] NZAR 414 (HC).

154 *Associated Provincial Picture Houses Ltd v Wednesbury Corporation* [1947] 2 All ER 680 (CA) at 683; and Joseph, above n 132, at 935–936.

155 *R v Panel on Take-overs and Mergers, ex parte Guinness plc* [1990] 1 QB 146 (CA) at 160.

156 *Seataste Products Ltd v Director-General of Agriculture and Fisheries* [1995] 2 NZLR 449 (HC) at 461.

it as a distinct ground.¹⁵⁷ However, in cases like NIWA's, the arguments made above might be rehearsed, demonstrating first that judicial intervention is not required, as either individuals' rights have not been affected or complainants have other forms of redress.¹⁵⁸ Secondly, this part has raised serious questions about whether a dispute involving scientific research is of such a nature that the Court should intervene, due to issues surrounding the adversarial process and judicial expertise.

E Summary

This part of the article has demonstrated that strong arguments exist that the Court's personnel and processes are ill-equipped to resolve scientific issues. The adversarial system is unsuited to addressing polycentric decisions, whilst judges lack fundamental scientific knowledge and expert witnesses may not overcome this deficit. Even potential solutions such as appointing expert panels or reserving complex cases for scientifically-trained judges are problematic. Thus, powerful arguments exist that judicial review should be excluded completely through a finding of non-justiciability or a deferential standard applied (partial justiciability). Part V will explore why the latter is preferable.

V DEFINITELY DEFERENCE: SOLUTIONS TO THE PROBLEM OF JUDICIALLY REVIEWING SCIENTIFIC RESEARCH

In this part, I examine how the problems with the adversarial system, judges' lack of training and expert witnesses explored above might be minimised. While non-justiciability may prevent judicial interference, it bucks the current trend towards increased scrutiny of public decision-makers and may allow CRIs acting fraudulently to escape consequences. However, something more than the deferential standard Venning J applied is needed, as *NIWA's case* demonstrates that even judges endeavouring to avoid making scientific decisions may be unsuccessful. Furthermore, scientific advancement may slow if researchers must worry about judicial scrutiny. I propose an intermediate position, with judicial review reserved for instances of "flagrant impropriety" in cases such as *NIWA's*.

A Non-justiciability

Whilst declaring scientific research matters to be non-justiciable would certainly protect the research process from judicial interference, it is problematic. Such a finding would run counter to the trend noted in New Zealand in the early 2000s towards increasingly intensive review.¹⁵⁹ Courts are unwilling to leave public power unchecked, perhaps reflecting greater demand amongst ordinary

¹⁵⁷ *Roach v Kidd* HC Wellington CP 715/91, 12 October 1992, McGechan J as discussed in *Laws of New Zealand Administrative Law* (online ed) at [108].

¹⁵⁸ See Part III.

¹⁵⁹ Joseph, above n 132, at 833.

New Zealanders for accountability in the public sector.¹⁶⁰ Even those answerable to the public through elections may only escape review when addressing matters of high policy or national security.¹⁶¹ CRIs would appear out-of-place on the list of decision-makers protected by non-justiciability.

Moreover, non-justiciability would protect any decision to publish by CRIs, even if it were fraudulent or corrupt. Aside from public and professional condemnation and employment consequences, which may not occur depending on how widespread the issue is within an institution, New Zealand has no mechanism for addressing such behaviour.¹⁶² Indeed, only 11 countries worldwide do.¹⁶³ Of these, the Danish Committee on Scientific Dishonesty is most comprehensive, although limited to public health research.¹⁶⁴ The committee comprises 14 members with "science expertise" but is chaired by a High Court judge.¹⁶⁵ In addition to preventative work, it investigates falsification and distortion of results, plagiarism and inappropriate authorship credit.¹⁶⁶ It is beyond the scope of this paper to determine the need for such a body in New Zealand. However, in its absence, courts should be able to take action in appropriate circumstances. Thus, decisions such as NIWA's should not be declared non-justiciable.

B Deference or Partial Justiciability

Whereas courts "have remained alert to situations of non-justiciability," the exercise of deference or its opposite, "hard look review", is somewhat contentious in New Zealand.¹⁶⁷ Deference or partial justiciability involves reviewing less intensively, for example by declining to examine certain matters or requiring a higher level of proof.¹⁶⁸ Some judges, including Elias CJ,

160 At 833.

161 *Curtis v Minister of Defence* CA 289/10, 25 February 2002 at [28].

162 Council of Science Editors "CSE's White Paper on Promoting Integrity in Scientific Journal Publications" <www.councilscienceeditors.org>.

163 Council of Science Editors "CSE's White Paper on Promoting Integrity in Scientific Journal Publications" <www.councilscienceeditors.org>.

164 Hans Henrik Brydensholt "The Legal Basis for the Danish Committee on Scientific Dishonesty" (2000) 6 *Science and Engineering Ethics* 11.

165 At 12.

166 At 22.

167 Dean Knight "A Murky Methodology: Standards of Review in Administrative Law" (2008) 6 *NZJPIL* 117 at 134–135 and 145.

168 Mark Elliott "Judicial Review's Scope, Foundations and Purposes: Joining the Dots" [2012] *NZ L Rev* 75 at 81.

strongly oppose varying the intensity of review.¹⁶⁹ Others have wavered, with Hammond J applying a "hard look" in *New Zealand Public Service Association Inc v Hamilton City Council*, before declaring such a spectrum of intensity unfeasible.¹⁷⁰ Part of their concern is that deference suggests judicial obsequiousness or the Court's failure to properly fulfil its supervisory role.¹⁷¹ However, variable intensities of review have gained traction regarding the amelioration of *Wednesbury* unreasonableness.¹⁷² Authors and professionals have openly embraced the concept, with commentators concluding that unacknowledged deference is more widespread in New Zealand than commonly thought.¹⁷³

Most common law jurisdictions utilise some form of deference.¹⁷⁴ However, most literature on deference in science-related matters is, once again, United States-based. Courts in the United States are at their "most deferential" when examining "agency science", using an approach known as "super-deference".¹⁷⁵ However, its effectiveness is questionable as decisions of organisations like the Environmental Protection Agency are frequently overturned, although this may reflect more on its policymaking than its research.¹⁷⁶ Furthermore, even with deference, judges make mistakes when contemplating complex science. In *Industrial Union Department v American Petroleum Institute* for example, what the United States Supreme Court found to constitute a "trivial risk" has been described as so plainly wrong that it would have been obvious to "anyone who has had Toxicology 101, even if they got a D in it".¹⁷⁷

169 Dean Knight "Mapping the Rainbow of Review: Recognising Variable Intensity" [2010] NZ L Rev 393 at 400–402.

170 *New Zealand Public Service Association Inc and Others v Hamilton City Council* [1997] NZHC 30 at 33 and *Lab Tests*, above n 94, at [379]. For discussion see Graham DS Taylor *Judicial review: a New Zealand perspective* (2nd ed, LexisNexis, Wellington, 2010) at 89.

171 Michael Taggart "Proportionality, Deference, *Wednesbury*" [2008] NZ L Rev 423 at 455.

172 James Palmer and Kate Wevers "Judicial review in a commercial context" [2009] NZLJ 14 at 15.

173 Knight "Mapping the Rainbow", above n 169, at 411–412 and 429. Contrast Edward Willis "Judicial review and deference" [2011] NZLJ 283.

174 See Michael C Tolley "Judicial Review of Agency Interpretation of Statutes: Deference Doctrines in Comparative Perspective" (2003) 31 Policy Studies Journal 421.

175 *Baltimore Gas and Electric Co v National Resources Defense Council* 462 US 87 (1983) at 103.

176 Elliott, Raul, Pierce, McGarity and Wagner, above n 78, at 10129; and Hammond Meazell "Super Deference", above n 76, at 749.

177 *Industrial Union Department v American Petroleum Institute* 448 US 607 (1980); and Elliott, Raul, Pierce, McGarity and Wagner, above n 78, at 10137.

C NIWA's Case and the Dangers of Deference

NIWA's case further illustrates the problems with deference. Despite stating that the Court should not determine matters of science, Venning J unintentionally decides scientific questions whilst unsuccessfully attempting to lower the intensity of review. He further fails to address issues surrounding the often-blurred boundary between science and fact, enabling future counsel to engage in the "science charade". Finally, even his deferential approach may lead to an ossification of research.

First, regarding inadvertent scientific decisions, Venning J is clear that the Court will not intervene in scientific matters. *New Zealand Pork Industry Board v The Director-General of the Ministry of Agriculture and Forestry* contains a similar statement that the Court will not determine whether institutions "got their science right."¹⁷⁸ Justice Venning thus declares multiple issues to be matters of scientific debate and inappropriate for the Court to decide. These include whether NIWA properly accounted for sheltering of weather stations and whether the methodology used was open to it.¹⁷⁹ However, in doing so, the Judge is deciding for the scientific establishment that there remains a debate and no "best" methodology exists for such cases.¹⁸⁰ Here, this was probably true, with NIWA's expert citing journal articles describing multiple valid methodologies.¹⁸¹ However, judges may occasionally make the wrong decision based on partisan scientific evidence and find there is on-going scientific debate when almost all experts are in agreement or vice versa. Whilst unlikely, this has the potential to influence subsequent funding priorities and developments, as well as policy-makers' and lay people's views of the science. Ultimately, there is a very fine line between a judge identifying a matter of science (incontrovertible or not) and making a judgment as to the status of the scientific debate.

Second, Venning J states that "less intensive review ... is appropriate" but fails to implement a deferential standard.¹⁸² Both the Judge and parties accept that NIWA must consider the "current state of knowledge".¹⁸³ Thus, the Court must make a scientific judgment as to what this represents. The Judge also makes no comment as to whether "officially recognised scientific opinion", the Trust's preferred standard, actually exists. He therefore leaves it open for later courts to apply such a standard and mistakenly influence science. Furthermore, in saying that the Court will be "cautious"

178 *New Zealand Pork Industry Board*, above n 144, at [111].

179 *NIWA's case*, above n 1, at [80] and [172]–[173].

180 Rodriguez Ferrere, above n 68, at 380.

181 *NIWA's case*, above n 1, at [80].

182 At [48].

183 At [82].

when addressing matters of science, Venning J does not rule out the Court openly intervening when it believes it may "definitively adjudicate on scientific opinions".¹⁸⁴

Additionally, as Rodriguez Ferrere notes, Venning J's attempt to introduce deference is ineffective.¹⁸⁵ His requirement that the decision be "clearly wrong" before courts intervene actually equates to "a decision outside the permissible boundaries to the exercise of ... discretion".¹⁸⁶ Since this is the normal standard applied in judicial review cases, Venning J's formulation allows later courts to scrutinise scientific research as they would any other decision.¹⁸⁷

NIWA's case also highlights the blurred boundary between fact and science. Justice Venning will intervene in factual arguments, although the threshold for finding mistakes of fact is high.¹⁸⁸ However, he will not (purposely) interfere in scientific debates, providing an incentive for plaintiffs to portray issues as mistakes of fact rather than scientific disagreements. Furthermore, judges may not always satisfactorily distinguish between factual and scientific issues, particularly as science is the search for facts, leading to a confusing overlap. If judges cannot reliably locate the boundary, the unwary may inadvertently judge science or fail to judge facts.

The Trust's complaint that the methodology used in NIWA's review was "flawed, unprecedented, outdated and unpublished" illustrates this difficulty.¹⁸⁹ Whilst the Judge considered this a scientific matter and thus deferred to NIWA, it might equally well be argued as a matter of fact as it could be determined whether a method is "unprecedented, outdated and unpublished" through examining scientific literature. Also treated as a scientific issue is the claim that NIWA did not account for non-climatic features which could have influenced results.¹⁹⁰ However, NIWA could easily have demonstrated factually that it had identified relevant non-climatic influences and undertaken corrections (although the appropriateness of those corrections would be a matter of science).

The issue of counsel taking advantage of the difficulties inherent in distinguishing science from reviewable matters is known in United States literature as the "science charade".¹⁹¹ As judges will defer to expert bodies on scientific matters, agencies creating science-based policy have allegedly

184 At [44] and [48].

185 Rodriguez Ferrere, above n 68, at 381.

186 *Te Wini v R* [2011] NZCA 617 at [16] as cited in Rodriguez Ferrere, above n 68, at 381.

187 Rodriguez Ferrere, above n 68, at 381.

188 See Part IVD.

189 *NIWA's case*, above n 1, at [152].

190 At [165].

191 Clark, above n 75, at 346.

portrayed "bad policy decisions as reasoned scientific analysis".¹⁹² Meanwhile, plaintiffs try to argue scientific matters as policy decisions to encourage review.¹⁹³ Such arguments may succeed improperly where judges lack scientific knowledge. Parties in the United States already "race to the courthouse", hoping to be heard by particular judges who will be more or less willing to involve themselves in issues of science.¹⁹⁴

Furthermore, scientists may be reticent to publish knowing that judges may scrutinise their work, particularly if their results are controversial. Scientists are already facing political criticism for speaking out, with the result that the media can struggle to find informed scientific opinion on matters of importance.¹⁹⁵ The mere existence of a court case may impact their reputations and employment prospects, especially given the cost to employers. Indeed, NIWA spent over \$100,000 defending itself against the Trust's allegations, although it was later awarded costs.¹⁹⁶ The resultant unwillingness to publish would be problematic as publishing and garnering critique from peers is vital to the scientific method. Alternatively, scientists may expend excessive time and resources gathering more data and conducting multiple analyses to ensure they will not be criticised by the Court. Plaintiffs also favour "blunderbuss attacks", with counsel criticising as many aspects of the science as possible, hoping that one argument at least will be accepted.¹⁹⁷ Such tactics potentially distort the focus of science by forcing scientists to consider and address any minor point which might be scrutinised in court.¹⁹⁸

D The Flagrant Impropriety Standard

This paper has demonstrated that denying judicial review based on an idea of non-justiciability leaves the system open to abuse by CRIs.¹⁹⁹ Scientists conducting research improperly may lose their employment and reputations, but this depends upon their employer taking action and carries no legal consequences for CRIs condoning such behaviour. However, Venning J's model of deference

192 At 342.

193 At 346.

194 Thomas O McGarity "Judicial Review of Scientific Rulemaking" (1984) 9 *Science, Technology & Human Values* 97 at 103.

195 Olivia Allison "Fears proposed code could gag science" *Radio New Zealand* (online ed, Wellington, 2 October 2014).

196 Trevor Quinn "Climate sceptics fail in NIWA case" *Dominion Post* (online ed, Wellington, 7 September 2012).

197 Hammond Meazell "Super Deference", above n 76, at 750; and Thomas O McGarity "*Daubert* and the Proper Role for the Courts in Health, Safety and Environmental Regulation" (2005) 95 *Am J Public Health* S92 at S96.

198 McGarity "*Daubert*", above n 197, at S97.

199 See Part IV: D.

offers the research process too little protection, ignoring the inadequacies of the court process in relation to scientific matters. The solution therefore appears to lie between the two, with what Knight calls "flagrant impropriety".²⁰⁰ This standard is typified by the Privy Council's determination in *Mercury Energy Ltd v Electricity Corporation of New Zealand Ltd*.²⁰¹ Instead of plaintiffs having access to all the grounds of review, the Court would only intercede in SOEs' commercial activities in cases of "fraud, corruption or bad faith."²⁰²

Justice Venning expressly rejected this standard in *NIWA's case*, reasoning that plaintiffs may challenge SOEs' decisions in private law but have no such recourse with CRIs. However, as demonstrated in Part III, other options are available and since individuals' rights will only be impacted when a resulting policy decision is implemented, only at this later stage should intensive judicial review be conducted. It is arguable that *Mercury Energy* may be distinguished as SOEs operate in the private commercial sphere, whilst NIWA is entirely public-focused. However, SOEs make decisions which would otherwise be private, but because they are themselves public entities, these decisions are within the Court's jurisdiction. NIWA is the same; as demonstrated earlier, its decisions had no "real practical" public consequences.²⁰³ Only NIWA's position as a public body justified a finding of "publicness". Furthermore, universities conducting similar work might be assisted by "the freedom ... to engage in research" enshrined in the Education Act 1989, as publishing is integral to the research process.²⁰⁴ New Zealand has witnessed a trend towards decreasing judicial intervention in the market, with judges viewing commerce as sacrosanct.²⁰⁵ This does not mean that commercial decisions alone should be afforded protection. Science also makes invaluable contributions to society.

Restricting review to cases of flagrant impropriety addresses the arguments raised in the three parts above. It acknowledges the improbability of individuals being harmed by decisions such as NIWA's. However, it provides a legal remedy should scientists behave improperly. It also recognises the risk that judges might inadvertently make decisions of science, which would be particularly harmful given the unsuitability of the adversarial system and indeed, judges themselves to determining such issues. Instead, it places the Court squarely within its usual range of operations, examining the facts to determine whether fraud has occurred. In doing so, it reassures the public that CRIs acting inappropriately will be held accountable.

200 Knight "Murky Methodology", above n 167, at 136.

201 *Mercury Energy*, above n 5.

202 At 391.

203 See Part III; and *Peters v Davison*, above n 55, at 188.

204 Education Act 1989, s 161(2)(b).

205 See Palmer and Wevers, above n 172.

E Summary

Having examined the arguments for both non- and partial justiciability, I conclude that "fraud, corruption or bad faith" is the optimal standard of deference when reviewing decisions such as NIWA's. A finding of non-justiciability would give scientists a freedom to act improperly that is almost unparalleled in the public sphere. However, Venning J's standard of deference allows judges to unintentionally determine scientific issues. In attempting to lower the intensity of review, he in fact allowed later courts to be anything but deferential. His decision also ignored the significant problem of the blurred boundary between fact and science which may allow unwary judges to decide matters of science. Scientific advancement might be delayed as scientists endeavour to ensure their decisions are above reproach – or if they forego publishing entirely. Thus, review should be restricted to cases of flagrant impropriety.

VI CONCLUSION

This paper proposed an alternative standard of judicial review in cases of scientific research to that adopted by Venning J in *NIWA's case*. Whilst the Judge was right to find NIWA's decisions to be within the Court's jurisdiction, its decision to publish did not directly impact individuals' rights. A finding that research could impact reputations presumes that the public would be willing to accept the findings of a single piece of research, despite knowing that science is not infallible. The absence of judicial review would also not leave plaintiffs without redress as they may seek review of any policy decision based upon the scientific research. This already occurs in the European Community courts. Furthermore, if plaintiffs have a valid scientific point, they could ask a reputable scientist to write a paper and have it published in a credible journal, and if the scientific community agrees, the initial conclusion would be discredited. However, Venning J was still justified in determining that NIWA's decisions were within the Court's public law jurisdiction as courts do not apply a purely functional approach. Thus, NIWA's nature as a public institution meant that its decisions may be considered public.

However, the adversarial system may not appropriately address scientific issues given its incompatibility with the scientific method. Expert witnesses appearing in court tend to be those outside the mainstream of scientific opinion, selected primarily for their ability to support the client's arguments. Moreover, judges lack the expertise to become involved in scientific decisions, with studies in the United States revealing very low scientific proficiency in their judiciary.

If these problems were remedied by finding NIWA's decisions to be non-justiciable, scientists might escape scrutiny when acting fraudulently or in bad faith. Thus, partial justiciability, or deference, is preferable; however, Venning J's formulation enables inexperienced judges to determine matters of science. The Judge himself inadvertently draws conclusions as to science, and his attempt at deference is unsuccessful as the standard he sets is no different from usual. Furthermore, scientific judgments are necessary to determine whether the required "current state of knowledge" has been considered. There is also a risk that counsel may encourage the confusion of fact and

science, as Venning J is prepared to review matters of fact but will not intervene in scientific disputes. In addition, should scientists become concerned that judges lacking scientific expertise will criticise their work, they may spend excessive time and resources ensuring their research is above reproach. These issues will not be resolved by a low standard of deference. Instead, decisions regarding CRIs' research should be reviewed only in cases of flagrant impropriety or "fraud, corruption or bad faith". This standard protects the research process from non-scientist judges but allows courts to intervene when scientists have acted reprehensibly.

Thus, NIWA's decisions should not have been judicially reviewed as they were. Whilst they fall under the Court's public law jurisdiction, the nature of the Court's processes makes it unsuited to determining such issues, requiring an extremely high level of deference. Instead, the Trust should have utilised non-legal methods or waited and sought judicial review of a resulting policy decision. As to whether these findings might be applied to other cases involving complex scientific evidence, it must be concluded, like in every good science paper, that more research is needed.